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**Article**

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# Revisiting the evolutionism of Edith Penrose's *The theory of the growth of the firm*: Penrose's entrepreneur meets Veblenian institutions

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## Abstract

Edith Penrose's *The theory of the growth of the firm* has offered key ingredients to an evolutionary approach to the growth of the firm. The entrepreneur enlivened by Edith Penrose in that book is revisited here, considering the role played by institutions in his decision-making. It is argued that her view of the entrepreneur rests greatly in the task of successfully linking two intertwined institutional sets, one internal and the other external to the firm. As a result, the entrepreneur must deal with instrumental and ceremonial elements of both institutional sets in order to re-channel pecuniary gains. The evolutionary approach of Veblenian institutionalism offers an apt definition of institutions to the case in point and is thus used here to expand Penrose's case account of Hercules Powder Company.

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## Resumo

O livro "A teoria do crescimento da empresa" de Edith Penrose oferece uma abordagem evolucionária que discute os limites do crescimento da empresa. O empresário como analisado por Penrose, nesse livro, é revisitado neste artigo, considerando o papel desempenhado pelas instituições em sua tomada de decisão. É argumentado que pode-se identificar no empresário penroseano a função de lidar com sucesso com dois conjuntos institucionais interligados, um interno e outro externo à empresa. Como resultado, o empresário deve lidar com elementos instrumentais e cerimoniais de ambos os conjuntos institucionais, a fim de gerar ganhos pecuniários. A abordagem evolucionária do institucionalismo vebleniano é a base teórica utilizada para analisar a relação do empresário penroseano com instituições. Esse artigo também apresenta uma releitura do relato de Penrose sobre a empresa Hercules Powder.

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*Palavras-chave*: Edith Penrose; Instituições; Empresário; Empresário Institucional

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## 1. Introduction

Edith Penrose's *The theory of the growth of the firm* is a milestone in evolutionary approaches of the firm. Her contribution has usually been associated to a resource-based view of the firm, as suggested by Teece (1982) and Wernerfelt (1984), but her main aim was to understand the limits to the growth of the firm. In her book, the entrepreneur is the main agent in dealing with resources and services of the firm, moved by versatility, ambition, ingenuity, and capacity to gather, organise and use information for judgment (Penrose, 1959; chapter 3), who perceives opportunities and organizes the firm's set of resources in order to capture potential gains. Perception is part of a process of image formation that, in this case, conditions an entrepreneur's decision-making. And image formation relies heavily on one's experience with shared habits of thought and behavior, or the institutions of the time.

Original Institutional Economics offers an explanation of human agency based on institutions, habits and their evolution (Hodgson, 1998). This branch of economics was named by Walton Hamilton during the 1918 American Economic Association Annual Meeting (Hamilton, 1919). Although the term was already part of oral conversations, Hamilton (1919) was the first documented that use of the term "institutional economics" (Rutherford, 2011). Institutional economics was an important segment of economic science (Hodgson, 1998; Rutherford, 2011). Built upon theoretical bases from the American Pragmatist School of Philosophy, the German Historical School, and Darwinian Evolutionism, it strived to analyse phenomena of economic relevance. In doing so, it defined institutions as habits of action and thought which generate foreseeable occurrences in thoughts and behaviors of people in a social environment. This environment can be not only a tribe, a community, or a country, but also a firm and the settings of a consumers' decision-making for they are equally embedded in institutions.

Despite the fact that Penrose (1959) makes no reference to Thorstein Veblen and his followers, it has been noted that her definition of the firm seems to contain Veblenian institutional elements (Foss, 1999b). This opens an opportunity for inquiring whether her view of the entrepreneur can be given a more visible institutional clothing by the Veblenian institutional atelier. If so, a more explicit evolutionary approach can be given to the theory of the firm. In this direction, this paper offers additional elements to understand how Penrose's entrepreneur deals with his decision-making environment by stressing the role of institutions as theorized by the Original Institutional Economics. The next section works on a theoretical institutional clothing of Penrose's entrepreneur, elaborating on instrumental and ceremonial aspects of institutions in her approach. The entrepreneur deals with them considering his role both as a link between the internal and the external institutional sets, and as a provoker of institutional change. In order to give life to the arguments, Section 3 reviews Penrose's (1960) case study of the Hercules Powder Company with the institutional lenses proposed. Final comments follow.

## 2. Penrose's "The theory of the growth of the firm": institutional insights added

In 1959, Edith Penrose published her most recognized work—*The theory of the growth of the firm*. Dissatisfied with the traditional theory of price and production, Penrose redefined the firm in the book and highlighted the impossibility of its unambiguous clear-cut conceptualization. In her view a firm "is not an observable object physically separable from other objects, and it is difficult to define except with reference to what it does or what is done within it" (Penrose, 1959, 10). She, thus, addressed two underlying issues. One is the view of the firm as a set of inherited productive resources, or resources that resulted from previous decisions of the firm that are now available for further moves. The other is the perspective of the firm as administrative units of planning where activities are interrelated, coordinated by, and subordinated to a central administration based on the entrepreneur.<sup>1</sup>

Penrose's concepts of productive resources and productive services seem to fit into the ceremonial-instrumental dichotomy approached by original institutionalists. This insight is developed in the next subsection in three steps. The second subsection discusses the features of an institutional set internal to the firm, while the third turns to the institutional set outside the firm, both of which form the arena for Penrose's entrepreneur.

<sup>1</sup> Despite the central role Penrose gave to the individual entrepreneur, she did not deny the significance of "board of directors", "committees", or "team work" for entrepreneurial decision-making. She argued, however, that an efficient group ends up as a "court of last resort" or "central management" that "must be acceptable as in practice as the highest authority within the administrative framework of the firm, and must be small enough to make more or less agreed decisions" (Penrose, 1959, 16).

## 2.1. Penrose and institutionalism: bringing ideas closer

In order to bring some of Penrose's concepts closer to those held by the Original Institutionalism, it is appropriate to expose which ones seem to fit the case. The next two subsections, thus, explain Penrose's notions of productive resources and productive services and institutionalism's notions of instrumentalism and ceremonialism. The third subsection then elaborates on the theoretical reinforcement they can bring on each other.

### 2.1.1. Productive resources and productive services

In Penrose's approach to the firm, entrepreneurial decisions command productive resources. To start with, productive resources are the material inputs, equipment, land, plants, employees' skills and entrepreneurial abilities. The key point about productive resources is not what they physically or humanly mean, but the productive services they can spawn. Penrose thus focuses on how resources are applied and not just on their material properties or what can be understood as observable employees' skills. Administrative decisions coordinate their specific use for purposes established by the entrepreneur. Therefore, actual productive services derive from what the entrepreneur is able to see as the potential uses of resources, and from the uses he eventually decides to put forth.<sup>2</sup>

In Penrose's (1959, 5) words:

“[i]n all of the discussion the emphasis is on the internal resources of a firm – on the productive services available to a firm from its own resources, particularly the productive services available from management with experience within the firm. It is shown not only that the resources with which a particular firm is accustomed to working will shape the productive services its management is capable of rendering. . . but also that the experience of management will affect the productive services that all its other resources are capable of rendering”.

Additionally, Penrose (1959, 67) states:

“[r]esources were defined. . . to include the physical things a firm buys, leases, or produces for its own use, and the people hired on terms that make them effectively part of the firm. Services, on the other hand, are the contributions these resources can make to the productive operations of the firm. A resource, then, can be viewed as a bundle of possible services”.

According to Foss (1999a), the Penrosean firm is a collection of productive resources organized by the entrepreneur according to the kind of services he wants to create with them. As the productive process unfolds, knowledge about productive services and about how to obtain them from the resources increases and can be further appropriated by the firm, in special by the entrepreneur. This helps him think about new connections between productive resources and services. Such ideas, old and new, are part of a puzzle out of which the entrepreneur expects to form an image. This image is an entrepreneur's understanding about what resources the firm holds and about what they can create – productive services (Ravix, 2002). Which productive services should be created among the set of possibilities will depend on what the entrepreneur now sees outside the firm, a productive opportunity (Penrose, 1959).

Part of the entrepreneurial knowledge that connects productive resources and services are tacit (Foss, 1999a). This creates heterogeneous images among entrepreneurs. Additionally, knowledge is always imperfect and incomplete to various degrees, and so are images built upon it. If the Penrosean firm depends on a cumulative learning process about resources, this does not mean warranted improvement to perfection (see Garnsey, 1998). It means a dynamics in which past decisions – good or bad ones – moulds a path for today decisions – good or bad ones – and so on and so forth. Learning to avoid mistakes of the past, for instance, is no guarantee to avoiding new mistakes in an updated institutional environment.

Let us now move to the institutional notions of ceremonialism and instrumentalism, so they can be next brought closer to Penrose's concepts of productive resources and services.

<sup>2</sup> Different approaches claim to build on Penrose's ideas, some of which – e.g. part of the resource-based view of the firm – rely on mainstream equilibrium price-theory. As Penrose (1985) was explicitly dissatisfied with such a view, a fact subscribed by those who worked with her (Penrose and Pitelis, 2002), we strive to keep in line with her standing on this regard.

### 2.1.2. Instrumentalism and ceremonialism

In Veblen's perspective, a society is a scheme of institutions or generalized habits of thought and action.<sup>3</sup> Consequently, the evolution of society is strongly associated with the evolution of institutions. For Veblen, two key elements make institutions evolve: (1) the anachronism of established habits, and (2) technological change (Veblen, 1899; Rutherford, 1984). Anachronism is not an absolute condition, but here and there habits established by past traditions become unsuitable for new situations, and new practices and thoughts emerge. As for technological change, Veblen (1906) considered, inventors' and engineers' actions the source of advance in knowledge and machinery, thus a vector of change. Several times, Veblen's writings suggests that technology would be instrumental to solving problems and opposed to ceremonial aspects of thought and behaviour, which for him belong to habits and institutions. Hence, one can affirm that, for Veblen, institutions and technology are opposing forces in society's evolution. Nevertheless, a technological innovation can only take place in an existing institutional structure (Veblen, 1906). An innovation does not mean an abrupt change to all things established, but more or less intense adaptations in an already existent way of thinking and acting. Veblen (1906) named "ceremonial adequacy" this process by which technology is absorbed by society and affects some of its established habits without breaking down its full institutional set. He expected innovations to make work and procedures easier, and material life better, and thus provoking change in habitual practices and ways of thinking.

Although stressing that institutional change can result from changes in technology, Veblen is not clear about what happens to the ceremonial aspects of institutions in the process. A follower of Veblen, Clarence Ayres, tried to elaborate on that unclear point. In Ayres's (1935, 1944) approach, technology means instrumentalism – technology is a purely progressive force, implying that new technology is always better for society than the previous one. Conversely, Ayres (1944) affirmed that ceremonial behavior is anti-technological, thus anti-progressive, and also pseudo-technological. And institutions are, according to Ayres, the carriers of ceremonial behavior through time. In his view, thus, institutions function as inhibitors of instrumental advancements. For Ayres (1961), ceremonialism and instrumentalism co-exist and each one deals with different and opposing functions in a society – which seems to be a rather clear-cut division that Veblen for some reason did not to put forth. Before these two driving forces, Ayres (1961) thus evoked a value approach to explain development in society. Holding and pursuing instrumental values would improve society through technological progress, while holding and pursuing ceremonial values would deprive society from such advance (Ayres, 1942). Ayres's view has been extensively debated among institutionalists. Some say he did not understand the instrumental process in a proper way (Rutherford, 1981), or that he was too optimistic about technological developments (Mayhew, 1981), or even that he was a technological determinist (De Gregori, 1977). Other institutionalists revisited Veblen's and Ayres's writings in an attempt to offer a new look at ceremonialism and instrumentalism (Bush, 1983, 1987; Junker, 1982, 1983). This revision culminated in what institutionalists call the ceremonial-instrumental dichotomy.

The ceremonial-instrumental dichotomy establishes that the notion of values in a society is a result of an institutional system (Bush, 1983, 1987). An institutional system deals with two different systems of values that become warranted by shared patterns of behaviour, a ceremonial one and an instrumental one. Patterns of behaviour hold both instrumental and ceremonial features but in different levels (Bush, 1983, 1987). Ceremonially warranted patterns of behaviour show a predominant feature of conditioning the means and techniques by which correlated instrumental practices evolve, while instrumentally warranted behaviour show means and techniques prevailing over correlated ceremonial practices.

The ceremonial-instrumental dichotomy holds an important difference from Veblen's and Ayres's writings. It moves away from suggesting that instrumentalism is good for society development and ceremonialism is bad. Being both inevitable, one can infer quite straightforwardly for instance that they are both also malleable in their distributional effects. The discussion additionally leads to the interpretation that instrumental features are problem-solving traits, whilst ceremonial features are the issues involving how things are to be done in order to solve a problem. Going to work is instrumental, whereas how one chooses to go to work can be ceremonial. Having a meal is instrumental, while having a meal at a fancy restaurant may show that ceremonial concerns end up driving the action towards one among other known patterns of solution. Buying a new car has instrumental features, while having to choose between different models may be guided by ceremonial patterns of behaviour. Instrumental features of institutionalized procedures are about achieving a practical result, and the central issue is what is achieved. Ceremonial features are about how results

<sup>3</sup> The relationship between institutions and habits is dealt with in Sections 2.2 and 2.3.

can be achieved under the influence of ubiquitous habits and institutions. And instrumental thoughts and practices can only emerge from a previous institutional basis, point at which the argument comes full circle.

### 2.1.3. *Productive resources and productive services after instrumentalism and ceremonialism*

Penrose's conceptualization of productive resources and productive services can be seen under the lenses of the ceremonial-instrumental dichotomy.

Some may argue that employees' skills and entrepreneurial abilities, as productive resources, are ceremonial entities, not instrumental ones. Indeed, when applied to the productive process of the firm they show ceremonial features, but they also create productive services. Employees and entrepreneurs, however, hold some skills and abilities before or independent of their use in the productive process. Hence, *for the firm*, such skills and abilities are instrumental. But employees' skills and entrepreneurs' abilities turn to be more ceremonially visible when they interact with the productive process of the firm. A useful metaphor to explain this point can be found in Nelson and Winter's (1982) concepts of skills and routines. For them, skills relate to personal abilities (instrumental for the firm) and routines to organizational abilities (ceremonial for the firm). The former supports the learning and improvement of the latter.

Ceremonial traits come to the fore once productive resources of employees' skills and entrepreneurial abilities are put to use in the firm. Ceremonialism is not just about "giving the employee a blueprint", but also about "how to read it". Relying on the dynamics of cognition, ceremonialism reflects the attempts at creating cognitive consonance upon employees' and entrepreneur's interpretation of how their skills and abilities should be put to use. It promotes consistency between what is understood as a personal skill and how such skill is to be shaped in order to attend to the firm's logic of pursuing pecuniary gains.

As stated by Festinger (1957), people feel compelled to produce consonant relationships among meanings and behaviours and, thus, to avoid dissonance. Social learning is part of such adaptive behavior. In a firm, there is an evolutionary path of meanings and behaviors that an employee or an entrepreneur can learn and adopt to achieve cognitive consonance. Earl and Wicklund (1999) endorse this argument highlighting that cognitive consonance can be more easily achieved by taking the path that is more resistant to change, like those patterns of behaviour held in the firm as e.g. routines or organisational culture.

For Penrose (1959), the ceremoniality of productive services and the underlying pursuits of cognitive consonances depend on some traits of the entrepreneur, such as experience, self-confidence, market vision, imagination in the productive sphere, and a drive to putting ideas into practice. This comprises intuition and imagination that precede and, to some extent, draw productive opportunities. Penrose's concept of productive opportunities as something visualized by an entrepreneur can be understood in Veblen's terminology as the opportunity for pecuniary gains, as Penrose used the term "searching for profit" to describe the entrepreneur's motivation.

An entrepreneur visualizes a productive opportunity and combines productive resources as to result in a productive service compatible with his vision. In other words, a productive opportunity is an image of how the instrumental traits of productive resources can be mingled by ceremonial mechanisms in order to achieve pecuniary gains. Such an image guides the entrepreneur and, thus, the firm to act. Image formation emerges from the entrepreneur's cognitive abilities to perceive, process and give meaning to information in connection with the pursuit of productive opportunities (pecuniary gains). As stated by Hodgson (1998), institutions play a key role in providing individuals with a cognitive structure for interpretation. And, in circular causality, interpretation is only possible with a previous set of cognitive abilities.

In this instrumental and ceremonial organization of production, the Penrosean entrepreneur uses his traits to deal with two different institutional sets: one internal and one external to the firm. The former regards how a bunch of different ceremonial aspects of production (productive services) can result from a set of existing instrumental features (productive resources). The latter concerns how the entrepreneur visualizes productive opportunities. This involves how he assesses the ability of the firm to deal with institutions that transcend its boundaries, such as demand patterns, competition behaviour, regulation bodies, and others. The internal and external institutional sets faced by the firm are discussed in detail below.

## 2.2. *The institutional set internal to the firm*

For Penrose (1959) ceremonial aspects of production are shaped through the inherited organizational structure of the firm. She stresses that, in a firm, there are inherited productive services which rely on the range of available productive

resources and on the knowledge about how to translate resources into services. The inherited structure of a firm and how it moulds ceremonial services correspond to its internal institutional set. This institutional set coordinates activities by sharing knowledge mainly through collective actions, habits, and rules that promote cognitive consonances among individuals.<sup>4</sup> The result is the establishment of practices that shape the ceremonial aspects of employees' instrumental skills.<sup>5</sup> Institutions internal to the firm thus help to form employees' personal dispositions, practices, understandings, and aspirations (Hodgson, 2003). Institutions have the capacity to influence personal goals and actions through the information they give out and the reinforcement vectors they, by definition, hold. Institutions produce reconstitutive effects on an individual, although the final result depends on his formerly acquired habits and practices. There is a cumulative process of institutional and habits change, intertwined by some stability.

In order to promote his pecuniary interests, the entrepreneur must be able to deal with the institutional set of the firm by handling habits and practices of the employees. This involves management, change, or creation of a corporate culture that drives the firm to where the entrepreneur thinks pecuniary gains are. According to Garnsey (1998), as the person who visualizes a path for the firm, the entrepreneur is the main agent of internal change (or stability) for Penrose.

By triggering reconstitutive effects upon the internal institutional set of the firm, the entrepreneur can transform its inherited set of resources and set up an organization design that is apt to deal better with the pecuniary interests envisaged. The triumph of the entrepreneur depends on his capacity to interact with the conventional wisdom inside the firm (Foss, 1999b) and, in due time, promote the reconstitution of thoughts and practices. Inside the firm, the entrepreneur can rely on his "authoritative communication" – as Penrose (1959, 20) called it – to mould the institutional set. Under reconstitutive downward effects, people learn through and abide by institutional standards that can make them review and renew their abilities, perceptions and needs as well as their purposes and wishes (Hodgson, 2003, 2007).

Creating or absorbing knowledge plays a key role in this logic. Learning, after all, is arguably the main source of individual reconstitution (Hodgson, 2003), for it is not only information acquisition in a quantitative sense, but also a qualitative check on established knowledge. Established habits of thought recombine with new inputs and, as they go, practices change. By checking upheld frames of thoughts in the firm, employees may end up reviewing their habits and aspirations. This is, thus, an opportunity for entrepreneurs to promote and institute cognitive consonance inside the firm toward what they sees as opportunities for pecuniary gains.

### 2.3. *The institutional set external to the firm*

The image of the internal institutional is paralleled by an image of an external institutional set. Productive opportunities are established by this dual image about what the entrepreneur thinks the firm can achieve. Those external institutions consist of habits and rules embedded in values and practices in the environment where the firm operates. As stated by Penrose (1959, 79): "experience of the external world is part of the experience of a firm's personnel". By interacting with institutions outside the firm, entrepreneurs form and review their images about practices and productive opportunities and/or the connection between resources and services.

Accordingly, Foss (1999a,b) and Ravix (2002) stress that productive opportunities for Penrose are subjectively drawn. They are established by the history of interactions between the entrepreneur and institutions that affect his mindset for decision-making, a cognitive process socially moulded (Foss, 1999b). Individuals build personal images of the environment as they interact with institutions, and act meaningfully therein. The entrepreneur is no exception. He deals with an unorganized mass of information and a complex set of institutions that pervade the environment in order to draw images that combine internal and external institutional sets.

<sup>4</sup> Commons (1931) argued that collective action empowers a line of action that would simply not happen by the effort of just one or few agents. Hence, collective action is an engine of convergence of unorganized customs towards organized interests – which in a firm are best represented by the entrepreneur's image of opportunities to accomplish pecuniary gains.

<sup>5</sup> The concept of practice was introduced by Veblen under the name of institutional furniture. According to Veblen (1961, p. 235–6): "[t]he cultural elements involved in the theoretical scheme, elements that are of the nature of institutions, human relations governed by use and wont in whatever kind of connection, are not subject to inquiry but are taken for granted as pre-existing in a finished, typical form and as making up a normal and definitive economic situation, under which and in terms of which human intercourse is necessarily carried on. This cultural situation comprises a few large and simple articles of institutional furniture, together with their logical implications or corollaries. . .". Over time, the term "practices" has become more usual (Rawls, 1955; Dolfsma, 2009).

On the one hand, entrepreneurs absorb existing values and practices to lead a firm through the complexity of decision-making. In this context, entrepreneurial drive and versatility exist in those who can learn how to change the environment according to his interest. So, on the other hand, entrepreneurs can impinge new values and practices onto the environment. If such values and practices happen to spread out, then institutional change may have been provoked.

Using Dugger's terminology, a Penrosean entrepreneur is apt to generate a subreption in the institutional set outside the firm. According to Dugger (1980, 901), subreption means "the process whereby the function performed by one cluster of institutions becomes the means of another cluster of institutions". Dugger referred to Veblen's *Higher Learning in America* as an illustration of subreption. Both Dugger (1980) and Veblen (1918) emphasized that 20th century USA educational institutions had become dominated by the content of other institutions permeated by the interest of corporations. Hence, pecuniary gain has entered the core of those institutions. Penrose's theory draws a parallel in the perspective of the entrepreneur. In the action of a firm, the entrepreneur is after an apt image of how to subrept institutions external the firm to achieve pecuniary gains.

Subreption can mean that lower levels of social interaction can also provoke upward changes onto higher levels (Hodgson, 2002). Dugger (1980) agrees, for instance, that institutions can be a legitimate source of power that influences individuals, but individuals in turn may use such power to change an institutional structure according to specific ideas or goals. This power can also be understood as a force that works on people's intentions (Searle, 2005; Veblen, 1910). Habits and practices have distributional effects and thus, in one way or another, favour certain interests (Stein, 1997). Consumption habits and jurisprudence in law are cases in point. When someone is able to interfere in the content of an institution according to his interests, then upward effects come about (Hodgson, 2002).

Successful Penrosean entrepreneurs can provoke upward effects in institutions external to the firm. In light of this competence, some authors have named them institutional entrepreneurs (DiMaggio, 1988; Beckert, 1999; Dorado, 2005). Accordingly, the institutional entrepreneur is interested in specific institutional structures and makes decisions regarding productive resources and services that can be applied to influence institutionalized rules and practices outside the firm. He can do that either by supporting or reinforcing an existing institutional set (or the conventional wisdom) or by promoting institutional change in a subreptive way (DiMaggio, 1988; Beckert, 1999).

For Beckert (1999), an institutional entrepreneur is a distinguished social type with the capability to take a reflective position towards institutionalized external practices and to envision alternative models of getting things done. Accordingly, productive opportunities can be viewed as the likelihood that an institutional set, with its habits and practices frames, will permit an entrepreneur to identify and introduce a novel institutional combination and facilitate the mobilization of the resources required to make it endure. According to Dorado (2005), in rare situations powerful actors may hold sufficient resources to impose a major change on an institutional set outside the firm. But, for his own good, there are limits for the change an entrepreneur can spawn, for an economic system requires a considerable level of institutional stability to work. An institutional entrepreneur, thus, must be able to break with standardized practices in an institutionalizable way (Beckert, 1999).

An important connection between an institutional entrepreneur and Penrose's theory lies on her views of demand. She clearly considered that the entrepreneur must cope with institutions outside the firm in order to handle wants and tastes of consumers. As a result, she suggested that "plasticity" should take the place of the traditional notion of "elasticity" because "[e]lastic" refers to something that can be stretched and "plastic" to something that can be molded" (Penrose, 1959, 81). Consequently, the investigation of plasticity is about how and how much entrepreneurs can remould consumers' decision-making. One means of pursuing that is by acting on institutions outside the firm, exactly what an institutional entrepreneur is meant to do. Moreover, Penrose (1959, 42) stressed that: "[f]irms not only alter the environment conditions necessary for the success of their actions, but, even more important, they know that they can alter them and that the environment is not independent of their own activities".<sup>6</sup>

An institutional change promoted by an institutional entrepreneur is not necessarily a *stricto sensu* modification. As stressed by Bush (1987), institutional change has both instrumental and ceremonial features and ceremonial aspects may prevail and encapsulate institutional change. This means that an institutional entrepreneur does not need to promote a dominantly instrumental institutional change to deserve his title. He can ceremonially encapsulate institutional modifications promoted by others, for instance, or reshuffle the very same productive resources to obtain new productive

<sup>6</sup> Penrose limited herself to introduce the notion of plasticity in a footnote (1959:72).



services. This last instance fits well with the necessary condition seen by Penrose (1955) for firms to grow—holding an excess of productive resources.

In line with the Veblenian tradition, the notion of the institutional entrepreneur also considers that not all actors are equally apt to promote their interests because some of them are in a better social position to interfere with the institutional set outside the firm (DiMaggio, 1982; Maguire et al., 2004). Additionally, there is a cumulative learning process in trying to match productive opportunities and resources that yield the productive services of the firm. Accumulation of knowledge and social differentiation make every firm unique (Garnsey, 1998) and empower institutional entrepreneurs accordingly.

With Penrose and institutionalist concepts paralleled, the Hercules Powder Company case studied by Penrose is now reexamined.

### 3. Penrose's case study: the Hercules Powder Company revisited

In a paper published in 1960, Penrose applied the theory presented in her 1959 book to a case—the growth of the Hercules Powder Company (HPC).<sup>7</sup> Its empirical content was the result of her study inside HPC over six weeks during the summer of 1954. During that period, Penrose observed the productive process and interviewed staff, including top decision-makers. Accordingly, our basis for analysis is the image drawn by Penrose. We have no intention to draw a new historical image of HPC that may claim to be better than what she did at the time. Alternatively, there is an attempt to enrich the way an observer can study a firm.

It should be noted that, in theoretical terms, institutional entrepreneurship is an individual attribute. Empirically, however, the individual entrepreneur is a nearly unobservable category for analysis. Most of the time, what can be observed and analysed are actions taken by the firm as a whole or by identifiable formal parts of it. Hence, it is hard to affirm that a specific action of the firm comes from one particular individual pecuniary interests or images. Actions of the firm can result from other intra-firm actors in vertical, horizontal or transversal internal relationships with an identifiable entrepreneur, or even of extra-firm actors, such as regulatory agencies and legislators. Collective action, thus, is the identifiable level of institutional entrepreneurship in the firm that can be spotted. Thence, we relate HPC's institutional entrepreneurship to the firm and not to specific individuals.

#### 3.1. Hercules Powder Company: first decades up to World War II

HPC was a small explosives company acquired in the 1880s by DuPont Company. By the early 1910s, DuPont produced two-thirds of the dynamite sold in the USA (Brown and Goacoo, 1977). In order to reduce its monopoly power, a federal court in 1911 ordered DuPont to be broken down into three other companies. One of them was HPC, whose productive services focused on goods associated to black powder and dynamites. HPC's internal institutional set was inherited from DuPont's and changed only gradually over time. The process interfered reconstitutively on habits and practices as parts of HPC's services, as it changed the instrumentalism of resources and ceremonialism of services to maintain existing customers, find new ones, and develop new products. The inherited experience and habits and practices of DuPont guaranteed the continuity of an important productive service, its existing efficiency in quality control and control of explosives hazards. At that time, the transformation of productive resources into productive services by HPC was moulded by what DuPont had seen as potential pecuniary gains for the whole conglomerate. As a result, HPC's instrumentalism and ceremonialism of production was limited to a few classes of highly used explosives, particularly dynamite and smokeless powder. This reflected the conglomerate's strategy in which other of its branches would try to seize other envisaged opportunities for pecuniary gains. For an independent firm, however, that image had too narrow a range of opportunities, especially if one considers that the field of organic chemistry had been showing interesting opportunities with, for instance, the commercialization of total synthesis products and the expansion of petrochemistry.

Concurrently, changes in the external institutional set reached out on HPC, affecting its image of new opportunities to productive services. One significant event was the beginning of World War II. By that time, HPC was the third-largest producer of explosives in the US (Grant, 2005). The War strengthened HPC's ties with the US military, which allowed

<sup>7</sup> The case study had in fact been written to be part of the book, but was cut off to make it shorter as suggested by its editor (Penrose, 1960).

the company to grow even bigger in its old explosives business. Yet other changes were ignited by the emerging automobile industry which became a big consumer of one of HPC's main products – nitrocellulose, a base material for gunpowder, but also for coatings and surface finishing of many sorts. In this case, HPC just reacted to other institutional entrepreneurs. To some extent, the interests of the automobile industry encapsulated the internal institutional set of HPC. Its habits and practices did not move farther from its inherited resources and services, which resulted in furthering the development of nitrocellulose for nonexplosive uses and the development of cellulose acetate – an important base material for manufacturing some grades of plastics.

HPC, thus, adapted some of its inherited institutionalised procedures to new opportunities and the Cellulose Products Department grew in relevance. It increased the firm's product range and revenue with mass use chemicals but, disappointingly, not its profitability. One example is the company's effort to produce naval stores (gums, turpentine and adhesives with widespread use in naval industries) from tree stumps. This came after the belief – expressed also by the US Senate in the 1920s (LBC, 2012) – that virgin pine forests would be soon exhausted. They were the source of pine sap from which high-quality naval stores were produced. Such belief did not materialize, and forest management was able to provide good substitutes for the original sap. On the one hand, HPC ended up with sunk investments in the lower quality and higher cost stump-based production of naval stores (Dyer and Sicilia, 1990). On the other hand, this led HPC to look for new compounds and change part of its internal institutions accordingly. By the late 1920s the company recombined resources in a department specialized in managing resins research, production and commercial businesses. In the mid-1930s another department was created to expand the the list of resins' services. At the end of that decade, the production of resins had become as important as the cellulose chemical in terms of mobilizing resources and productive services by HPC (Grant, 2005).

The image drawn by HPC of pecuniary opportunities at that time seems to have a dual basis. One was the combination of resources and services inherited from DuPont, leading to a reactive accommodation of its internal institutional set. The other appears to have been a bolder attempt to act on the external institutional set, unvindicated however from the point of view of its institutional entrepreneurship. HPC had an external environment with big competitors, including downstream clients that saw vertical integration as a plausible opportunity. The inherited images of its internal institutions, habits, and practices, and its social position were still scanty to provoke favourable upward changes in the external institutional set.

### 3.2. *Hercules Powder Company: productive opportunities after World War II*

HPC saw new opportunities for pecuniary gain growing out of the institutional changes brought about by World War II, like the development of synthetic rubber and of a new petrochemical basis for polystyrene, a cheap plastic. HPC, however, had only marginal expertise in petrochemicals. Its inheritance of resources and services was connected to other chemical compounds. The only exception was the use of waste gases from oil refineries to produce polypropylene at the end of the 1940s (Brown and Goacoo, 1977). This instrumental inheritance was insufficient to see petrochemicals as a productive opportunity that could redirect its core activities at first.

As a result, the internal image of the firm kept its focus on its existing knowledge basis, such as cellulose acetate through the production of moulding powders. This activity was well-known to HPC, as mentioned above, and was improved during war time through the work of its Industrial Research Department. Because of its Industrial Research Department, HPC succeeded in replacing a lubricant in disuse – the sodium carboxymethy-cellulose – by its more versatile base as carboxymethy-cellulose (CMC). With CMC, HPC acted as an institutional entrepreneur introducing it to new applications far away from the explosives business, such as processed foods, ice cream, lotions, medical drugs, and cosmetics, changing the path of many other intermediate markets (Dunning and Lundan, 2010). In few years, HPC's production line had a much larger range of products.

Home and agricultural insecticides were also potential targets for pecuniary results. The firm used its knowledge repertoire for new related services and, thus, a wider range of products around the same chemistry basis. As in the case of cellulose chemistry, a large variety of chemical productive services were developed in that new field. This resulted in HPC learning more and building a basis of resources and services in petrochemicals, a field in which it had no experience. One of the main results of such effort was the creation of a new process of making phenol. Phenol is a benzene derivative and a by-product of coke processing with a wide range of applications. Increased demand after World War II led firms to extract benzene from crude oil and then to adapt its productive services to end up with derivatives of commercial quality.

After the War, external institutions changed significantly once more, resulting in many industries moving away from military-purpose products. Nevertheless, HPC decided that its Industrial Research Department should insist on investing on the production of wood naval stores (rosin, turpentine, and pine oil) obtained from stumps of the long-leaf southern pine – a waste product of wood industry.

Those markets, however, grew very slowly. In its turn, the production of explosives for military use shrunk. This new course of events let HPC apparently hibernating (Grant, 2005). As future events showed, the company was in a difficult discussion about new opportunities and the drawing of new images about its internal and external institutional environments. Internally, it was a period of creation and absorption of knowledge. Externally, the HPC envisaged the importance of petrochemicals as a new major source of chemical compounds.

One of its relatively marginal activities, polypropylene production from gases emitted by oil refineries, was expanded. Moves in other industries drove changes in final consumption habits, increasing the usage of the polymer. Polypropylene is widely used, for example, in food packaging (rigid, flexible, and films), textiles (ropes, carpets and thermal fabrics), stationery, automotive parts, packaging of hygiene products (bottles, jars and tubes), and in many other applications. This led HPC to learn more and build a much wider basis of resources and services in petrochemicals.

Other front envisioned by HPC was synthetic fibers. With the invention of nylon by DuPont, the chemical basis for its commercial viability led to major innovations in and associations with petrochemicals. Many of the innovations involved not new chemical compounds, but methods to obtain them. From a license obtained with the German company Dynamit Nobel, HPC began producing the main base of polyester fibers, DMT. DMT was sold both to producers of other chemicals and to polyester manufacturers. As for the latter, DuPont was its main buyer (LBC, 2012).

Finally, the old competence in the production of propellants was reinvigorated. With the Cold War its arms race, the US military contracted HPC to produce more powerful propellants for aviation. The Korean War was one an important moment for that demand. Not only that, but from the mid 1950s the company obtained contracts for the development and supply of solid fuel for missiles, and from 1959 of solid fuel for rockets by the US space program. According to company reports, its sales doubled between 1955 and 1963 (Grant, 2005).

### 3.3. *The chemistry between images and actions of Hercules Powder Company*

As a producer of chemical goods for other industries, the knowledge about how its clients use its products in their own internal institutions is central for the development and improvement of HPC's productive services. This is the basis of HPC's actions as an active institutional entrepreneur, that promotes changes rather than only reacts to changes promoted by others.

As external institutions interfered in HPC's image formation of how to pursuit pecuniary results, the firm explored such institutionalized procedures by dealing with the plasticity of its customers. This was done through a learning process based on offering technical services to its costumers. The company offered them technical services, keeping staff in their clients' plants, even when its sold products were considered commodities. Furthermore, HPC's sales personnel were technically trained to present an active interest in the internal and external institutions of their clients. This increased learning and led the company to develop productive services in greater synergy with the images of their clients. This kind of interaction helped HPC learn how to seize pecuniary gains opportunities by giving their customers support, anticipating problems and new demands, thus, driving them to use more of HPC's productive services.

For example, the HPC produced no tires, Hhot lacquers, enamels, concrete for roads, special hammers for auto body aircraft, or laundry detergent, but advertised final products in technical magazines, linking them to manufacturers who used the company's chemicals (the examples above taken from a single volume of the magazine *The Michigan Technic*, number 70 in 1951–52). Thus, in keeping with its image of the possibilities of change in the external institutional environment, the company was struggling to participate in the development of productive services to its customers in order to increase the derived demand for its products. If HPC's clients could see productive opportunities out of what HPC could offer them, then their actions as institutional entrepreneurs in the final markets could consolidate HPC's pecuniary gains. Such image moulded HPC's growth initiatives, as one can infer from the fact that it has never stepped forward into final product markets. Doing so would risk the intimacy it had with its clients in other markets, lest HPC be seen as a treacherous partner or its so engaged sales personnel as the enemy within. It is hard to affirm, but the proximity between HPC and its customers opened a door for HPC's institutional entrepreneurship based on ceremonial traits.

Penrose (1966, 22) noticed that HPC was “conservative” on its strategy to achieve pecuniary gains in new fields. It used mostly its own finance and moved alongside instrumental bases it had already developed, as opposed to relying on borrowing or on mergers and acquisitions. Sometimes this conservative image of itself would hold back its growth, as noted by Kay (1999). It would even lead HPC to develop a product like CMC, as reported earlier in Section 3.2, without being sure of either its applications or who exactly could be interested in it. As Penrose recorded (1966, 8): “[n]o one knew [to what use American industry could put it]; nevertheless, advertisements were placed in trade papers describing the qualities of the product and inquiring ‘[w]hat do you see in CMC?’”

In other words, this image framed what HPC would see as productive, and profit, opportunities. The company would not move towards new productive services that required an instrumental basis not firmly held internally, for instance. Penrose recognizes that this image depends on the entrepreneurial resources of the firm, stressing that most top executives of HPC worked for the firm from its beginnings. This brings with it a socially built conviction about how things are and how things should be in the firm (“conventional wisdom”), organizing its internal institutions and its interactions with external ones. Penrose thus states (1966, 23): “[a]s the men who built up the firm and carried it through its first few decades retire, it remains to be seen whether the growth of Hercules will be shaped in the future by the same considerations as it has in the past. . .”

Kay (1999, 76) noticed that from the 1960s, HPC broadened its range of actions to include “merger, acquisition, collaborative activity, divestment, strategic focus and multinationalism.” In 1968 it even changed its name to Hercules Inc. Although any causality might be hard to establish without further evolutionary or historical investigation, the correlation between a wide changeover on the directing boards and the image of the firm can be a strong indicative of that. As noted also by Grant (2005), since the late 1990s changes in Hercules Inc. management became too frequent and the name of the company would be read mainly in financial headlines. From the early 2000s, it hardly made any profits. The 2008 financial crisis raised the bar too high for Hercules. It was bought over by rival Ashland Inc. in the following year.

#### 4. Final considerations

Penrose looked at the entrepreneur as someone able to develop an image of how the firm should act in order to profit. This image results from the interaction of the entrepreneur with two different institutional sets. One is connected with the organizational design of the firm that shapes knowledge and abilities of employees and others associated with the firm’s productive process through habits, values and practices that render potentially profitable services. The other is composed by institutions that build the environment in which the firm operates, to which the firm can react or with which it can actively engage to change in its favour.

The way a Penrosean entrepreneur intends to organize the productive process can be viewed through the lenses of the ceremonial-instrumental apparatus. The entrepreneur must deal with the instrumentalism (productive resources) of the productive process in order to shape a ceremonial result (productive services) compatible with what he imagines as sources of pecuniary gains (productive opportunities). Habits, values and practices are addressed as ceremonial issues of production. In such a socialization dynamics, the Penrosean entrepreneur learns to give specific meanings to the productive resources and productive services he interacts with. Looking for pecuniary gains, he connects two institutional sets with the image of how they can work in conformity with his own interests and those of the firm.

This paper obviously does not exhaust institutional readings of the Penrosean entrepreneur. Much more can be said about how institutions mould the entrepreneur’s expectations, or the extent to which institutional entrepreneurship regards collective action and in what kinds of form. Penrose’s ideas seem to be full of institutional content that may be fruitfully made explicit to the benefit of institutional analysis and to the reputation of her insightful work.

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