

## Marshallian Industrial Districts Revisited. Part II<sup>1</sup>

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### Abstract

Marshall pointed out that a specific form of industrial organisation (industrial districts) increased the wealth of some regions in England and Germany, and connected it with the accumulation of capital and investment, social capital, externalities and increasing returns. In his view, industrial location was closely linked to demography, local governments, freedom and social institutions. He recognised that districts were a main territorial framework for knowledge-based economic growth.

The notion has attracted a widespread and so far unanticipated interest in both economic policy and academic research. Becattini and Bellandi rescued the Marshallian notion of external economies to the firm and internal to the district, applied it to the Italian districts and examined the extent to which the district as a contemporary theoretical construct is ultimately explicable by conventional neo-classical (Marshallian) economic categories of 'externality' and 'agglomeration'. As a by-product of this valuable enterprise, some confusion arose regarding the usefulness of the original framework applied to more recent developments. With extensive reference to his own words, the author demonstrates that his writings on the subject of industrial districts provide an interesting exploration of issues still very relevant today.

This paper intends to contribute to a renewal and revision of the seminal concept of Marshallian industrial district to distinguish it from further developments of this idea inside the field of industrial organisation. It provides a comprehensive view of the topic of industrial districts from this standpoint; and shows how Marshall's analysis connects it to other themes and issues in his economics.

**Key words:** Industrial Districts, Alfred Marshall, Industrial Organisation.

### 4. Human Capital

District's organisation is not tied to a specific situation, though it may be the outcome of a very concrete setting as England's lead in the cotton industry which "resulted from concentrated original thought, making use of what little aid could be got from the science of the time" (IT: 608n). It is rather a "set of capabilities" or an organisational asset, reserves which are provided to grasp opportunities arisen out of the firm's contracts, and to respond to threats coming from its rivals' moves. Capabilities that are not under control of an individual or group but spread out within the industry, are all the same if they are rivals or working together.

One of the tasks that Marshall saw as specifically entrepreneurial was that of efficient allocation of resources inside the district. First of all, they should look for the fitting occupation of everyone, to place them in the occupation for whom they are better prepared according to their expectations and capabilities. Entrepreneurs "had full opportunity for putting each one to the task appropriate for him ... his experienced instinct carried far" (IT: 351). He makes the point that, due to its size, "in businesses of small, and even of medium size, each employee can be to a certain extent treated as an individual human being: his strong points and his weak points are known; and his latent efficiency may be evoked by ... a tentative change in his work on another" (IT: 352). That does not mean to reach a complete harmony between persons and jobs for it is a distinctive note of districts the constant desire to go beyond what has been reached.

Marshall argues that firms "are located increasingly in industrial districts when the personal contact is needed: in trade between allied branches of production ... which have not yet

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brought under the dominion of standardisation" (IT: 285); he refers to tasks where "the later stages need mainly to be done by hand, and call for the kind of care that is best given by an artisan working ... or by a small employer" (IT: 246). This is quite clear when design is involved in the process: "the supreme skill of the Lyons weaver shows itself now almost exclusively in an inherited power of delicate manipulation, and fine perception of colour, that enable him to carry out the ideas of professional designers perfectly" (PE: 214).

That makes sense for skills in districts which are strongly polarised specially in all dealings "which need to be adapted to individual requirements and idiosyncrasies ... connected with dress, ornaments" (IT: 285). Some carry out simple tasks and in the course of their work they do not learn much: "the large business, itself increasingly given to semi-automatic work on standardised products, is often indirectly aiding business in which routine has but a secondary place"; others are highly specialised and their ability continually increases in their relations: "in some directions it promotes new openings through which a man of small means but large energy may work his way up to become a leader in industry" (IT: 246). When it is absent, "this cause of localisation was indeed much weakened as soon as automatic machines and other expensive plant, along with high organisation, become a more important factor than manual skill in production" (IT: 150-1).

The intrinsic tendency to constantly reorganise its human resources is another key note: "in the modern era of rapid changes – some caused by fashion and some by the beneficial movements of industrial and social progress – everyone feels free to make a new departure, everyone has to rely in the main on his own resources" (PE: 213). That is the outcome of an ongoing testing of inefficiencies, both inside and outside the district. It profits from a kind of out-breeding: "changes of work, of scene, and of natural associations bring new thoughts, pay attention to the imperfections of all methods, stimulate a 'divine discontent', and in every way develop creative energy" (PE: 197). This does not happen in "giant business which does little to educate high creative faculty" (IT: 603) due to the brutalisation caused by the production process.

Industrial district refers to new firms set up by their founders as independent businesses. It works like a school for firm founders: a combination of the capacity for creation, the power of local decision-making, and the ability to control the environment to its own ends (Keeble, 1986). Empirical research showed to Marshall that most founders came from SMEs, in which they had received far more appropriate experience and training for entrepreneurship than was the case with large, more hierarchical and occupationally-segmented establishments. Partially, it was the result of having been "taught in a school of this old-fashioned kind" (PE: 209), "it used to mean little more than imparting that manual dexterity and that elementary knowledge of machinery and processes ... but such so-called education does not develop faculties" (PE: 208).

The ratio of new independent firms' birth measures district's dynamism. Nurturing with new firms: a net that supports new members is more likely to succeed in the long run; they will take the leadership in future, and maintain the traditions of the group. "Sometimes one of these makers develops exceptional ability: and he may then wish to claim the merits of his advance: but if he insists on issuing his own name or trade-mark, he will need to begin to build up a connection for himself (a new firm)" (IT: 301n). Normally, old employees received support (know-how, credit and contracts) from the existing firms to match a need still not solved. It gives them the chance to take advantage 'from the growth of subsidiary trades in the neighbourhood ... which are occupied with collecting and distributing the various materials and other commodities which are required by the small establishments in question, and with collecting and distributing the product of their work' (Webber, 1984).

Everybody has a direct experience of what means to start a new activity. A company entering the district found it easy to hire the requisite expertise locally "facilitated by association with others engaged in the same industry" (IT: 511); and the diffuse transmission of know-how among workers because "the mysteries of the trade become no mysteries ... if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further ideas" (PE: 271). Learning can also be considered as a social process (because it favours the construction of networks of people sharing 'social capital'), resulting in knowledge building and a 'collective memory' of organisations. It is a no-sophisticated level of knowledge, but deeply settled within the social texture which, little by little, feeds and incites the

growth of new firms: “new factories grew up increasingly in surrounding rural districts and small towns” (IT: 285). Knowledge building is a multifaceted endeavour.

To get access to knowledge’s gist is necessary to be where the others are, to have lunch with them, to swap or extract confidences, to bathe in an *atmosphere*, the pivotal word in the Marshallian idea of districts. “Frank talk heals” (IT: 643). An “industrial atmosphere” is created by taking advantage of externalities, the outcome being the adoption of improved methods: “the leadership in a special industry, which a district derives from an industrial atmosphere, such as that of Sheffield and Solingen, has shown more vitality in view of the incessant changes of technique” (IT: 287). It becomes a firm’s asset: “Sheffield and Solingen have acquired industrial ‘atmospheres’ of their own; which yield gratis to the manufacturers of cutlery great advantages, that are not easily to be had elsewhere; and an atmosphere cannot be moved” (IT: 284). It cannot be taken away to another location, it belongs to the district and is the guarantor of its dynamism. One big firm can change its location “but an atmosphere is not so lightly to be treated” (IT: 287).

This entrepreneurial climate of a whole geographic area is the cultural factor that brings about industrial dynamism. Historically, it had come even from “the patronage of a court: the deliberate invitation of rules to artisans from a distance (Norman smiths, Flemish) and settled them in a group together” (PE: 269). Marshall considers this factor as a comparative advantage of SMEs grouped in districts because the big ones can create branches when “needs skill that cannot be quickly acquired, but remain as of yore loath to quit a good market for its labour” (IT: 284). He defended that the small firm was “the best educator of the initiative and versatility, which are the chief sources of industrial progress” (IT: 249), while the big one “seldom has the enterprise, the energy, the unity of purpose and the quickness of action of a private business” (PE: 604).

The idea will enter again the literature on economics with Williamson (1975) and the transaction cost analysis. The ‘atmosphere’ of a transaction comprises, on the one hand, the social, legal and technological framework of the transaction and, on the other hand, factors like trust and the sharing of common values of the involved parties. A way to reduce transaction cost is to choose the organisational type that facilitates a good atmosphere and reduces the possibilities to fail in one of the two behavioural assumptions (bounded rationality and opportunism).

A crucial factor in the district’s success is the smooth inter-connection of a variety of professional activities: from part-time manpower to independent skilled workers and entrepreneurs. Let us examine the main groups which Marshall refers to:

i) *Pure entrepreneur* (in the Schumpeterian sense) that acts on his behalf without being, in many cases, capitalist partner. It is an alertness and vigilant person: “he watches all new thoughts and inventions which point to that end; and he is quick to adapt them, or to cause them to be adapted, for his special uses” (IT: 358). S/he partly subcontracts the production and considers the district as a flexible capital, capable of producing a lot of different goods along the same range of products (Becattini, 1994). S/he faces “the central problem of the modern organisation of industry: the advantages and disadvantages of the subdivision of the work of business management” (PE: 283). S/he prefers doing than talking, going to the problem’s gist. “They were admirably qualified to deal with simple direct problems of organisation, and adaptation of mechanical means to ends ... they retained their old simple habits sometimes eating with their operatives; and they often added nearly the whole of their net incomes to their capital” (IT: 63).

The main risk s/he is confronted with consisted in losing his roots and the sense of co-operation prevailing in the district, to become a ‘captain of industry’ who distances himself from the particular idiosyncrasy that prevails in the group: “we shall inquire how far industrial progress is dependent on individual and how far on collective action: how far it depends on ceaseless initiative; and how far on broad ideas and knowledge, which when once acquired pass speedily into common ownership; and become a part of the collective wealth” (IT: 175).

Marshall finds a historical precedent of this specific type in the *undertaker*, a subcontractor making the bridge between firms and “homely producers”: he looks after the efficiency of workers and instructs them on how to carry out their job. For this purpose “he needed the power of going to the centre of each practical problem as it arose; concentrating the forces of his mind on it; working out connections between it and outlying considerations; developing practical conclusions with a just sense of proportion; and pursuing resolutely the line of policy thus indicated, but with a

mind always alert for new ideas, especially such as were demanded by the changing circumstances and conditions of his problem” (IT: 48). In this way he pictures the qualities and the kind of man that the industrial district will produce.

Our economist takes into account other factors that facilitate the growth of knowledge, such as the geographic mobility of top managers because “a shifting places enables the more powerful and original minds to find full scope for their energies and to rise to important positions” (PE: 197n); and the communication of ideas coming from ‘public exhibitions, trade associations and congresses, and trade journals’ (PE: 210). It is possible to “import a considerable staff of leading men into a district” provided that “the population is ... energetic and has a fair share of alert intelligence” (IT: 168). The important role of immigrants in Victorian English business is a myth in need of revision. But the advantage of the recently arrived in perceiving and adopting new ideas is a familiar theme in studies of economic growth.

ii) *Skilled manpower* possessed a high professionalism as a result of historical sedimentation of techniques used in the production process, the “hereditary skill” (PE: 264), “characteristic of a special industrial atmosphere” (IT: 287). As we mentioned earlier, the task of managers is to look for “the better utilisation of the knowledge and experience of the workers: ... technical training and industrial research: the development of inventions made by the workers, with the co-operation of the employers” (IT: 644). This is possible for them to better know the workers (to offer everyone the fittest job) than in a anonymous urban environment: “he (the entrepreneur) is indeed responsible for the choice of his chief subordinates: he needs quick insight into character, and some power of influencing it ... in calling to his assistance men who are possessed in various degrees of like endowments” (IT: 350). It is a localised labour market “with the special skill which employers require” (PE: 271). Economies of skill, through the capacity to attract “men with exceptional natural abilities” (PE: 283). “The advantage of diversification in the inhabitants of the same region” (PE: 264) permits the access to “a large supply of high class ability, the most skilled workers”.

For Marshall, “a localised industry offers a constant market of skill” (PE: 271), an orderly market of specialised and trained workers. Industries are attracted to regions where labour scarce resources (in the firm’s production function) are easily found: “the chief need of the large majority of modern industries is for alert intelligence, good judgement, promptness and trustworthiness in conduct on the part of the more responsible employees” (IT: 168). Skilled labour has incentives to group in particular locations and stay there for, doing so, they are better considered and paid than elsewhere: “men seeking employment naturally go to places where there are many employers who need such skill as theirs and where therefore it is likely to find a good market” (PE: 271). “Sheffield skill makes fine cutlery of such excellent quality that none can surpass it; it is an epitome of Britain” (IT: 587), “due chiefly to the excellent grit of which its grindstones are made” (PE: 269). That is in contrast to big firms where “both sides like to be able easily to break off old associations should they become irksome; these difficulties are still a great obstacle to the success of any business” (PE: 272).

iii) lastly, *part-time and homely workers*: they carry out secondary activities that act as a shock absorber of economy’s cyclical fluctuations and of their own household economy. The loose relations imply that members of the network may, on the one hand, feel free to leave the network or, on the other hand, bring partners into new network. Easiness to enter and leave lowers the firm’s costs and allows them to adjust constantly their personnel to production’s needs. In Sheffield, it was easy to enter into the industry and the degree of social and professional mobility was high: the division of labour ignited a process of physiological fitting to external conditions. Any skilled worker could join the army of ‘small masters’ who made up the absolute majority of cutlery producers within this region up until the 20th century (Magnusson, 1994). Only a small capital was needed to open up a business in the districts and the necessary workmanship and know-how was generally available within the industrial community at large – an over-establishment of SMEs competing with each other.

Those workers are attracted from everywhere and profit the district: for firms, as for human beings, endogamy is insane. “History shows that a strong centre of specialised industry often attracts much new shrewd energy to supplement that of native origin, and is thus able to expand

and maintain its lead" (IT: 287). For instance, in America the "growth of localised industries" has been faster through the push of emigrant labourers: those having the courage to move to another continent do not mind to go to a "rising centre of industry" (IT: 150). Even in Germany "the great business energy of Germany attracts to its districts labour from other countries" (IT: 169). Not only is there a permanent interchange of people (new blood) with the surrounding market: "progressive industrial districts gain much from the immigration of workers to whom all methods of manufacture are new ... and work to the best of their power" (IT: 148), but within the district too.

District's tacit rules include the pride of being in the technological cutting-edge. Change is perceived as a necessary step towards a brighter future, the chance to reinforce a conquered position (Becattini, 1994). Both at corporate and regional level, innovation is increasingly recognised for what it is, namely, a collective endeavour. The stress on knowledge's flows and spread skills allows for adopting a model of incremental technical development, far away from innovative jumps: quiet intended process that looks for feedback. The strategy of permanent innovation is based on flexible, multi-use equipment, skilled workers, and the creation of an industrial community that restrict forms of competition not favouring innovation (Piore, 1984). Innovating in a district is an interactive process within firms, between firms (suppliers, contractors), and between firms and various institutions. As Porter (1990) put it, a nation's competitive advantage depends on the capacity to upgrade and innovate; and innovation goes through organisation.

That is far away from the Schumpeterian model of 'creative destruction' which denies the innovative ability of the Marshallian entrepreneur 'who loses himself in routinary duties' and whose innovation goes through investment. The crucial hypothesis is that innovative activities are strongly selective, finalised in rather precise directions, often cumulative activities. What the district's firm can hope to do technologically in the future is heavily constrained by what it has been capable of doing in the past. The sequence of critical choices necessarily restricts the set of alternatives available in the future. These are forms of rule-guided behaviour in which incremental adjustments are made to pre-existing patterns. But, if we follow Schumpeter's thesis it would be impossible to explain the success of many Italian industrial districts poorly equipped and not having R&D at all.

The pre-Marshallian world was one of integration of thinking and doing in work activities. This collaboration gave place to small innovations ("the development of a specialised industry in any place was until recently nearly always a gradual process ... incapable of sudden creation" (IT: 150)), or even important innovations that open new market prospects (things "which needs to be revolutionised and again revolutionised" (IT: 247)). Although the subdivision of tasks had led to an even more restrictive, specialised use of the handworker's tools, those tools remained an adjunct to artisan ability; they facilitated the worker's translation of his/her idea of a product into an actuality (Piore, 1984, pp. 22-3, 27-8). The pre-modern world based on the ideal Smithian worker innovating in the workshop was reluctant to technological changes. Industrialisation should revitalise at least part of the craft sector, reorienting it towards its own ends.

With the introduction of automatic machinery, the roles of artificer and instrument were reversed: the worker became the adjunct of the machine: whereas once the worker had defined the product, now the product defined the worker (Best, 1990). That happened when successive generations processed an even more sophisticated knowledge; for Marshall, it was the time of "engineers ... the leading representatives of modern industries ... and cause of economic progress" (IT: 206); and then the alternative to mass production is a dynamic version of Marshallian district: "modern massive retailing is in some respects a counterpart to massive production; but it was pioneered by co-operative trading" (IT: 289). A particular strategy for competitive success that is open to groups of SMEs with flexible specialisation.

For Marshall, a powerful explanation of districts' vitality ("the leadership in a special industry" –IT: 287) is the smooth transition from invention to innovation ("to turn into account quickly any new departure affecting its work"). Keeping in mind his own country, "the British cotton industry, in those finer goods, which owe most to skill, is without a rival in great measure due to the fact that their plan is made in their own districts, with constant intercommunication of ideas. Nearly the whole of it is of British invention" (IT: 603). Incentives for innovation may be increased by the organisation of individuals in the same field (Loasby, 1991). A district "was well

adapted to stimulate that sort of invention ... which cannot be created by a single alert individual ... but the product of sustained researches by large groups of specially qualified students extending over long periods of time" (IT: 96).

The most skilled workers have a particular ability that is linked with the way the industrial district works (Brusco, 1986). It is the ability to meet and solve specific problems often in a original way that signifies in more than one case a real capacity to innovate: "changes in appliances, in methods, and in the purposes for which they are to be used, are mutually dependent on one another: and this cause alone would greatly limit the practical influence of isolated new ideas ... for large inventions and other advancements are seldom completed by a single man; and not always by a simple generation" (IT: 199). Innovation is better carried out by a team of researchers and workers.

Knowledge's search needs the joint effort of persons looking for different goals – men of practical ways and basic researchers – though "the weakness lie in the borderland between academic and business work" (IT: 97). Marshall is quite explicit: "in order that an article may really excel, it must be the outcome of thorough theoretical knowledge, combined with great technical skill" (IT: 353):

i) the man of practical ways and means looking for particular knowledge: "an improvement in business method is generally initiated by a man of affairs, who sets himself to attain a particular end by his best route ... in so far as they are made in the course of business" (IT: 203);

ii) basic research (the professional student): "the greater part of the work, which lies at the bases of those advances ... is made by mere students ... in search of knowledge for its own sake ... this is a richer source of new knowledge" (IT: 203); "many of these experiments are made by students in the pursuit of knowledge for its own sake, and are promptly published in the general interest" (PE: 285); "every scientific discovery, which has ultimately revolutionised methods of industry, has been made in the pursuit of knowledge for its own sake" (IT: 100).

Both tasks are complementary: "they will have much in common; each of them concentrates his attention for a time on some particular subject" (IT: 204). "It is well that laboratories devoted to the advance of pure science should take some account of the work of a second class of laboratories, whose researches are specialised on the attainment of particular practical ends" (IT: 100).

In any case, "whether he communicates his results to a learned society (ii) ... or applies them in practice himself (i), they become in effect the property of the world at once. Even if he uses them in a 'secret process', enough information on them often leaks out to set others soon on track near to his own" (IT: 204);

iii) the connection between them is conducted by the entrepreneur "who combines the faculties and aptitudes required for high scientific research with those of a great business administrator ... with the power and the will to embody their ideas in specific practical inventions of commercial value" (IT: 203); for Marshall "markets are firms" were structures designed to refine knowledge, and this task requires a 'conscious organisation', the entrepreneur: "in order that an article may excel, it must be the outcome of thorough theoretical knowledge, combined with great technical skill" (IT: 353).

National funds should support scientific research serving the industry's needs "in three distinct classes of laboratories. The first seeks the extension of knowledge at large; the second aims at knowledge with regard to special requirements of a particular branch of industry; the third checks the quality of the output of individual works" (IT: 99-100). This "new demand for the extended study of science" must respond "to the requirements of industry" (IT: 99). He is trying to connect innovation and industrial reality: "the world may gain much from his keeping in touch with some of this industries, whose methods might be improved by increased knowledge" (IT: 100). Marshall had no illusions concerning the role of Government for "experience shows creative ideas and experiments in business technique, and in business organisation, to be very rare in Governmental undertakings" (PE: 304), though he ask him "to set up an association for scientific research in respect to cotton industry" (IT: 608).

## 5. Firms

The district is a specific case of localised division of labour, that is neither diluted in a general market nor concentrated inside a few firms: “it recommends to work together by joint pooling of resources, by specialisation of production” (IT: 594). Every firm specialises in those points of the chain value that are essential to its competitive advantage, reaping all the benefits of specialisation and size: “individual firms frequently specialise on a narrow range of counts for spinning. Blackburn, Preston, Nelson and Oldham are centres of four different classes of staple cotton cloths, and so on” (IT: 601).

Marshall knew an industrial location centred in London but also with many firms in Lancashire-Cheshire, Birmingham and Leeds-Sheffield. In 1907, four out of every five firms had their headquarters far from the capital; but in 1935 half of them had moved to London. Metallurgy was centred in Birmingham and Sheffield; textile in Manchester, Liverpool and Newcastle; iron and steel provoked the creation of new cities like Middlesbrough and Barrow-in-Furness. “The medium sized cities can market a larger part of their products at moderate distances than a giant city can” (IT: 151). Nevertheless, industrial specialisation was not the main note though every region had a dominant industry: for example, Sheffield, capital of cutlery, had also mechanical and steel-related industries; over the centuries a minute division of specialised trades had developed in and around Sheffield.

Often an entire village was known to specialise in a certain trade. The list should include silks in Lyon; ribbons, hardware, and speciality steel in Saint-Étienne; edge tools, cutlery, and speciality in Solingen, Remscheid, and Sheffield; calicoes in Alsace; woollen and cotton textiles in Roubaix; cotton goods in Philadelphia. Nowadays, we could mention Hollywood, Silicon Valley or Boston’s Route 128 as examples of regional development associated to specific industries (Saxenian, 1996). But Remscheid (tooling) or Solingen (cutlery) continue to have the same character as they had.

Most of the districts’ firms operates in the production intermediate level, so the process can be dissolved (both spatially and temporally) in a number of stages: that makes it easier “to enter into direct contact with makers of innumerable specialities spread over an area of some two hundred square miles” (IT: 595); continuous processes, as steelworks, without intermediate stages are not suitable for being carried out in a district. One may wonder what is the cost of this radical fragmentation of the productive apparatus: it is only possible because many small firms that complement one another are grouped together in a relatively small area, with the advantage “that of so parcelling out the demand for various sorts of the same class of product that each business can specialise its plant on a narrow range of work” (IT: 601), not stopping production as a consequence of supply’s failures.

On the local level a strong productive specialisation prevails: the district focuses on one sector of production, with “a sufficient market for specialities” (IT: 246). It is the fact of being a ‘system’ rather than a ‘single firm’, that defines the degree of sophistication of this industrial structures and that makes it difficult to reproduce these experiences on the basis of incentives or measures of industrial policy (Brusco, 1986), and gives its strength “when everyone taking part in the manufacture devotes his whole experience, intelligence and time solely to the production of this one article” (IT: 353). In every industrial country there are “opportunities for a strong man with moderate means, who concentrates his energies on a speciality” (IT: 244). The district entrusts to a few firms the task of meeting demand on all sides for unusual, specialised and exacting jobs: “a large open market effects an automatic distribution of tasks to those establishments which are best fitted” (IT: 174). A market is developed for every stage of production: for instance, “each shipyard might advantageously concentrate on a limited number of classes of ships” (IT: 227), “concentrating all his strength on making some one thing, perhaps only of a single size” (IT: 246).

The Marshallian idea of industry or sector does not exactly correspond with the classification of official statistics. It is not a random grouping of firms; they belong to the same industrial sector only in a rather loose sense: while talking about localisation he does not mean accidental concentration of productive processes brought together to the same location due to the region’s characteristics (Becattini, 1994). The notion of district, that he uses to explain external economies

makes up all activities from a vertical standpoint (Callejón, 1995). For example, the 'textile sector' includes the machinery, chemicals, and the means of transport – and belongs to the district. Marshall makes the distinction between principal and auxiliary industry; Porter (1990) refers to sectors vertically integrated: the firm establishes intra-sector relations though always inside the whole activities which needs any industrial good along its production process. This relates to a weakness in Marshall's approach to the economics of industry, which is the absence of a proper theory of vertical integration.

Districts can be seen as an example of quasi-market 'co-operative competition': the firms belong to the same cycle of production; they trust the others will abide the rules of the game; and decrease information's costs without increasing co-ordination's costs. "It gives each of its members freedom and responsibility ... while it collects into its own body a strong force of high business faculty for organising the whole" (IT: 605). These markets are strongly competitive; sub-contractors are free to switch clients, and clients are free to switch sub-contractors. In each case, the centre of a supplier network of private firms that combined elements of co-operation and competition; they owe the success "to an unusually high average of constructive ability and initiative among employers, and of sustained energy and fidelity of work among employees" (IT: 16).

District's rules assure that losers always have a second chance: those who have lost a game can try again if they have respected what was agreed upon. There is no room for Hobbesian fights, the "aggressive competition", who mastered English industry in the first half of 19th century: "they were often inclined to regard business as a species of warfare ... not in solid prosperity, shared by all" (IT: 179). Destructive battle in the market brings ruin for everyone, only co-operation renders good. "Darwin's 'law of the survival of the fittest' is often misunderstood ... but the law really is that those who are best fitted to thrive in their environment: that is, to turn to their own account those opportunities which the world offers to them. A race of wolves that has well organised plan for hunting in packs is likely to survive and spread" (IT: 175). Rather, the *Bradford Dyers' Association* held a "skilled technical staff" to make it easy a constructive co-operation among its members.

Firms are deeply rooted in the region: it is impossible to understand it without taking into account its historical evolution. Marshall goes back to early stages of civilisation to note that the production of some goods had been localised. Itinerant sellers "created new wants among consumers", and were the ferment of what came later on: "this elementary localisation of industry gradually prepared the way for many of the modern developments of labour division in the mechanical arts and in the task of business management" (PE: 268). The historical background explains this process which, though not the distinctive feature of an industrial district, is a previous *sine qua non* condition for further development; but it does not make the mistake of simply equating "an industry concentrated in certain localities with a localised industry" (PE: 267).

From historical point of view, three main explanations (or theories) have been provided to justify the resurgence of an economy based on small firms (districts) in the turn of last century:

a) *recession push* theory (Keeble, 1986): it argues that district's emergence primarily reflects the impact of deepening recession in Europe after the financial crisis in 1873; growing international competition hit England where large firms were dominant, and diseconomies of scale had favoured small-scale production; enforced rationalisation and withdrawal of large firms from less profitable activities (far from their core business) may leave vacant market niches which were taken over by more flexible and specialised new firms with lower overhead costs; the division of labour made SMEs specialise in an specific niche ("one small branch") where economies of scale hardly can be obtained (PE: 287-9); and to do so, up-to-date machinery had to be used: "they do the finest manual work ... while they use subtle mechanical appliances" (IT: 284);

b) *income growth* theory (Brusco, 1982): a reason for the proliferation of SMEs and associated decentralisation of the productive structure in Italy can be found in the appearance since the mid-1860s of a significant demand for more varied and customised goods, produced in short series, alongside that for standardised goods; this structural change in market demand reflects a substantial increase in real household income that, coupled with widening cultural tastes, has fuelled an expansion in the market for sophisticated products ("to pay attention to the tastes of particular customers" (IT: 246)), and for quality and variety; its fullest expression are the SME industrial

district model; when Mr Stuart Uttley, secretary of the *Sheffield Federation Trades Council*, was heard in 1889 before the *House of Lords* he emphasised ardently that decentralised forms of production was still a living reality in his city (Magnusson, 1994); this high level of de-integration inside the district gave the firms flexibility in adapting to customer's needs and their changing demands;

c) *technological change* theory (Schumpeter, 1939) describes a four step process: slump (crisis in 1870s), boom or technological revolution (creative destruction: bursts of radical technological innovation), a period of innovation exploitation (Second Industrial Revolution), and eventually decline through market-swamping as a result of competitive imitation (1920-30); the end of the 19th century was witnessing just such a technological revolution (chemicals, transport, sources of energy, labour skill requirements, organisation and flexibility of production).

Marshall notes that the whole osmosis between production's activities and ordinary life's ones only can be achieved in a sector diversified sufficiently so as to offer employment to all the categories of district's population (men and women, young, adults and seniors) (Becattini, 1994). It is easy to perceive what is the problem: the concentration of firms devoted to the same product "makes too extensive demands for one kind of labour and ... there had been but little demand for the work of women and children" (PE: 272). Major shifts in demand for an industry may cause imbalances, which hit regions with specialised industrial districts particularly harder (Peneder, 2001, p. 155). The labour demand of the firm is both uncertain and imperfectly correlated. The restricted mobility of labour to switch their once acquired knowledge base may then become the most critical factor, causing districts to downgrade into acute structural crisis although or even because they have been host to highly successful clusters in the past.

According to Marshall, the solution rests "in the growth in the same neighbourhood of industries of a supplementary character", demanding the specific type of skills refused by the firms in the region; he mentions the example of Barrow's naval engineering which attracted textile firms to the area. Krugman (1991) calls it 'correlated local labour market'. The labour market clears with this negatively correlated labour's demand that must be adequately multi-sectoral for "a district which is dependent chiefly on one industry is liable to extreme depression, in case of a falling-off in the demand for its product ... this evil is avoided by large industrial districts in which several distinct industries are strongly developed; if one of them fails for a time, the others are likely to support it indirectly" (PE: 273). In 'bad times' it works as a stabiliser.

The district combines a great variety of productive strategies: "even in the same place and the same trade no two persons pursuing the same aims will adopt exactly the same routes" (PE: 355). The numerous and varied protagonists lead to a working by trial and error, with a higher possibility for the fitting solution to be found by any member of the group. The process of improving knowledge by conjecture, testing, and criticism, is likely to be most efficiently organised in a structure which combines differentiation and integration, in accordance with Marshall's general rule: "This central unity of action between the laws of nature in the physical and in the moral world is set forth in the general rule ... that the development of the organism ... involves an increasing subdivision of functions between its separate parts ... and a more intimate connection between them" (PE: 241).

The differentiation of the economic structure and its increased complexity, can be connected (or even equated) with economic growth. It can also be related to the necessity for learning (Lambooy, 2000). Diversity in the activities of businesses of a given geographic zone is a strong incentive for the growth of knowledge. Heterogeneity of firms is a significant benefit of industrial localisation. The organisation amongst various entrepreneurs in the same sector clearly favours knowledge, due to natural heterogeneity within the group: "each man's actions are influenced by his special opportunities and resources, as well as by his temperament and his associations" (PE: 355-6). The connecting task is left to the entrepreneur.

The advantage of an industrial district with a multitude of firms is that to generate a *gene pool* which encourages variation (Loasby, 1991). Marshall stressed that "the tendency to variation – biological in origin – is a chief cause of progress", and considered variety in business as a constant source of mutual enrichment: "the abler the undertakers in any trade are the greater this tendency will be" (PE: 355). He maintains this point of view although the vision of the industrial

world as a community in which information is shared is not congruent with the role that the dominant economic liberalism attributed to the market and to competition, which leads to differentiation in businesses.

Districts contrast with the widespread opinion that large firm size is a necessary condition for reaching economies of scale and for economic and efficient production: the small size of a factory would be a powerful indicator of bad technology. The general idea was that large size is a condition 'sine qua non' for economic efficiency and performance (Schumpeter, Galbraith). But the thesis that large firms are growth promoting must be refuted; SMEs grow faster whereas large ones decline. In fact, no real technological advantages of factory or large-scale production appeared within the high-quality cutlery industry in Sheffield; on the other hand, there were other advantages that might be reaped from increased centralisation and integration.

Once again Marshall sets up a distinction, according to the size of the businesses. For the entrepreneur who "must have the power of forecasting the broad movements of production and consumption" (PE: 297), big businesses find themselves in an advantageous position to observe market conditions through the commercial contacts which help them in the acquisition of information: "its agents gave it information on trade and personal matters in distant places" (PE: 282, also 278-83). Size conditions the amplitude of the external connections that a business can develop. Thus he recommends some type of alliance amongst the SMEs to share this knowledge.

Thirty years later, his view has changed: "we start from the position that nearly the maximum economy of production can often be attained by a well organised business of moderate size: but that the task of marketing efficiently over a large area demand for almost unlimited capitalistic resources, unless it is facilitated by association with others engaged in the same industry" (IT: 511). Division of labour favours SMEs, its multiplicity and acute sub-division favours a relatively optimum small size. "It is possible to divide the process of production into several stages, each of which can be performed with the maximum of economy in a small establishment and thus yielding a district consisting of a large number of such small establishments specialised for the performance of a particular stage of the production process" (EEW: 196-7).

Critical attitudes towards SMEs reflect the mistrust of neo-classical theory that took the size of the firm below the *minimum efficient size* (MES) as a reflection of poor management. Vertical integration produces a higher MES than in districts where one type of plant corresponds to every stage of production. So it is with reference to the single phase of production that the MES must be estimated. In fact, if this is the reference, these firms nearly always reach the MES (Brusco, 1986). If a worker can operate three looms, we can be sure that a textile artisan plant will have these three looms. In this case, the MES, measured in terms of labour force, is that of one worker.

In learning networks based on face-to-face contact, the optimum may be reached very quickly as the number of participants increase, because of diseconomies of density and the limited capacity of human being of interact intensively with a great number of actors. "Though the volume of output required for maximum efficiency in proportion to capital is increasing in almost every industry ... there is a point beyond which any further increase in size gives little further increase in economy and efficiency. And this is good; for small businesses are on the whole the best educators of the initiative and versatility, which are the chief sources of industrial progress" (IT: 249).

Marshall does not deny the advantages of mass production – "the small producer is constantly threatened with extinction" (IT: 247)–, for instance, in order to develop a strong marketing: "it can spend large sums on advertising... and its own goods advertise one another" (PE: 282). Big firms have access to up-to-date technology: "in some trades a factory of moderate size can have the best machinery ... for instance in cotton spinning, and calico weaving, a small factory will hold its own and give constant employment to the best known machines for every process" (PE: 281). Also, it is in advantage for "the increasing economies of specialised machinery and skill", and the use of specialised machinery: "in all such trades new machinery and new processes are for the great part devised by manufacturers for their own use" (PE: 280).

But he believed that economies of scale in marketing were a significant factor in promoting industrial concentration: "the advantages of production on a large scale can in general be as well attained by the aggregation of a large number of small masters into one district as by the erection of a

few large works" (EEW: 196). Marshall was optimistic about the district's future, this "multitude of British businesses of moderate size to hold their own against powerful aggregations in all those industries, in which no over-mastering technical advantage belongs to massive production: provided these qualities are united with frank willingness to learn from others; and to co-operate genially with others in matters in which unfettered association has large opportunities" (IT: 584).

Without any conscious intervention and centre of co-ordination, the industrial district frames a complex pattern of division and integration of labour that a big business hardly would plan, however much conscious effort applied to the task. That acute division of labour creates a dense network of productive inter-dependencies both inside the sector and between sectors: "each part is analysed with the aim of subdividing it into elementary tasks ... apparatus is devised or adapted for each elementary task" (IT: 207). The outcome is low transaction costs between local firms:

*the small miller long fought bravely but hopelessly against the giant flour mill ... but he has great uses in his readiness to adopt and try new things –in the application of his inventive genius, and in the practical knowledge that he acquires, through working in daily contact with his men; the individuality of the small business man remains an important asset ... there are good grounds for rejoicing in the fact that the progress of technique, while pushing him out of the track of many industries, continually opens to him new opportunities, if he will apply energy and resource to developing some speciality (IT: 588-9).*

Hence, mechanisation and/or a large scale of production presented no immediate cost advantage (Magnusson, 1994). The SMEs considered here typically produce in short series: "procure from working artisans and small masters the making of high-class goods to the order" (IT: 285). The advantages of flexibility are much greater: of being able to make special plans or designs on demand ("make good to orders of customers ... and do much constructive work in designing" (IT: 284) or to move about within the market (Brusco, 1986). "This method enables the merchant to turn to the fullest account his powers of contriving improved models, patterns, etc., of the goods of which he has attained a special knowledge; and also of anticipating the future course of demand, with reference to coming changes of fashion and taste, and to fluctuations of general economic prosperity" (IT: 50). Still in 1896 the SMEs preserving small-scale methods of production was a characteristic feature of Sheffield: "there were room for the profitable investment of capital in the organising of subsidiary industries adapted for meeting their special wants (EEW: 196).

That is true when we are talking about small segments of the market, the interstices that Penrose (1959) talks about (Brusco, 1986). SMEs could survive in highly developed agglomerations for the differentiation and specialisation associated with a well-developed system of outsourcing; this offers SMEs the opportunity to find a niche in the market, where specialisation can help them to survive (Boekema, 2000). But it would seem that whole sectors converted to short series: "the number of small businesses is constantly growing, since their products are ever finding new vents in these markets" (IT: 248). High-quality accompanied by the price that derives from good technology suitable for small series often comes off best against low quality, even though accompanied by prices that derive from a production technique of the Taylorite type. The success of many businesses in Sheffield depended upon their ability to produce their own raw material in the form of high-quality steel. For some firms this sideline of crucible steel production became dominant.

Marshall and other contributors to economic growth analysis agree with Schumpeter and Knight that entrepreneurship is absent in many big firms and that the most dynamic economic sectors are in the hands of SMEs. This sector is the most entrepreneurial, the most advanced in technology and organisation, and the one that enhances economic growth. For Marshall, the tacit knowledge of SMEs (connected with creativity and intuition) took the upper hand in products' innovation. Later on, this is also referred as serendipity (Boekema, 2000). "Such a growth will of course tend to impair the supply of that individual initiative, which is by far the most important element of national wealth: but that tendency may be relatively slight, if an open field be kept for small businesses in appropriate industries. An important means to that end is constructive co-operation" (IT: 594). Over the time, it grows and falls into routinary management.

In the Marshallian model, firms of different sizes (parent-firms and small) as well as with different organisational set-ups tended to co-exist and compete successfully side by side. The industrial landscape in England was dominated by a few vertically integrated firms surrounded by a multitude of specialised SMEs working for the big ones. Clothing and furniture's sector was controlled by small firms co-ordinated by market –vertical integration failed. Cotton industry in Lancashire was “in the hands of a multitude of independent businesses of moderate size ... fine spinning, coarse spinning, and weaving are localised separately” (IT: 601). Such sectors did not benefit from the economies of high throughput.

Marshall, however, suggested a basis for industrial development and stability of SMEs in terms of industrial districts. Although “the domination of a few large businesses may impair the efficiency of the open market” (IT: 174), experience shows that large establishments located in regions with a considerable number of SMEs develop better than in regions where they dominate the scene. England and America inclined to move in the same line of “massive production of knowledge by methods that are partially mechanical” (IT: 134). “The plants have been settling down towards their present shape during a century” (IT: 389) because the appearance of increasing returns needs a long period of maturation. Socio-economic stability over time seems to be strong for tacit learning, therefore, “when an industry has chosen a locality for itself, it is likely to stay there long” (PE: 271).

For that reason, the origins of districts often stem from the previous existence of one or more large firms which were working in the field where small and artisan firms are now operating (*e.g.*, cutlery of Sheffield). In old industrialised areas of Lancashire, big factories were surrounded by a number of recent industrial districts “to develop the cotton and engineering industries” (IT: 601). Others were able to develop into big firms combining steel and cutlery manufacture. “It has been developed in Lancashire, and to a less extent in other great homes of textile industry” (IT: 286), due to competitive advantages: good access to the sea and to raw materials; a climate suited to cotton industry; the character of the population; and a large market of a million people: “combines indeed an admirable climate for the purpose, and unique manual skill and organisation” (IT: 595). There is no doubt that part of the competitive strength of districts was determined by its natural, physical conditions “such as the character of the climate and the soil, the existence of mines and quarries in the neighbourhood, or within easy access by land or water” (PE: 268).

Districts presented a dualism of big firms producing the stable part of demand, and SMEs specialised on the volatile component of it. Piore (1990) explains complementarity between them, though always under technological dependence: SME's firm provides the machinery that the big one uses to produce in a large scale. Variations of skill between firms within a given industry would explain the diversity of practices within a district – for example, high-quality items being supplied by integrated, high-skill firms and low-quality items by disintegrated, lower-skill ones (Casson, 2000). Marshall made no attempt to construct a theory on these lines. One reason why Marshall failed to develop an integrated theory about this dualism is that he never grouped together his various remarks about the importance of information in a systematic way.

Chandler's theory of business evolution does not preclude the possibility of the permanence of small firms in peripheral, as distinct from core, sectors. But it implies that such vertically specialised sectors will be technologically backward (Best, 1990). One company takes the role of ‘central controller’ and organises the flow of goods and information among many other independent companies, making sure the final client gets exactly what s/he is supposed to get in an efficient way (Jarillo, 1993). In many instances, it was the establishment of a branch plant by a large firm from another region introducing the necessary technical and professional competence into a peasant social texture with few market connections: workers tended to change into independent workers doing on their own the work they have learnt at factories (Brusco, 1986). The market asked for customised goods that large firms tend to decentralise and so the productive process can easily be divided into phases.

Marshall finds advantageous the co-ordination of a routinised big factory with SMEs dedicated mainly to design and innovation: “the central control can bring the experience of each part to bear in guiding the whole: and can defray the costs of large experiments, the benefit of which will be available to the whole” (IT: 174). The role of highly mechanised firms and other where individ-

ual work is needed, are complementary to one another: “those parts of the work, that still require individual attention for the elasticity, for the initiative, and for the watchful care about details, in which the small producer excels” (IT: 248). Everyone contributes with what it has (standard items or especially designed) and enhances the soundness of commercial relations. Brusco (1986) finds an indicator to distinguish the industrial district’s model in the percentage of SMEs that have a direct relation with the market of finished products: the higher the ratio between parent-firms and sub-contractors is, the closer to a district model will be the industrial texture; Marshall notes that “we can find industries ... localised in retired villages of central Europe, and sending their simple wares even to the busiest haunts of modern industry” (PE: 268).

Firms in a district plan together and receive technical, financial and other services from the ‘commons’ together, rather than on a firm-by-firm basis. “With regard to technical matters, it delegates all difficult questions to a capable scientific staff” (IT: 605). So, SMEs reduce costs: the *Fine Cotton Spinners* “keeps special experts for dealing with every part of a cotton spinning mill, who are too expensive to be employed by a single firm; but are in effect available for all” (IT: 606n). Collaboration can also cover R&D: “a suitable arrangement being made for a special contribution in case its expense should be great, as well as for the ownership of patents” (IT: 100). For only a big firm could carry on those investments: “in some cases (only) a simple giant which is pioneering new developments may reasonably set up a great laboratory ... too costly ... for any but very exceptional business” (IT: 100). Though it is neither clear that big enterprises were more innovative nor size had a considerable effect on the intensity of R&D carried on.

In the district, the parent-firm normally has a rather vague idea of what it wants. Its technical offices, which often coincide with the manager, define the new product along general lines –more in terms of requirements than in specific technical solutions. For example, “a manufacturer of textile goods designs a number of patterns for the season ... he works off samples in various colours and materials” (IT: 279n), because trading by sample makes easier itinerant selling. The parent-firm rules guides the division of labour in the district: “a large retail dealer recently boasted that his agents after inspecting patterns of shoes from many makers, select ideas contained in several of them; and he then gives out an order for a considerable make of a pattern in which these ideas are combined” (IT: 279n). But allows for complete scope to SMEs: “such associated efforts need not encroach on the freedom of each business to manage its own affairs in its own way” (IT: 179).

The co-ordination cost of the whole operation can be managed in an extremely efficient way. The autonomy given to each of its business units in an expanded market explains the “advantages of associated groups of businesses” (PE: 282). The *franchise* system creates thousands of entrepreneurs and incentives for hard work on the part of the business unit. SMEs can “confine its production to a class of limited goods” in such a way that “a man who knows how to turn the economies of partial standardisation and complete specialisation to his account is not in a bad position” (IT: 244-5). Marshall provides the example of the machine-tool industry in which “ten firms have agreed that, while setting up a common selling agency, they shall retain individual independence, on the understanding that each will limit its production to a single type of machines: radial drilling, milling, capstan lathes, grinding, boring, slotting machines” (IT: 592).

The sub-contracting firms, therefore, can no longer squeeze the profits – and the wages – of the sub-contractor (Brusco, 1986). Among firms that carry out different jobs, instead, there is a great readiness to collaborate: “the growing tendency to association among businesses in the same branch of industry” (IT: 100). Only a collaboration between thousands of workers and technicians can explain how new products appear by means of work-meetings and friendly discussions: “it is proposed that everyone shall contribute, both as an individual and in association with his comrades, to the solution of such business problems as are of most direct interest to him and to them. This co-operation may be expected directly to promote correct understanding” (IT: 644).

Agglomeration economies of an industrial district simplifies the shopping process, since in a single visit a customer can accomplish several trades, reducing customers’ information costs. This encourages strategic rivalry among different districts and activates a chain of knowledge’s interchange (“co-operative work”) between the parent-firm and the different levels of the productive process:

- 1) with SMEs: “the merchant, or his agent, inspects the samples ... visits the factory ... some of the combinations of colours shown in a pattern may meet with no approval, and never be worked in the piece”; even, “in other cases a merchant devises a pattern and contracts with a manufacturer to make a cloth or other product to it” (IT: 279n); he has in mind Manchester which “is now increasingly sought by representatives of merchants and large dealers” who prefer “visiting many factories” and “discuss with the manufacturer himself any suggestions and modifications” (IT: 286);
- 2) with wholesale dealers: “traders not infrequently aid producers by direct hints as to customers’ needs, and even by suggestions as to methods of meeting them”; “makes suggestions for improvements in details of patterns submitted to him” (IT: 279n); even “visiting a working class district, will put forward samples or illustrated catalogues, representing things likely to suit the technical work and domestic habits of the place” (IT: 281-2);
- 3) with the seller of the product: “the retailer, on the initiative of commercial travellers, receives pattern-books or samples; from which he chooses at once some thing for stock, and orders others as occasion arises to meet the selections of particular customers” (IT: 279n).

Relations with external suppliers are design-driven. Engineers do not prepare the specifications for the part and send them to a list of subcontractor. Instead, they describe the function of the product and ask a familiar supplier to design it (Best, 1990). The definite plan is perfected in talks between the management, the most skilled workers and sub-contractors, in a common task that has no other hierarchy than of professional quality and competence: “the stage has passed at which a great idea is almost self sufficing: it has to be elaborated in connection with others already in possession of the same or neighbouring parts of the industrial field; and its application is therefore not an act, but a long process” (IT: 172). The supplier offers a prototype that is then examined by engineers who may suggest alterations. “Social forces here co-operate with economic: there are often strong friendships between employers and employed” (PE: 272). A process of dialogue on the performance, quality, and production characteristics ensues until eventually the desired product is agreed upon.

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