Edith Penrose's 'The Theory of the Growth of the Firm' Fifty Years Later

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I. INTRODUCTION

2009 marks the 50th anniversary of Edith Penrose's *The Theory of the Growth of the Firm* (TGF thereafter). In a review of the book in the *Economic Journal*, Robin Marris (1961) predicted that TGF would prove one of the most influential of the decade. In his 1987 entry to the *New Palgrave* he added that "this proved an understatement" (p831). Marris' statements were referring mainly to the economic theory of the firm, especially the literature on 'managerial theories', which were popular in the 1960s and in which he himself was a major contributor (Marris 1964). Neither Marris nor Penrose herself could foresee what appears to be the case 50 years on; this is a situation where the influence of TGF in mainstream economics has been rather limited (also Marris, 1987 and below). The managerial theories of the firm turned out to be no more than a footnote in the history of the neoclassical theory of firm, while Penrose receives no mention in leading neoclassical microeconomics, Industrial Organisation (IO) and economics of regulation textbooks (for example Kreps 1990; Tirole 1988, and Viscusi et al. 2001, respectively) and even in leading Economics, Organisation and Management textbooks, such as Milgrom and Roberts (1992).

The book's reception was anticipated by the reputable Oxford economist PWS Andrews. In his 1961 review of TGF Andrews noted that *"A theory of the growth of firms surely should involve generalizations about their economic environment, or, in other words, just those questions about the (equilibrium) structures of industries which the author rules out of court at the start" (p.114).*

Andrews criticisms and predictions proved to in line with economists' continued focus upon a market-based analysis of the equilibrium structure of industries. Early inroads from economics to management by Porter (1980, 1985), retained this focus. The TGF helped change this spectacularly, albeit so far mainly outside mainstream economics. Whether the apparent failure of the TGF to make significant inroads in neoclassical economics says something about the quality of the book, or instead the state of economics, however, only history will tell. This paper reveals, at least, where this author stands on this.

TGF's influence outside mainstream economics, on the other hand, gradually exceeded by far Marris' apparently optimistic assessment. Over the past 25 years or so, TGF has become a canonical reference to the currently dominant resource, knowledge, and (dynamic) capabilities – based approaches to business strategy, and to a lesser extent to the theory of the multinational enterprise (MNE) and International Business (IB) scholarship. TGF is also seen as seminal in (strategic) human resource management (SHRM). Of recent, the book has been used as the basis of integrating and extending the now flourishing literature on strategic entrepreneurship. TGF is also employed in order to explain the nature of the firm and its ability to create and capture value, which are at the heart of the theory of the firm, business strategy and organization scholarship. It is virtually impossible to predict where else and how far more the book's ideas will branch out. Today TGF is one of the leading books on the Theory of the Firm with more than 7,800 citations in Google Scholar. This compares with, for example, around 1,600 for Chandler's (1962) 'Strategy and Structure' and 7,500 for Cyert and March's (1963) 'A Behavioral Theory of the Firm'[1].

Although we will attempt some speculative predictions towards the end of this paper, its main focus will be to present TGF's ideas and assess them critically. In so doing, we will aim to understand the book's phenomenal success that motivated the present fourth edition on the occasion of its 50th anniversary, while celebrating the book's and Penrose's lasting influence. In particular, the aim of this paper is to: briefly discuss Penrose's life and background to the writing of the book; the early contributions of the book to economics; subsequent ideas in economics which are related to, but do not appear to have drawn on the book; the book's contribution to organizational economics, (international) business strategy, SHRM, strategic entrepreneurship, and recent debates on value creation and capture. We will also touch upon Penrose's epistemology.

[1] Chandler's sum total for his three classic books, *Strategy and Structure, The Visible Hand* and *Scale and Scope (Chandler, 1962, 1977, 1990)* is around 9,500. Nelson and Winter's (1982) classic *An Evolutionary Theory of Economic* Change leads with around 12,000 citations; a remarkable record partly attributable to the more general scope of the book, as an alternative to neoclassical economics, as a whole.

Following on from the above, we outline possible ways in which TGF can be generalized, critiqued and integrated with other theories, extant and emergent.

Clearly the above is a rather tall order, both imperfect by its nature and reliant on earlier work by the present author, including joint work with colleagues. These are all recognized in the text. However, special mention is due here to Perran Penrose, Edith's son, who has authored the life part, printed below with very little input from the present author:

II. Edith Penrose's Life[2]

Edith Elura Tilton was born on November 29, 1914 on Sunset Boulevard in Los Angeles. Her father, George Tilton, was a road engineer for the Department of Public Works, and was descended from early immigrants to the United States. Edith had two brothers, Harvey and Jack. It was a close and supportive family, living in a small town community. For much of the time, the family followed George as he surveyed the new Californian road network (he headed the party that surveyed Highway 1 along the Pacific coast). As a child Edith spent much of her time in road camps, packing along narrow trails, receiving a basic education in small shacks that served as classrooms. For a child the life was exciting and not without danger: she was about to engage in a close dialogue with a rattlesnake when her mother shot the snake through the head.

The family settled eventually in San Luis Obispo, where she went to school. She went on to graduate at the top of her class in San Luis Obispo High, and entered the University of California at Berkeley. She gained a scholarship after her first semester, and more or less by accident decided to study economics. While still a student she met David Denhardt, who was slightly older than she was, and married him. She completed her studies in Berkeley in 1936 with a BA in economics, and the couple moved to Northern California where Edith took a job as a social worker with a depression relief agency. The first tragedy in a life that was to see more tragedy came when David, who

[2] This section is a slightly edited version of a text written by Perran Penrose, see also Penrose and Pitelis (1999).

was a lawyer and an aspirant District Attorney, was killed in a hunting accident when Edith was four months' pregnant. Circumstances surrounding the incident suggest the possibility that it might not have been an accident, but the mystery was never resolved.

One of her teachers at Berkeley was the economist E F Penrose ('Pen'), who was born of Cornish parents in Plymouth, UK, in 1896. Like Edith, Pen came from a relatively humble background, had served in the trenches in the First World War, managed to finance himself through Cambridge after the war (assisted by his tutor W S Thatcher), and had come to Berkeley via Japan and the Stanford Food Research Institute. Edith acted as an assistant to Pen, who was 20 years her senior, and attended his summer extension classes in economics.

In 1939 Pen moved to the International Labour Office (ILO) in Geneva at the suggestion of John Winant, who was at the ILO and who was later to become US Ambassador to Britain. Edith took a job as a researcher in the Economics and Statistics Section of the ILO, and travelled to Geneva. Life there was tense during this period, and Pen and Edith were involved in assisting Jews to escape from Germany through Switzerland amid real uncertainty whether Germany would invade Switzerland.[3] The ILO then moved to Montreal, and Pen and Edith made the first part of the journey by bus across France in front of the German invasion. During this period she wrote *Food Control in Great Britain*, published in 1940, which analysed the problems of production, distribution and consumption of food in wartime Britain.[4]

When Winant was appointed to London, Pen went with him as Economic Adviser, and Edith served on his staff as a researcher. Pen was deeply involved in the negotiations between the United Kingdom and the United States, including those between John Maynard Keynes and Harry Dexter White, over the post war economic order. Edith's association with Pen, who was in a web of economists working on post-war planning, had brought her into contact with many of the most prominent economists of the day. She had been greatly influenced by Schumpeter, whom she met once (Pen knew him and worked with Elizabeth Boody Schumpeter (1940)), and as a young woman came

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[3] E.g. see http://mises.org/story/2094 for one account.

[4] There would only be a tenuous connection between this work and her subsequent work. However, the analysis includes the organisation of the food industry and its tendency towards consolidation and collusion, ideas she later pursued in TGF (see below).

into contact with Keynes, Meade, D H Robertson, Austin Robinson, H D Henderson, Robbins, Jewkes, all before, as she used to say later, seriously taking up economics!

In 1945 another tragedy occurred: Edith's brother Jack, a pilot in the US Air Force in Italy, was shot down and killed. Her other brother, Harvey, was also an air force pilot. In 1952 his plane went down over Alaska and he perished before help could arrive. In 1945 Pen and Edith married. Immediately after the war Edith and Pen joined the US delegation to the United Nations, again following Winant, who died in 1947. Pen spent a year at the Institute of Advanced Studies in Princeton, and in late 1947 moved to Jogns Hopkins University in Baltimore where he took a chair in Human Geography. In 1946 Edith bore a son, Trevan. Trevan died in 1947 at the age of eighteen months, and is buried in Baltimore. Edith bore two further sons (1947 and 1948).

The move to Johns Hopkins was an important one in Edith's development as an economist. She began her master's and doctoral studies, which she completed in 1951.[5] She then became Lecturer and Research Associate at Johns Hopkins where she and Pen stayed until 1959, with extensive stays out of the country.

At Hopkins Edith's supervisor was Fritz Machlup, who co-directed with GH Evans Jnr a research project on the growth of firms. Her description of how she became involved in the project is given in an illuminating interview with David King in the British edition of Parkin and King's economic textbook:[6]

> 'I had no special interest in firms, but a Professor there [Johns Hopkins] had a large grant to do studies of the growth of firms, and he asked a group of us to participate. I didn't mind what I specialised in, but I had to earn some money and the growth of firms seemed interesting. So I elected to work on the theory of the growth of the firm and it took me nine months of reading and especially thinking before I realised

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[5] At her PhD oral examination she was asked by Prof Clarence Long (who later became a US Congressman) to give a brief discourse on the economics of the shmoo, which was a creature in the comic strip L'il Abner and which reproduced instantly, gave milk and eggs, and on request would lie down and die and become a cooked ham. The shmoo was a free good. Edith hadn't read the comics and had no idea what a shmoo was. She was very annoyed at Prof Long for asking such a question and let him know it. She passed unanimously.

[6] Parkin M and D King, *Economics*, Wokingham, Addison Wesley, 1992. Other quotations in this section are from the same source unless otherwise indicated.

that the traditional theory of the firm, in which I, like other economists had been trained, was not relevant to the problem of the growth of firms.'

For her field work Edith was attached to the Hercules Powder Company as a Fellow under the College-Business Exchange Program, and this was the beginning of research which eventually led to *The Theory of the Growth of the Firm*. Machlup remained a life long friend and mentor.[7] Indeed, Edith's intellectual development and the rigour of her thought were very much a product of her association with first, Pen, and second, Fritz Machlup, both of whom were demanding in their requirement of clear and uncluttered analysis. But Pen was also very wise in the way institutions worked, and mistrusted the increasingly specialised trends in economics. Although her conclusions were sharply at odds with textbook theories, she never sought confrontation: "Would anyone ... try to reconcile a football game with a cricket match just because they are both ball games?".

Pen became increasingly disillusioned with the United States during the 1950s. The Committee for UnAmerican Activities chaired by Senator McCarthy had targeted academic institutions, and Johns Hopkins was caught up in the net as Owen Lattimore, the eminent sinologist and Mongolia specialist, was accused 'of losing China' by McCarthy. Edith and Pen played central roles in his defence. Although the University was generally supportive, the experience prompted Pen to take sabbatical leave until retirement, first in the Australian National University in Canberra (1955), where Edith continued work on TGF, and then in the University College of Arts and Sciences in Baghdad (now the University of Baghdad) (1957-59), from which sprang a lifelong interest in the Arab world. After Pen's retirement in 1960, they made many return trips to Iraq until they were expelled from the country in the mid 1960s. Later they jointly wrote *Iraq: International Relations and National Development* (1978), and were an important influence on a generation of Iraqi economists in particular and Arab economists in

[7] However, the relationship was by no means unidirectional, Machlup was seeking Penrose's advice on his various writings and even lamented its absence. The **dedication to Penrose in** Machlup's 1962 book 'The Production and Distribution of knowledge in the United States' reads "This book probably shows that I have missed your guidance, criticism and stylistic taste. As ever, Fritz". For a view on the Machlup-Penrose mentorship relationship, see also Connell (2007).

general. Pen and Edith travelled extensively in the Middle East, teaching in the American University of Beirut, and in the universities in Cairo and in Khartoum.

A natural development of Edith's work on the growth of the firm was that she became interested in the international firm and the oil industry. Edith's economic preoccupations were frequently a response to the situations in which she found herself. Although in one sense this characteristic meant that she did not follow a given path over time, in another sense it contributed to the way she approached theory, from observing the real world and trying to make sense of it. 'When I went to Baghdad in the late 1950s ... I found that no economist had published any analysis of the international oil companies in spite of the fact that the oil industry was a very large and vitally important industry, accounting for a large proportion of international trade and run by some of the largest companies in the world. I happily took advantage of this splendid opportunity for empirical research.' Her interest in developing countries dates from this period, in particular the role that international firms have as investors in developing countries, and, by extension, problems of development in a wider sense. Again, her theoretical concerns arose from observation of the real world: 'essentially this is all common sense, which is especially important when you deal with theory, for it is not always easy for beginning students to understand the relation of the 'theory' they study to what they see as the 'real world''.

The path to Johns Hopkins was a fortuitous one: so was the path to London. In 1959 Edith and Pen drove across the Syrian Desert, through Turkey and on to England in an old Hillman estate car so that she could attend an interview at Cambridge. *The Theory* had not been published but was circulating in manuscript. She failed to be appointed, but successfully applied for a joint Readership in Economics with Reference to the Middle East in the London School of Economics and the School of Oriental and African Studies (SOAS).

In 1964 she took the first Chair of Economics with Special Reference to Asia in SOAS which she held until 1978. During this period her research preoccupation was very much with oil and the multinationals. She was also a remarkable teacher. In addition, she visited many parts of the world, notably the Middle East (Baghdad, American University of Beirut, Cairo, Khartoum, Amman) but also Delhi, Tanzania (where she provided advice on the government's treatment of foreign companies which was not well received[8]), Indonesia, and other countries.

In 1978 she was asked by INSEAD in Fontainebleau whether she could recommend anyone for a political economy position, and to their surprise she recommended herself. She retired from SOAS and took up a position as Professor of Political Economy in INSEAD, where she was also Associate Dean for Research and Development. She had been one of the very few female full professors in London, and INSEAD was also largely a male preserve, but that had never bothered her. Pen died in 1984. Edith and Pen had had a long and fulfilling marriage, and had been entirely self-sufficient in each others' company. His death, though not unexpected, was a serious blow, as each had provided for the other the geographical centre of their existence: location did not matter. On his death she retired from INSEAD and moved to Waterbeach, near Cambridge, to live near her sons.

In years of her retirement she led a very active life. She was on several governing bodies, including the council of the Overseas Development Institute, and the board of the Commonwealth Development Corporation. She sat on the Pharmaceuticals Committee for many years, having in the early 1970s provided advice to the labour government on pharmaceutical industrial policy. She also undertook consultancy work, including advisory work for the Iranian government on compensation claims resulting from the nationalisation of the oil industry.[9]

In the period after her retirement the pace of recognition of her early work gained momentum – she had never formally taught the firm in INSEAD, but her approach to economic analysis influenced a generation of MBA students who came into contact with her. She received honours from American, British, and other European universities, and a steady stream of visitors arrived in Waterbeach. She had always been modest about her

8 As explained below, she took the view that economic independence of a country is not necessarily threatened by extensive foreign investment, though it could be under certain circumstances, and that the main question was whether state intervention could increase the net contribution that multinational firms can make to the economy.

9 She argued that there was little in the economic literature on the subject apart from a straight discounted cash flow approach regardless of circumstances. There was, therefore, a lack of economic principles on which to base resolution of conflicts arising between private and public interests where the law only recognized private interests, particularly in the case of nationalization where exhaustible national resources are involved, see below.

work, and gained much pleasure from the belated recognition accorded to it. The stimulus of the renewed interest in her work set her thinking again about theories of the firm, both in terms of business and management, and in terms of the poverty of the neoclassical model. She became interested in how firms were changing, having toyed with the idea of a theory of the death of the firm, the idea metamorphosing into the metamorphosis of the firm, see Penrose (2008).

Edith used to quote advice given to her by John Winant: 'the important thing is to lose your illusions and not become disillusioned'. She did not become disillusioned. She was one of the most original economic thinkers of the century, but it seemed as though she was unaware of her achievement. She was not ambitious for herself and had had little interest in academic politics. She believed in the goodness of people, as Pen had done, and retained a vigorous interest in other people's business, as all those who sought her advice (as well as many who did not seek it) will remember.

She had a slight stroke in 1994, after which her thought processes slowed, but she lost none of her acuity or interest in life. She continued to enjoy robust conversations with her visitors, and enjoyed her evening drink. She died from heart failure in her sleep the next day, October 11 1996, shortly before her 82nd birthday.

III. Penrose's Contribution

As the short account of her life shows, Penrose's contribution to economics was wide ranging: from 'food control' through the patent system, to the theory of the (growth of the) firm, the multinational enterprise, the theory of industry organisation, the international oil industry, the economics of Arab countries, international economic relations, and more. Within this context, she proposed theories of competition, innovation, mergers and acquisitions, small firms and networking and anti-trust and industrial policy. In her early work, for example on the economics of the International Patent System (1951)[10], Penrose questioned the alleged positive benefits of the international extension of the patent system to social welfare, in particular of the developing countries. That work was described as

[10] See also Machlup and Penrose (1950) and Penrose (1973).

> 'novel and controversial … several dogmas which legal experts have held in great respect are exposed to the bright searchlight of a skilled economic analyst and are shown to be untenable' (Machlup, 1951, p. viii).

Despite such praise, Penrose's early work has not been particularly noticed. However, it helps expose some of her early interests in 'monopoly' and 'innovation' and social welfare, which were to later assume dominant position in her thinking.

Penrose's major claim to be remembered as an economist is undoubtedly *The Theory of the Growth of the Firm*, first published in 1959. The result of her work with the Hercules Powder Company, 'The Growth of the Firm, A Case Study: The Hercules Powder Company' was completed in 1956, and published in 1960. It 'was originally intended for inclusion in [the] Theory of the Growth of the Firm, but omitted to keep down the size of the book' (1960: 1). Given this, it is safe to consider the two pieces as part of an integrated whole and consider its main arguments.

On various occasions, Penrose (1959, 1985, 1995) describes her experiences in seeking guidance from existing economic theory to address the issue of her concern, the growth of a real life firm. She found very little. In brief, economic theory of the firm had no firms in it. For mainstream economic theorists 'the "firm" was primarily a set of supply and demand functions' (Penrose, 1985: 6), a

> 'part of the wider theory of value, indeed one of its supporting pillars, and its vitality is directed almost exclusively from its connection with this … general system for the economic analysis of the problem of price determination and resource allocation … the "equilibrium of the firm" is, in essence, the "equilibrium output" for a given product (or given group of products) from the viewpoint of the firm. It does not pretend to be an "equilibrium" of the firm if the firm is represented in any other way, or if any other considerations affect it than those permitted in the theory of price and output. Hence if we become interested in other aspects of the firm we ask questions that the "theory of the firm" is not designed to answer. In that theory the "growth" of the firm is nothing more than an increase in the output of

given products, and the 'optimum size' of the firm is the lowest point of the average cost curve for its given product' (1959: 11).[11]

She went on to suggest that the adequacy of traditional explanations of limits to growth (limitations to management, the market and/or uncertainty) do not stand to scrutiny and concluded that such a theory of the firm cannot be easily adapted to 'the analysis of the expansion of the innovating, multi-product, "flesh and blood" organisation that businessmen call firms' (p. 13).

III.*a. The Penrosean firm and the market*

The firm in Penrose is a collection of productive resources (human and non-human) under administrative coordination and authoritative communication that produces goods and services for sale in the market for a profit (Penrose 1959, 1985, 1995). Administrative coordination and 'authoritative communication' define the boundaries of the firm. Very much like Coase (1937), but without having at the time been influenced by his classic article, Penrose maintained the distinction between the firm and the market.

> 'The essential difference between economic activity inside the firm and economic activity in the "market" is that the former is carried on within an administrative organization, while the later is not' (p. 15).[12]
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> 'The boundary of the firm is what distinguishes it from the market and therefore it must "exist" whether or not it is "real" … ' (1995: xvi).[13]

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[11] Despite her critique, Penrose chose not to quarrel with the extant theory of the 'firm' as part of the theory of price and production, 'so long as it cultivates its own garden and we cultivate ours' (1959: 10).

[12] Penrose goes on to point out the 'central managerial direction' within firms which she calls a 'court of last resort', much in line with subsequent arguments by Masten (1996) and Williamson (1996).

[13] Despite glowing references to G B Richardson's 1972 'splendid and pioneering article' (p. ix) in which 'he challenges the whole notion of a firm/market dichotomy, pointing out that there are three means of coordination: direction, cooperation and market coordination and that firm networking blurs the boundaries of firms; that the firm in reality is not the island in a sea of market transactions, but itself part of a network …' (p. xviii), Penrose maintained that 'firms and markets are both, in their different ways, networks of activity, but the difference between them is crucial to an understanding of the nature of the economy as a whole' (1996: 1717).

From the resources within the firm, human resources, and in particular managerial resources, are most important. A reason is that any expansion requires 'planning', which can be done by the firm's own management, which itself is firm-specific and not available in the open market.

There are two major categories of 'causes' of growth; those external to the firm and those internal. Penrose suggests that external causes, for example raising capital, demand condition, etc., while of interest 'cannot be fully understood without an examination of the nature of the firm itself' (1955: 532). The problem as she saw it was 'the internal incentives to and limits on growth - a theory of the growth of the firm that does not relate to fortuitous externals events' (1955: p. 532).

There are two basic reasons why there are endogenous to the firm incentives for growth which moreover are self-reinforcing, leading to opportunities for further expansion. First is the claim that the execution of any plan requires resources which are in excess of those strictly necessary for this execution. Second, upon completion of a plan, managerial resources will be released. Crucially, moreover, 'the services that the firm's management is capable of rendering will tend to increase between the time when the plan is made and the time when the execution is completed' (1955: 533).

Penrose attributed the ubiquitous presence of unused resources to arguments by Charles Babbage, Austin Robinson and Sargent Florence such as the 'balance of processes' or 'the principle of multiples', which suggest that

> "if a collection of invisible productive resources is to be fully used, the minimum level of output at which the firm must produce must correspond to the least common multiple of the various outputs obtainable from the smallest units in which each type of resource can be acquired. … This output will tend to be greater the larger the variety of resources and the more diverse the units in which they come" (1955:533).

Accordingly "a firm would have to produce on a vast scale of it were to use fully the services of all the resources required for much smaller levels of output" (1955: 533).

In addition,

'most productive services … are capable of being used in many different ways and for many different purposes. Hence a firm in acquiring resources for particular purposes - to render particular services, also acquires a range of potential productive services, most of which will remain unused' (1955: 534).

Managerial services are of particular importance in this context, also because they are available to the firm only in limited amounts: 'executives with experience within any given firm can only be found within that firm … The production of these services requires time and this limits the scope of a firm's expansion plans at any given time, but permits continuous extension of these plans through time' (1955: 534-535).

However, the completion of expansion plans creates and releases resources. It creates resources because 'all personnel in the firm will gain additional experience as time passes' (1955: 538). It releases resources because 'not only is there likely to be a generalized improvement in skill and efficiency but also the development of new and specialized services' (1955: 538).[14]

This increase in knowledge not only causes the productive opportunity of the firm to change in ways unrelated to changes in the environment but also contributes to the 'uniqueness' of the opportunity of such individual firms (1959, p. 53). This is particularly true given that not all knowledge is 'objective' (transmittable); some takes the form of 'experience', which is hard to transmit.

Unused productive services are, for the enterprising firm, at the same time a challenge to innovate, an incentive to expand, and a source of competitive advantage. They facilitate the introduction of combination of resources - innovation - within the firm (1959: 85). In addition, they are 'a selective force in determining the direction of expansion' (1959: 85).

Once it is recognised that firms are not to be defined in terms of products, but instead of resources, and given the potential versatility of the latter, demand conditions cannot limit a firm's expansion. In this sense, and in the absence of traditional managerial

[14] Importantly, 'the unused services thus created, do not ordinarily exist in the visible form of idle man-hours but in the concealed form of unused abilities' (1955: 538).

diseconomies which existence Penrose questions[15], there is no limit to the size of the firm, but only to its rate of growth.

Whilst focusing on the internal environment and in contrast to the critique by Andrews (1961), Penrose does not ignore the external one. In her introduction (abstract) to The Hercules Powder Company case, she claims that

> 'growth is governed by a creative and dynamic interaction between a firm's productive resources and its market opportunities. Available resources limit expansion; unused resources (including technological and entrepreneurial) stimulate and largely determine the direction of expansion. While product demand may exert a predominant short-term influence, over the long term any distinction between 'supply' and demand' determinants of growth becomes arbitrary' (1960: 1).

It is not an easy task to summarise all of Penrose's major ideas. The following points, however, may help to recapitulate and complement the above account.

- Firms are bundles of resources, under internal direction, for production of goods and services, sold in markets for a profit. Their boundaries are defined by the area of coordination and 'authoritative communication'.

- Firms differ from markets in that transactions in markets do not take place within administrative coordination.

- Entrepreneurs are in search of profits; firms desire to increase total long-term profits 'for the sake of the firm itself and in order to make more profit through expansion' (1959: 29).

- Resources render (multiple) services. The heterogeneity of services from resources gives each firm its unique character. Effective use of resources and innovation takes place when resources are combined with other resources.

- Human, and in particular managerial resources are of essence, because expansion requires planning and managerial resources able to plan for the firm are firm-specific; they cannot be acquired in the market.

[15] See also Demsetz (1995) for a critique of the idea of managerial diseconomies of scale.

- The cohesive shell of the firm helps create knowledge. This can be 'objective' (transmittable) or 'experience' (hard to transmit). Experience renders managerial services firm-specific.

- Unused resources always exist; they are released after the completion of an expansion and they are created through experience and new knowledge. They are an internal stimulus to growth and innovation, and determine in part the direction of expansion.

- Firms are not defined in terms of products, but of resources and (so) 'diversification' is the normal state of affairs in firm expansion.

- There are economies of growth, quite apart from any economies of size.

- There are limits to growth, but not to size, and are determined by the rate at which experienced managerial staff can plan and implement plans. The services of 'inherited' managerial resources control the amount of new managerial resources that can be absorbed, thus limit the rate of growth of firms.

- The external environment is an 'image' in the mind of the entrepreneur. Firms' activities are governed by their 'productive opportunity'; this involves a dynamic interaction between the internal and the external environment and includes all the productive possibilities that its entrepreneurs can see and take advantage of.

- In the long run, the profitability, growth and survival of firms depend on them establishing 'relatively impregnable bases' (1959: 137) from which to adapt and extend their operations in an uncertain, changing and competitive world. A new technological base requires the firm to achieve a 'competence' in some significantly different area of technology.

III.*b. From firm growth, to industry organisation and anti-trust policy*

The above account is by and large well known by now, and much of it can be found in other contributions, see Penrose and Pitelis (1999), Kor and Mahoney (2000), Pitelis (2002). Less known is Penrose's use of these ideas in explaining vertical integration, mergers and acquisitions, industrial concentration, the scope for small firms, and competition policy. Penrose's ideas on all these are nuanced and hard to present in a short space, but some elements are presented here and elaborated upon in the next subsection (see also Slater, 1980a).

First, vertical integration. For Penrose firms integrate vertically in part because they may be able to produce more cheaply for their own requirements (Penrose, 1956, 1959). However, they have to set this against the diversion of resources from potentially more profitable activities. Mergers and acquisitions can be motivated in part by the need to acquire productive services. Targets are likely to complement or supplement the acquiring firm's existing activities.

Concentration in a growing economy emerges when the larger firms as a group grow faster than the smaller firms and (therefore) the economy as whole (Penrose, 1956, 1959). Larger and older firms have a 'competitive advantage' over smaller firms in terms both of non-monopolistic advantages (size, experience, access to funds, etc.) but also because of 'monopolistic power' (1956: 64). In a growing economy, however, and given limits to firm growth, it is unlikely that large firms can take advantage of all opportunities open to them, allowing potentially profitable opportunities for smaller firms. These relatively unprofitable activities for larger firms are the 'interstices' of the economy. Limits to the rate of growth of large firms, and big business competition will tend to lead to a decline in concentration, albeit not the absolute size of large firms.

On competition, Penrose observed that a strong case can be made for the big firm and for 'big business competition' especially 'with respect to the rate of development of new technology and new and improved products …' (1959: 160). The 'basic dilemma' is that competition induces innovation but 'competition is at once the god and the devil' (p. 265) in that the growth of firms may be efficient but the consequent size may lead to industry structures which impede growth.

Penrose's nuanced perspective on firm growth and industry organisation shows vividly when she considers 'monopoly and competition' in the petroleum industry (1964). Echoing critically Schumpeter (1942) and predating Chandler (1962) and Demsetz (1973), she observes that the firms'

> "… efficiency in production and distribution, in inventions and technological advance, could not account for the dominant position they achieved. Their record in finding, producing and distributing oil and its products is indeed impressive, but efficiency in this respect would not have been enough to secure their dominance. Hence the story of the rise of the great companies deals as much with financial power, commercial and political negotiations and intrigue, with cartel agreements, marketing alliances, price maintenance arrangements, price wars and armistices, mergers and combination, actions to avoid taxes, and the national and international political interests of governments, as it does with the economics of production and distribution. This statement does not necessarily imply any condemnation of the companies" (1964: 155).

The above provide a broad picture of what Penrose covered in her early work on the growth of the firm Penrose's subsequent work has also been important, particularly her work on the theory of the multinational firm, the international oil industry, and the political economy of international relations and the economics of the Arab world.

***III.**c. The multinational enterprise and the political economy of international trade and relations*

Penrose's flirtation with the multinational enterprise (MNE) and foreign direct investment (fdi) has been long and enduring. Many of her major publications are on this topic. This includes an *Economic Journal* article in 1956, and interestingly the homonymous entry in the *New Palgrave* (1987). In all her later day writings, notably her Uppsala (1985) lecture on the 25 years since *The Rate of Growth* book, in her 1995 introduction to the book's third edition and in her entry to the International Encyclopedia of Management (1996), Penrose includes a section on multinationals.

Throughout her writings on this topic, Penrose considers the multinational as the natural outcome of the very pressures for growth:

> 'The processes of growth, the role of learning, the theory of expansion based on internal human and other resources, the role of administration, the diversification of production, the role of mergers and acquisitions are all relevant. … It is only

necessary to make some subsidiary "empirical" assumptions to analyze the kind of opportunities for the profitable opportunities of foreign firms that are not available to firms confining their activities to one country, as well as some of the special obstacles' (1995: xv).

The same is emphasized in her 1987 entry to the *New Palgrave*. 'There are differences between national and international firms, but the differences are not such as to require a theoretical distinction between the two type of organizations, only a recognition that national boundaries make an empirical difference to their opportunities and costs' (1987: 563).

The emphasis changes a little in her 1996 paper. 'International borders make enough difference to justify separate treatment of international firms. The differences arise from the additional obstacles (or advantages) relating to culture, language and similar considerations' (1996: 1720).[16]

Penrose's initial reluctance to acknowledge any fundamental difference in the nature of multinationals, as opposed to the relative importance of national boundaries, could partly explain the fact that her work on this topic has been less noticed and not linked to TGF[17]. One reason for this is that Penrose did not address the question 'why MNEs' vis-à-vis, let's say, licensing or exports, therefore, she did not deal with the 'nature of the MNE'. This is not very surprising – TGF did not address the issue why (national) firms either. Rather more surprising is the fact that Penrose did not explore in any detail the implications of her TGF contribution for the growth of the MNE either. This is partly because in her early work she chose to treat subsidiaries as independent entities (Penrose 1956).

However, the TGF and Penrose's other insights have important implications on the theory of the MNE. In particular, Penrose's knowledge/learning perspective can add

[16] In the entry to the *New Palgrave*, Penrose also comments on Coase (1937) and Hymer (1976) to the effect that their theories do not distinguish the multinational from domestic firms.

[17] Penrose recognises this in a letter to Slater, on April 10 1979, were she points out that "I came across references to my 1956 paper in the EJ of Foreign Investment and the Growth of the Firm. This paper is widely cited and I do not deal with the subject in the book. I am wondering if it would not be useful somewhere in your introduction to refer to this offshoot of the 'Theory of the Growth of the Firm' ". We pursue this literature below.

cognitive and entrepreneurial elements, missing from extant theory (Pitelis, 2007). These can be highlighted in terms of Dunning's (1988) well known triad of Ownership, Location, Internationalisation (OLI), which is now widely seen as a general framework on the MNE and Fdi. For Dunning, the choice of Fdi versus alternatives such as licensing presupposes the co-existence of ownership advantages, internalisation (integration) advantages, and locational advantages, see Dunning and Lundan (2008) for a recent re-statement and extension.

Starting with Ownership (O) advantages, in TGF O are efficiency advantages, as they are the result of an endogenous knowledge/innovation process. O advantages only become monopolistic when firms attempt to capture value by, for example, creating 'relatively impregnable bases', raising barriers to entry, using restrictive practices, etc. All these are discussed in the TGF (mainly Chapter VII). In addition Penrose observes that

"A firm may attempt to entrench itself by destroying or preventing effective competition by means of predatory competitive practices or restrictive monopolistic devises that relieve it of the necessity of either meeting or anticipating serious competitive threats to its position. In such circumstances a firm may grow for a considerable period depending on the demand for its products, harassed neither by price competition nor by the fear that competitive developments will make its products or processes obsolete. Examples of growth over long periods which can be attributed exclusively to such protection are rare, although elements of such protection are to be found in the position of nearly every large firm." (1959, p. 113).

Monopolistic advantages are in line with Penrose's claim that while the process of expansion is definitionally efficient, the resulting state need not be – as/when MNEs try to capture value through monopolistic practices. The dual nature of O advantages, as both efficiency and monopolistic, is in line with subsequent literature, see Dunning and Pitelis (2008). In addition, the Penrosean insight serves to provide an intra-firm, efficiency-based explanation of (endogenous) *O* advantages. It also introduces the important distinction between process and state-type advantages, the latter being potentially monopolistic as originally suggested by Hymer (1960/1976).

Coming to Location (L), Penrose did not deal with it in TGF. As noted in her preface to the third edition (Penrose 1995) she claimed that all the theory of the MNE requires it to suitably adapt her TGF ideas, and account for the existence of different nations. This would require accounting for inter-national differences in regulatory and tax systems, different laws and cultures, etc. Penrose did not pursue this much further, leaving it to other scholars to do so. (We will return to this later, when discussing *I*.) Nevertheless, the Penrosean perspective has important implications on resource/asset/ knowledge/innovation and institution- seeking and augmenting locational advantages for FDI. As firms are bundles or resources creating knowledge, it is 'natural' for them to locate where existing resources/knowledge is such that it can add value to firms' existing resources, knowledge and technological bases and (thus) operations. This implication from Penrose's work is in line with Dunning's discussion of asset and institution- seeking *L*ocational advantages (e.g., Dunning 2001, 2005), and more recent attempts to build a theory of the meta-national (e.g., Doz et al. 2001), which consider MNEs as pursuers of global learning, knowledge acquisition and upgrading, as well as work by Dunning and Lundan (2008) on institutional advantages.

Although Penrose did not deal with *I* – advantages in the specific context of the MNE,[18] she dealt extensively with integration, which she considered as an earlier (and more accurate) term for 'internalization'.[19] Accordingly, her views on 'internalization' should be looked at in her analysis of horizontal and vertical integration. In TGF there are detailed arguments for both. For example, one argument she offers for horizontal integration is the acquisition of valuable managerial resources (partly in response to the 'Penrose effect'). *"Of special importance is the fact that a firm can also acquire an experienced management 'team' and an experienced technical and labour force. Hence acquisition can be used as a means of obtaining the productive services and knowledge that are necessary for a firm to establish itself in a new field, and the addition of new managerial and technical services is often far more important than the elimination of competition and the reduction of the costs of entry." (Penrose, 1959, p 127).*

[18] The nearest she comes in TGF to discussing the MNE is the following: "Often the large firms organize their various types of business in separate divisions or subsidiaries" (p.156).

[19] In private discussions. Note that Richardson (1972) also took this view. In essence the two terms are synonymous.

Concerning vertical integration, one reason for it is the superior knowledge, and (thus) ability of firms to cater for their own needs, as they have better knowledge of these (Pitelis and Wahl 1998). For example, Penrose states that *"opportunities arising from the nature of the productive resources of the firm giving the firm an advantage in the production of some of its own requirements, market opportunities in the case of forward integration, competitive pressures of various kinds, special problems arising from the existence of uncertainty, all play a similar role." (1959, p 145).*

Applying such ideas to the case of the MNEs, would suggest resource/knowledge/institution seeking superior firm capability-induced FDI. The last mentioned is similar to Teece (1977) and Kogut and Zander's (1993) subsequent 'evolutionary' contribution to the MNE (see Verbeke 2003, for a critical account).[20]

To summarize, TGF arguments on integration have implications on *I*, in line with more recent theoretical developments. Importantly, moreover, a Penrose-inspired knowledge/ learning-based approach has important implications for the interaction between O**,** L and I. In addition, by incorporating cognition, it calls for a more entrepreneurial, forward-looking approach for the MNE (and more widely), one that (tries to account for) anticipated change and to act on its basis Pitelis (2007).

Penrose's analysis of the political economy of international relations, notably the relation between multinationals and developing countries, similarly, is based on dispassionate non-partisan, careful and dissecting analysis. Her analyses of transfer pricing, dumping and protectionism are anathema to mainstream neoclassical views, yet extremely modern in the context of 'new international trade' and related theories, see for example Krugman (1986, 1990) and Pitelis (2009) for a recent critical account. To mention just a few points, in Penrose (1962) she suggests that 'restriction on the repatriation of profits under some circumstances may be a useful means of ensuring, for a while, continued foreign investment …' (p. 138). Moreover, in Penrose (1973) she

[20] Being capabilities-based and quite Penrosean in nature, this contribution has acquired prominence. Yet both the Penrosean view of vertical integration and Kogut and Zander's view of the MNE, suffer from a failure to appreciate that differential firm capabilities are tantamount to relative firm superiority vis-à-vis the market (i.e. relative market failure), see Pitelis and Teece (2009). It is interesting to note that in her case study of the Hercules Powder Company (Penrose, 1960) she provides a reason for non-vertical integration of Hercules' customers and of Hercules itself, in terms of oligopolistic interaction', but also in terms of the superior advantages of specialization (not integration) of Hercules.

suggests that ‘infant firms’, not just infant industries, arguments be ‘accepted as an exception to the doctrine of “free investment” ’ (p. 8), while in Penrose (1990) she suggests that ‘dumping is endemic in the system, an integral part of the competition among large, diversified, research-based, integrated companies’ (p. 185).

***III.**d. Epistemology*

Penrose did not deal extensively with the issue of methodology. Yet her ‘endogenous growth’ approach to organisations and institutions, her insistence that in order to appreciate the external, one has to start from the internal (‘nature’) of the object under investigation, the dynamic interaction between the ‘nature’ and the external, her own experience with research, both at the Hercules Powder Company, and later in the Arab world, her views of mainstream theory, and, lastly, her approach to the link between ‘theory’ and evidence, can all provide scope for discussion of methodology in social science. She appears to have based her work on the belief of a dynamic interaction between induction and deduction, however, in the context of history-based, path-dependent evolutionary change, shaped by conscious actions by economic actors. She critiqued biology-based theories of the firm, for failing to account for human motivation.

> ‘To treat the growth of the firm as the unfolding of its genetic nature is downright obscurantism. To treat innovation as chance mutations not only obscures their significance, but leaves them essentially unexplained, while to threat them directly as purposive attempt of men to do something makes them far more understandable’ (1952: 818).

In her view, ‘there would seem to be a genuine complementarity between theory and history’ (1989: 11).

> ‘Without theoretical analysis of cause and consequence one has no standard against which to appraise the significance of any given set of observations, for this significance is a question of what difference the observations make to what might otherwise have been the historical interpretation … Some of the ‘theory’ may be little more than dressed-up common sense deduction from common observations and therefore not even recognized as such, but much of it has a deeper significance’ (p. 10).

Last but not least, ‘theory is needed precisely *because* reality is so complicated’ (p. 11).

III.*e. Edith’s last years*

Edith’s main interest in her time at Waterbeach following her retirement was the issue of collaboration, ‘networking’, firm boundaries and thus the possible ‘metamorphosis’ of the firm (see Penrose, 2008). She was impressed by the work of G.B. Richardson, his emphasis on the dense network of cooperation and affiliation, his attempt to distinguish market from integration and from non-collusive forms of co-operation, in terms of complementarity and similarity of activities. Building on her earlier work she viewed corporate alliances or cooperative arrangements, as driven ‘not necessarily by monopolistic intent but as a means of gaining mutual access to resources such as technology, regional markets and information services’ (1996: 1722).

Penrose struggled with the idea whether such networks, clusters, webs, etc., require a different (to hers) theory of the firm, pointing in particular (in private discussions) to the single person, single computer terminal ‘firm’ in IT industries. Her conclusion was that

> ‘The individual companies do not lose their “independent” identity; but the administrative boundaries in each of the linked firms may become increasingly amorphous and the effective extent to which any individual firm exercises control is often not at all clear’ (1996: 1722).

IV. Influence

Penrose's ideas on the theory of the firm have been noticed, discussed and praised. In this sense, they have been undoubtedly influential. However, it is arguable that this influence has fallen well short of a recognition of her overall contribution as described above, let alone of the realisation and application of the full potential of her ideas for mainstream economic theory. There can be various reasons for this and some speculative thoughts are presented below, following a short account of the way in which her early work was perceived and received by mainstream economics.

IV.a. Penrose and neoclassical theory

An important focus of managerial theories of the firm was on the extent to which managerially-run firms could pursue objectives different to short term profit maximisation like, for example the maximisation of sales revenue (Baumol, 1959, 1962), discretionary expenditures (Williamson, 1964) of growth maximisation (Marris 1964) and what are the implications of such behaviour for 'managerial capitalism'[21].

Penrose's own role in this context was seen in terms of her providing justification for the motivation for growth and the 'Penrose effect'. Concerning the former, and following a critique by Marris (1961) that her treatment of profits and growth was 'woolly', as well as Slater's (1980a) work, Penrose (1985) admitted that profits and growth could not be treated as 'equivalent criteria for the selection of investment programmes' (Penrose 1985: 8). Nevertheless, she maintained that she found

> 'the assumption that managers of firms try in general to make as much money as seems practical to be not only the most useful, but in fact the only general assumption from which reasonably general conclusions can be drawn' (p. 12).[22]

In that paper, Penrose also conceded the limitations of her theory on the issue of capital markets, and the relation between diversification of consumers' demand and that of new products. She praised Marris' theoretical contributions on this front. She was also

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[21] In his own unparalleled way, Marris (2002) describes his first encounter with Penrose's ideas as follows; "my administrative task was carried out after teaching hours in the department office, which was then located in Downing Street. Naturally it was my habit to read any other interesting documents concerning faculty affairs which might happen to be lying around. In 1958 one such was a full set of the gallery proofs of *The Growth of the Firm*. Obviously I was immediately attracted, I took all the sheets home for the night and by the time I had surreptitiously replaced them the next day, I had read every one. It turned out that the reason the proofs were in the office was the departmental appointments committee had decided to offer Edith a Cambridge lectureship, subject to interview. The interview duly occurred; there is no record of what transpired, except that no appointment was made. A bad day for Cambridge but in my opinion a good day for Edith, who I think would have been suffocated there" (in Pitelis, 2002, p. 62)..

[22] It is also interesting to read the follow-up to this statement: 'That I adopt a 'weak' form of the profit-maximizing hypothesis is only a recognition of the fact that even in the strong form, maximum profits cannot be uniquely determined ex-ante in the face of uncertainty; that no ex-post outcome can be unequivocally identified as the maximum that would have been obtained; and that managerial and entrepreneurial attitudes towards uncertainty differ greatly among firms. The problem of 'testability' and 'refutability I leave to others, who have long been puzzling over it' (1985: 12).

able, however, to point out that the remarkably similar and independent work of Chandler (1962) provided support for her theory of growth, while Williamson's (1981) analysis of the M-form organisation provided powerful support for her view that growing firms 'expand their ability to manage growth efficiently, with minimum interference with on-going operation …' (1985: 11).

Penrose (1985) quotes, not disapprovingly, various applications of the 'Penrose effect', which "has been applied in a number of contexts, and even to my surprise to agricultural products" (1985: 9).

As already shown, in the (evolutionary) context and way developed, the 'Penrose effect' is of importance. It simultaneously describes and determines firms' limits to endogenous growth and the receding boundaries of the firm. Out of context, the 'Penrose effect' could be seen as just another reason why there can be constraints to 'optimal growth'. Arguably, Penrose's name in mainstream economics is synonymous to the concept of managerial limits to growth, see Malmgren (1960), Shen (1970). Stripped from its context, that was also the one contribution that was not too hard to formalise in models of firm growth, optimal investment and 'optimal growth'. Besides Marris' (1964) seminal contribution, notable examples are Slater (1980b) and Gander (1991), for the theory of the firm, Buckley and Casson (2007) for the multinational firm and Uzawa (1969) for the theory of macroeconomic (endogenous) growth which predated the subsequent and very influential endogenous growth theory, see Pitelis (2009) and below. A problem with such literature, however, noted in Foss (1999), was that it allowed the mainstream to consider that

> "the Penrose effect was just a minor detail in the neoclassical analysis of optimal investment' and that 'Penrose's critique of equilibrium economics should not really be taken seriously, as her ideas were fully compatible with extended notions of equilibrium" (in Pitelis 2002:94).

A conclusion from the above is that while Penrose's work has been noted, used and influenced mainstream thinking, that was done is a way which downplayed, even ignored her major insights. As noted, these were the endogenous, production-side growth advantages associated with the knowledge creation process through specialisation and division of labour, in an evolving, cohesive shell called a firm. This is not efficient allocation of scarce resources under conditions of perfect knowledge, it is not static, it is not equilibrium; in a word it is not neoclassical. Accordingly, it is not too surprising that while

> "the total effect of Edith Penrose's work was that of destruction of the neoclassical model of the firm, followed by reconstruction … In the following years, and despite the wide recognition the work received, classroom microeconomic theory, and also classroom industrial organisation, often seemed to continue as if nothing had happened" (Marris 1987: 831).

More than twenty years on the situation is arguably worse. As noted in our paper, even the apparently most relevant texts written by mainstream economists do not cite Penrose!

One can come up with various reasons why that has happened, some discussed by Loasby (1999) and Richardson (1999), see below. Here we provide a number of speculative ideas. An obvious observation is that, in part, that was due to Penrose herself. She tended not to look back; she had often chosen not to link her early work with later day developments; and, importantly, she had never really tried to promote her ideas, especially in more mainstream directions.[23] It is interesting that at INSEAD she did not even teach a course on the 'growth of the firm'.

An additional reason in this category is that her uncompromising attitude rendered her impossible to pigeon-hole. Her views on efficiency and monopoly, on international trade, on big business competition, while fully consistent with her analysis, could often ring simultaneously Schumpeterian, Hayekian and even Marxian. All these are linked together in their focus on dynamics and resource creation (as opposed to efficient resource allocation). Yet they are so ideologically diverse that can render anyone who holds such views simultaneously too much to handle.

[23] In reviewing a paper, which was building explicitly on her work (thus helping to revive it), Penrose recommended rejection, among other reasons, because it "adds nothing to what I and others have said for years" (Thankfully the paper was later published in another journal, went on to become very influential and helped Penrose's work to be recognized and acknowledged). She was also very discouraging to attempt to formalize her work considering the 'path' more interesting than the equilibrium position (letter to M. Slater 16/07/1977). It is arguable that, despite its limitations, formalization would have made her ideas easier to be fathomed by economists.

A second, related, reason is that Penrose chose to 'cultivate' her own 'garden', insisting that the neoclassical theory had its uses, but it was simply unsuitable for her concerns, and that it was not useful to try to integrate the two. Her choice not to 'quarrel' with the neoclassicals would help explain why, in their turn, they chose not to quarrel with her.

It is also arguable that attempts to integrate Penrose with the neoclassical theory could prove problematic. Importantly, this is due to the issue of knowledge. The neoclassical perspective focuses on the efficient allocation of scarce resources given the assumption of perfect (even if asymmetric) information. In Penrose's theory knowledge, in the form of experience, is not just 'tacit' and hard to transmit, but it can simply not be known in advance both because of uncertainty and also because knowledge is being created in the context of an evolutionary process and through the very purposeful actions of economic agents, not least firms. Additionally, knowledge is not really scarce in the conventional sense. Its use by someone need not necessarily and always exclude somebody else from using it, and the exchange of knowledge can actually help to enhance it. A theory that starts by assuming full, pre-existing knowledge is clearly unsuitable to deal with these issues. But these, as Hayek (1945) has shown, *are* the issues.

In addition to the above, as already noted, and in contrast to the neoclassical theory, Penrose does not have conventional, rational optimising agents, does not focus on efficient allocation of scarce resources alone, does not look for an equilibrium. In all, and while we do not doubt the significance of, and need to bring together, coordination and growth, we claim that neoclassical theory could simply not fathom Edith's ideas and remain neoclassical. Incorporating her ideas could amount to committing mass suicide, not likely in a profession populated by self-interested optimising agents. In this context the apparent failure of her work to make significant inroads to neoclassical economics is less hard to appreciate.

***IV.**b. Penrose and the resource / knowledge (/dynamic capabilities)- based perspective*

In stark contrast to neoclassical economics, the past twenty-five years or so, have experienced a major resurrection of Penrose's work in other fields, notably organisational economics, strategic management, international business, (strategic) entrepreneurship, and even (strategic) human resource management. In these fields the resource-based, competence-based, or knowledge-based theory of the firm, with or without explicit acknowledgement of her work, has revisited all of her main points. Already in 1985 Edith became aware of these emerging developments.

> ‘Some of the rapidly growing literature and research on strategy and strategic management … tend, by their very nature, to merge what I have called the ‘resources approach’ with the ‘environment approach and are likely to produce empirical results useful in testing a theory of the growth of firm’ (p. 15).

Penrose here refers not just to the ‘industry attractiveness’ and ‘positioning’, Porter-type approach to strategy (Porter 1980;1985), but also the then emerging resource-based, competence-based, (dynamic) capabilities-based and/or knowledge-based approach to strategy. All these were building consciously or unconsciously on her work, as well as that of Chandler (1962), Demsetz (1973) and others, including founding figures of economics, such as Adam Smith and Alfred Marshall. Being in a business school at the time, Penrose has come across some of the early literature already then, notably Teece’s (1982) now classic article which combined Penrose-inspired resource-based and transaction costs ideas in order to explain the multi-product firm.

Since, the literature has expanded by leaps and bounds. The resource, knowledge-capabilities and more recently dynamic capabilities-based perspective is now arguably the dominant one in strategic management and organisation science. The major journals in the area are editing special issues on the topic (*Strategic Management Journal*, 1996, Winter Special Issue; *Organization Science*, September - October 1996) and it is now hard to find a new issue in any major journal in this field without reference to these issues and Penrose. Every aspect of the firm, including the multinational, is currently influenced by this work, see Pitelis (2007). Special issues of journals such as Contributions to Political Economy (1999), Journal of Management Studies (2004), Managerial and Decision Economics (2005), Management International Review (2007) and Organization Studies (2008) have been devoted to Penrose’s ideas-the last mentioned published her last article on the Metamorphosis of the Firm (Penrose, 2008).

More recently the emergent literature on (strategic) human resource management (SHRM) and (strategic) entrepreneurship use TGF and the RBV as one of their main pillars. So does the dynamic capabilities (DCs) perspective that is currently very popular in strategy thinking; see Pitelis and Pseiridis (1999) and Foss et. al (2008) for entrepreneurship, Georgiadis and Pitelis (2008) and Teece (2008) for SHRM and Teece and Pisano (1994), Teece et al. (1997), Teece (2007), Helfat et al. (2007) and Augier and Teece (2008) for the DC perspective. Even more recently Pitelis and Teece (2009) build on Penrosean ideas and re-visit the nature and essence of the firm (see also Kay and Pitelis 2009, for inter-firm cooperation and Teece and Pitelis 2009 for the MNE). The (strategic) marketing literature, also drew on RBV ideas (Hunt 2000). Resource and capability-based arguments are now central in the explanation of firm-level sustainable competitive advantage, Teece (2007), Pitelis (2009b). At the more macro level, endogenous growth and capabilities-related ideas are dominant in macroeconomic theories of endogenous growth (Lucas 1988; Romer 1986, 1990; Aghion and Durlaf 2005) in economic development (Sen 1999), and the sustainable competitive advantage of firms and nations (Pitelis, 2009a). Syntheses of Penrose's ideas with those of the behavioural school, have been produced by among others Pitelis (2007), see also Organization Science (2007) special issue on Cyert afnd March's work.[24] There is no obvious limit to the growth of such literature, if anything it seems to be branching out at an alarming rate in increasingly novel and unpredictable directions.

Edith was fortunate to see and enjoy the first signs of this new wave of recognition. While in Waterbeach, she was approached by contributors in the field asking for her comments and contribution. Sure enough she returned to the issue. Her 1996 paper on 'growth of the firm and networking' revisits the issues she raised and comments on the current state of play. She recognised the importance of transactions costs issues, which she considered as one of the 'two major types of explanation for the growth of firms in a market economy' (p. 1717). The second was the resource-based view she helped originate. Interestingly, she felt that 'the two approaches are not mutually

[24] Even two book reviews of TGF more recently appeared, almost fifty years on (Volpe and Biferali 2008;Nair, Trendowski and Judge 2008).

exclusive' (p. 1717), a view shared by Coase. In a letter to this author, Coase comments on Penrose's views as follows:

> 'I do not regard her views as an alternative view to mine in "The Nature of the Firm", but as a necessary addition to it. As I indicated in my Yale lectures … there has been insufficient attention to the role of the firm in "running a business" '.

Coase's recognition of the need to go back to production, to 'running a business', represents an important vindication of Penrose's ideas. All the same, there is an important sense in which the transaction costs perspective of Coase, as developed by Williamson (1975, 1981) is easier to assimilate in neoclasssical thinking. It assumes optimising agents and focuses on static equilibria. While there is scope for rendering transaction costs theorising dynamic, and for integrating transaction costs with Penrosean ideas, (see for example, Pitelis 1991; Langlois and Robertson 1995; Pitelis and Teece 2009) it is arguable that this cannot be done without either stripping Penrose from her fundamental insights or stripping neoclassical theory from its very neoclassicism. Involved may well be a battle of paradigms. Required may be no less than the outright domination of one. In the absence of a full return to the resource-wealth creation tradition of economics, it could well be that Penrose's ideas will keep finding it difficult to be fully appreciated, acknowledged, and assimilated by mainstream economic theory.

V. An Overall Assessment

V.a. The argument and some recent critiques and debates

Penrose's major contribution and lasting influence pertain to both her argument and her method-epistemology. The argument, first, is not simply about the theory of the growth of the firm; it is an argument about the theory of (growth of) knowledge. For anything and everything new to even be conceived, perceived, let alone implemented, one needs prior knowledge, including the very capacity to obtain knowledge, i.e. to learn. There exists a variety of institutions that help achieve this; families, schools, norms, customs and traditions, human interaction in society at large. Hayek's (1945) view was that this knowledge is dispersed and that there is, at least in capitalist economies, an institution par-excellence, the market, that facilitates its transmission and (thus) the co-ordination of individual plans and in the society at large. This is a fundamental insight. For Penrose it is *firms* which help create knowledge, indeed firms are seen by her as better at doing so than markets. If so, Penrose both critiques Hayek, since firms involve planning, and complements him, since private firms and markets together - the market system – both create new and transmit (dispersed) knowledge. Penrose's contribution, however, goes deeper. If knowledge in general, or even a type of knowledge most suitable for production-related activities, is engendered more efficiently within firms than without firms, and to the extent that this knowledge is of relevance or use to society as a whole, everything and anything we conceive or perceive and the lens through which we do so, is predicated upon the existence and functioning of firms.

As we saw, Penrose's method/epistemology involved a dynamic interplay between induction and deduction, structure and agency, in the context of a history-informed path-dependent evolutionary dynamic, shaped by actors' conscious, yet path-dependent and structure-moulded actions, in the context of a purposive organisation, the firm, operating under conditions of uncertainty.

Both the argument and the method of Penrose are more suited for the concerns of non-neoclassical economics and for strategy scholars. Concerning economics, one can identify two major camps; one focussing on efficient allocation of (scarce) resources, the other on resource and wealth creation.[25] Most classical economists, notably Adam Smith and Karl Marx, but also Joseph Schumpeter (1942), have paid attention to the issue of resource and wealth creation. To varying degrees, these economists also dealt with the related issue of resource allocation. Adam Smith, for example, arguably owes his place as the father figure of modern (neoclassical) economics to his very analysis of the allocative and co-ordination role of the 'invisible hand', or the market. Yet, he believed in the labour theory of value, and attributed wealth creation to labour productivity engendered within firms e.g., his famous pin factory, from where his *The Wealth of Nations*, starts. In

[25] Resource allocation and creation are related. For example, a change in resource-allocation can lead to resource-creation. Yet, there is a difference in focus between the two perspectives (see below).

the pin factory, labour productivity is achieved through specialisation, the division of labour and teamwork, which leads, among others, to new inventions. For Smith, the realization of these benefits is limited by the size of the market. In Allyn Young's (1928) powerful insight, the size of the market itself is determined by specialisation and the division of labour; the latter leading to further, more elaborate sub-division of labour and extending the size of the market.

The other major (and related) difference between the classical and the neoclassical tradition concerns growth versus co-ordination. As Loasby (1999) and Richardson (1999) explain the neoclassical focus is on co-ordination, while the classical is on growth. In Penrose's 'garden' metaphor, neoclassical price theory does not deal with firm growth, which is Penrose's 'garden'.

For Loasby (1999), Penrose's work reinvented the classical resource-creation tradition. In addition, Richardson (1999) claimed that in contrast to Penrose, one needs to deal with both co-ordination and growth, and that Penrose's contribution arguably provides a tool that can help this come about. Indeed. Penrose's endogenous knowledge perspective goes beyond Allyn Young in explaining why and how the size of the market is itself determined by specialisation and the division of labour (as well as vice-versa). It provides the requisite perspective and knowledge to approach the synthesis between dynamic innovation (equals) knowledge and (thus) productivity – growth perspective and dynamic co-ordination through the knowledge provided by firms' own operations and the perceived equivalence (in part achieved through firms' own conscious efforts) of supplies and demands. It helps bring together resource-creation and efficient allocation as explained above, in that it is the internally generated knowledge within firms that is required to supply firms with the very tools to achieve (rather than assume they know how) efficient resource allocation and innovation-growth. In this sense Penrose's contribution is seminal. However, her inadvertent association with the 'wrong camp' and (thus) the 'wrong issues', alongside the difficulties we mentioned under the 'Influence' section, help explain why in the currently dominant neo-classical resource-allocation perspective, hew views may be seen as peripheral or non-relevant. This is not the case for organisation and management scholars whose focus instead is on resources, and firm growth, strategy and entrepreneurship.

Penrose's ideas can arguably make a significant contribution on the issue of the 'nature of the firm', too, namely the question why do firms exist (Coase, 1937). Penrose took for granted that firms exist. Coase (1937) equated the 'nature' of the firm with the 'employment relation' and attributed this to the efficiency benefits derived from reductions in market transaction costs. Penrose's approach has complementary implications on Coase's 'nature argument'. The 'employment relation' can be explained in terms of efficiency gains, effected through productivity enhancements, through endogenous innovation (equals) knowledge-growth, see Pitelis and Wahl (1998). To the extent that dynamic transaction costs can also be of relevance, it will be the overall dynamic transaction costs reductions cum knowledge-induced productivity benefits that could explain the Coasean firm. Importantly, the very perception of when and how to reduce transaction costs can only be afforded through intra-firm knowledge generation, see, among others Fransman (1994), Pitelis and Pseiridis (1999). This Penrosean 'insight' leads us further afield. To explain firms from a situation of no firms at all, one requires an entrepreneurial idea aimed to be put in practice. Selling this idea in the open market may be hard at least for two reasons.. First, being tacit, it may be hard to transmit. Second, if in addition (which is possible) this idea also has public goods characteristics, explaining it to anyone can lead to it being expropriated. The control afforded to entrepreneurs on their ideas, in the cohesive shell of the firm can be an adequate initial reason for not selling the idea in the open market. This is prior to, and complements, the idea that firms may have productivity benefits vis-à-vis markets, which can also be an adequate non-transaction-costs-related explanation of the 'nature' of firms.

Following the emergence and rise of the resource-capabilities/knowledge theory of the firm and the resource-based perspective in (business) strategy, Penrose's work has now become a canonical reference – indeed she is arguably seen by some as the mother figure of this perspective (much like Michael Porter had become for the 'positioning'/industry-centered view and Ronald Coase (1937) on transaction costs), see Kor and Mahoney (2000).

Some early disputes, focused on the extent to which Penrose's book was influential in the early resource-based contributions, as well as to whether the resource-based view is tautological and/or possible to operationalise. In brief, as discussed in Foss

(1999) and Rugman and Verbeke (2002), among others, at least a variant of modern resource-based theory is about rents in equilibrium, which is far from Penrose's main theme. However the last part of her book, that deals with the issue of firm size, artificial barriers to entry, etc., as well as her references to 'impregnable bases' can be interpreted in 'rents in equilibrium' terms (Pitelis, 2004). This suggests that for Penrose, firms create value, but also try to appropriate value, both at (quasi)equilibrium (monopoly) and at dis-equilibrium through building 'relatively impregnable bases'. Despite the above, 'rents in equilibrium' was not Penrose's main theme and interest.

The other two criticisms of resource-based ideas come from two figures whose views currently inform two major 'competing' perspectives to Penrose's on firm (strategy) - Michael Porter and Oliver Williamson. Both have dealt with resources and competences more recently in Porter (1999) and Williamson (1999). Porter is largely dismissive, the main reason being what he sees as vague concepts. Williamson has wider-ranging critiques, a major one being the apparently tautological nature of the perspective and the lack of operationalisability and supporting evidence.[26]

Penrose's contribution has not been criticised as tautological. Indeed, the predictive and prescriptive aspects of her theory are both operationalisable and testable, and they have been operationalised and tested. For Kor and Mahoney (2000) the persistence of critiques on operationalisation and evidence is just misinformed. They cite an extensive list of empirical studies that test and mostly support the Penrosean views, see also Mahoney (2005).

Porter, (1987) has written a classic article on conglomerate diversification, which in many respects is the best test of the Penrosean theory of diversification! The prescriptive implication of Penrose's theory on this is to diversify where there is perceived evidence of the applicability of existing resources to the new venture. By transferring knowledge (thus skills and competences) there will be value added. Porter's study provides empirical support to the claim that by transferring skills and by sharing activities, diversification can add value and succeed. The finding itself, and even the terminology (skills, activities) are quite Penrosean. More recently, Mahoney (2005)

[26] Porter does not refer to Penrose and it is unlikely he has read the book. Williamson's critique seems to be reinforcing Porter's and both need to be addressed.

summarised the significant and growing literature that tests Penrosean ideas. On balance these support Penrosean insights. The work of McGahan and Porter (1997) is of much relevance here. The authors find that intra-firm-level factors are more important than environmental factors in explaining firm performance, but the environment still matters. This supports Penrose's 'productive opportunity' concept.

V.b. Further Limitations and Generalisations

It is arguable Penrose's contribution fails to fully address a number of important issues.

The first has to do with the issue of knowledge-related intra-firm advantages. These are always taken by Penrose to lead to growth. This is not self-evident. The question is why not sell your (intangible) assets in the open market? One has to return to some sort of 'market failure' argument to address this, either natural (transaction costs or tacit knowledge related) or structural (fear of creating a competitor). Clearly, the argument can also be phrased in terms of differential capabilities; i.e. firms are better in making use of their own assets than other firms (i.e. the market!). One can read arguments by Buckley and Casson (1976), Teece (1977) and Kogut and Zander (1993), plus the importance of oligopolistic interaction in this context. Penrose did not discuss transaction costs arguments in the book. While oligopolistic interaction is part and parcel of her story, it is not explicitly discussed in the context of 'why not sell'.

A second, related, limitation refers to the question why not shed excess resources, e.g. labour or even management. Penrose deals with the issue by claiming that she focuses on growing firms in a growing economy. This is all very well, but even successful firms in a growing economy may choose to shed excess resources, rather than use them for further expansion. While excess resources may have zero marginal costs, the costs of thinking what to do about them could be large – as it is the time by the management that has to do the thinking, see also Marris (1999). In this sense, the issue is not so straightforward as it may appear in first sight. Shedding excess resources (labour, middle-level management) is not only an option; it is one that has been used extensively in the 1990s despite this being a period of unprecedented growth. Clearly this issue, too, needs further discussion.

A third limitation has to do with a broad category of issues related to what is now called 'agency', 'moral hazard', 'monitoring' and the like. The literature on these issues is huge, notable contributions being Alchian and Demsetz (1972), Jensen and Meckling (1976) and Grossman and Hart (1986) and Hart (1988; 1995) and Hart and Moore (1990). In brief, the issue here is that whenever there exists a 'principal-agent' relationship, like for example employer-employee, or shareholder-manager, and when the interests of the two parties are not ex-ante fully aligned, agents may have discretion to pursue their own interests. When this is the case, it becomes important for principals to devise means for aligning the incentives of employees to their own. Besides Alchian and Demsetz, Jensen and Meckling and the Grossman, Hart and Moore (GHM) approach of incomplete contracting, managerial and behavioural theories of the firm are based on similar concerns, see Pitelis and Teece (2009). There is little of that in Penrose. Indeed there is no conflict of any kind within the production process. We believe her analysis could be usefully enhanced by allowing conflict to enter it, see below.

Besides the aforementioned 'limitations', and building on (some of) them, we can propose some generalizations of Penrose. The first concerns excess resources. Building at the time on important insights by Charles Babbage, Sargent Florence, and others, Penrose considered it normal to expect excess resources to be present in all but very large scales of output, for reasons related to 'balance of processes', indivisibilities of resources, etc. All these are relevant but not strictly required. Penrose can be generalised even by starting from a hypothetical situation of no excess resources and just observing knowledge generation within firms. This suffices. Indeed the very observation that human beings (and some machines) have ever-present unrealised (brain) potential will do. In effect, organisation aids potential, which (activates brainpower and) releases resources. All other arguments are sufficient but not necessary conditions for the Penrosean story to follow.

The second issue we wish to explore by way of generalising Penrose is that of intra-firm conflict. The conflict par-excellence is that between employer - employee (Marx, Alchian and Demsetz, GHM). Recognising this may help Penrose's story in various ways. First, it provides an extra reason for thinking by entrepreneurs-management of how to address this – which is innovation-knowledge generation. Second, it helps explain/predict, at least partly, the direction of this thinking. Last, but not least, conflict can lead to creative tension, and thus be a source of new information, knowledge and innovation but can also be destructive (Pitelis, 2007). The recognition of intra-firm conflict questions efficiency-only-based explanations of organizational change, including that of TGF. As for example argued by Hymer (1970) and Marglin (1974), conflict may lead to a choice of technology that favours sectional interests, not necessarily societal ones, for example labour saving technology may serve as a labour control device. Such choices by management may in turn help intensify conflict. This may render crucial the role of non-economic factors that help establish shared morals and vision through for example, leadership, ideology, legitimization, shared views, culture and enablement (Simon 1995, Boddewyn 2003).

There is little of that in Penrose. In TGF, interest alignment appears to be in part always present, perhaps effected through managerial leadership and its ability to implant its vision to other groups within the organization. Whilst this may well be possible it is neither self-evident nor cost-free. For example, Cyert and March (1963) asserts the opposite- that conflict is simply always there and that firms can use ‘organisational slack’ (such as Penrose’s ‘excess resources’) to alleviate conflict. This, points to the need to discuss in more detail leadership, ideology, legitimization and the effecting of shared values, beliefs and common moralities in organizations.

While organizational ‘slack’ can be used in principle by management to alleviate conflict, this requires knowledge. In TGF this is endogenously generated within firms. It also requires motivation and effectiveness. In TGF motivation is established through the possibility of putting ‘excess resources’ to use at zero marginal cost. While this is problematic in that it ignores the cost of managerial time itself, which can be high, and while the belief in TGF of the ability of management to implement change can be questioned, (as it requires a degree of power asymmetry between intra-firm groups, and also a degree of managerial competence), both these are arguably plausible hypotheses to make- (as well as being in line with, for example, Chandler’s (1962) views). In this context, we feel that the importation of the above TGF concepts/assumptions to the Cyert and March (1963) approach could be employed to suggest that through the relentless pursuit of (endogenous) innovation and growth, productivity and efficiency, emergent ‘organizational slack’ can be used by management to alleviate conflict and drive innovation, as well as to helping to establish shared vision, values and moralities.

Such a positive-sum approach to problem-conflict solution goes beyond economic theories (see for example, Tirole 1988, Prendergast 1999) and is closer to management theories such as the stakeholder and institutional approaches. It points to enabling and motivating employees (by means other than simply the provision of control-based “incentives”) as a managerial strategy for long term performance (Perrow 1986, Granovetter 1985, Powell and DiMaggio 1991, Clarkson 1998, Boddewyn 2003, Mahoney 2006). It looks at contract and conflict not as opposites but, rather, as related, both being shaped, and both in turn shape, the relentless pursuit of productivity and innovation, which is itself driven by objective factors (‘excess resources’ and ‘organizational slack’ through knowledge generation) and subjective factors- agency (the pursuit of maximum feasible profit, power, recognition and the love of the game), by firms’ management. Importantly, the very process of generating intra-firm knowledge can help management enhance its problem-solving capabilities. Managerial knowledge may serve as a means of a dialectical synthesis between ‘contract’ and conflict.

The above possibilities are supported by scholars such as Selznick (1957) and Simon (1995) as well as work on the psychology of obedience, e.g. Milgram (1963). For Simon, ‘agency’ and transaction-costs-based theories ignore key organizational mechanisms such as authority, identification and coordination. Those are crucial in explaining why do employees so often exert themselves to satisfy organizational objectives, not what appears to be their own self-interest. In his ‘sociological interpretation’ of Leadership and Organization, Selznick (1957) observes that ‘this process of becoming infused with value is part of what is meant by institutionalization. As this occurs, *organization management* becomes *‘institutionalized leadership’*(1957, p. 138, original emphasis). In Industrial Organization (IO) economics, Holmström (1999), too, points to the variety of methods used by ‘authority’ to influence employee behaviour. For Loasby (1999), authority provides not only such inducements, but also a framework for problem identification and attempted solution. Kogut and Zander (1993) see the provision of ‘identity’ as one of the major functions of firms. A substantial literature on ‘trust’ and ‘social capital’, both in economics and management, stress the role of trust in the building of social capital as a means of effecting common beliefs, norms and attitudes, see *Organization Science*, 2003 special issue for a recent extensive discussion. In addition, the path breaking work of Milgram (1963) and subsequent literature has emphasized the unexpected frequency of behaviour obedient to perceived legitimate authority, even when this behaviour involves breaking deeply held conducts such as inflicting harm on others, see also Gross (1990) for critical analysis.

Crafting organizational, sociological, cognitive and psychological elements on TGF may help explain why and how management, when seen as a legitimate authority can effect conflict alleviation and leverage human resources to enhance firm performance. This in turn will tend to engender excess resources and slack, which can be used in part to alleviate conflict, in part to motivate and enable them to put it to profitable use through endogenous innovation and growth.

An integration of behavioural and Penrose-inspired RBV would suggest that intra-firm knowledge generation can engender endogenous innovation and growth through the generation and leverage of ‘excess resources’ and ‘slack’. “Slack” may serve as a means of conflict alleviation alongside monitoring, incentives and rewards, but also motivational and psychological reasons for obedient behavior. Besides motivating endogenous growth and innovation, slack may also enable it, given resource availability. Intra-firm knowledge generation moreover can inform management as to why, whether and how to leverage excess resources so as to alleviate conflict, breed success and engender a virtuous cycle of endogenous growth and innovation.

VI. Concluding Remarks

By bringing in issues of endogenous knowledge, innovation and growth, human resources, the role of ‘image’ and ‘productive opportunity’ and the dynamic interaction between internal and external, agency and structure, Penrose went well further than existing economic theories to provide what we consider the first economics-based, yet interdisciplinary, organizational theory of the firm. Penrose’s view of firms as organizations, aiding the generation of knowledge, provides a new perspective on firms, but also organizations and institutions at large. Her theory serves as the glue that binds together, including economic and organizational theories of firms, organizations, institutions, and (business) strategy. Importantly, Penrose's work has significant implications for managerial practice.

Penrose's work was analytical, not normative or prescriptive, and she advocated no managerial practice of any kind. Having said this, she actually felt that rents, of both the monopoly type and through the building of 'relatively impregnable bases' were important for the sustainable competitive advantage of firms. Whilst monopoly power could give rise to short-term success only the building of 'relatively impregnable bases' was important for the long-term successful expansion of firms (Pitelis 2004; 2009b)

The building of "relatively impregnable bases", however, is itself predicated upon the successful re-deployment of resources, competences and other advantages, in a dynamic, changing, uncertain environment. In such an environment, the key to long-term success was to build technology bases through perennial innovations, through knowledge creation and by internalising the Schumpeterian process of "creative destruction". In her words:

> The Schumpeterian process of 'creative destruction' has not destroyed the large firm; on the contrary it has forced it to become more and more 'creative' (1959:166).
>
> In more recent years such 'creativity' might have involved 'externalisation' and 'open innovation' which could also be leveraged to achieve value capture (Panagopoulos and Pitelis 2009; Dunning and Pitelis 2008 and Pitelis and Teece 2009).

There is a clear message for management practice from that, which is also good for practice, namely a focus on firm and market creation and co-creation through appropriable and perennial innovation (Pitelis and Teece, 2009).

However, Penrose also felt that good managerial practice might not be by itself adequate. She therefore also advanced suitable anti-trust policies by government, which aimed to marry firm-level sustainable advantage, with nation-wide sustainable advantage. She also saw an important role for government in developing countries, especially as concerns their relationship to multinational firms and Fdi. While such aspects of Penrose's work have been less noticed, they are gradually becoming very relevant, especially in the post-Washington consensus global financial crisis context we are currently experiencing. It is arguable that Penrosean concerns and ideas about sustainable economic development, the role of the state and state-MNE interactions (thus development economics), is a more natural milieu through which Penrosean ideas can be appreciated more in economics. We consider sustainable development to be a major area in which Penrosean ideas will gradually become very influential. Related capabilities-based independent work by Sen (1999), but also the endogenous macroeconomic growth literature, (see Pitelis, 2009b) point to this direction.

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