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The Nature of the Firm – Static versus Developmental Interpretations

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Abstract. Different from the prevailing static perspective in the theory of the firm, a developmental approach focuses on processes of change in firm organizations (rather than on states and their properties). Although business history provides ample evidence for systematic organizational change, few contributions in the literature take a developmental viewpoint and offer explanations for the endogenous processes of change. To contrast static and developmental interpretations, the paper identifies three paradigmatic questions for each of them. Their comparison sheds some new light on the theory of the firm and draws attention to the neglected entrepreneurial role in organizational change.

1. Introduction

The attempt of the new institutionalist research program to explain the "nature" of the firm has strongly influenced modern economic thinking about business organizations. Because the neoclassical theory of the price mechanism was virtually silent about why there are firms at all (Demsetz, 1991), a huge literature emerged that, following Coase's lead, tried to explain why there are two alternative ways of coordinating the division of labor: markets and firms. The reasons offered for why economic agents rely on markets in some circumstances and in others use the organizational form of the firm revolve around the differences between firms and markets, with respect to (transaction) costs and the controlling of contractual hazard (see Holmström and Tirole, 1989; Foss, 2000 for surveys). In pursuit of the new institutionalist program, economic theorizing was attracted to the problems of governance – problems that had interested organization and management science for decades – and started a systematic inquiry into the incentive problems in contractual relations.

Yet differences in incentive and transaction costs are not the only reasons why there are different forms of economic organization. For a full understanding of the "nature" of the firm, other differences between markets and firms are also important. For example, the way in which knowledge can be transmitted, utilized, and, most notably, accumulated is very different in markets and firms. Similarly, cognitive, motivational, and emotional attitudes develop in different ways in the continuing interactions between the members of a firm on the one hand, and between the participants in market transactions on the other hand. The differences may be very important for an agent – the entrepreneur – who has to invest time, effort, and private wealth into building up a business on the basis of one or the other organizational forms. In general, the *development* of firms as organizations – their growth and aging process over time – is very different from, though not independent of, the evolution of the markets in which the firms operate. Organizational forms are not given, unchanging entities. Firms undergo significant organizational changes during their life span (Chandler, 1990, 1992). A newly-established, small entrepreneurial business clearly differs from a large, well-established corporation although the roots of the latter can usually be traced back to the former type.

However, development, or any other time-dependent aspects of real firms do not play much of a role in the new, institutionalist research program. Although the scope of economic theorizing has been extended to non-market institutions, the static method and the optimization-cum-equilibrium-based interpretation of neoclassical economics have been preserved (with a notable, early exception in Langlois 1986; but see Witt, 1989). The accompanying narrowing down of the theoretical focus to incentive-alignment problems has caused a growing uneasiness among scholars working in organizational science and strategy research. Indeed, approaching organizational arrangements exclusively, in terms of incentive conflicts between self-interested individuals does not seem to do justice to the conditions of a dynamic and knowledge-intensive economy (Grandori, 2000; Shapira, 2000). Conversely, the reduction of the many possible and actual alternative forms of governance to only the few discrete structural alternatives fitting the incentive-alignment problems has produced an abstract categorization not conducive to the analysis of other organizational problems (Grandori, 1997). In order to account, in a significant way, for the role played by knowledge, variety, and development for the organization of the firm, there will have to be changes within the theoretical framework.

The present paper looks more closely into what development means in the context of the firm and discusses several contributions to a developmental approach. Besides the empirical work in business history, much of which takes this approach, the writings that assume a resource-based or competence perspective on the firm (Penrose, 1959; Langlois and Robertson, 1995; for other contributions and a critical discussion see Foss, 1997 and 1997a) are perhaps closest to such an approach. To pinpoint the difference a developmental view makes, we briefly summarize the core issues of the static, contractual theory of the firm in section 2 and contrast them in section 3 with the core issues of a theory which, in a developmental interpretation, aims at explaining how, and why, firm organizations and their performance change over time. In section 4 we highlight the relationships between the developmental view and the evolutionary approach to the dynamics of firms and industries, arguing that these are two distinct, but complementary, approaches. In section 5 we review a few contributions in the literature that seem significant for a developmental theory of the firm. Section 6 focuses on the nexus between firm development and industry evolution, and discusses a few suggestions made in the literature for explaining the co-evolution of firms and markets. Section 7 explains that entrepreneurship plays a distinctive role in the development of firm organizations and that this needs to be recognized in order to fully understand the driving forces and the regularities of organizational change. Section 8 offers concluding comments.

2. Why Firms? – Limitations of the Static View

The division of labor in the economy between agents with different skills, knowledge, expectations, and material endowments is, to a large extent, coordinated within or by the operation of firm organizations and not through market interactions. The discussions about the theory of the firm in recent decades have basically been framed by what was considered to be a theoretical puzzle: the fact that the two coordination forms, firms and markets, operate in parallel. To cut a long debate short, the main issues of the theoretical approach to the firm that emerged from these discussions may be summarized by three questions (Holmström and Tirole, 1989; Foss, 2000):

(i) why do firms exist?
(ii) what factors determine their boundaries relative to the markets?
(iii) what determines the firms' internal organization?

Question (i) pinpoints the original, theoretical puzzle raised by Coase (1937): if the price mechanism is such a powerful device for coordinating the plans of individual actors, why is the price mechanism suppressed within a firm? Question (ii) – also frequently identified with the "make or buy" decision problem – specifies in more detail where, or to what extent, firm organizations can be expected to exist within a market economy. Question (iii) addresses the problem of the internal working of firms, i.e. exactly how the supersession of the price mechanism works.

In order to bring out what the "nature" of the firm is, the contributions in this literature revolve around one or more of these questions. However, all contributions basically share the core assumption of (more or less) rational, self-interested, and autonomous individuals (Foss, 2000). Under this assumption, it is by no means evident how the surplus resulting from forming an organization can be secured if there are unforeseen contingencies, costs for information, measurement, and enforcement, or if specific investments have to be made. Even though the interpretations vary with respect to how the information problems involved are represented,[1] and how the firm as such is conceptualized,[2] there is nevertheless substantial common ground among all contributions. The "analytical enterprise [is . . .] one of comparing contracting arrangements in terms of their implications for the joint surplus from a relation" given that "all contracting problems, and therefore problems of economic organization more generally, are represented as stemming from *incentive conflicts*" (Foss, 2000). Thus, despite the fact that, in this approach, the theoretical scope is extended to institutions that had previously not been considered worth contemplating, the core assumptions come close to those in hard-core, neoclassical economics. The optimization-cum-equilibrium interpretation is applied to just another set of decision problems, most obviously in the more recent body of purely neoclassical, contractual theories.[3]

The important point, with respect to the subject of this paper, is the static framework to which the neoclassical approach is tied. In almost all contributions, the main questions (i) to (iii) have been interpreted as suggesting an analysis of states (of firm organizations and markets and the boundaries between them) rather than of the processes by which such states come into being and change.[4] At best, one contractual arrangement (organizational equilibrium) is, in the familiar style of comparative statics, supposed to be replaced by another one if there are exogenous changes in the data – the process of the alleged transition between the equilibria being left open. Although markets and firms do change over their life spans and these changes are systematic in character. (Note that even though there is considerable interaction between them, the changes in firms on the one hand and in their markets on the other, differ significantly.) These changes play a crucial role in fully understanding the nature of firms. The choice of the institutional form of the firm for the division of labor is influenced by the fact that such an organization develops differently from pure market transactions. It may make joint activities feasible, which are not available in the same quality through market operations. Among the candidates for which firm organization possibly proves more effective than markets are the accumulation of specialized, interdependent knowledge and its protection against uncontrolled diffusion, the education of trust, and the elicitation of intrinsic motivation.

Once the rigorous abstractions required under the static perspective are abandoned, it becomes evident that there is no such thing as "the" firm organization. Organizing the division of labor by means of a firm implies very different things under, e.g., the conditions of a newly-established, small enterprise and those of a large-scale, multi-division managerial company. A successfully-operating, large firm organization is not created from scratch and positioned in the markets. It emerges during a time-consuming process. (On paper, as far as its legal form is concerned, this may of course be different. Yet, even the success of large corporations, formed by mergers in a single day hinges on what has been previously accumulated within the merging firms.) The growth of a firm usually means serious organizational challenges as it requires changes in the way coordination is achieved.[5] If, considering the lessons from business history, the firm organization is not treated as having an invariable nature, then a theory of what happens inside firms, and of what happens to them over time, is necessary in the first place. The change that firm organizations undergo – often to a stunning extent – is, of course, also subject to exogenously induced adaptations. Yet, experience not only shows that similar exogenous influences may have dramatically differing consequences for firms at different stages of their development, it also shows that the sources of systematic development are endogenous.

3. Towards a Developmental View of the Firm

In order to deal with change over time in firm organizations and other economic institutions, a dynamic theory is needed. In principle, the dynamics can be conceptualized in two ways: as a reaction to exogenously-induced change, i.e. to causes that need not themselves be explained by the theory; or as a concomitant of endogenously-emerging change, i.e. of drives within the system under consideration. In the latter case, the driving forces (causes) that generate the adaptations of the system over time, and the mechanisms through which they operate, are to be explained by the theory (Witt, 1993). Dynamic theories of this kind have come to be labeled "evolutionary." In the context of firm organizations, this particular class of dynamic theories tries to explain how firms generate, and adapt to, change, and how these processes are intertwined with what happens at both the lower level of individual behavior and the higher level of markets and the firm's environment in general.

Here, we thus understand the term "evolutionary" in a broad sense, which does *not* necessarily imply using an analogy to the Darwinian theory of natural selection. Evolutionary theories in this broader definition include the population-based theory of natural selection and its analogies, but also pre-Darwinian notions of descent and, in particular, what may be called *developmental* theories.[6] Important features of systematic change are to be found on the level of the individual firm rather than that of the population and are therefore developmental in character. Accordingly, a developmental analysis focuses on the individual firm organization, its unfolding, and its eventual decline.[7] A natural starting point for a systematic treatment of the development of firms is the creation of the organization. What happens at this stage, in many respects, sets the course for the further development of a firm. Let us pinpoint these issues with the question:

(I) what guides the creation of a firm organization?

The question is of particular significance for some problems that, up to now, have been grossly ignored in the theory of the firm (Witt, 1998b). First, as the inauguration of a firm organization is a genuinely entrepreneurial act, the question calls for clarification of the role of the entrepreneur in the context of the theory of the firm. Second, in creating a firm organization, knowledge, expectations, and beliefs of the staff hired have to be concerted to a degree that enables the entrepreneur to indeed attain the goals pursued by setting up the organization. As will be discussed in more detail below, this is by no means a trivial task. It requires generating socially-shared, cognitive and motivational commonalities among the members of the firm organization (a prerequisite that is not necessarily, and not to the same extent, needed for agents involved in the organization of the division of labor via market transactions).

After a firm organization has been established, the question arises as to what is precisely meant by its further development. It would be naive to see the further development as merely quantitative growth. In reality, quantitative growth and qualitative reorganization are closely intertwined. It may therefore be asked what regularities govern the quantitative and qualitative changes in the further course of events, and how they are caused. By distinguishing according to the differences in causation, two sources of regularities can, in principle, be identified and may be addressed here in turn. The first source can be located in systematic changes in the firm's environment. Such processes may take place in its input markets and its output market(s). What role is played by the expansion and growth of the markets, on the one hand, and the outcome of competition and imitation on the other? Again, this is a question closely related to life cycle considerations – this time of life cycles of product, markets, and industries. How do these processes jointly affect the growth of the firm organization and, hence, the borderline between the division of labor via markets and via organizations? To account for this source of systematic change is another major issue in a developmental approach, which we may highlight with the question:

(II) How do firms, and the markets in which they operate, co-evolve, and how is the boundary between them affected?

The second source of possible developmental regularities are processes inside the firm organization. It may, for instance, be asked: is there any systematic alteration of organizational features and outcomes as a result of, e.g., learning – broadly defined – or of growth of the organization in terms of employees and/or the number of activities and businesses, or simply as a result of aging? If so, what moderates and, in turn, drives the processes of learning, growth, and aging?[8] Development naturally encompasses not only progressive but also regressive change in terms of growth, functional specialization, etc. The success of an economic organization, however it is being measured, is likely to vary over time. A developmental theory therefore has to deal with both success and failure (as every theory of economic organization should do, see Loasby, 1991, chapter 3). Summarizing, again in the form of a key question for a developmental approach to the theory of the firm, one may ask:

(III) What regular paths of internal, organizational development can be identified, and what contingencies determine which of the paths is likely to be taken?

The questions (I) to (III) and the questions (i) to (iii) in the previous section show parallels which invite a comparison. Thus, there is obviously a switch in perspective from the static view implied by question (i) to the process-oriented one implied by question (I). However, this is not all: question (I) also draws attention to entrepreneurial motives and conceptions about the very origin of a firm organization, which are completely ignored by the static approach. Similarly, question (III) is not simply a dynamic counterpart of (iii). Entering the time dimension means allowing for variations over time, which, in turn, implies a much richer set of possible configurations, contingencies, and ways of causation than the static view underlying (iii).

The questions of what activities to pursue inside the firm and what size a firm may grow to are ubiquitous problems in the development of firms, which resemble the make or buy decision in the (comparative) static version of question (ii). Yet, question (II) suggests the broader frame of a feedback relationship. With few exceptions, a firm has all the technical, managerial, and commercial knowledge and skills required to develop, produce, and sell its products and services. Typically, suppliers and customers contribute substantially to the knowledge and skills, and these contributions are likely to change systematically in response to the development of technologies and markets. Where the latter development follows systematic patterns like, an industry life cycle, it may be conjectured that the boundaries of the firm hinge crucially, and systematically, on the developmental stage achieved. Furthermore, as the ownership and the various forms of acquiring knowledge and skills may entail competitive advantages to an individual firm, strategic decisions on the corresponding investments and engagements may themselves be a significant *agens movens* in the partly competitive, partly cooperative co-evolution of firms and markets. A feedback relationship emerges here, in which current technology and market conditions induce integration/disintegration decisions that, in turn, shape future technology and market conditions.

4. Evolution versus Firm Development

The key questions (I) to (III) that have characterized the developmental view on firm organizations may be used not only for a comparison with the static, contractual approaches to the theory of the firm. They are also helpful in putting the developmental view into perspective with hypotheses on firm dynamics derived from a narrower interpretation of the notion of evolution in economics, which was shaped by the influential work of Nelson and Winter (1982) on evolutionary economics (see also Nelson, 1995). This kind of literature primarily concerns the ongoing change in industries, technologies, and the economy as a whole. Internal change of the firm is less of a focus, perhaps because firms are treated as "merely the carriers of technology" (Dosi and Nelson, 1994). As Nelson writes: "For an economist, what matters is that pharmaceutical R&D take advantage of the new possibilities opened by new biotechnology, and not whether the old pharmaceutical firms do it, or whether they fail, so long as new ones take up the torch" (1991, p. 70). In a similar vein, Silverberg et al. (1988) look into technology diffusion as an invariant and stable property of an industry that faces technological progress. They abstract from what happens inside the individual firms in such an industry. This is characteristic of many contributions in which evolution is conceptualized in terms of population based (phylogenetic) processes.[9] In the corresponding modeling strategy, the development of the individual firm is reflected only by the changing relative frequencies of behaviors in an otherwise undifferentiated population of firms.

As is well-known, such an interpretation is informed by (more or less loose) analogies to the Darwinian theory of natural selection. Following the lead of Nelson and Winter, many writers in evolutionary economics characterize the firm as a hierarchical set of routines, i.e. standard ways of operating in productive activities as well as in investment and search behavior. In an analogy to natural selection, routines are seen as the genotype of a firm, and the decisions of the firm produced by these routines as the phenotype. It is then assumed that successful routines are retained and inferior ones are abandoned. Hence, the relative frequency of successful routines in the population of all firms – the analogue to the gene pool – increases over time. (Note that the same does not necessarily apply to the individual firms.) This results in an improved adaptation of the industry to demand conditions, technological opportunities, and factor prices. Differential growth rates of firms reveal their differing success in generating and/or utilizing superior production processes and ranges of products.

R&D is conceptualized as a search process undertaken by firms or, more generally, as learning within the firm. This means that firms are interpreted as learning systems whose survival and growth strongly depends on the successful generation and absorption of new knowledge. Nonetheless, the impact of the firms' cumulative searching and learning – of the accumulation of knowledge and capabilities – on organizational transformations and systematic developmental changes is not considered. Systematic influences are exclusively attributed to (external) selection forces. It may well be argued that such a representation of the sources and regularities of endogenous change within firm organizations does not exhaust the realm of possible dynamic regularities. Developmental change at the level of the individual firm deserves to be explored in its own right.

If this is so, what relationships could be expected to exist between developmental change at the firm level and systematic transformations occurring on the level of a population of firms in a market or an industry? From the point of view of the Darwinian concepts of variation, selection, and retention, it may be submitted that variation occurs at the level of the individual firm, whereas selection is a phenomenon relevant to a population of firms operating in the same markets or making up the industry (Metcalfe, 1994). This would mean casting the problem in terms of the co-evolution of individual firms and markets, i.e. of question (II) above. Developmental change could be the major source of variation and, as such, the precondition for selection. This means that there would be no evolutionary change in markets and industries without the development of firms over time. Conversely, new firms are started and possibly grow within the technological and institutional framework of their markets and industries.[10]

5. Regular Paths of Internal Organizational Development

The difference that a developmental perspective to the firm makes was clearly shown by the works of Edith Penrose and Alfred Chandler. Both were explicitly concerned with the growth of firms. Whereas Chandler was primarily interested in the origin and growth of the large, multi-divisional firm from a historic perspective, Penrose wanted to develop a theory of the growth of the firm as such. The fact that she was first to establish such a view in the literature is not accidental. In an earlier controversy with Armen Alchian about the role of evolutionary concepts in economics, she had boldly taken position against analogies to Darwinian theories in biology (Alchian, 1950, 1953; Penrose, 1952, 1953). Since she also attacked the life cycle analogy there, it seems that she felt induced to create something in place of both. The outcome of this endeavor was her theory of the firm[11] – an independent, original contribution to the theory of the firm. Given this prehistory, it is not surprising that, although her book is frequently cited in works on the evolutionary perspective of the firm, it did not have much of an impact there – in contrast to the inspiring role that it has played for the recently emerging capabilities view or resource-based perspective (RBP) on the firm.[12] The unequal receptiveness reflects the fact that the RBP follows Penrose in her interest in how "internal" factors (like the organizational form, ability to learn, etc.) affect the existence and performance of firms. More precisely, the core question Penrose sets out to discuss is: "Assuming that some firms can grow, what principle will then govern their growth, and how long can they grow?" (1959, p. 7). Her theory is thus not so much concerned with the factors that determine whether or not a firm will grow, but with the process of growth as such (question (III) above). She also explores the way the regularities in the growth process of individual firms affects and changes industry structure (which is an important part of issue (II) above).

What is central to both Chandler and Penrose's understanding of the firm is the emphasis on the "internal resources of a firm – on the productive services available to a firm from its own resources, particularly the productive resources available from experienced management within in the firm" (Penrose, 1959, p. 5). For Chandler, the firm is a group of "dynamic organizational capabilities" that are built-up and improved by conducting the firm's daily activities. In a similar way, Penrose defines the firm as "a pool of resources, the utilization of which is organized in an administrative framework" (ibid., p. 149). In contrast to Chandler's characterization, Penrose's definition comprises two important aspects. First, the productive activities are planned and coordinated through authoritative communication by a central management. Second, the firm is a collection of productive resources that can yield different services. This means that, for the firm as a constrained productive unit, it is the way in which the resources are utilized that matters, not the resources themselves. The "productive opportunities" of the firm are, even with an unchanged set of resources, not objectively given, but subject to the possibly differing conceptions of individual actors. What a firm can produce with given resources thus hinges critically on the conceptions and capabilities of the entrepreneur who creates the firm (issue (I) above).

Although Penrose argues that entrepreneurship is of utmost importance for the growth process of individual firms, she focuses on the developmental regularities in the *managerial* services available to the firm. What is central to a firm organization is *administrative coordination* provided by trained managers. Managerial ability is the chief factor for limiting growth: The highly idiosyncratic, partly tacit and collective nature of managerial knowledge makes managerial services a highly specific, non-tradeable resource. It emerges over time on the job, i.e. from the interactions within the firm's management team. Ultimately, the scarcity of managerial abilities therefore constrains the growth rate the firm can realize at any time. The growth of the firm has to be planned and implemented, and this absorbs part of the specialized resource "management ability." Moreover, when growth means an increase in the number of (management) employees, the integration of new employees into the existing labor force requires time to transmit at least part of the existing, tacit knowledge, which constitutes a bottleneck in the firm's resources.

On the other hand, in their daily coordined efforts, managers learn and become increasingly experienced so that, over time, they need less attention and effort to run their business. Excess management capacity is set free. Since idle managerial abilities are closely tied to the firm, they represent a potential for realizing further growth. Learning, experience, and routinization within the firm thus make productive services available for new uses, which constitute "a challenge to innovate, an incentive to expand, and a source of competitive advantage" (ibid., p. 85). Growth induced in this way is expected to take place in areas closely related to those in which the firm is already operating. If an important part of this knowledge is tacit and develops from working in management teams, it seems that firm organizations are not only serious contenders in the market as a coordination mechanism, but are able to generate the knowledge required for productive activities in the first place. Such knowledge constitutes the most important part of the firm's capabilities and, by and large, determines its competitive position in the market.

The kind of automatism in the process of knowledge generation and the expansion endogenously driven by the excess management capacity made available through learning and the accumulation of experience, are the key features in Penrose's developmental approach.[13] For a firm to be profitable, survive, and grow in the long run, specialization in the utilization of its resources is crucial. However, the current production program of a firm can be seen as only one of several possible resource utilizations. Over time, managerial learning about the potential services rendered by the firm's resources widens the productive opportunities-set of the firm. If, as a consequence, the firm grows by extending its production program, the position of the firm is changed relative to its competitors (who may, however, learn similarly about their productive opportunity-set). Such an expansion invokes what has now come to be called "path-dependency": a firm specializes in a few "impregnable bases" (ibid., p. 137) from which it generates and enhances its activities.[14] There is, of course, yet another way in which firms can expand their activities. Rather than developing the capabilities needed in-house through the learning processes mentioned, firms can try to buy the necessary capabilities via the capital markets through acquisition of, or merger with, other firms or some of their divisions. Penrose maintains that the reasons for acquiring firms and their capabilities reside in developmental regularities inside the firms.

Empirical work on the evolution of businesses suggest that many firms do not grow beyond a certain size. As e.g. Bhidé (2000) argues, many entrepreneurs seize small opportunities in a Kirznerian fashion by means of opportunistic adaptation. If they want to build larger, longer-lived enterprises they have to change the nature of their business. This requires a change from projects with high uncertainty and low investment to ventures with longer time horizons and higher investment, which require considerable amounts of strategic planning, i.e. managerial input. Such growth requires a transition from "piecemeal" entrepreneurship to specialized management. As the size of the firm increases, the problems to be solved with respect to accounting, controlling, human resources, etc., become more involved and difficult to solve so that, at a certain point, specialization, i.e. the taking over of these internal processes and services by "experts," is a prerequisite for further growth. These necessary reorganizations constitute "critical points" (Penrose) in the development of the firm, which can result in three possible consequences if a firm fails to make the transition to specialized management. The firm: a) is sold, b) ceases to grow, c) fails to retain profitability. Alternatives b) and c) are common in a firm's internal organizational development. They may induce firm owners to consider alternative a). This may generate opportunities for other firms (not yet, or not currently, faced with a "critical point" in their own development) to take over some or all of the activities of a firm facing the transition problem.[15]

Empirical findings from other authors confirm these findings. In his now classic contributions to business history, Alfred Chandler (1962, 1977, 1990) came to similar conclusions. Although growth processes of firms in different countries and industries differ considerably, they have in common "a self-generating force ... to keep resources effectively employed" (1962, p. 383), which results in growth accompanied, by considerable managerial reorganization. Growth has to be planned and carried out. Organizational *structure*, defined as the way in which the firm is administered is a consequence of the planned process of growth that is part of the firm's *strategy*, i.e. the decision-making on the overall goals of the firm. In sum, "structure follows strategy and ... the most complex type of structure is the result of the concatenation of several basic strategies" (1962, p. 14). Therefore, a firm's structure at any point in time is much a result of its history, i.e. its past strategic decisions resulting in success or failure.

How do firms know what to do and how to do it, i.e. devise and implement a strategy if there is no blueprint or course of action given in advance? In Chandler's account, the precondition for continued firm growth was the invention and implementation of modern mass-production and transportation. As a consequence, firms developed into large multidivisional enterprises by exploiting economies of scale and scope to serve growing markets. In a way, firm growth is governed by a logic of functional adaptation of the firms' strategies and structures to technical opportunities (Fransman, 1999, pp. 42ff). In contrast, Penrose stresses the role of creativity and imagination of the entrepreneur running the firm. In her view, the firm is more of an "image creator" (ibid., p. 43) than a device to exploit economies of scale and scope as a response to technological progress. Therefore, the firm is genuinely entrepreneurial in nature. However, both Penrose and Chandler focus on the managerial firm. Both authors distinguish between the entrepreneurial function and managerial services,[16] but they focus on the role of the latter for the firm's development. In contrast, it may be claimed that, in order to fully come to grips with the developmental nature of the firm, the coordinating role of the entrepreneur and the fallibility of entrepreneurial conceptions has to be understood. However, before elaborating on these entrepreneur-centered points in section 7, question II (co-evolution of firms and markets) needs to be discussed in the next section.

6. Co-Evolution of Firms and Markets

Theorizing about the regularities in firms' internal organizational development raises some interesting questions with respect to the co-evolution of firms and their markets (issue II above) and, as a consequence, the development of market structure. Empirical findings suggest that developmental patterns can be identified not only for firms, but also for technologies, industries and whole economies. Frequently the change is described as a life cycle.[17] On the industry level, the dynamic relationship between technological innovation, and market structure is analyzed. Firms are seen as carriers of technological innovation which enter or exit the market in predictable waves. Although the focus is not on firms *per se*, the dynamic relationship between firm development and growing markets is reflected in terms of changing size distributions, cumulative R&D, links between market share and profitability, etc. This literature captures important features of cumulative technological and commercial-learning processes and the resulting industry structures.

The contributions by Langlois (1992) and Langlois and Robertson (1995) take the analysis of co-evolution a significant step further by explicitly analyzing the interactive nature of changes in both firms and markets. Their starting point is question (ii) of the static approach (boundaries of the firm). However, they frame the question in a new way by drawing on distinct sources as neoclassical production theory, transaction cost economics, and Penrose's capabilities view of the firm. While production theory usually considers knowledge as given and focuses on cost or price induced substitution effects between factors of production, transaction cost economics acknowledges the relevance of changes in relevant knowledge. Learning about the outcome of transactions and the opportunities offered by the markets reduces transaction costs. As a consequence of learning-by-doing, innovation, imitation, and knowledge of production technology, of course, changes as well. Langlois and Robertson (1995) argue that the costs of building up and communicating the firm's capabilities, including its production know-how, are part of the transaction costs that may change systematically over time. Hence, with respect to the boundaries of the firm (questions (ii) above), the static approach taken, e.g. by Williamson (1985) needs to be transcended.

However, if capabilities that include production knowledge are sticky, largely tacit, and dispersed and therefore costly to acquire and to apply, then the implications of a dynamic theory with respect to question (ii) are far from being straightforward. In line with Penrose and Chandler, Langlois and Robertson interpret the firm as a set of productive and organizational capabilities. The boundaries of the firm should then be determined by its (relative) capabilities, more precisely by a) the strength of the capabilities available inside the firm or through market contracts, and b) the transaction and governance costs of generating or acquiring capabilities as far as they are needed and not currently available under a). Yet, in an innovating economy, capabilities change over time, e.g. through technical progress. These changes may enhance both the capabilities available inside the firms and those available through market contracts. It is then decisive for the effects on the boundaries of the firm whether, relatively speaking, improvement of capabilities is easier or cheaper inside the firms or through market exchange.

The learning ability of firms, it is argued, largely hinges on their internal organization, while the learning ability of markets is determined by technical and institutional arrangements as well as by the learning abilities of the firms. At this point, the notion of *dynamic* transaction costs is important, i.e. "the costs of persuading, negotiating, coordinating and teaching outside suppliers" (Langlois, 1992). These costs can be significant in the decision concerning whether to vertically integrate. If an innovation is of a "systemic" nature, i.e. requires the adaptation of many complementary activities, it generates high, dynamic transaction costs and this makes vertical integration attractive. Process innovations and innovations in modular systems in contrast, tend to cause lower dynamic transaction costs and are therefore more likely to induce vertical specialization and producer networking. Innovations, of course, also affect competitiveness and performance within an industry. From their point of view, Langlois and Robertson (1995) find it crucial to pay attention to the relative distance between the capabilities needed for handling the innovation and the actual capabilities available inside the firm. Firms with a technological base close to the capabilities needed for the utilization of the innovation can be expected to perform better than firms specialized in somewhat unrelated fields of operation. In other words, an innovation can be understood as a diversification, which will be more successful the more it relies on the existing core competencies of the firm.[18]

Even though the starting point of all these considerations, question (ii), was within a static framework, the ideas just discussed are congenial to a dynamic, co-evolutionary, or developmental view of firms and markets as epitomized above by question (II).[19] An interesting point is whether this literature also suggests an analogous transformation of question (i) (nature of the firm) into question (I) above. Langlois and Robertson (1995, p. 12) indeed argue that several of the productive activities are interdependent and thus inseparable or indivisible. If, in addition, the knowledge about such productive activities cannot be easily imitated or transferred, i.e. it represents an "idiosyncratically synergistic resource," this may serve as a reason for the existence of firm organizations: "In sum, we are arguing that idiosyncratic knowledge and ways of acting are at the heart of the firm organization" (ibid., p. 13). This statement resembles the capabilities view of the firm, which argues that this special kind of knowledge can only be generated through firm organizations (see Kogut and Zander, 1992). The idiosyncratic resources constitute the intrinsic or strategic "core" of the firm, which determines the boundaries of the firm in the short- and medium-run. Because there are learning processes outside the firm, these resources tend to erode over time if the firm does not invest in the improvement of its capabilities and/or in the generation of new ones. What can be regarded as the firm's intrinsic core is expected to change over time. Correspondingly, the firm may grow or contract.[20] As in the writings of Penrose and Chandler, this dynamic account of changing firm boundaries highlights the importance that strategic decisions have as an entrepreneurial input for the fate of the (growing) firm.

A number of interesting questions arise from this conclusion such as, how do firms identify, build up, and improve their intrinsic core capabilities? In a comparative perspective, which strategies do firms with comparable resource bases pursue? How do firms respond to a devaluation of their core capabilities? It seems evident that work in fields as diverse as business history, organization theory, economics, and strategy research can provide valuable insight into these problems. What is largely missing, however, is the recognition of the crucial role of the entrepreneur for the development of the firm over time, which is what makes "idiosyncratic knowledge and ways of acting" possible, a role to which we will now return.

7. Why Entrepreneurship is a Constituent Part of the Firms' Development

A first step to provide more elaborate developmental hypotheses was undertaken by one of the present authors (Witt, 1998a, 2000). As these discussions show, for a full understanding of the developmental process and its different organizational stages, it is necessary to recognize the crucial, though often neglected entrepreneurial role. In the case of the newly-founded nucleus enterprise, question (I) above evidently relates to entrepreneurship. However, entrepreneurship changes in character, Witt argues, when the firm grows into a large and mature organization. This change is a decisive, if not pivotal, part of organizational development. The division of labor, be it market-based or firm-based, originates in a venture someone must have conceived, at least vaguely, before it can be undertaken. To develop ideas of how to (re-)organize work, and to make efforts to see them through is an indispensable entrepreneurial contribution.

While many of these ideas may be achieved exclusively through market transactions, there are also more complex ideas, probably not yet fully thought through, ideas that an entrepreneur is therefore unable to realize by her/himself exclusively on the basis of standard market contracts. In this case, the entrepreneur's image of what business to conduct and how to conduct it – the entrepreneurial "business conception" – implies hiring staff and creating an organization. Once a firm organization has been created, the entrepreneur has to rely on the individual capabilities and knowledge of the firm members and their work efforts. She achieves her goal more easily, the better the decisions that the firm members make within their respective area of discretion, fitting the entrepreneur's business conception. This means that, in order to realize the organizational advantage, the entrepreneur's conception must be communicated to, and adopted by, the firm members in the first place. There are also important motivational connotations to this.

Whether or not people adopt the attitude that they are contributing to a common goal makes a great difference. If they do, their task perception tends to be framed in such a way that their attention is devoted more to solving problems in the interest of the firm's goals than to pursuing private, short-run inclinations and separate interests. Conversely, it may be concluded that individual knowledge and efforts are not well concerted if there are rivaling business conceptions pursued within the firm, or if all firm members just follow an opportunistic conception of extracting some form of short-run security for themselves. From a cognitive point of view, the possibility of concerting individual motivation and dispersed knowledge on the basis of a socially-shared cognitive frame is therefore a crucial part of why the firm organization may be superior to the market mechanism as an organizational form. Indeed, this is an independent argument for why an entrepreneur creates a firm organization for expanding business (issue (I) above), instead of realizing her/his ideas on the division of labor exclusively via ordinary market transactions.

Thus, after creating a firm organization, the entrepreneur has to figure out, and work on, her capacity to coordinate the firm members on her business conception, and to motivate them to engage in the conceived division of tasks and to perform effectively – and to resist opportunism.[21] Entrepreneurial conceptions may well be contested by rival conceptions and motivations. Failure to prevent rivaling frames and motivations from tacitly taking the lead in the firm's informal communication can have far-reaching consequences. The firm organization is likely to perform in a significantly less efficient and coherent way and, hence, profitability is negatively affected. Therefore, it is important for the entrepreneur to succeed in propagating her/his business conception, and to do so a particular capacity of "cognitive leadership" is required.[22] This capacity is not independent of the chosen organizational form and, in particular, the size of the organization. As a consequence, systematic changes over time can be expected to result in the operation of the firm organization as the organization grows.

Once a point is reached where an entrepreneur fails to maintain sufficient cognitive leadership, she can try to counter the emerging tendency towards incoherence, inefficiency, and declining work effort by the employees by switching to a different mode of running the firm, namely, to a regime of close monitoring and control – much as the transactions cost approach states it as the regular case. However, monitoring curbs individual creativity and the intrinsic motivation in problem solving. Furthermore, coordination must, to a large extent, be based on bureaucratic directions and the execution of these directions must be tightly controlled. This causes friction and administrative costs, which tend to lower the efficiency of the firm the larger it is. Transitions between different modes of running a firm can therefore be expected to play a key role in the development of firm organizations. As Witt (2000) has argued, a major factor inducing a transition is the size of the organization. If a nucleus entrepreneurial venture is successful and fuels its own growth, the increasing business volume sooner or later requires the expansion of the firm organization. Even though attempts are then often made to maintain an entrepreneurial regime of cognitive leadership through major organizational restructuring, success of such endeavors is rare and limited. Where it is not achieved, disorder and decline or, in the more favorable case, a regime of governance takes over. The further development and survival of the large, mature firm organization then becomes a matter of technology and market structure. Economies of scale, due to the sheer size of the firm and/or a less competitive market position may allow the losses in efficiency and innovative capacity to be (over-)compensated, albeit in a highly innovative market environment, probably not for too long.

8. Conclusions

In the theory of the firm, as in science in general, problems are defined and explanations are worked out on the basis of conceptual frames. The present paper has tried to draw attention to the far-reaching consequences for the understanding of organizations that follow from choosing either a basically static conceptual frame or a dynamic one. The former is more commonly adopted by scholars dealing with the theory of firm and is, in particular, a central element of the research program of new institutionalist economics and its application to the firm. A dynamic approach, particularly one that focuses on developmental regularities in the way firm organizations emerge and change over time, has so far been given much less attention – with the exception of sparse contributions from an evolutionary background (in a broader sense). In order to highlight and clarify the differences, three core questions which may be considered paradigmatic for the two approaches have been identified for each of them. The comparison of these questions has led to a discussion of what development as a systematic feature of firm organizations may mean.

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Notes

1 Foss (2000) presents a comprehensive taxonomy: Complete contract theories (principal-agent theories, see e.g. Hart and Holmström (1987b); nexus of contract view on the firm, Alchian and Demsetz (1972), Jensen and Meckling (1976) basically analyze the impact of information asymmetries between agents while assuming that all future contingencies can be contracted for. The focus is therefore on ex ante incentive alignment. Incomplete contract theories, in particular the asset specificity and property rights view (Klein et al., 1978; Williamson, 1975, 1985; Grossman and Hart, 1986a; Hart and Moore, 1990) on the other hand take into account unforeseen contingencies, which make it prohibitively costly or impossible to write complete contracts. This makes ex post governance necessary.

2 Some authors who focus on question (i) argue that there is no fundamental difference between market transactions and transactions within the firm (Alchian and Demsetz, 1972; Cheung, 1983). Other authors are concerned instead with the internal working of firms – question (iii) – and therefore stress the difference between arms-length market transactions and long(er) term contracts within a firm which establish an authority relation (Simon, 1951; Williamson, 1985; Kreps, 1990).

3 See e.g. the recent contributions from Aghion and Tirole (1997), Holmström and Milgrom (1991), and Holmström and Milgrom (1994).

4 An important exception is Langlois (1992).

5 This is impressively documented in Chandler's case studies in business history. As he shows, in their process of growth, firms undergo significant changes in their products, technologies, internal organizations, and staff, see Chandler (1990).

6 In biology, the latter corresponds to theories relating to the ontogeny of organisms. According to the Darwinian understanding, the evolution of the species (phylogeny) is driven by the processes of mutation and selective retention that operate on the level of a population of interbreeding organisms. Development, in contrast, refers to the physical unfolding of the individual organism (ontogeny) from its origin to its death, i.e. the progressive and non-repetitive changes that occur during the life history of all individuals of the same species.

7 The existence of such systematic patterns of change has long been conjectured, for example, in the literature focusing on the life cycle of firm organizations, see e.g. Quinn and Cameron (1983).

8 See Witt (1998a) for a more extended discussion.

9 This is also the paradigmatic assumption in organizational ecology (Aldrich, 1979; Hannan and Freeman, 1989; Carroll, 1984), but see the more recent refinements in Aldrich (1999).

10 Note that this interaction between evolution and development is highly path-dependent, raising doubts as to whether some specific contractual arrangements can indeed represent a unique, superior response to given organizational problems as is sometimes claimed in the static approach.

11 Incidentally, she interprets the nature of the firm as "to make use of productive resources for the purpose of supplying goods and services to the economy and put into effect within the firm" (Penrose, 1959, p. 15). This is a simple "locus of production" interpretation as a starting point for the analysis, which is not informed by Coase's static juxtaposition of firms and markets. Instead of being drawn into the ramifications of Coase's problem, Penrose has room for dynamic, developmental concerns

and, in particular, for the role played by knowledge and learning concerning the opportunities that a firm can generate with its resources.

12 For a collection of the fundamental contributions to the RBP, see Foss (1997).

13 An implication is that the static notion of an optimal firm size loses its meaning. There may still be economies of scale (or size), but these are no longer exclusively, technologically-induced returns to scale in production. Instead, they may follow from managerial effects in the organizational sphere, such as an improved division of labor within the firm's management team and an increasingly mechanized and standardized administrative process, where both effects are by-products of the firm's growth. It can be substituted by something similar to a notion like 'efficient growth,' and economies of scale have a natural extension in 'economies of growth' due to the endogenous creation of excess managerial capacity. The growth of the firm can be efficient at all sizes, whereas the size resulting from growth in the past does not have any efficiency implications.

14 In a similar vein, Richardson (1972) refers to "similar" activities that are expected to be pursued within a firm in contrast to "complementary" activities. Similar activities require the same capability, understood as knowledge about production process as well as experience in organizing it.

15 In general, the evaluation of the productive services available in firms is always a genuinely entrepreneurial task. The large differences in "entrepreneurial temperament and ambitions" do not only account for different evaluations of productive services, but can help to explain the different growth paths of firms. Some firms constantly expand by acquiring other firms, viz. choose the option of external growth. The rationale behind this is that internal difficulties of transition phases can be mitigated, at least temporarily, by external growth, as entrepreneurial 'empire-building' only needs "financial ability, bargaining skill, aggressive initiative, and a sense of strategy" (Penrose, 1959, p. 189). However, because time and managerial effort are needed to integrate the firm's newly acquired activities into the existing ones, rapid expansion through external growth may be accompanied by substantial inefficiency in the managerial coordination of the firm's activities.

16 Penrose, 1959, p. 31f., n. 1; Chandler, 1962, p. 11f.

17 See e.g. Mueller, 1972; Abernathy and Utterback, 1978; Nelson and Winter, 1978; Quinn and Cameron, 1983; Clark, 1985; Metcalfe and Gibbons, 1988; Mueller, 1996; Klepper, 1997; Klepper and Simons, 1997.

18 Cf. also Teece, 1980; Cohen and Levinthal, 1990; for an empirical analysis, see e.g. Stuart and Podolny, 1996.

19 Langlois and Robertson (1995) do not delve into the details of intra- and inter-firm learning processes, but their historical inquiries (ibid., chs. 4 and 5) show that they do try to capture the essential features of a rich historical account of firm and market development. See also Thomson (1993), who highlights the cooperative knowledge flows between firms and the role of inventive communities, lineages of firms and industrial districts advancing technical and organizational knowledge.

20 If firms grow continuously, will the economy eventually be dominated by eternally growing, aged mega-firms? If large firms have advantages over small firms in their access to capital, minimum efficient-scale operations, etc., why are there small firms at all? Penrose argues that, because large firms cannot seize all profitable opportunities that an economy offers at a certain time, there may be "interstices" for small firms. In growing markets, large firms often concentrate on certain fields of productive activities and thus leave opportunities for small firms, which may enable them to grow and become large firms themselves (although Penrose considers this a very unlikely event at all times). Industrial concentration, in turn, depends on the kind and number of interstices occupied by small firms. According to Penrose, existing interstices are likely to remain unfilled and to constitute a dynamic inefficiency in an economy if entry barriers and competitive conditions after entry deter small firms or discriminate against them.

21 Note that only after entrepreneurs *conceive* new opportunities for production and trade, and only when they are taking organizational measures to realize them, do transaction costs become important for the particular contractual arrangement that emerges. Even then, however, transaction costs are

not the ultimate determinant. In a world of bounded rationality and non-omniscient agents, the size of transaction costs depends on entrepreneurial skills and experience, and is likely to vary over time.

[22] See Witt (1998b) for a detailed discussion. On the one hand, such a capacity calls for social skills like being able to communicate, persuasiveness, and persistence, as well as fairness, credibility, and appreciativeness. Obviously, the agents assuming the role of an entrepreneur may differ widely in the extent to which they command these skills. On the other hand, the intrinsic features of business conceptions surely also play an important role in whether or not leadership can be successfully exerted on their basis. If a conception is too complex and sophisticated, if it lacks soundness and appeal – not the least in terms of career options, remuneration, qualification enhancement, and working conditions for the employees – or if it is obviously unsuited for the imagined business, it is difficult to make employees adopt it.

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