

Strategy Formation and Firm Diversity: the Driving force of Economic Evolution

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Health Warning: This is a very preliminary draft.

Introduction

In this note I will explore some of the connections between strategy in the firm and development in the wider economy. I equate development with the structural transformation of an economy, as reflected in the changing relative importance of different activities, the entry of “new” activities and the demise of “old” ones, and the recombination and fission of existing activities. These are the processes that we associate with innovation and the competitive process and therefore with the strategic activities of firms and other forms of productive organisation. The theory of the firm appears only *sotto voce* in most discussions of development so I consider this to be a welcome opportunity to explore the connection between strategy and development. The background approach is evolutionary in that the central focus of attention is the relation between the differentiation of firms and the consequential adaptation of the economy to the possibilities inherent in differentiation.

I begin with a simple question, “What do we want from a theory of the firm?” In providing an answer I will trace some of the changes in the purpose of the firm within theories of market competition, changes that engage quite different conceptions of the firm. This is a topic that covers a vast literature, one that I have scarcely begun to comprehend or to find reliable connecting principles. So what follows is a first cut at the problem.

To cover the main points at the outset the position of the firm in modern economics is problematic, by and large it is a supporting actor within a larger play. As the agency

charged with the decision to produce in response to particular market incentives it is frequently treated as a black box or, if this is opened, it is treated in terms of isolated decisions such as make or buy or price setting thus ignoring the multidimensional nature of strategic decision making in the firm. Firm and market are dual constructs in the modern theory of resource allocation but they serve quite different purposes, firms do what markets cannot do and vice versa, they are complements not substitutes. Within equilibrium price theory the firm is of interest only in so far as they provide a connection between prices and the allocation of resources to production. It has not always been thus, there is a quite different view of the firm as the agency for economic development, a view that is certainly in Schumpeter but is also integral to the work of Marshall. The theory of value perspective and the theory of development perspective are not necessarily antagonistic. Indeed, I will presume at the outset that development refers to the development of an economic order, by which I mean a structured set of relations that serve to pattern the allocation of resources according to a particular logic of decision making and interdependence of action. However, as the theory of firm developed in mainstream thinking, the developmental element disappeared, although some progress was made in terms of developing an analysis of the growth of firms. The question of which products a firm produced and by what technical, organisational and governance methods ceased to be part of the analysis and consequently innovations in these dimensions of the firm also ceased to be relevant. It is only in the past two decades that this defect has received attention from economists and management scholars in guises as far apart as principle agent analysis and the dynamic capabilities theory of the firm.

I intend to develop the argument from an evolutionary view, for evolution is a particular take on the development problem. It has two main advantages the first is to be concerned with the sources and consequences of differences between firms in those dimensions that bear on its economic performance within the market process (Nelson, 1991). It is this dimension that brings innovation into the analysis as the primary instigator of evolution and thus development, and with innovation comes enterprise and business experimentation and other non equilibrium aspects of the firm's development. The second is to require a dynamic view of the firm, how the firm grows, or rather how a firm

grows differently from other firms, either intensively by expansion of current activities or extensively by changing the set of activities that define the firm. This dynamic view encompasses relative and absolute growth and decline, birth and death of firms and the recombination and fission of firms through mergers or spin-offs. In this way we can combine two interdependent aspects of economic evolution, the cumulative unfolding of the activities of the firm and the relation between firm differentiation and the competitive process. Evolutionary theory of this kind is naturally dynamic theory, it is naturally growth oriented but the focus is not on the growth of firms *per se* but rather on their differential growth. “Why growth rates differ?” that is the question.

Any respectable cut at this problem has to consider the extent to which the firm develops through internal or external stimuli and the relative balance of these forces. To say for example, that a firm grew because the general market for its type of product grew is not particularly informative. Decisions about growth are not passive and the issue is why some firms grasp new market opportunities in different directions and at different rates compared to other firms. It is the differential responses that we need to understand from a developmental perspective and this requires an understanding of the interaction of internal and external stimuli. Naturally this brings a theory of the firm into close correspondence with a corresponding theory of competition and market adaptation. Thus from an economic point of view we are not interested in the firm in isolation but in the firm as a component part of a market economy that derives its peculiar significance from the market processes in which it is embedded.

A final issue to reflect on is the role of the firm as generator and articulator of economically useful knowledge. The connection between knowledge and development is agreed by all economists to be a central issue, with the corollary that under-development is related to a lack of knowledge or the lack of capability to articulate knowledge to useful effect. The knowledge intensive firm is the natural complement to the knowledge intensive economy and the capacity of firms to invent and innovate moves to centre stage. In turn, the matter of how internal sources of knowledge are integrated with external sources becomes important so raising issues about the boundary of the firm and

its environment. Thus a theory of economic development is unlikely to proceed very far without a supporting theory of the development of the firm.

Before proceeding it will be helpful to outline a set of distinctions that need to be kept in view, given that the firm is a particularly complicated form of organisation. At the basic level is a particular productive activity, the methods of production and organisation that connect inputs in the firm to its outputs of goods or services within a particular plant. Many firms do not develop beyond this single plant stage but others do, so we define a business as one or more plants producing similar products that meet similar user needs. A business develops not only by changing an individual plant but by changing the number of plants and, whereas the production methods of the plants may be identical, the organisation of the business cannot but vary as the number of plants varies. Just as we have business units with different numbers of plants so we have firms composed of different numbers of businesses articulating different activities, the modern diversified firm. Development of the firm can then be construed at several layers, in terms of the development of an activity within a business, in terms of the development of a single business and, finally, in terms of the development of the collection of businesses that define a firm.

The theory of the firm as developed in the economics literature began from the unity of activity, business and firm and treating the firm as a production function and dual cost function is a perfectly sensible way of defining the firm in this framework. However, it excludes too much that is of interest, particularly the multi dimensional ways in which firms can sustain differentiation. The importance of strategy emerges precisely when we permit the possibility of differentiation of one firm from another and, as we have intimated, strategy is a layered concept. Of course, if strategy is to be linked to development we must do more than comprehend the formation and implementation of strategy within our triad of firm, business and activity. Strategy only matters in so far as it generates differentiation across firms, the idea that it links to competitive advantage and competition as a process rather than a state of equilibrium.

To give some substance to these ideas I shall treat the topic in historical terms beginning with Marshall, then move on to explain why Marshall's developmental perspective was written out of economic theory only to be re-introduced by Edith Penrose. And it is Penrose's work that connects us to the modern managerial perspectives on capabilities and the development of the firm.

Alfred Marshall

It is relevant to begin with Alfred Marshall for Marshall's extended treatment of management practice provides clear evidence of the intertwining between his developmental and population dynamic views of economic progress. Marshall's firm is a real decision making unit concerned with much more than short period matters, it invests it becomes more knowledgeable and it innovates. These are all managerial tasks that Marshall locates in the firm. Indeed, the managerial topic brings together the two high themes of knowledge and organisation that are central to his treatment of economic dynamics. It is also worth noting that the main features of his treatment change little between the First and the Eighth editions; apparently Marshall's views on management were settled early in the development of the Principles and are elaborated in essentially the same form in Industry and Trade. I can think of no other comparable economic theorist who devoted so much attention to this topic. The reason for this is clear, the managerial function is a major route to explaining firm differentiation and firm dynamics both of which are central to the long run theory of value and to the role of differential profitability in economic change. No echoes of Marshall's treatment are to be found in current economic textbooks but instead in important developments in modern managerial thinking, in the distinction between strategy and implementation, in the distinction between innovation and routine, and in the role of managerial services in the theory of the growth of the firm, a theme later picked up by Edith Penrose (1959).

In Book IV Marshall sets out the central evolutionary question thus, 'what are the causes which make different forms of management the fittest to profit from their environment, and the most likely to prevail over others..' (P, IV, 9, p. 265). The answer is in two parts.

Consider first the organic, developmental side of the argument and the rise of specialist managerial functions in business. This growth of specialised functions is a consequence of the wider organising principle of the division of labour, for it is the increasing complexity of large scale business affairs that makes ‘handicraft’ managerial methods quite inappropriate to the task of modern business management. This requires a new division of administrative labour, premised on organisational innovation, with specialised business men who collectively undertake risks, bring together capital and labour, engineer the general plan and superintend the details of the business. The distinguishing feature of these tasks is the distinctive knowledge and specialised mental effort that they entail. The small businessman in a traditional trade, the village artisan for example, may be taxed by continued physical effort but, in a telling phrase, ‘his brain was seldom weary’ (P, IV, 12, p. 292). In contrast, management in its new forms was a matter for the intellect and involved much more than the superintendence of labour. Managerial services fall within two broad categories of action: first, the ability to appoint and lead a team of subordinates and to make the most of their abilities while preserving order and unity in the plan of the business; and, secondly, to “know the trade”. By this short phrase, Marshall means activities that are closely tied to enterprise and innovation, and included in this category are the ability to forecast demand, (expectations, as always, play an important role in Marshall’s assessment of how people act and different individuals hold substantively different expectations¹), the facility to judge risks boldly but with care, and, finally, the capacity to innovate through the perception of opportunities to supply new commodities or improve methods of production. Thus Marshall’s organic view of the managerial team, consisting of grades of different ability carrying out interlinked tasks, organised on different lines, whether partnerships or private companies, but always held together by business leadership. In Industry and Trade, the list of attributes of a business leader and his chief subordinates is spelt out even more clearly, as follows: the personal qualities of judgment and enterprise, prudence and fortitude in risk making; an alertness to adopting new techniques and initiating them; a high power of organisation; the ability to read and handle character in subordinates; and, finally, the skill to allocate

¹ See Loasby, 1990 for further elaboration. We note in passing that a business does not expect to make profits, or losses for that matter, by having the same expectations as rivals. At a minimum, rational expectations in relation to business prospects must mean variform expectations.

employees to tasks to which they are most suited. All of these are needed even in a business of moderate size and *a fortiori* in the larger business they are required by the senior management team and its head in particular.² It cannot be said that Marshall did not have innovation and enterprise very firmly in his grasp when he wrote about the distinctive contribution of management to economic organisation.

In passing we should also note a significant addition to Marshall's treatment of management that appears in Industry and Trade, namely his treatment of the growth of the scientific management movement and its implications for work and the organisation of the firm. The central theme is a familiar one, namely the organisation and management of the flow of information required to coordinate the division of labour in a firm, but Marshall goes to great lengths to explain how greater information and its organisation through new principles of work allocation and evaluation allows further rationalisation of the division of labour. Cost accounting is one example but the chief exhibit is the work of F.W. Taylor, for it leads to a possibility not previously considered namely a deeper division of labour between the physical work, 'the doing' and the mental work, 'the planning', the former distributed but the later centralised³.

Turning now to the **variational** dimension of Marshall's treatment we find the twin concerns that **caused so much trouble in** his dynamic treatment of value, namely, the differentiation of managerial ability and the tendency for managerial ability to develop with experience and age. In broad terms business leaders are divided into those who open up new and improved business methods and, as in Schumpeter, those who follow beaten tracks (P, VI, 7, p. 597).⁴ In relation to variety very few employers combine the multifarious managerial abilities to a high degree and scarcely any two owe their business success to the same combination of advantages. Consequently each business is an 'individual', differing in some degree from its rivals, for no two persons pursuing the same aims follow exactly the same route and, importantly, we are told, this tendency to

² Industry and Trade, II, 10, p. 355.

³ See Whitaker (1999) for extended discussion of Marshall's attitude to the Taylorism movement.

⁴ Not that leadership in innovation necessarily brings a full reward to the innovator, those that pioneer new paths may confer on society benefits that are disproportionate to their personal gains even if they "have died millionaires" (P, VI, 7, p. 598).

variation is the chief source of progress (P, V, 4, p. 355). This **pregnant** phrase captures in a single step the deep evolutionary content of Marshall's thought. The immediate consequence of the differences in managerial ability is the variation in the profitability of their business organisations, and their prospects for survival **and growth** such that average ability brings forth quite low returns but exceptional ability allows fortunes to be amassed (P, VI, 12, p. 685).

However, Marshall insists that managerial ability is not a given. There is first the simple consequence of natural **human** life span and the need to hand the business on to successors who, if they are family members, are unlikely as a general rule to have the business **acumen** of the founder despite any advantages of training in business that they might have enjoyed. In Marshall, business dynasties are short lived, at least that is until the innovation of limited liability for joint stock companies which fundamentally changed the nature of the management process. There is secondly the process of accumulating experience, overcoming obstacles and establishing a sound footing in a trade, modern scholars would call this "learning by doing".⁵ In Marshall, age and experience are intertwined with energy and purpose in offsetting ways through time. This is the **imagery** of the 'trees in the forest' and of the rise and fall of individual firms⁶ and, of course, this organic view poses a central problem of managerial continuity. Marshall's proposed answer lies in the innovation of new forms of business organisation: cooperative arrangements, of which he is in favour but doubts their viability; business partnerships, in which the partners may specialise in different business functions; private companies; and, more troublesome, the joint stock company with its publicly traded capital and separation of ownership from control. The fact that the later form might give the business a life lasting beyond several generations of management was a continued source of concern in relation to the theory of competition in Book V: not only in terms of a **potential** failure to exit when leadership waned but more fundamentally in terms of **the** superior growth and

⁵ Marshall was already distinguishing between general managerial knowledge applicable to many trades and the knowledge required for specific trades, and the concomitant roles of formal education and experience in the acquisition of capability.

⁶ There is some ambiguity here. On the one hand, rising and falling refers to the changing relative positions of firms in a market, on the other hand it refers to the different states of ability and leadership in the life of the firm and the implications for its cost structure.

innovation prospects associated with the new, **large scale** governance form. Each of these different forms of organisation has the effect of distributing leadership and the managerial task over a group of individuals, but what is also significant about the joint stock form is that it opens up the possibility of managerial employment to gifted individuals independently of their access to capital or prior business connection.⁷

It is clear that Marshall considers the rise of professional management to give further advantages to the large scale organisation, where the head can devote himself to ‘the broadest and most fundamental problems of his trade’ neither troubled with details nor with routine work but’ keeping his mind fresh and clear *for thinking out* (my emphasis) the most difficult and vital problems of his business’ (P, IV, 11, p. 284). While the smaller business may have **some** advantages of direction and close control of fine detail yet its most fundamental disadvantage is in making experiments (innovating) so that the small business must generally follow rather than lead. Here we see the logical division between the control of an existing business and the ability to change the business in technique, organisation or market. It constitutes **today** a central managerial dichotomy. As always, Marshall’s non essentialist approach leads to important qualifications. Thus the small business, exceptionally, may become large by overcoming formidable barriers. To do so, the business man must adapt to the larger sphere, must retain his ‘originality and versatility, his perseverance his tact and his good luck for very many years together’ (P, IV, 9, 285) so that a larger market can be secured, credit established, and subordinates attracted of more than ordinary zeal and ability. Bad luck may thwart such efforts and the ultimate barrier to growth may be decay if not of the faculties then of the willingness to work hard. For Marshall, it seems, great stress is placed on the **elemental** fact that time is the ultimate scarce resource at the disposal of the individual.

The difference in business abilities which is central to Marshall’s treatment is further reinforced by the operation of the capital market and this is an argument that foreshadows the **subsequent** treatment of long run value. Differential ability translates into differential

⁷ A development that fitted well with Marshall’s moral stance and his desire that the son’s of the less fortunate might play a fuller role in economic life. As always, the coin has two sides in Marshall.

profitability and by making good profits a firm blessed with exceptional managerial ability and energy (P, VI, 8, p. 614) not only adds to own capital but increases the willingness of others to lend to it on more advantageous terms. So vicissitudes apart, capital grows in proportion to business ability. The converse happens for weaker business men so that selection, via the product market directly and the capital market by remove, **we are told**, results in an unexpected correlation between size and business ability (P, IV, 12, p. 312).

Innovation and the Development of Knowledge in Marshall

We come now to Marshall's theory of innovation, and its connection between the development of a firm and the development of its knowledge, not least because it reflects one of his incessant themes, pervasive, internal change and movement in an industry or economy, **the high theme of economic flux**. It is where Marshall's evolutionary thought reaches its most fundamental significance in relation to the development of knowledge in general and modern science and engineering in particular. Unlike Schumpeter, a focus on innovations as step, transformative changes is smoothed away in line with the gradualism that marks his approach. This is not to say that major, radical inventions are not countenanced but rather that the economic mode of their development and application is gradual.⁸ Indeed it is perhaps surprising to note how much Marshall, like Schumpeter, was in touch with the major inventions and innovations of his time, something which is manifest on even a cursory reading of Industry and Trade.⁹

The point, hinted at above, which distinguishes Marshall most sharply from Schumpeter is that innovation is part of the normal routine for the discovery of business advantage, it is an intrinsic attribute of economic leadership in the economic systems that he analyses and observes (Moss, 1982). The idea of the entrepreneur, 'the new man' breaking in

⁸Discontinuities are backward looking artifices of the mind in Marshall **as when he** uses them to explain the step change in economic society from that of traditional, custom bound agriculture and empirical knowledge to a world in which progress of technique depends on men trained in industry, in commerce or in scientific schools rather than the fields. In such a radically different modern society invention and innovation are endemic (IT, II, p.).

⁹ See, for example, the **discussion** of invention and innovation in relation to machines for making more exact machines (IT, II, 2, p. 210-211).

saltationist fashion with the status quo fits too uneasily with Marshall's avowed gradualism. But perhaps this distinction is overdrawn. Innovation is only the economic beginning of an adaptation to new possibilities, even Schumpeter needs his imitators and so the process of fitting an innovation into its environment is inevitably a continuous process of reshaping demand and patterns of resource allocation and, indeed, the further developing the innovation itself. **Consequently, the** radical nature of any innovation only emerges with the benefit of hindsight. It is a historical fact, and depends on the combination of market and non market responses as well as a stream of incremental innovations in technique, organisation and instituted frame that have been stimulated by the information flux that trial and adaptation generate. Thus while Schumpeter emphasises the discontinuity of the original innovation opportunity, Marshall highlights the ensuing continuity of adaptations: surely they are complements not substitutes. This is made manifest in Marshall's attitude to inventions, they are usually the culmination of many contributors over extended time that bring to a head 'constructive movements that have long been in preparation' (P, Preface, p. xiii).

The Counter Revolution

Marshall's approach was deeply evolutionary and one of his central concepts is the idea of equilibrium at the level of the industry coexisting with disequilibrium at the level of individual firms. This is the line of reasoning that leads to the representative firm and it is a line of reasoning in which the firm is never stationary. Growth and decline, entry and exit, innovation within the firm are the key elements of Marshall's flux within and between firms. This is why we have in Marshall a complementarity between the metaphor of the trees in the forest and the metaphor of evolutionary selection. These unique, dynamic features of Marshall's theory of value and development did not last for long, and with it went his perspective on the dynamic firm. Sraffa (1926) gets much of the credit for the abandonment of Marshall and the imperfect competition revolution that followed. But the real shift comes with Pigou (1928) for it is in his writing that Marshall's purpose is completely circumvented and the connection between the theory of value and the theory of development shattered irrevocably.

Pigou's construction, of course, is still the dominant mode of exposition when students of economics are introduced to a theory of the firm. Pigou's purpose was to codify the relations between supply price and the flow of output "when the industry under review is fully adapted to producing that quantity" (p238). The start is promising and centres on two difficulties in generating a stable relation between prices, cost of production and output. Since the analysis is of a long period kind, it is recognised that the advance of knowledge and invention has to be accommodated and this is done with a familiar device, a distinction between those inventions that are spontaneous and independent of the growth of output, and those inventions that are induced in Marshallian (indeed Smithian) fashion by the growth of output and may be internal too or external to the firm. Spontaneous changes have to be excluded but, as Pigou acknowledges, internally induced inventions may give rise to continually falling supply price without there being any tendency to increasing returns at the level of the firm in a given state of knowledge and technique. Thus the relation between supply price and output is not to be separated from induced innovations in organisation and technique, though this idea is taken no further and we are invited to treat firms with given production functions in the remainder of his analysis.

However, Pigou's elaboration of the supply curve for the industry now meets a deeper difficulty. Namely, Marshallian flux, the possibility that, a given price and aggregate scale of production coexists with changes in the output of the component firms, some declining, others rising in such a way that their fluctuations exactly net out to zero in the aggregate. This, of course presents a logical problem, how can an industry be in equilibrium if none of the firms are in equilibrium? This is a highly complicated aspect of Marshall's theory, the aspect that takes him to the representative firm, the aspect that Pigou immediately side steps by arguing that since the rate of flux cancels in the large it can be ignored in the small and deemed irrelevant as far as "the supply schedule of the industry as a whole is concerned" (p.239). Having denied the possibility of flux by the simple expedient of assuming it away, the path is opened to the concept of the *equilibrium firm* as the replacement for the representative firm. That firm has the property that is in equilibrium when the industry is in equilibrium. Having thus stabilised the

relation between industry output and firm output the analysis can then proceed in terms of the relation between marginal and average costs, prices and quantities of output in the equilibrium firm, which is familiar to every student of the subject. The consequence is to write development out of the theory of the industry and if it is superfluous to the industry it is but a short step to rendering it superfluous to the firm.

What are we to make of this argument? First it is clear that if flux is denied then there is no problem in finding one example of an equilibrium firm that is stationary when the industry is stationary, because necessarily, all the firms are now, by definition, equilibrium firms. This is a trivial way of avoiding the problem that Marshall's developmental analysis posed. But Pigou's solution has deeper implications. For the issue is not that flux may be compatible with a fixed output at the industry level, it can. Rather it is that it is not compatible with given average cost conditions, and thus a given supply schedule in the industry unless all firms operate with exactly the same cost constraints and exploit them to the same degree. Either costs are identical and independent of output at the level of the individual firms, or if costs are not independent of output then all the firms are of the same size. If not, if average and marginal costs differ at the existing pattern of inter firm output, then Marshall's competitive flux will alter the average and marginal cost levels in the industry simply by virtue of changing the relative importance of different firms with different cost conditions. Moreover, if cost conditions are to remain identical across firms they must innovate to the same degree and benefit from any external economies in the same degree, otherwise uniform cost conditions become differentiated cost conditions. There is no escape from this conclusion. If the relation between output and costs at the industry level is to be stable in the presence of flux then all firms must have the same unit costs.

Consequently, it is not the equilibrium firm that Pigou bequeathed to economic theory, it is rather the uniform firm. The choice is stark: either we have uniform firms and a stable supply curve or we have heterogeneous firms and a developmental process in the industry that necessarily transforms the supply curve endogenously. There can be no stable long period relation between quantity and output in a world of differentiated competitors.

While Marshall does not invoke a stable long period relation between costs and quantities, Pigou does and indeed uniformity is the crucial step to eliminate flux and thus to derive the possibility of an equilibrium firm, a firm which is in equilibrium whatever the price in the market. Once we eliminate flux all of Marshall's insights into industry evolution and the reaping of internal and external economies to different degrees are rendered nugatory. The firm is a production function alone (one step to the black box) and all production functions in the industry are the same. This is the step that we find in Viner too, for he famously draws his cost curves in such a way that they are the same in each firm and reach their minimum at the same scale of output.

The upshot is that Marshall's evolutionary, population methodology is unwittingly replaced by essentialist methodology (Hodgson, 1993; Limoges and Menard, 1994). Shortly afterwards, Robbins (1928) and Shove (1930) delivered the *coup de grace*, and within their own terms they were right so to do. Unfortunately, they had lost sight of the fact that their terms were not entirely Marshall's terms, their problem not entirely Marshall's problem. Perhaps this is not unreasonable given Marshall's infamous lack of clarity but the fact is Shove and Robbins alongside Pigou and Viner had constructed a different problem, how to allocate given heterogeneous resources in such a way as to best meet economic needs; a problem of "sorting and fitting" as Shove put it, invoking in the reader's mind the image of the economic problem as a gigantic jigsaw puzzle with a given number of unchanging pieces. Their solution concept, the arbitrage principle of "returns no worse than in the next best use", had no more need for an average firm than it did for an average parcel of land or average degree of human skill. It is the margin that matters in their characterisation of any market order and all talk of averages is redundant. The relevant supply curve is built from knowledge of the capacities of all the firms in a trade, and in the established order one or more firms, depending on circumstances, forms the margin of viability. Thus a coherent account of price formation emerged that is not an account of any process but a characterisation of a state of affairs. *Pace* Marshall, equilibrium of this kind is the equilibrium of every productive agent in the industry, though it is perfectly consistent with differential returns to entrepreneurs of differing ability including those at the margin who can at best expect normal returns to their vision

and organising ability.¹⁰ Thus while Robbins and Shove kept population thinking but stripped it of any causal evolutionary force, Pigou and Viner went further and eliminated the population approach altogether. Since each of them also took economic analysis out of time, no bridge with Marshall remained (Raffaelli, 2003, ch.6).

The immediate consequence was to emasculate the theory of the firm. Marshall's flesh and blood devices that develop and decay, that invent and innovate, that grow and decline at different rates simply disappears from view. The equilibrium firm is reduced to a price and quantity correspondence it never varies and it has no substantive decisions to make; within its purview strategy is an oxymoron, so is competition.

Revival: Edith Penrose and the Restless Firm

It is Edith Penrose in her Theory of the Growth of the Firm who returns us to the Marshallian tradition in which the firm derives its importance from a long period perspective linking profits and investment behaviour. The crucial point about Penrose's analysis is that the firm is not in equilibrium, there are always endogenously generated possibilities for its development, opportunities that are necessarily generated differently in different firms and acted upon differentially according to the distribution of entrepreneurial vigour. The essential point is that the firm develops because its managerial team are always gaining experience, experience which develops their capabilities and opens up opportunities for expansion. Thus the fundamental reason why the Penrosian firm is not an equilibrium firm is that no meaning is to be attached to the idea that knowledge can be in equilibrium. Penrose's managers are living individuals, not uniform automata.

The Penrosian firm is an administrative organisation, controlling bundles of resources that it either owns or rents from the market. The resources, however, are not the inputs

¹⁰ Thus Shove "in equilibrium every unit of resources must be so placed that its owner does not consider that he would gain by moving it to another point in the industrial field" (1930, 99, fn.1). But if so, every firm must also be in equilibrium otherwise it would offer inducements to resource owners to come or go.

into the productive process rather they are funds from which heterogeneous services are drawn and the services that are so drawn from any one resource depend on the other services that are available to the firm. Thus the services derived from any given manager in a given time interval, for instance, are not simply a property of that manager but rather a potential that is to be realised, a potential which depends on the surrounding managerial team and organisational context and which in its realisation changes the services that are available. This is the nub of her connection between the development of the firm and the development of its managerial team. As in Marshall, management is the basis of performance and management as an integrated team activity dependent on practice of working together. This is not incompatible with, for example, the idea that the firm is a bundle of contracts, but it is essential to the argument that the contracts as to what services come from what resources cannot be perfectly specified, and they cannot be perfectly specified because the conduct of the activity in the business changes the entities in the contractual relationship. Thus it is more accurate to say that Penrose's firm is a bundle of relationships jointly partaking in decision making rather than a bundle of contracts. It is a view that gravitates naturally to the emphasis in Nelson and Winter on firms as bundles of interdependent routines.

The logic of firm differentiation follows immediately once we recognise the epistemic element in Penrose's theory. In order to operate effectively the management team must develop a coherent sense of common understanding as to their respective duties and how these are coordinated in the organisation. Correlation of understanding is essential for the performance of any activity. But performance changes that knowing and gives rise to new understandings in the form of unexploited, latent managerial services for the firm to act upon. The managers are developing and opportunities arise for the organisation of the division of labour in management to develop and no two firms will develop in the same way. Thus Penrose's firm is neither an equilibrium firm nor a uniform firm and it is this fact which makes strategy meaningful. Enterprise in this scheme involves the decorrelation of understanding, the conception of alternative ways of conducting the activities of a firm and of putting the new perspectives into effect. Enterprise, like management is multi dimensional and a given team may vary in its entrepreneurial

versatility, fund raising ingenuity, ambition, and judgement in assessing and taking risks, all dimensions that impinge heavily on the development of the firm. If enterprise and innovation are at the core of what we mean by economic development then a theory of development needs a Penrose style theory of the firm.

The development of the firm will usually involve growth of scale and with it new opportunities for specialisation and co ordination within and between activities and here there is a degree of interdependence between those external factors creating opportunities for growth and the internal factors that are at the core of her discussion. The net outcome is the creation of growth and development opportunities that depend on how other firms are simultaneously creating their own developmental possibilities and how these differences are resolved in the market process. How one manager develops relatively to another manager is mirrored in the question of how one firm develops relatively to another. The firm is an unfolding entity and its unfolding depends its internal organisational form and on the competitive interaction with its rivals. Thus markets and firms cannot be separated from a developmental viewpoint.

The importance of Penrose lies not so much in bringing management back into an understanding of why firms differ but in making the link between the Marshallian competitive process tradition and the more recent development of a strategic view of the firm expressed in terms of the articulation and development of capabilities.

Capabilities and Development

This strategic view of the firm, also know as the capabilities view of the firm, is of considerable interest in any study of the sources and consequences of firm differentiation for the essence of differentiation is that it requires a change of knowledge within the firm (Kogut and Zander, 1992). It is immediately apparent how these new approaches are a development of the Marshall/Penrose perspective.

Several recent contributions to the management literature provide an underpinning to this approach. Barney (1991), for example, emphasises the importance of firm resource heterogeneity as a basis for competitive advantage and distinguishes in broad fashion between the physical, human and organisational resources of the firm. To be the basis of differential advantage the bundle of resources must be deployed to create differences in effectiveness and efficiency, there must be no strategic substitutes available to rivals, and the resource bundle must not easily be imitated. Imperfect mobility in imperfect resource markets is one reason for imperfect imitability but more significant is the complexity of the links between particular resource bundles and competitive advantage. These give rise to observational difficulty and causal ambiguity (Dierckx and Cool, 1989), as reinforced by the social complexity of the resource bundles when viewed internally, in terms of organisational structures, and externally, in terms of customer, supplier and other linkages. As long as we interpret resources not as the funds but as the factor services, in particular managerial services, gathered from those resources the Penrose connection is clear. Amit and Schoemaker (1993) explore similar themes but emphasise the imperfect tradeability of the resources which give strategic advantages and the consequences that they must be accumulated internally. This, together with the specialised nature of the assets, means that they are sunk and open to sudden obsolescence, and that they are a basis for inertia in responding to new opportunities. Of course, bundles of resources of themselves do not constitute strategic assets. Strategic assets are resources which are utilised for a purpose in the context of specific organisational contexts. It is clear from this resource-based perspective that a great deal of the competitive value of knowledge depends on matters of organisation and capability.

The organisation of the firm creates its distinctive signature, by co-ordinating the internal division of labour and, equally importantly by transforming the knowledge and skills of the individual members into a collective, unitary capability, which McKelvey (1982) has suggestively called a competence pool. A moment's reflection on the nature of any team sport will illustrate the point perfectly, and reinforce the idea that an important management task is the effective choice, motivation and allocation of individuals to teams. The organisation further forms the context in which any new knowledge is

acquired; it is the framework for learning and creativity. The same teams of individuals placed in different organisational contexts are expected to know different things and learn in different ways, while a change in the individual members of the organisation may equally be expected to change what it knows and how it learns. Thus what individuals know and can achieve depends on their context. In this way I like to sum up the organisation as an operator transforming the individual into the collective; it is a device for coordinating the division of labour in the generation of knowledge and skill, a device which gives the firm or business unit its individual and indissoluble character.

Several authors have emphasised, Penrose fashion, the role of the top management team in a business unit in shaping the nature of the collective enterprise (Eliason, 1990; Castanias and Helfat, 1991). This team defines the direction in which the business unit develops and the organisation of its operations. It is the top team's capabilities which underpin the ability of the organisation to conjecture alternative futures and to internally test the alternatives and select between them. And, of course, innovation is a matter of conjecturing alternative futures, of imagining how the future can be different from the present. It would be a mistake, to lose sight of the concept of the individual in all of this for firms are composed of individuals and indeed any serious discussion of entrepreneurship emphasises that point (Hughes, 1971; Douglas, 1987; Millard, 1990). So this line of argument is not meant to deny the importance of the individual but rather to emphasise that individuals always operate in an organisational context. However distinctive the individual may be, context is still important. Clearly in closely coupled organisations there is far less scope for individual creative behaviour than in more open, loosely coupled organisations. It is a familiar theme in the management literature as to where one draws the balance, close coupling being beneficial for efficiency but loose coupling being beneficial for innovation (Loasby, 1991).

A second strand of the capabilities approach is to explain the nature of the distinctive organisational resource or organisational operator in terms of its sets of decision rules or routines (Dosi and Marengo, 1994). Each routine relates to some task, cognitive or physical, within a specific activity, and provides the instructions for action according to

the circumstances prevailing (Nelson and Winter, 1992). But routines do not operate in isolation and the important point is that the firm's behaviour depends upon the interaction between its bundles of routines; capability is something which relates to the integration and joint operation of routines. Hence it is not always possible to link specific behaviours to single routines. Arrow (1974) has usefully developed this idea by specifying the firm's internal language or communication code as the element which shapes the integration of routines. Who talks to who with what frequency on what topics and with what authority both internally, and externally with suppliers, customers and the wider community of technological support, is a rather simple minded way of specifying this integrative function of an organisation. However, no organisation is simply reducible to its set of routines. For one thing routines vary considerably in the specificity of the action they stimulate and in the nature of the information by which they are triggered. Certain routines may brook no deviation from a performance template and be entirely automatic in operation being invoked purely by habit. Other routines may admit a great deal of interpretative flexibility so that the outcome varies with the individual or team performing the routine, and the other teams with which they interact. This is particularly likely with respect to the sets of higher level routines, such as those which guide innovative activities, since their purpose is to encourage and accommodate creativity.

Equally important is the fact that routines do not denote purpose or intent, the strategic objectives of the firm. Thus the collective capability is a bundle of routines for a strategic purpose. In this way the collective capability is an image of the firm's theory of its own activity and purpose. This is a view which has been stressed by Prahalad and Hamel (1990) when they emphasise the importance of strategic intent, and the failure of a resource-based perspective to account for these differences in firm performance which reflect, they argue, a mismatch between resources and ambitions. In short, productive opportunities are conjectured connections between capabilities and intentions (Loasby, 1991, 1994), while capabilities are organised packages of resources and routines. One possibility this suggests is that the organisation must possess a memory, or tradition of practice, so that losses in personnel can be matched with new employees who can be trained in the firm's routines. Indeed Penrose pointed out that one of the major

constraints on the rate of growth of the firm is the rate at what it can absorb and train new staff. Thus an individual may be difficult to replace when she leaves an organisation and of much lower effectiveness when working in another organisation. Thus each firm is a unique system for accumulating knowledge, the crucial point throughout is that firms differ in their dynamic capabilities and that is why their behaviours at any point in time are different (Teece et al, 1994).

Conclusion

A deeper understanding of the role of strategy in the process of economic development in the round requires a theory of the firm in which strategy is meaningful. We have suggested that this requires a non equilibrium theory of the firm which in turn requires an approach that privileges the differentiation of firms. In practice this is what we see as an essential feature of modern capitalism but it is an approach that we have traced from Alfred Marshall through to the modern emphasis on knowledge and capabilities as the roots of heterogeneity in the development of firms. Two remarks in conclusion. A non equilibrium approach does not mean abandoning the idea of economic order, for no analysis of evolution or development is possible without a substrate of structured relations that are patterned by a set of causal processes. But equilibrium is a far stronger stipulation than order and carries the necessary implication that any change of equilibrium can only be accounted for by external forces not included in the explanation of equilibrium. That is not a helpful way to grasp the nature of development, as Schumpeter put it from “within” the economic system. Finally, strategy in isolation has no economic meaning, rather it gathers its significance from the possibility that it generates competitive differences between firms and that the market adapts to those differences. Without appropriate processes of adaptation, as expressed for instance in the instituted rules of the market, there can be no development only fragmented change. This is the core of a variation/selection approach to development, strategy generates variety and the consequences that flow for the relative performance of firms generate the conditions for further variation in strategy. The firm unfolds as the market selects and the two meanings of evolution become as one, just as the firm and its market become one.

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