

Edith Penrose's approach to economic problems as reflected in the Theory of the Growth of the Firm: A humanistic perspective

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The aim of this paper is to demonstrate elements of Edith Penrose's distinctive approach to economics, particularly in *The Theory of the Growth of the Firm* (TGTF henceforth), but also in other areas of her work so as to offer guidance to future researchers exploring similar issues in the fields of strategy and international business. Her own description of how she became involved in the Merrill Lynch Foundation funded 'investigation into the growth of firms' led by Fritz Machlup and G.H. Evans, Jnr. at Johns Hopkins University in 1954 reveals the intellectual freedom and confidence which she had already developed and which she applied to the research that led to her book.

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 realized that the traditional theory of the firm, in which I, like other economists had been trained, was not relevant to the growth of firms.
(Penrose, 1995)

Having decided that the firm, a central institution of economic life, was ill served by existing theory, she felt free to follow a new logic. How had this independence of thought evolved? In this article we hope to provide a few pointers as to what influenced her thinking, in particular what might be called her humanistic approach, by examining how her personal history contributed to her intellectual development. Humanistic economics was not current in the formative years of Edith's thinking, but can be described, ex post, as a perspective that introduces elements of psychology, moral philosophy, political science, and sociology into traditional economic thought. In the process, basic human needs, human rights, human dignity, community, cooperation, economic democracy and economic sustainability are built into the framework. Humanistic economics seeks to replace the hypothetical economic man and woman, at the root of utilitarian economic theory – represented in the neo-classical paradigm. As J.M. Clark writes, "economic man has long been recognized to be a sheer abstraction, though not everyone realised the importance of the elements left out... Progress [he continues] ...cannot be accomplished through the ...static ideal of marginal utility" (Clark, 1936, p. 126-127).

There have been many proponents of elements of this approach in the last fifty years; Schumacher's *Small Is Beautiful: Economics as if People Mattered* (1973) most obviously. Mark Lutz, an economist and Kenneth Lux, a clinical psychologist, came together to write

Humanistic Economics which presented an alternative to the one-dimensional view of ‘homo-economicus’ and the narrow assumption of self-interest that this entails (Lutz & Lux, 1988). Such endeavours draw on recent findings from neuroscience, behavioural economics and evolutionary psychology (Lawrence & Nohria, 2002) and efforts have been made to develop this view to business strategy and organizational culture (Lawrence & Pirson, 2010). Most recently, Vernon L. Smith and Bart J. Wilson in *Humanomics* (2019) declared that, “We economists have lost sight of an elementary understanding of the social and economic range of human action. [b]ut studying Adam Smith has humanized our study of economics” (p. xvi). They use the neologism ‘humanomics’ to refer to the study of the very *human* problem of simultaneously living in (these) two worlds, the personal social and the impersonal economic (Smith & Wilson, 2019, p. 2). None of these texts were available to Edith, although many of the concepts included in these more recent works she would certainly have found recognizable. Feminist economics also focuses on the social construction of traditional theory and in making the case that Edith was a ‘feminist economist’ (whilst acknowledging that she would not have defined herself as such), Michael Best and Jane Humphries (2003, p. 48) argue that it is by ‘breaking away from the androcentric presuppositions of orthodox economics that she develops the ‘radical alternative methodology’ of *TGTF*. Their description of Edith’s breaking open the “black box” finds parallels in Smith and Wilson’s appeal for a more human approach. Edith described the firm as “a complex institution, impinging on economic and social life in many directions, comprising numerous and diverse activities, making a large variety of significant decisions, influenced by miscellaneous and unpredictable human whims, yet generally directed in the light of human reason” (1995, p. 9). Best and Humphries believe that it is her “understanding of the nature of these ‘significant decisions’ and the ‘human reason’ behind them that provides the foundation stone of her innovative theory” (p. 69).

CALIFORNIA- Early influences.

Edith’s parents were first generation Californians at a time when it was changing from the remote, rough, and exotic territory cut off from the rest of the nation by deserts and mountain ranges to a well-organized, permanent and progressive State on the Pacific coast. Edith’s father George Tilton, a surveyor and construction engineer with the Californian Highway Commission, was an enlightened man who encouraged his daughter in every way. As a young child she and her brothers were schooled in a tent alongside the encampments of the convict construction

workers who built Highway One, the magnificent engineering project along California's Pacific Coast.

Competitive debate was formalized in American schools and universities in the late nineteenth century as a form of training for active participation as citizens. Debating was Edith's idea of a challenge; it suited her competitive nature and fostered many critical skills which served her in later life. It enabled her to see both sides of any proposition, thinking dispassionately about arguments that could support each side. On entering Berkeley to study economics in 1932, Edith made an immediate impression on debating circles and was voted onto the Executive Committee of the Association of Students as debating commissioner in her final year.

Edith's married her first husband, David Denhardt, a fellow student and lawyer, whilst she was still an undergraduate. On leaving Berkeley in 1936 she actively supported him in his law office and in his campaign to become a District Attorney, whilst she became a social worker in the California State Relief Administration working with the migrant workers whose desperate condition was so vividly described by John Steinbeck in *The Grapes of Wrath*. Tragically, Denhardt was killed under suspicious circumstances while on a hunting expedition in 1938, at a time when Edith was pregnant with their first child.

GENEVA TO MONTREAL

Edith's former economics professor at Berkeley, Ernest Francis Penrose, was economic adviser to John Winant, the Director of the International Labour Organisation (ILO), based in Geneva.¹ Concerned with Edith's future, he invited her to join him as a research assistant. Leaving her baby son with her parents Edith travelled overland to New York and sailed for Europe in June 1939. Thus, at the young age of twenty-three she found herself working for one of the earliest international organisations in the centre of Europe on the brink of the Second World War. When war broke out E.F. Penrose turned the ILO research programme towards the problems of wartime. A major output of this period was *Studies in War Economics* (Penrose et al., 1941) which aimed to bring out the essential differences in aims and methods between war economics and peacetime economics. After the invasion of France it became increasingly difficult for the ILO to remain in Switzerland and Winant negotiated its evacuation to Montreal. ILO staff travelled

¹ E.F. Penrose was an Englishman who had a visiting appointment at UC Berkeley in the 1930s. He later took American citizenship in order to work for John Winant throughout the Second World War. He retook British citizenship after his disillusionment with the USA during the McCarthy period.

through Vichy France and Spain to Lisbon and by sea to Canada where they began to prepare for the post-war era.

Their task was to undertake an analysis of all factors which influenced the “standard of living” so as to fulfil the ILO’s resolution that “the close of the war must be followed by immediate action, previously planned and arranged . . . for the raising of standards of living throughout the world,” essentially a humanistic economic approach. E.F. Penrose was convinced that nutrition was one of the most important elements in any standard of living programme and Edith was assigned to write a report based on the British Government’s work in controlling food production and distribution during wartime.

Edith’s *Food Control in Great Britain* (1943) led directly to much of the work she did throughout the rest of the war. She concluded that “The purpose of food control in wartime is first to obtain an even and adequate flow of food into the channels of distribution and secondly to distribute these foods equitably to all individuals and to all classes in the community. The task is immense and the pitfalls many, but on the whole British food control has been successful in accomplishing these ends” (p. i).

THE LONDON EMBASSY: Ambassador Winant

In 1941 President Roosevelt appointed Winant as the US Ambassador to the United Kingdom where he became a highly regarded confidant of Winston Churchill and Anthony Eden². In August 1941 Roosevelt and Churchill signed The Atlantic Charter, a statement agreed during their secret meeting aboard warships in Placentia Bay, Newfoundland. It laid down the principles and aims of the Allied powers concerning the conduct of the war and their objectives for a post-war world. The Charter was quickly endorsed by the Inter-Allied Council and the various governments in exile, and came to be generally accepted as a set of principles underpinning plans for future reconstruction. The fifth clause of the Charter expressed the desire *to bring about the fullest collaboration between all nations in the economic field, with the object of securing for all improved labour standards, economic advancement, and social security.*

At Winant’s request, Edith and E.F. Penrose joined him as his economic advisers. They shared Winant’s commitment to working for peace in collaboration with the British and the intensity of this enterprise suffused not only their working environment at the US Embassy, but

² Winant was also friendly with Harold Laski, Professor of Political Science at the London School of Economics, Ernest Bevin, General Secretary of the Transport and General Workers’ Union and Minister of Labour in the coalition government, and Clement Atlee, Deputy Prime Minister in the wartime government.

their whole life in wartime London where they lived as a couple and were married in 1944. Edith wrote in her journal “Our work is getting increasingly interesting - I will either do more work on commodity agreements or a report on labour. Pen [her name for E.F.Penrose] says that the next year’s work on economic matters here will determine the course of world history for many years to come” (Penrose, 1942). As part of her duties, Edith wrote briefing papers on a wide range of issues for Winant and other Americans visiting Britain including Paul Appleby, the US Under-Secretary of Agriculture, Chief of Food Missions to Britain and Special Assistant to Averell Harriman, the Lend Lease Administrator.

With only a bachelor’s degree, Edith read insatiably, talked and listened to a wide range of people including the many academics who had become involved in war and post war planning in London. Churchill’s near-total preoccupation with diplomacy and war strategy left the Labour party coalition partners with almost a free hand in domestic policy. As a result, many of the economists integrated into government service were of a liberal or left-wing persuasion.

E.F. Penrose met John Maynard Keynes frequently, and Edith often joined him at formal and informal meetings. They worked and socialised with many other leading members of the liberal and left-wing elite such as Austin Robinson, John Maud (Baron Redcliffe Maud), James Meade (who had also been in Geneva), Harold Laski, D. W. Brogan, journalists like Kingsley Martin the editor of the *New Statesman*, members of the Fabian Society including the secretary Margaret Cole, and politicians such as Hugh Dalton and Ernest Bevin. Edith was frequently invited to significant conferences such as one organized by G.D.H. Cole at the newly created Nuffield College in Oxford. Cole was the Director of the Nuffield College Social Reconstruction Survey and organized conferences on topics such as employment policy, which influenced William Beveridge’s thinking for his 1944 publication *Full Employment in a Free Society*. Cole presided over these conferences and speakers included Beveridge, Joan Robinson, E.H. Carr, G.C. Allen, Thomas Balogh, and Michal Kalecki. Edith was conscious of how much not just she but all these academics were learning as they came to grips with institutional realities. She listened critically testing what she heard against her own intuitive balancing mechanism.³

³ Two quotations from her journal of 1941 illustrate this: ‘Dinner with Lionel Robbins and Pen at the English Speaking Union. I was most agreeably surprised with him. What a change the war must have made in that man – I didn’t know him before except through his books – yet now even he talks of planning. I’m increasingly impressed with the intellectual integrity and open-mindedness of these English economists. It was amazing to see L R & Pen joining in denunciation of doctrinaire positions.’ On receiving the proofs of a Fabian pamphlet for her comments, Edith wrote; ‘Why oh why do left wing people have to go for so much recrimination and assertion instead of solid analysis. They lose weight and prestige and gain nothing by such tactics – I shall write a note to that effect on this pamphlet’.

WASHINGTON and the foundation of the UN.

In the Spring of 1943 E. F Penrose and Edith were called to Washington to prepare for a United Nations Conference on Food and Agriculture, a test for the potential of postwar international cooperation. Edith prepared a paper on buffer stocks which formed the core of the eventual resolution. A second paper on commodity control was also widely distributed. The conference, held at Hot Springs, led to the establishment of the Food and Agriculture Organisation (FAO) in 1945.

Throughout the war period Edith continued to work at the US Embassy in Grosvenor Square on, among other things, detailed estimates of food requirements for the countries to be liberated and the needs of thousands of refugees throughout Europe. A new international organization, the United Nations Relief and Rehabilitation Administration (later UNHCR), was launched in November 1943 by the same forty-four nations represented earlier at the Hot Springs conference. In early 1946 President Truman called on Winant to devote all his resources to the first United Nations General Assembly to be held in Central Hall, Westminster, and when the UN's Economic and Social Council (ECOSOC) was created, Winant was appointed the US representative.

Working in Winant's support, Edith thus became involved with the general organization of the first session of the United Nations and in one of the major topics to be discussed at the United Nations Assembly: refugees and displaced persons. Eleanor Roosevelt was the only woman on the US delegation to the first meeting of ECOSOC. Returning to the US in 1946 as a member of the US delegation, Edith's main assignment was to work with Winant, Eleanor Roosevelt and George L Warren, throughout intricate negotiations on refugee issues. She also assisted Eleanor Roosevelt on the preparations for the UN International Children's Emergency Fund (UNICEF) set up to provide emergency food and healthcare for children in countries devastated by war. At Eleanor Roosevelt's request Edith again assisted her in the early negotiations of the UN Commission on Human Rights that led to the drafting of the UN's Universal Declaration of Human Rights. In February 1947, as the First Session of the Commission on Human Rights drew to a close, Eleanor Roosevelt wrote to the Deputy U.S. Representative on ECOSOC to express her appreciation of Edith's services: "Mrs Penrose had given me a great deal of help during the General Assembly last fall, and she continued to be unstinting in her efforts during the Human Rights Commission Session. Her energy and her ability to get things done has always excited my admiration and she has proved once again to be an extremely able assistant."

BALTIMORE and Fritz Machlup.

These experiences in Geneva, war-time London and at the UN increased Edith's understanding of real economic issues, leading her to distrust purely theoretical models. When Edith came to Johns Hopkins in 1947 as a 'mature' student aged 33, she had been writing and synthesizing information for several years and already had considerable experience of unsupervised research in a professional capacity. She may not, at that time, have described her approach to economics as humanistic but she undoubtedly had a perspective that would combine elements of human psychology, moral philosophy, political science, sociology, and history with standard economic thought. She had been working alongside highly capable and motivated men and women dedicated to building the post-war era on a humanistic base which would enable basic human needs to be met and human dignity and communities to be restored. Edith believed human beings to be intrinsically motivated to serve humanity and not as self-serving economic man or woman only interested in maximising their immediate utility. The work she had been involved in – food rationing in Britain, defining a standard of living, providing for refugees and refugee children, and defining universal human rights – had led her to believe that distribution should aim to be equitable and based upon economic justice.

Edith enrolled to do a Master's degree in the Department of Political Economy at Johns Hopkins which was relatively small but had a strong reputation in the USA. The Department Chair was G. Heberton Evans and a new faculty member was Fritz Machlup, a productive and versatile economist who had just taken a chair after three and a half years with the US Treasury. Professor Machlup had studied under Ludwig von Mises and Friedrich Hayek in Vienna in the 1920s but fled to the US in 1933 and become a US citizen in 1940. Edith immediately realized how fortuitous it was that she and Machlup had arrived at Johns Hopkins at the same time. Their collaboration began with work on the International Patent Regime, which later became the subject of her doctorate thesis (1947-1951). A graduate of the Austrian School, Machlup had been involved in his family's cardboard manufacturing business in Austria and combined 'pure' and 'applied' research in his work. "What Machlup gave to students under his mentorship was an appetite for methodological rigour, a passion for detecting, measuring and verifying change, and a framework for organizing the knowledge emerging from their research" (Connell, 2007, p 230).

Machlup's methodological individualism places the actions of the individual at the centre of economic analysis; economics becomes a branch of moral philosophy and the liberal arts, as

well as a science (Novak, 1997). Economics becomes the study of how individuals combine in their activities to bring about the economic outcomes that we observe. As Machlup expressed it, “The Austrian approach is definitely a microeconomic approach – it goes back to individual decision-making in every respect” (Machlup, 2005, *Austrian Economics Newsletter; interview*). The opening lines of Von Mises’s *Human Action: A Treatise on Economics* (1949) are: “Choosing determines all human decisions. In making his choice man chooses not only between various material things and services. All human values are offered for option” (p. 1). The Austrian School highlighted the importance of enterprise as the dynamic factor in economic activity. Its approach amounted to a theory of ‘human capital’, although the phrase was not used at the time.

Her work in wartime policy and planning gave Edith the confidence to challenge and discard theory that did not stand up to empirical tests.⁴ The differences and inconsistencies between the centre-left and left-wing views she was exposed to in London and the views of the Austrian School fascinated rather than troubled her. She appears to have accepted Von Mises’s arguments that economic laws are timeless and not space bound, and that they apply in local conditions very differently. (She would later take this argument further when exploring the economics of development.) She accepted the need for theory but thought empirical observation is critical and she concluded that economics has a limited range and must be buttressed by other disciplines.

CANBERRA AND THE HERCULES POWDER COMPANY.

Whilst teaching at the Australian National University in Canberra (1955) Edith came to know several anthropologists and was drawn to the idea of studying how people behave and adapt to different environments. The motivations and behaviours of people within firms determine how firms grow, and the ‘environment’ is not given; it is itself fashioned by firms both individually and within a sector. Whilst traditional economic structures rely on hierarchies and top-down decision making, she focused on humanistic organisational structures centred on human capabilities and effectiveness.

The business firm, as we have defined it, is both an administrative organization and a collection of productive resources; its general purpose is to organise the use of its ‘own’

⁴ Edith was personally acquainted with Keynes as a government economist tussling with real issues and conversant with his published work. In his Preface to *The General Theory of Employment, Interest and Money* (1936) Keynes speaks of “his lack of emancipation from preconceived ideas” and “a struggle of escape from habitual modes of thought and expression.”

resources together with other resources acquired from outside the firm for the production and sale of goods and services at a profit; its physical resources yield services essential for the execution of the plans of its personnel, whose activities are bound together by the administrative framework within which they are carried out. (Penrose, 1995, p.31)

A major inspiration for Edith's work on TGTF was her 1954 study of the Hercules Powder Company. The arguments developed in the article based on the case study (1960), formed the basis for the book. Her exposure to the real world of the Hercules Powder Company allowed her to put her thinking on the theory of the firm to the test. The case study article is clearly written and argued, and is an admirable example of business history,⁵ positioning a detailed historical account of the evolution of the Hercules Powder Company within an interpretive theoretical framework. Significantly, the article also offers a clear statement of her basic arguments about growth, the role of management, the development of resources, and teamwork. In her introduction to the article she writes,

The interpretation of important factors in the growth of Hercules is shaped by the case histories of other firms studied. Consequently, I shall begin with a brief summary of some of the relevant conclusions presented in my larger work.

A firm is both an administrative organization and a pool of productive resources. In planning expansion, it considers two groups of resources; its own previously acquired or "inherited" resources and those it must obtain from the market in order to carry out its program. All expansion must draw on some services of the firm's existing management and consequently the services available from such management set a fundamental limit to the amount of expansion that can be either planned or executed even if all other resources are obtainable in the market. At all times there exist within every firm, pools of unused productive services and these, together with the changing knowledge of management, create a productive opportunity which is unique to each firm. (Penrose, 1960, p.2)

Edith thus introduces several new concepts at the very beginning of her article that are later expounded in TGTF. As a firm realizes its productive opportunity resources employed are engaged. Importantly, some of these resources may be improved (more experienced staff, for example) or even altered (a new process or technology). These resources can then be employed

⁵ The article on Hercules in the *Business History Review* was judged by the Newcomen Society in North America, to be the best article to appear during the year 1960. It was excluded from the book in order to keep production costs down despite Machlup's plea to the contrary.

in a new venture. The Hercules case study provides a number of illustrations of the creation of new resources that are then deployed in new ways. During the war, for example, Hercules produced an “extraordinary versatile cellulose gum” (CMC), but was not sure initially how it could be used. The company soon found opportunities for it ranging from a food stabilizer, oil-well drilling mud, the sizing of textiles, ointment bases, thickening rubber latex, toothpaste, in emulsion paints and lacquers, and many other products (Penrose, 1960, p. 8). Even so, Hercules’ relative entrepreneurial conservatism meant that some “junior executives [felt] their opportunities were unnecessarily limited” by senior management’s decision to expand only with internally generated funds (Penrose, 1960, p. 21). Her study of the 40-year history of the firm starts from its origins as a producer of explosives in 1913 and follows how “it branched out in numerous directions in response to external opportunities and internal developments.” She called its entrepreneurship “product-minded,” reasonably venturesome and imaginative, but concentrating on “workmanship and product development rather than on expansion for its own sake or quick profits” (Penrose, 1960, p. 4). She concludes that “Hercules takes pride in the long service of its people and in the fact that the board of directors is not only a ‘working board’ but is also drawn from men who have spent a great part of their working life with the firm.” Her key reflection is that entrepreneurial attitudes, the “firm’s conception of itself,” have had a pervasive influence not only on its direction of growth but also on the method of growth and the rate of growth.

Edith also concluded from her time with Hercules that an essential resource is knowledge. Knowledge that comes from familiarity of a firm with its routines brings about an “increasing knowledge of the possibilities of action... [contributing] to the uniqueness of the opportunity of each individual firm.” She also distinguishes between “objective” knowledge that can be gathered in formal ways and can be transferred easily to others, and “experience,” now commonly referred to as tacit knowledge, that “produces a change - frequently a subtle change - in individuals and cannot be separated from them. ...[w]ith experience a man may gain in wisdom, sureness of movement, in confidence - all of these become part of his very nature, and they are all qualities that are relevant to the kind and amount of services he can give his firm” (Penrose, 1995, p. 53). Combinations of familiarity with the firm, objective knowledge and experience were embodied in Hercules’ salesmen who built a detailed understanding of both their customers’ needs (mostly other companies) and Hercules’ own technical resources. By trying to provide solutions for their customers they laid the path for the development of potentially new resources, services and productive opportunities for Hercules.

Since a “technological base” consists not of buildings, kettles, and tubes, but of the experience and knowhow of personnel, the basic restriction comes down to the services available from existing personnel; the problem of entrepreneurial confidence is building up an experienced managerial and technical team in new fields of activity. (Penrose, 1960, p. 22)

Having developed the foundations of her theory Edith felt able to challenge standard theory. For example, price theory is predicated on firms being confined to particular sectors and markets that govern its possibilities of expansion. But Edith argued that firms need not be so constrained. Subject to the resources available to a firm and the imagination and competence of its management team, a firm may seek opportunity in new and different markets. Hercules’ management, for example, periodically reviewed the company’s resources with an eye on external developments, asking the question, “What have we got to offer?” (Penrose, 1960, p. 13). In the process, Hercules could overcome any shortfalls in demand in existing markets by exploiting its productive opportunity elsewhere.

Hercules was not the only firm to influence her, however. Footnotes in the book cite her studies of other specific firms as she was constantly testing her argument in the real world. Writing to Machlup from Australia, when she was still working on TGTF she explained, “Wednesday night I had to work late on some old annual reports and balance sheets lent to me by a firm, which are not available anymore and had to be returned before I left Melbourne (Edith Penrose to Fritz Machlup, 4 October 1955, *Fritz Machlup Collection*).

BACKGROUND READING

Although we do not know for sure what Edith read in her nine months of reading in preparation for TGTF, we know some of the authors she admired. R.H. Tawney’s *The Acquisitive Society* (1920) was an old favourite she read in her early twenties. She underlined significant thoughts and phrases throughout her own copy of the book such as “...poverty is a symptom and a consequence of a social disorder...” (p. 5). “An industry, when all is said, is, in essence, nothing more mysterious than a body of men associated, in various degrees of competition and cooperation, to win their living by providing the community with some service which it requires” (p. 6). She was taken by Tawney’s ideas of “Rights and Functions,” and sympathetic to his critique of capitalism, his contention that societies pay a high price if they tolerate concentrated wealth which will inevitably distort a nation’s basic economic decisions, and his vision of alternative means toward a just economic, social, and intellectual order. She certainly had Adam Smith in her library and

was possibly closer to his understanding of human relationships as described in *The Theory of Moral Sentiments*, the work central to Smith and Wilson's thesis, than many modern economists.

Edith was well acquainted with Joseph A. Schumpeter and appreciated that he represented the continental European approach rather than the static and mathematically orientated general equilibrium models favoured by economists in the USA and Britain. As Elizabeth Boody Schumpeter, with whom E.F. Penrose, assisted by Edith, had collaborated,⁶ wrote in her introduction to *History of Economic Analysis (1954)*, "The subject of the book is the history of the efforts to describe and explain economic facts and to provide the tools for doing so." This appealed to Edith who could identify with the need to weave sociology, philosophy, and history into theory. The idea that *TGTF* is, in part, a restatement and modernisation of Schumpeter's approach has been explored by John Cantwell (2003) who argues that Edith "relied on an approach to profits and innovation in the firm that implicitly embodies the most important elements of Schumpeter's original theory... and she explicitly incorporated the role of in-house research and development and endogenous innovation in large firms. As such, she helps us to link together these two aspects and from that vantage point to expand upon Schumpeter's theory of innovation, profits and growth for a modern institutional setting" (p. 4).

Existing treatments of the size and growth of firms in her preparatory reading, particularly dissatisfied her. She identified two main types; the first, the 'traditional approach', explains size 'in terms of the balance of advantages and disadvantages of being a particular size'. The second concerns 'the process of growth and treats size as a more or less incidental result of a continuous on-going or unfolding process.' Her conviction that such biological approaches were inadequate was essential to the thinking underpinning *TGTF*. In her article 'Biological Analogies of the Theory of the Firm' (1952) Edith critiqued the prevailing "premise that firms have life cycles analogous to that of living organisms, and laws akin to laws of nature govern the development of firms, and, more than that, the different stages of a firm's development are a function of its age" (p. 805). To understand how the firm grew it was necessary to understand the workings of the firm, and this she argued was an outcome of the behaviours of the people within it. "The characteristic of biological analogies in economics is to suggest explanations of events that do not depend upon the conscious willed decisions of human beings" (p. 808). She was clear that analogies were misleading and should be avoided;

⁶ He contributed to *The Industrialization of Japan and Manchukuo*, (1938) edited by Schumpeter, which was at the time the most extensive study of the modern industrial development and totalitarian trends in Japan and Japanese-controlled territory.

business is not a biological phenomenon and appropriate tools can and should be developed to fit the subject. “Firms are institutions created by men to serve the purposes of men,” she concluded [and] “to abandon their development to the laws of nature diverts attention from the importance of human decisions and motives, and from problems of ethics and public policy, and surrounds the whole question of the growth of the firm with an aura of ‘naturalness’ and even inevitability” (p. 809).

THE THEORY OF THE GROWTH OF THE FIRM

As many of the original reviews of *TGTF* suggest (Early, 1960; Wolfe, 1962), this is not a conventional economics book. Significantly, there are no graphs; no calculus. Machlup soon dismissed her attempts at arithmetic: “I am convinced that your algebra does nothing for the presentation of your theory. At best it gives the appearance of a plaything. It reduces the appeal that it would have to most earnest readers... All you say can be said in words and it is no advantage whatsoever to use fractions and other mathematical signs instead” (Fritz Machlup to Edith Penrose, 9 November 1955, *Fritz Machlup Collection*)

In her letters to Machlup Edith reveals that she considered *TGTF* to be more than an economics book, a subject that she seems to have believed had significant limitations. She more than once observed to Machlup, “I don’t know all the answers before I start as you do.” (Edith Penrose to Fritz Machlup, 23 November 1955, *Fritz Machlup Collection*)

The following very personal extract from a letter to Machlup reveals that whilst she often lacked confidence she never doubted the necessity of questioning each premise and assumption, however well-established or accepted, and she never stopped testing and adjusting her own intelligence.

You know me better than, perhaps anyone else but you only know a tiny part of what goes on inside me. But you do know the constant introspection, constant analysis of myself and others, constant search to understand the validity of values, struggles to find in some way a relationship between myself and the world which is in some sense ‘satisfactory’ and uses what little ability I may have most effectively, coupled with a severe awareness of my own weaknesses and inadequacies as well as of some of my strengths. Unlike you, I don’t have the answers to all the problems pat from a few simple premises. I don’t think the premises are as easy as you do. That is why I can’t go on in economics. Economics is useful by itself, is necessary, but is not enough and I am more interested in what has to be added than in the

science itself. (Edith Penrose to Fritz Machlup, 28 February, 1955, *Fritz Machlup Collection*)

In another letter to Machlup she reveals just how much she saw herself as breaking new ground:

This is hard work, and at times heartbreaking. It isn't just logical deductions but searching for new ideas, new frames of reference, new ways to express and demonstrate the relationships that seem to be important... Remember no one has ever written a book on the growth of firms, not even you giants of economic analysis and, frankly, my stuff makes more sense than some of Boulding's and Stigler's. (Edith Penrose to Fritz Machlup, 25 November, 1955, *Fritz Machlup Collection*)

Edith's major addition to the classical tradition was her development of the intra-organizational dynamic in which learning releases resources and this motivates endogenous growth; concepts which in general did not develop until later. Richard Blundel in particular stresses the interdisciplinary nature, the unusual richness and the diversity of concepts of *TGTF*. "It was an astonishingly ambitious attempt to forge a new conceptual framework for analyzing the behavior of firms, based on an eclectic mix of concepts drawn from several disciplines. Penrose's capacity to operate across a broad conceptual and empirical canvas gives her account an enduring explanatory potential" (Blundel, 2003, p. 2).

The conviction that firms control, create and manage resources within an administrative structure overseen by flawed but motivated people and that firms affect their environment and can influence the institutional structures within which they operate governed Edith's thinking throughout her career. It informed her work on the oil industry, and when she arrived at the School of Oriental and African Studies (SOAS) in London in 1960 her thinking on economic development.

FROM BALTIMORE TO BAGHDAD: The International Petroleum Industry

A good example of how Edith derived her arguments from practical experience was her work on the international petroleum industry. In 1957 Edith and E.F. Penrose took up positions at the University College of Arts & Sciences in Baghdad, so beginning their long involvement with the Middle East and Edith's interest in the oil industry and in developing economies. She wrote, "When I went to Baghdad... 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” (Penrose, 1959).

Fresh from the innovative work she had begun in Australia on the behavior of firms she was well placed to look at the problems confronting the oil companies. Teaching in the economics department of Iraq’s national university exposed her to the opinions and dilemmas of the informed elite of the host nation. Intrigued by the relationship between these external companies and the producing country she arranged to visit the Iraq Petroleum Company (IPC) oil fields in Kirkuk to inform her growing interest in the industry. The blazing gases of the oil field against the dark sky fascinated her on the evening of her arrival. The following day she toured the IPC facilities, its housing projects and its training programmes. Edith asked many questions, opened an enormous valve to release a flow of crude, and saw for herself how an oil field functioned.

She soon began drafting a paper initially entitled, “Oil, Nationalize or Share the Profits?” that explored the implications of international oil companies having a crucial impact on the national income and balance of payments of both producing and consuming countries but which were under the effective control of neither. She analysed the distributional problem arising at the time; the sharing of rent between the host country and the foreign oil company. She wrote to Machlup that if one accepts “the traditional ‘property rights’ of countries in their own natural resources (as I do) then there is no call for ‘sharing profits’” (Edith Penrose to Fritz Machlup, 3 August 1959, *Fritz Machlup Collection*)

As with the initial stages of her work on the growth of firms Edith’s early exploration of the economics of large international firms, specifically the petroleum industry, convinced her that conventional theory was woefully inadequate. She rapidly found herself an expert with a worldwide reputation at a time of remarkable change within the industry.

The way in which prices, quantities, and the distribution of investment and of income originating in the (oil) industry are determined bears only a faint resemblance to the processes traditionally analysed in the theory of international trade and investment. The economics of the large international firm, including the significance of the fact that international economic relations in a number of important industries are largely conducted within the administrative framework of such few firms, is a subject worthy of economic analysis in its own right (Penrose, 1968, p. 19).

Studying British Petroleum’s annual reports set her off on a fresh trail.

It is the profits from crude oil production that are shared with the producing government but the crude production is part of an integrated oil business and the outside, or market price, is not independent of the policies of the integrated concerns. Actually, the posted price which forms the basis for the calculation of crude profits is only a basis for negotiation, not with any economic meaning. I can show that it is in the companies' interest to have as low a posted price as possible if they sell less than half their production outside. (Edith Penrose to Fritz Machlup, 17 August 1959, Fritz Machlup Collection)

Machlup's responded cautiously and her reply illustrates not only her conviction that theory must be tested empirically, but also her doubts about standard theory, and her ability to think independently.

As to your remarks on my investment study – I am not asking who gains and who loses, but I am merely analyzing the effect on underdeveloped countries and especially the producing countries. I have become most skeptical of the approach of economics analyzing the optimum distribution of resources, activities or anything else... our ground is awfully weak. ... Your analytical help is invaluable to me, but I find your general approach too conventional. I'm off to meet two of the most prominent independent oil experts. I'm having fun. (Edith Penrose to Fritz Machlup, 17 August 1959, Fritz Machlup Collection)

Edith visited most oil-producing countries in the early 1960s bringing a political depth to her work through discussion with government ministers and oil executives. Political analysis took a central place in her articles, seminars and lectures and her book, *The Large International Firm in Developing Countries, The International Petroleum Industry* (1968), a comprehensive study of the history of oil, the technology, international trade, investment patterns and particularly oil price formation. Her analysis is often informed by an instinct or intuition that leads her to conclusions beyond the obvious, often revealing the inadequacies of existing theory.

She never felt embarrassed about asking what might appear to be obvious questions and always insisted on starting from the beginning; in this case she observed that crude oil, one of the major commodities in world trade, crossing international frontiers was transferred between affiliates of a small group of international firms. She explained the workings of the large, vertically integrated multinational major companies – those that explored, produced, refined, marketed, and distributed oil – and showed that the determination of output and prices was not just a matter of profit maximization given cost schedules and competitive markets. She was the first oil economist to focus on the significance of integration and transfer pricing, showing how vertical integration offered opportunities for tax optimization.

All international firms are integrated across international frontiers either horizontally or vertically or both, for they are conducting similar operations in several countries or are engaged in different stages of the same industry in different countries, or both. A high degree of integration inevitably introduces an important element of arbitrariness in the allocation of overhead costs to different operations and in the setting of the prices at which goods and services are transferred between the subsidiary entities of the firm. If we assume that firms attempt to minimize taxes in their efforts to maximize retained earnings, we can infer that they will attempt to use the scope thus provided to allocate overhead costs among their foreign branches, subsidiaries and affiliates, and to adjust their transfer prices, in order to reduce their total tax outlays (Penrose, 1968, p. 43).

Edith demonstrated that crude oil prices until the late 1950s were more related to the internal requirements and planning mechanisms of the international oil companies than to any free market for crude oil. This pricing system began to be eroded as new firms entered the industry and a market price for crude oil began to emerge. Not only new “independent” companies entered the industry but new countries joined the ranks of major exporters. Further, technological advances allowed new types of operation, particularly offshore drilling, to become economic.

Edith concluded that, “The deeper root of the problem is simply that international firms, including the oil companies, have not yet found a way of operating in the modern world which would make them generally acceptable as truly international institutions” (Penrose, 1968, p. 263). She found the international firm defective as a vehicle for the flow of foreign investment because its characteristics – size, private ownership and the monopolistic powers it often possessed – were capable of seriously distorting the international distribution of the benefits obtainable from foreign investment.

BACK TO LONDON: Development Economics

Edith Penrose lived through the turbulent times of the 20th century and the trajectory of her life was profoundly influenced by political events, but she always insisted that the processes of economic analysis must be independent of ideology or the particular outlook of the analyst. She dismissed those who observed that she did not follow through on the lines of argument in *The Theory of The Growth of The Firm* by remarking that her belief in the importance of managerial and entrepreneurial resources to organizational expansion had led her to a personal commitment to the instruction of economists from developing countries. Her view that people

with the ability to undertake the organization of economic activity were in short supply underpinned her commitment as a teacher of economists from lower income countries, who she believed were as essential to the development of the state as doctors and engineers.

I am inclined to accept the view that the greatest obstacle to rapid economic development is the magnitude of the organizational problem and the shortage of men with appropriate training and skill to do it (Penrose, 1958, p. 8).

In 1960 Edith took up the post of Reader in Economics with reference to the Middle East created by Lionel Robbins of the LSE, in collaboration with Cyril Philips, Director of SOAS (the School of Oriental and African Studies), University of London. Two years later she became Acting Head of the newly established Department of Economic and Political studies at SOAS, and became a full Professor of the Department in 1965.

Her inaugural lecture developed her view that economics was not just a technique of analysis but the application of that technique to real world problems in which many factors other than those admitted in theoretical models must be taken into account. Some seem to think that economists make mistakes *because* they apply Western concepts to African or Asian contexts, whereas experience led her to conclude that mistakes in diagnosis and prescription were more often due to an inadequate understanding of the society concerned and a failure to apply the most appropriate economic analysis, rather than the inapplicability of the analysis itself. She gave examples of the work of three of her departmental colleagues – Patrick O’Brien’s research on private enterprise in Egypt, Ken Walker’s analysis of Chinese agriculture, and Seymour Broadbridge’s work on the Japanese shipbuilding industry – to demonstrate how the correct analysis could be valuable. The problems of *le tiers monde* were in urgent need of study, she acknowledged, but the emergence of an “economics of development” did not imply a new and special economics for developing countries; they were another category of problems, not another category of thought.

She illustrated this central argument with the example of land reform, a major issue in many countries, drawing on the case of Iraq. After the revolution of 1958 most economists, Western and Iraqi, supported the idea that redistribution of land would increase productivity; yet the government decree to redistribute land resulted in an economic disaster. This could have been foreseen, Edith argued, if economists had collected and analysed existing information, without bias. She concluded that although land reform may have been desirable for social, political, and even economic reasons, the economists who examined the matter failed in their

professional duty to bring out clearly the economic implications of various courses of action. Her intention was to demonstrate that,

the remedy for the errors that have been committed by economists with respect to Asian and African countries is not necessarily the abolition of economists but the improvement of their work involving those countries. And this is one of the results I expect from the establishment in this School of a Department of Economics, the chief function of which is to teach economics with special reference to economic development and to carry out research into the characteristics, problems and contemporary history of the African and Asian economies (Penrose, 1965).

Students would continue to be trained as specialists in one of the key disciplines, but interdisciplinary research was invaluable when several people from different disciplines collaborated in the study of specific types of problem.

One outcome of Edith's desire to encourage this type of multi-disciplinary empirical research essential to building up solid knowledge of economic development was the launch of a journal which would provide an outlet for such specialized research: the *Journal of Development Studies*. As Edith intended, the journal opened up many new areas of debate and has continued to publish many seminal articles on development. The purpose was to include articles from across academic disciplines and indeed the priority was, and still is, given to papers which are interdisciplinary. The editorial board also believed that political development was a seriously neglected field and they hoped to encourage research on the efforts of developing countries to establish stable political systems and efficient governmental institutions. The journal soon established itself as an essential medium for development studies and was a fully accepted scholarly journal in its own right within a decade (Cooper & Fitzgerald, 1989).

CONCLUSION

Edith Penrose enjoyed a successful career and rose to distinguished positions, but this was only achieved through great resilience and an ability to adjust to changing and often very cruel circumstances.⁷ The personal tragedies she endured enabled her to develop an inspiring sense of perspective and proportion; she could not tolerate pomposity and could be irritated by unnecessary formality or ceremony. Her sense of what was important was linked to a strong sense of humour. When taking up the position of Professor of Economics at SOAS in 1965, for

⁷ For a fuller narrative of her life and work see A. Penrose (2018).

example, she began her inaugural lecture by charting the evolution of “instruction” within SOAS, observing that “changes in problems studied, in the syllabuses of instruction, and in the academic establishment, take place behind the developments in the outside world which called them forth with a lag of something like half a century” (Penrose, 1965).

Her early work showed how aware she was of the ways in which many large firms had acquired their dominant positions, and in the later years of her life, looking back over several decades of increasing liberalization in the world economy, she continued to critique the impact of large firms on local and regional economies. During the 1980s and 1990s she became increasingly concerned not only at the undermining of the state but of international agencies which played a role as protectors, regulators and facilitators within the multilateral trading system. Edith argued for the reform programmes advocated by the World Bank and IMF to be more flexible and sensitive to human rights. Arguing for maintaining the importance of the role of the state, she urged “circumspect vigilance” over the unfettered consequence of free markets, “to take explicit account of the economic and political power and operations of the great private bureaucracies of international business” (Penrose, 1992, p. 250).

Anyone who met her would testify to her passion for intelligent discussion, her determination to get to the heart of the argument and the essence of an idea. In particular she was suspicious of all unquestioned systems of thought and belief. This is perhaps her defining characteristic as an intellectual, and one which can provide lessons for young economists at the beginning of their careers.

Recently, the authors of a review article on her TGTF work (Kor et al., 2016) wrote, *Edith Penrose’s classic book, The Theory of the Growth of the Firm, made a substantial impact on strategic management research, especially in the context of the resource-based view of the firm, and the ripple effects of her impact continue to unfold in various disciplines. The book serves as a remarkably rich source of inspiration for scholarly research and a generative source of ideas, which are poised to be further developed* (p. 1729).

The acknowledgement and appreciation of Edith’s contribution to economics and business studies have been the subject of celebratory conferences, special editions and memorial lecture series.⁸ Eminent scholars have looked critically at how and why her ideas can still inspire

⁸ See for example, Special edition of Oxford University Press’s journal *Contributions to Political Economy*, 1999; *The Penrosian Legacy*, INSEAD, 2001; *The Growth of the Firm: The Legacy of Edith Penrose*, Christos Pitelis (ed.), Oxford University Press, 2002; Centenary Conference: SOAS, INSEAD, and the Oxford Institute for Energy Studies, 2015;

thinking in such areas as the theory of the firm, strategic management, industrial and regional economics, technological entrepreneurship, and international management. Kofi Adjepong-Boateng and Christine Oughton, in their introduction to the SOAS Penrose Lectures (2018), state that:

Penrose's theory of the innovative firm is more relevant in the 21st century than it was when first introduced in 1959, because knowledge, advances in technology, and organisational innovation are more critical in today's advanced economies. For example, Penrose's theory of the growth of the innovative firm provides insight into the recent debate on the UK "productivity puzzle" that currently preoccupies economists, management theorists, businesses and policy makers (including the Bank of England).

'Why was Penrose's book so generative of further inquiry in management science?' asked Yasemin Kor and Joseph Mahoney (2000). They answer, in part, by describing the creativity of her research methods, observing that Pasteur's maxim that "chance favours only the prepared mind" is applicable to her way of combining multiple learning skills, including interviewing managers rooted in real-world problems; conversations with students and colleagues; research on economic theories of growth; studies of business history; research on business literature and annual reports; and extended company visits and observations. William Lazonick (2001) believes the book lends itself to generating further ideas because it "contains numerous testable hypotheses for empirical investigation. As an economist, Penrose saw her role as the elaboration of a theoretical framework on the basis of limited empirical data so that useful hypotheses could be posed for further study" (p. 28).

Firms are still important to our livelihoods and remain a primary engine of economic growth and prosperity across nations. For this reason, an analysis of what drives the success of firms continues to provide fertile ground upon which to sow new theories of firm behaviour and continues to keep Edith's work relevant.

Three linked lessons emerge from Edith's work. First is to read, think and analyse until one is sure of the fundamental questions to be asked. Having read works attempting to determine the optimal size and efficiency of firms, an issue that preoccupied much of economic theory at the time, Edith focused on a different question: why, faced with the same market conditions, do some firms grow while others stagnate? Her answer identified the key role of firms' managerial and entrepreneurial capacity to create and renew the resources required to

Penrose Lectures, SOAS, 2018, 2019, and (forthcoming) 2021; "The Legacy of Edith Penrose: Perspectives on the Theory of the Growth of the Firm -- Then and Now" AIB Annual Conference, 2018.

generate new products and processes with which to satisfy new market demand. This leads to the second lesson: be prepared to question standard theory, do not be fobbed off by the official story. Finally, working out how to ask the fundamental questions and deriving the answers may require using methods, devising tools and appropriating ways of thinking from other disciplines.

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