AN INTEGRATIVE THEORY OF FIRM GROWTH IMPLICATIONS FOR CORPORATE ORGANIZATION AND MANAGEMENT

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We are grateful to the Ashridge Strategic Management Centre for its financial support for this work and to Michael Goold and Marcus Alexander for their helpful comments on earlier drafts of this paper and in discussions on its subject matter.

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Abstract

Penrose (1959) provided us with a theory of why and how "enterprising firms" with "competent management" are able to grow but she did not seek to explain why similar firms can easily fall into decline, even after long periods of growth. Schumpeter (1934), on the other hand, explained why new growth opportunities are more likely to be exploited by new firms - leading ultimately to the decline of established large firms. In this paper, we integrate the insights of these two seminal contributors into a theory of firm evolution that simultaneously accounts for both growth and decline. The accumulation of resources that accompanies firm growth adds new possibilities for further growth but these possibilities support and stimulate new growth only to the extent they are enabled, perceived and motivated within the context of the firm's administrative organization. Administrative reorganization - or what Langlois (1995) has described as Schumpeterian integration - is needed by both established and new firms alike in order for them to assimilate old resources with the new and to broaden the exercise of entrepreneurial judgement within the firm. Firm growth, then, is the outcome of a symbiotic process of resource accumulation and administrative reorganization - a process that determines the success with which the firm's activities are expanded and influences the forces that constrain this expansion. Our argument accounts for the historical evolution of corporate organizational forms and suggests the roles and tasks of management in protecting a firm's vitality and in preventing its decline.

AN INTEGRATIVE THEORY OF FIRM GROWTH: IMPLICATIONS FOR CORPORATE ORGANIZATION AND MANAGEMENT

Why do some firms, including those that are already relatively large and complex, continue to grow? Why do other firms, facing similar conditions, decline? Thanks to the path breaking work of Edith Penrose (1959, 1995), we have a theoretical framework that addresses the first question. Following from her view of the firm as a "coherent administrative organization," Penrose opened up the black box of the firm and argued why we should not be surprised to see even the largest firms continue to grow indefinitely. Although the need for "using inputs from existing managerial resources to maintain the coherence of the organization" necessarily limits a firm's rate of growth, it "would not necessarily limit the ultimate size of a firm" (1995: xii).

However, while she took care to point out that firms may fail to grow for many reasons (1959: 7), her argument was explicitly aimed at explaining the growth of "successful firms" (1959: 32-33). This is why, perhaps, her theory does not address the second of our two motivating questions - viz., why even successful firms can easily fall into decline while others facing similar conditions do not. Penrose suggested, but did not develop the idea, that the key to sustainable growth lies in a firm's organizational capability. As she put it, in the newly written forward to her book,

> "It follows from the argument developed in The Theory of the Growth of the Firm that a firm's rate of growth is limited by the growth of knowledge within it, but a firm's size by the extent to which administrative effectiveness can continue to reach its expanding boundaries. . . . [I]n order to focus on the internal dynamics of the firm, I assumed constant returns to scale and scope, implying that any size of firm is as efficient as any other. In this respect I argued then, without developing the supporting evidence, that as firms grew larger they apparently did not necessarily become less efficient . . . . With increasing size both the managerial function and the basic administrative structure of firms

> seemed to undergo an administrative reorganization to enable them to deal with the increasing growth" (Penrose, 1995: xvi-xvii; emphasis added).

In other words, all the firms whose growth her theory was developed to explain "seemed to undergo" a reorganization in both their "managerial function" and their "basic administrative structure" to maintain and accommodate the direction and magnitude of their growth within a coherent administrative organization (1995: xvii).

We submit that this accommodation process is the same change process referred to as "Schumpeterian integration" (e.g., see Langlois, 1995), and that is used to describe the entrepreneurial process of "carrying out new combinations" within new firms. Administrative reorganization is necessary not only to enable an individual firm to grow over time but also to retain its size in any dynamic environment in which the forces of Schumpeterian integration also exist outside the focal firm.

In this paper, we integrate the insights of Penrose (1959), Schumpeter (1934), Langlois, (1995) and others to present a theory of firm growth as a symbiotic process of resource accumulation and administrative reorganization. One benefit of this theory is that it provides a common framework that can address the issues of both firm growth and decline. We begin by restating the essence of Penrose's theory, followed by an analysis of how the continuous accumulation of resources that accompanies firm growth induces the need for administrative reorganization, both to assimilate new resources with the old and also to facilitate the perception and exploitation of the wider set of productive possibilities that accrue to the growing firm. This symbiotic process of resource accumulation and administrative reorganization not only determines the success with which the firm's activities are expanded and the forces that constrain this expansion, it also provides an explanation of the historical evolution of corporate organizational forms and suggests a perspective on the roles and tasks

of firm management. The paper concludes with a brief discussion on some of these implications of the theory.

PENROSE'S THEORY OF FIRM GROWTH

Arguably the most significant breakthrough in Penrose's theory of the growth of the firm is her conceptualization of the nature of the firm itself – a collection of physical and human resources whose complementary productive services are made cohesive by, and thereby specific to, the firm's 'coherent administrative organization.' This unique collection of resources, particularly the firm's "existing human resources," provides "both an inducement to expand and a limit to the rate of expansion" for the firm (Penrose, 1995: xii). To understand the dynamics of Penrosean growth requires an understanding of how these resources interact with the firm's administrative organization to expand and contract its 'productive opportunity.' As Penrose put it, "a theory of the growth of firms is essentially an examination of the changing productive opportunity of firms..." (1959: 31-32). This productive opportunity, in Penrose's words, "comprises all of the productive possibilities that its 'entrepreneurs' see and can take advantage of" (1959: 31). Consider the model illustrated in Figure 1, as we explore the factors that determine a firm's productive opportunity in any period and thereby both facilitate and limit its growth.

- Figure 1 about here -

Productive Opportunity

Put simply, a firm grows or declines as its 'productive opportunity' expands or contracts (depicted in Figure 1 as relationship 'a'). The basic ingredients for the firm's productive opportunity are the resources whose services can be marshaled and coordinated for the benefit of the firm (i.e., relationship 'b'). These resources include those 'inherited' by the firm (i.e.,

relationship 'c'), as well as those that are available from the firm's external environment (i.e., relationship 'c''). Because of this access to external resources, no firm's productive opportunity is confined to any particular set of resources. At the same time, however, because of the firm-specific nature of the factors that shape its 'productive opportunity', no two firms enjoy the same set of opportunities.

A "bundle of possible services" accompanies each resource that a firm acquires or accumulates (Penrose, 1959:67). To the extent some of these services are not needed or cannot be used to support current operations, they become available for, and thereby, add to and shape the set of possibilities for future growth. However, the firm's productive opportunity will be expanded by these newly added possibilities for growth (relationship 'b') only to the extent that they are perceived and motivated within the context of the firm's administrative organization (relationship 'd'). That is, each firm's productive opportunity is restricted to only those possibilities for productive resource deployment that its entrepreneurs and managers can <u>see</u> and are <u>willing</u> and <u>able</u> to act on (Penrose, 1959: 32).

The two factors emphasized by Penrose that most affect a firm's productive opportunity are the quality of its inherited resources (i.e., relationship 'c') and the coherency of its administrative organization (i.e., relationship 'd'). While both factors shape the firm's productive opportunity through their influence on all three determinants of the firm's productive opportunity - that is, what the firm's entrepreneurs and managers can see as opportunities and which of these they are willing and able to act on - the first more directly determines those activities that are most likely to constitute possibilities, in any objective sense, and which are likely to be perceived as such. This is because the firm's inherited resources include not only its stock of capabilities or routines (Nelson & Winter, 1982) that constrain (and, thereby, effectively specify) what the firm is able to do, but they also

represent most of the human resources who must see the firm's possibilities as opportunities they are willing to exploit.

The perception of new opportunities, whether in a marketplace or within the bounds of a particular organization, depends on the quality of 'entrepreneurial judgement' (Penrose, 1959: 41) residing within that organization. "Entrepreneurial judgement" – defined as the ability to discover new ways of dealing with known problems or "new combinations" of given knowledge - is needed to perceive productive possibilities, particularly those that are rooted initially outside established routines. This concept of 'entrepreneurial judgement' used by Penrose is broadly consistent with the concepts of entrepreneurship, developed by Knight (1921) and Schumpeter (1934). It also easily captures Kirzner's (1973: 35) notion that it is one's "alertness to" information, and not the possession of superior information, that enables the entrepreneur to see previously unrecognized opportunities, or to evaluate known opportunities differently. Although greater knowledge and insight about the relevant aspects of the task in question may be useful, the ability or 'alertness' to link this information to some overall vision or imagination of what might be possible (Hamel & Prahalad, 1994) is paramount.

Penrose's notion of entrepreneurial judgement, however, goes beyond this cognitive dimension of alertness that Kirzner saw as "the entrepreneurial element in human decision-making." To Penrose, the quality of entrepreneurial judgement includes more than any "combination of imagination, 'good sense,' self-confidence and other personal qualities" (Penrose 1959: 41), that are "characteristics or temperament of the individual" (p. 40). Just as Schumpeter saw the need to accommodate one's alertness with the coordinative capabilities needed to break free of the ruts of established practice, Penrose saw the value of coordinative capabilities to facilitate and encourage the exploitation of productive possibilities that are

within the firm's reach. Whenever the possibilities available for consideration represent choices that lead to different or shifting equilibria - a basic condition of entrepreneurship for both Schumpeter and Kirzner (see Kirzner, 1973: 127) - the decision maker's alertness to the possibilities is not enough to suggest the choices that follow. Some degree of judgement is also needed to enable the entrepreneur to distinguish opportunities that appear feasible from those that do not. The greater the number of possibilities for productively deploying resources and the more these possibilities outnumber our capacity to exploit them, the more judgement is required to "process complex and incomplete information usefully in an intuitive way" (Langlois, 1995: 83).

The second factor emphasized by Penrose, the firm's administrative organization, plays this role of accommodating the entrepreneurial judgement of members in the firm (i.e., relationship 'd'). The coherency of the firm's administrative organization - that is, the degree to which the firm's resources are organized to produce services that are somehow complementary (i.e., mutually enhancing) - reflects the ways in which the firm's administrative structure, values, rules and incentives link these and other resources coherently in the minds of the firm's employees.

Administrative coherency is essential for the productive deployment of the firm's resource base. Penrose's views on the role of administrative organization in shaping the productive opportunities actually available to a firm are very consistent with those of Schumpeter and of North (1990) on the role of institutions in shaping the perceptions and actions of individuals within these institutions. Whereas Schumpeter emphasized the value of enterprise's "bursting influence", Penrose emphasized the usefulness of it's "shaping influence". North (1991: 97) defines "institutions," as "the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs,

traditions, and codes of conduct), and formal rules (constitutions, laws, property rights). . . . Together with the standard constraints of economics they define the choice set and therefore determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity." Hence, the "necessary cohesion" that Penrose emphasized (1995: xviii) stems largely from the institutional context that is created by the existence of the firm itself.

We will have more to say in the next section about the role that the firm's administrative organization plays in sustainable firm growth. For now, it is sufficient to note that just as the 'technical relatedness' of the firm's inherited resources defines a unique subset of possibilities that are or are likely to be seen as worth pursuing, the 'administrative coherency' of the firm's organization specifies another more-or-less cohesive set of productive possibilities. The intersection of these two sets constitutes the firm's productive opportunity.

The Environment

To the extent that the firm's productive opportunity involves resources that have alternative uses, these alternative uses exert a disciplinary effect on the firm to use these resources productively. Competition for its resources and the services they can provide pressures the firm to pursue only those opportunities that are at least as productive as those outside the firm – or face a migration of resources to those more productive external opportunities (i.e., relationship 'b"). Hence, this pressure of competition influences the nature of the firm's 'productive opportunity' set and thereby the direction of a firm's growth - that is, towards activities that enhance the productivity of scarce resources. While this is sufficient to set up Penrose's theory of the diversification of the firm (Penrose, 1995: xiii), the effect of the

firm's environment on the size of the productive opportunity or the firm's potential growth rate is more complex.

Penrose (1959) suggested that the effect that the firm's environment has on its size will be greatest when the firm is still small and more susceptible to market forces. Small firms are particularly likely to feel the sting from competing opportunities for resources restrict their access to resources (i.e., relationship 'c") and constrain not only the direction of their growth but also their ability to grow at all. But this effect should be attenuated, according to Penrose, as the firm grows larger and has accumulated a sufficient stock of its own resources to provide it with multiple avenues for growth. This accumulating stock of diverse resources that accompanies its growth enables the firm to cope more easily with external forces that compete for its resources, by enhancing its opportunities to expand in a variety of new directions. Because larger firms with access to more resources are generally free to expand in many directions, any resistance to growth they may encounter in one direction is unlikely to limit their ability to grow in others. Each increment of growth adds <u>many</u> more new possibilities for new directions and enables the firm to overcome external pressures, generally by avoiding those paths where competition is the fiercest. Thus, the growth of small firms is likely to be limited by the relatively small number of possibilities that stem from these firms' own limited resource bases. If, however, a small firm is somehow able to grow despite this constraint, it will soon amass a possibility set that contains a sufficient variety of possibilities so that there is always some productive opportunity to exploit - provided it has the appropriate administrative organization. Although this argument is consistent with that of Penrose, (see, also, Montgomery & Hariharan, 1991) it leaves unanswered, as did Penrose, the question of why so many successful firms stop growing and why some even begin a long spiral of decline.

The explanation, we suggest, lies in a shift in the relative importance of the two roles played by the firm's environment in impacting the firm's productive opportunity. As an important alternative source of resources (i.e., relationship 'c"), the environment offers a veritable cornucopia of possibilities for productively combining and recombining these external resources with the accumulating stock of 'inherited' resources. As the stock of 'inherited' resources grows in size and variety with the growth of the firm, the number of possibilities grow exponentially. But because the environment is also a source of competing productive opportunities for these and other possibilities (i.e., relationship 'b"), a declining proportion of these possibilities are likely to end up as productive opportunities as the firm grows larger. Because the firm's growth is accompanied by a concomitant growth in the firm's "administrative responsibilities" (Penrose, 1995: xvi), its growth must be accommodated by a process that successfully assimilates the old possibilities with the new. With further growth, the firm's accumulated stock of resources begins to tax the capacity of the firm's "existing managerial resources" to "maintain the coherency of the organization." Hence, the firm's set of possibilities will expand more certainly and at a faster rate, with the firm's growth, than will the firm's productive opportunity. The size of the disparity, between its possibilities and those opportunities it exploits, that the firm can withstand will depend upon the alternative demands placed upon its resources by the firm's environment. Unless the firm is somehow able to adjust its "coherent administrative organization" to accommodate its expanding possibilities, it cannot continue to grow, particularly in an environment with many opportunities. It may even face decline as other firms pursue its possibilities more productively and compete away the firm's resources and its productive opportunity.

We suggest, therefore, that as large firms continue to grow, the potential for sustainable growth lies less in the larger <u>number</u> of productive possibilities that past growth puts within

the firm's reach and more in the extent to which these possibilities continue to be complementary - i.e., jointly perceived, motivated and enabled in the context of the firm's administrative organization. Thus, the pressure of competition for a firm's resources is likely to be felt more (not less) as the firm becomes larger. Even though the large firm has open to it a large set of avenues that it might pursue, most will lie outside the firm's 'productive opportunity' set, given its current administrative organization. That is, despite their relatively greater potential, it is increasingly more difficult for larger firms to change focus and direction because so much of the stock of their productive opportunity is specific to the path previously taken (See also Arthur, 1989; Nelson, 1991; and Cohen & Levinthal, 1990). Hence, as a firm grows, a greater proportion of the possibilities within its reach will be more complementary under the context of alternative organizations that may exist or may be possible outside the firm. Administrative reorganization is necessary to keep the firm's productive opportunity in balance with its possibilities or the firm will experience a migration of these possibilities to economic actors who reside outside the firm (i.e., relationship 'b'').

This 'administrative reorganization', which Penrose deemed to be necessary for long-run growth, is neither automatic nor assured. As Penrose noted (in the passage quoted earlier), all the successful firms whose growth her theory was developed to explain "seemed to undergo" such reorganization in both their "managerial function" and their "basic administrative structure" (1995: xvii). We submit that this accommodation process is the same change process referred to as "Schumpeterian integration" (Langlois, 1995), that is used to describe the entrepreneurial process of "carrying out new combinations" within new firms. As we argue below, this administrative reorganization is necessary not only to enable an individual firm to grow over time but also to retain its size in any dynamic environment, particularly one in which the forces of market discipline are particularly strong.

SCHUMPETERIAN INTEGRATION

No single institution, whether a firm or a market, can provide a context that sufficiently enables the successful exploitation of more than only a tiny fraction of the productive possibilities that are always within reach. In other words, each institution favors a unique subset of economic activities over all other activities it might pursue under the influence of a different administrative organization. This institutional bias stems from the way the behavioral context of the firm's administrative organization affects both the objective and subjective determination of the firm's productive opportunity. For example, Eliasson (1990) attributes the fact that resources may not be deployed as needed to a lack of "receiver competence" that may exist on the part of those who could gain from deploying their resources in a certain way but do not realize it. This may happen, because they do not perceive the opportunity for gain or because they believe they might not be able to appropriate enough of the gain.[1] Consequently, many productive possibilities within the firm's reach are excluded from its productive opportunity set.

The forces that facilitate the perception of, the motivation to pursue, and the means to execute those resource deployments that collectively characterize a firm's productive opportunity can also impede the pursuit of many other alternative possibilities for deploying the same resources by making these alternatives more costly or less attractive. For example, the complementarities that make particular deployments collectively 'coherent' (see Teece, Rumelt, Dosi, & Winter, 1994; Langlois, 1995), and thereby more attractive in one use,

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[1] This lack of "receiver competence" implies the inability of individuals to accommodate the entrepreneur's judgement for various reasons: First, by definition, the entrepreneur is someone who sees things others cannot see. This has nothing to do with superior foresight. Rather, it stems from the coincidence of the unique resource set - which creates specific opportunities for deployment, and the necessary capability and imagination to see these particular opportunities when others with similar opportunities cannot. Second, in the absence of a consistent track record of discovering new projects, there is no way of estimating whether the entrepreneur is correct in his/her judgement. Third, and perhaps most importantly, the entrepreneur

inherently increase the opportunity cost of separating out the individual resource components for redeployment to most other uses. As a coherent administrative organization, a firm can only imperfectly adapt its institutional context and can never do so in ways that align its productive opportunity to more than only a fraction of all the possibilities within its reach. Hence, the very coherency of any institutional context must impede the pursuit of more possibilities than it enhances for deploying the same resources.

This institutional focus can be particularly troublesome for innovative alternative uses of resources that involve "new combinations." As Schumpeter (1934) argued, the "new combinations" that generally precede subsequent leaps in economic progress are seldom if ever as productive initially as alternative deployments of the same resources that are also available at the time. Indeed, even if a particular "new combination" is shown retrospectively to have triggered great progress (implying it to be among the best possible choices for resource deployment), it is seldom even among the most advantageous methods that were available at the time the combination was made (p. 83).

It follows then that some change in the organization of economic activity is generally required to accommodate the entrepreneurial judgement that resides within the firm. This change can come in the form of an "administrative reorganization" of an existing firm, as Penrose suggested had taken place in the successful growing firms that she studied, or as a new firm as Schumpeter insisted is often necessary (see Figure 2). In either case, "Schumpeterian integration," involves a substitution of the current organizational context (e.g., firm or market) by a new one that is created by some administrative reorganization.

- Figure 2 about here -

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cannot trade his/her services through the market, because there are considerable costs involved in persuading and communicating with those who have complementary abilities or resources (Silver, 1984).

By reorganizing certain resources within the context of a new institution (i.e., Schumpeterian integration), the entrepreneur makes certain resource deployments more coherent and/or more salient (by enhancing their motivation and perception) and, therefore, more likely to occur. Langlois (1995) argues that while Penrosean growth is essentially driven by the supply of resources and experiences that are within the firm's reach, Schumpeterian integration is driven more by "the entrepreneur's demand for the capabilities necessary to bring about a redesign of the chain of complementary activities. As a consequence, Schumpeterian innovation normally involves integration into dissimilar activities that the entrepreneur would have preferred to leave to others" (p. 90; emphasis added).

The internalization of economic activity that Schumpeterian integration brings about arises not from the fact that the new organization is better than alternative institutions. Rather, it is simply because of the lack of a supporting (i.e., enabling, motivating or preception stimulating) context in either the market or another firm that would divert resources away from theoretically "best methods" towards the new combinations that may be more promising, but only appear so as perceived by the entrepreneur. As a consequence, activities that need to and can complement the entrepreneur's competence are integrated within the boundaries of a new or existing firm. The firm provides, via its administrative organization, a coherent organizational context for coordinating these activities in ways that reinforces their complementarity (i.e., relationship 'd'). It does this largely by influencing the perceptions and behavior of its members in ways that are very different from those that may be induced, either by the nature of the resources themselves (i.e., relationships 'c' and 'c'') or by any other context that may be "within reach" (i.e., relationship(s) 'd'').

We are now ready to explore why some firms can grow continuously while others face decline. Although Penrose's theory explains why firms grow and the mechanisms through

which growth is accomplished, continued growth over time requires Schumpeterian integration to fundamentally change the firm's administrative organization. Schumpeterian integration is needed to create a context that is hospitable for carrying out some new combinations. Further, as suggested by relationship 'd" in Figure 2, the need for Schumpeterian integration becomes stronger with the number and variety of external organizational alternatives that are available to exploit the firm's productive possibilities. Hence, as economies advance and begin to exert significant market discipline, the need for (internal) Schumpeterian integration among growing firms only intensifies. Moreover, as we have shown above, the inability of a firm to undergo the needed administrative reorganization encourages the migration of the firm's entrepreneurial judgement outside the firm and, consequently, shifts the likely locus of the next round of Schumpeterian integration to occur outside the firm - by inducing the creation of new firms to accommodate the entrepreneurial judgement. The migration of other resources is likely to follow and to lead to stalled growth or even to decline.

The Symbiotic Process of Firm Growth

Because Penrosean growth and Schumpeterian integration are distinct processes, each affected by different drivers of growth, they tend to influence the direction of an individual firm's growth in different ways. While Penrosean growth is driven by what the firm can do - given its current institutional context, Schumpeterian integration is driven more by what might be possible in a different context. For example, Penrosean growth, on the one hand, seeks to extend the firm's existing organizational capabilities to exploit 'equilibrium' opportunities (i.e., those that enhance the productivity of resources employed within the extended administrative framework). This type of growth occurs generally through horizontal

expansion into fields that are already in some way related to the existing firm-specific stock of knowledge. Schumpeterian integration, on the other hand, focuses on 'disequilibrium' opportunities that demand a "redesign of [those] complementary activities" (Langlois, 1995: 90) that constitute the firm's organizational capability. Schumpeterian integration, then, tends to induce growth more often by means of vertical integration (i.e., internalization of various stages of a product's or service's value chain). Whereas Penrosean growth exploits complementarities that are inherent in either the resources themselves or in the administrative context that they are embedded in, Schumpeterian integration creates new complementarities that otherwise would not exist.

The interaction of these two forces can perhaps best be seen by tracing the emergence and growth of a hypothetical firm. In the first instance, the general inability of the current administrative framework to accommodate the entrepreneur's judgement to "carry out new combinations" leads to the creation or expansion of a firm via Schumpeterian integration. This creation or expansion implies immediate demand for improved organizational capability to encompass the newly integrated activities with the old. For example, by integrating vertically related activities, firms provide a new context for sharing knowledge among previously unrelated entities. This process directly contributes to the firm's growth by extending the complementarity of its activities. It also makes an indirect contribution to future growth by setting the stage for improved internal coordination and adaptation (i.e., the enhancement of organizational capability) to enhance the firm's exploitation of this extension. As a result, firms will be able to (indeed, must to some extent) take on new related resources or tasks in order to utilize this enhanced organizational capability efficiently (i.e., Penrosean growth).

Because each integration of activities leads in a similar fashion to more resources under the control of the firm and, consequently, an expanded set of productive opportunities within its reach, the firm creates a continuing cycle of inducements to initiate one form of growth or the other. First, it has to find more productive uses for its current resources (i.e., Penrosean growth), then restructure its administrative organization in order to coordinate these or other uses more efficiently (i.e., Schumpeterian integration), and finally bring in new resources to exploit these new coordinative capabilities, only to start the cycle again. External competition for resources (as indicated by high levels of market discipline – relationship 'd" in Figure 2) serves to reinforce these inducements and speed up the cycle. In a 'carrot and stick' fashion, the existence of many attractive alternatives for deploying resources encourages firms to <u>try</u> to grow faster, only to find it even more difficult to accommodate each new increment of growth to keep the market's forces (i.e., the relevant environment) at bay.

There are various pieces of historical evidence to illustrate this symbiotic process of firm growth. Consider, for instance, Langlois and Robertson's (1989) account of the acquisition of Fisher Body by General Motors in 1926, which made possible the necessary acquisition of related (but still non-complementary) knowledge that was needed by GM to exploit its vision of the closed-body vehicle. Integration is what made the activities associated with acquiring this knowledge complementary. Moreover, the integration also improved GM's internal production flow and thereby enabled workers to acquire skills about processes related to chassis assembly, which were applicable in neighboring activities. These skills, and the associated learning and adaptation of GM's production line workers, increased GM's overall productivity, which in turn created incentives to increase scale to accommodate these newly acquired skills. This technological trajectory (Dosi, 1988) that GM pursued contributed, for a

while, to the firm's coherent context for motivating and enhancing the salience of many new resource deployment opportunities that were then within the firm's reach. In turn, GM's expanded 'productive opportunity' exposed a need for, and stimulated improvements in, the firm's organizational capability. The firms' ability to acquire specific knowledge, therefore, enabled it on the one hand to exploit economies of scope by moving into related markets, and on the other hand to expand geographically to exploit economies of scale (Chandler, 1990).

More recently, Michael Best (1990) described the institutionalization of Schumpeterian integration (which he refers to as "Schumpeterian organizational innovation"), within Japanese firms. He argues that "the successful Japanese firm has combined Schumpeter and Penrose, and thereby altered the notion of entrepreneurship from 'big ideas by individuals' to a social process of learning within which individual contributions can come form the bottom up, as well as from specialist staff" (Best, 1990: 138).

SUMMARY AND IMPLICATIONS

The insights of Penrose and Schumpeter give us the foundation for an integrative theory of dynamic firm growth. While Penrose's theory, on the one hand, offers a compelling explanation of why and how successful firms are able to grow, it does not offer any systematic explanation of why and how the growth of successful firms can stall. Schumpeter, on the other hand, explained - at least in his earlier work (1934) - why innovative new growth opportunities are likely to be exploited by new firms leading, ultimately to a migration of resources away from existing firms. Thus, while his theory provides a powerful explanation for the decline of large established firms, it does not adequately explain why and how some of the largest firms in the world can continue to grow, often by continuing to proliferate innovative new products and services.

In this paper, we have integrated the core ideas of both these pioneering authors to suggest a symbiotic process of firm growth. Growth begets growth, as Penrose suggested, because the expanding productive possibilities that inherently accompany resource accumulation generally lead to an expanded productive opportunity for the growing firm. But for growth to be sustainable, the firm's productive opportunity must be kept in balance by periodic administrative reorganization to motivate and accommodate the entrepreneurial judgement required to exploit this expanding set of possibilities. Without such administrative reorganization to maintain coherency among a sufficient proportion of productive possibilities, the proportion of possibilities that remain dormant and unexploited by the firm will grow. In any vibrant economy (i.e., one with many organizational alternatives or the possibility of such alternatives), such a growing imbalance of unexploited possibilities will lead ultimately to a migration of those resources and their deployment to those existing and potential alternatives outside of the firm.

The story, at least for companies that are relatively large and complex, is of a continuous battle between the organizational capability of the firm and the discipline of the firm's external markets. The more developed and sophisticated the markets, the greater the pressure on the firm and the greater the likelihood of a migration of resources and opportunities away from it. The more a firm is able to enhance its organizational capability (through a coherent administrative framework) to develop and accommodate a diversity of entrepreneurial judgements from its members, the more easily the firm will be able to continue to grow, both horizontally and vertically in defiance of the market's discipline.

Diversification and Firm Performance

Several pieces of historical evidence exist that lend a degree of credibility to our story. The vast literature on the relationship between diversification and corporate performance provides

one example. As has been widely documented (see review in Markides, 1995), empirical evidence on this topic - much of it based on studies conducted in the United States - has remained highly equivocal and inconsistent. Despite Rumelt's (1974) finding that the way in which a firm's businesses are related affects performance more than the degree of its diversification, a vast majority of these studies have attempted to relate some measure of the extent of product-market diversification with different aspects of firm performance, with no attention paid to the issues of organizational capability (important exceptions include Grant, 1988; Hill & Pickering, 1986; Hill, Hitt, & Hoskisson, 1992; Markides, 1995).

The theory we have presented suggests that the nature of the diversification-performance relationship will be strongly mediated by organizational capability and the inconsistencies in past research findings may well be due to the omission of this contingency factor. Companies with superior ability to marshal the entrepreneurial abilities of their members without sacrificing administrative coherence can continue to perform well despite their larger size and greater degree of product-market diversity, when compared with companies that lack this capability.

Teece et al's (1994) finding of a high degree of coherence (i.e., measured in product market terms) across a broad range of corporations that vary markedly in the degree of their diversification (i.e., measured as the number of activities), lends support to the notion that coherence is important to firm growth. Moreover, the persistence of this finding across firms of varying diversity suggests that coherence stems less from product market or technical relatedness than it does from the firm's organizational or 'combinative' capabilities (see Kogut & Zander, 1992) - a product of what Kogut and Zander (1992) have described as 'organizing principles' and Conner (1991) has referred to as 'linking mechanisms'. The ongoing superior performance of at least a few highly visible and highly diversified firms

such as General Electric, 3M and Motorola may well be due to their greater capacity to maintain coherence across a broader range of products and technologies. There is some evidence, even if not highly systematic, about the superior organizational ability of these companies and of the attention their managers pay to continuously protect and enhance that ability (e.g., Tichy & Sherman, 1993; Collins & Porras, 1994).

Our framework also accounts for the inverted U-shape of the baseline relationship observed between diversification and performance in developed countries like the United States and the United Kingdom. Following directly from our earlier discussion on the role of the environment in firm growth, as a firm's stock of 'inherited' resources increases in size and diversity, its productive opportunity should grow (and with it, performance) - until such point is reached that it loses administrative coherency and with it, some of its productive opportunity. Increasing diversity beyond the firm's ability to maintain coherency, should have a negative impact on performance.

Our argument is also consistent with recent findings that this baseline relationship may <u>not</u> hold in developing economies such as South Korea, Indonesia and India (Khanna and Palepu, 1997). The relative scarcity of resources that generally prevails in developing nations may extend the particular challenge to growth faced by small firms to affect larger and more diverse firms as the munificence of their environment diminishes. Indeed, this 'small firm' effect may even be exacerbated, rather than attenuated by further growth. Absent an environment that is sufficiently endowed with resources and opportunities, firms may need to make up for a baseline level of coherency that is readily available in more advanced economies but not in developing ones. This is likely to have an adverse effect on performance until firms are large enough to benefit from their added investments in infrastructure and capabilities. Once they reach sufficient size, however, they are likely to

have opportunities that do not exist elsewhere to any but the largest of firms. Ceteris paribus (i.e., given a certain level of organizational capability), firms will be able to grow and diversify to a greater extent in economies characterized by relatively lower levels of market discipline than they can in economies where such discipline is much stronger.

The Evolution of Corporate Forms

At a broader historical level, the arguments we have presented here provide one explanation of the evolution of organizational forms in large corporations. The symbiotic process of growth we have described implies the periodic enhancement by the growing firm of its ability to facilitate the exercise of entrepreneurial judgement within its membership and the continuous preservation of its overall administrative coherency. The framework we have presented resonates with Thompson's (1967) dynamic open systems view of organization in which structure plays an instrumental role in accommodating the firm's coordination and control requirements. Complex organizations, according to Thompson, behave dynamically and adaptively by continually modifying and adjusting their structures as they seek "determinateness" and "certainty". Thompson defined structure as the "internal differentiation and patterning of relationships" and described it as a fundamental vehicle for organizations to create "numerous spheres of bounded rationality [and] facilitate the coordinated action of those interdependent elements" (p. 54). As they grow, their need for both differentiation and integration increases - an argument that has been made and empirically supported by Lawrence and Lorsch (1967).

This is, indeed, the explanation provided by Chandler (1962) for the evolution and subsequent diffusion of the multidivisional organization. The functional organization, or F-form as Williamson (1975) labeled it, was instrumental in focusing firms on the development of specialized functions, particularly when no alternatives existed externally. This form, like

any other, had an upper limit to what may be described as its "carrying capacity of complexity" - that is, the extent to which it could accommodate the exercise of entrepreneurial judgement by its members, given the size and diversity of its accumulated stock of resources. Essentially, only the general manager in an F-form firm had the multi-funtional perspective required to both perceive entrepreneurial opportunities and be able to act on such perceptions.

However, as an F-form firm grew, the multi-functional possibilities created by the firm and others like it, required a greater capacity for accommodating and exploiting the complexity they were generating. That is, they required an administrative organization that could continue to accommodate the growing diversity of people who could see what might be possible and would be willing and able to exploit their entrepreneurial judgement. Beyond a certain level of size and diversity - a level that was eventually exceeded by companies like General Motors and DuPont - companies operating under F-form structures found it increasingly more difficult to exploit the productive possibilities that were accumulating with their growing stocks of diverse resources. The innovation of the M-form by the managers of some of the largest companies in the early years of the twenty-first century was the outcome of their efforts to relax this constraint. As Chandler has explained, the M-form created a new level of general managers, below the corporate chief executive, to whom strategic - i.e., entrepreneurial - decisions could be delegated. What this decentralization accomplished was a significant broadening in the source of entrepreneurial judgement that could be accommodated within the company - an order of magnitude expansion in the organizations' carrying capacity of complexity. It is this expansion that ultimately allowed these pioneering companies to grow and diversify well beyond the limits imposed by the F-form.

Over the last seven decades, a vast majority of large companies around the world have made organizational changes similar to those documented by Chandler in his four famous cases (see Rumelt, 1974; Dyas & Thanheiser, 1976). This, indeed, is the general outcome that our story of firm growth would predict. What is at work here is the same continuing battle between firms and their managers, on the one hand, striving to preserve their ability to grow, and of market discipline, on the other hand, forcing them to expand their ability to accommodate a broader array of entrepreneurial judgement or else "hand on" their productive possibilities and their associated resources and face a slackening of growth or even decline.

Several contemporary observers of large companies have suggested that another round of fairly fundamental organizational change is currently occurring among the largest of these companies (e.g., Tushman & O'Reilly, 1997; Handy, 1990). In an article entitled "Beyond the M-form", Bartlett and Ghoshal (1993) have described what they believe is an emergent new organizational form characterized by "radical decentralization" and a focus on stimulating and supporting frontline entrepreneurship as its defining characteristics. In essence, the arguments of these authors can be interpreted as indicators of the next step in the evolution of corporate organizational forms: for the largest and most complex firms, the M-form may have reached the limits of its complexity carrying capacity and the search is now on for another round of organizational innovation for expanding a firm's ability to accommodate more "distributed" entrepreneurship, while still preserving administrative coherence.

While the evidence of such a change is still only anecdotal at best, the evolutionary process described by these authors is entirely consistent with the theoretical arguments we have presented in this paper. That is, the largest firms - for whom maintaining coherency in resource deployments is made more difficult by the breadth of deployment possibilities available - will be limited in their ability to grow further. This limit will be greater in

advanced economies, where the pressure to deploy resources to their current best use is greater. Unless these companies are able to discover new organizational forms that will enable them to preserve coherency at historic levels, their growth will stall or even reverse itself.

The Role of Management

The arguments we have presented here also suggest a theory-grounded way to conceptualize the role of firm management. The recognition that the performance of organizations depends to a large extent on the ability of those who administer their operations does not require much insight into the real world of the successes or failures of established enterprises. Both Penrose and Schumpeter placed special importance on the entrepreneurial role of management in their theories. Indeed, Penrose defined the "class of firms which are capable of growing" (1959:33) - that is, the "successful" firms whose growth her theory explains - as those "possessing or able to attract competent management" (p. 33). Both Penrose and Schumpeter also took care to distinguish this entrepreneurial role of management from the more routine functions of administration that occupies a large part of the management literature (e.g., see Penrose 1959: 31n - 32n). Explicit in both Schumpeter's and Penrose's theories of growth is their notion of enterprise, as it is practiced by entrepreneurs, which transcends the function of a "mere manager" (Schumpeter, 1934: 83), in that it is not restricted either to routine administrative tasks or to those few individuals who are in the positions of 'managers'.

Schumpeter saw entrepreneurship (or innovation) as significantly different from invention: "The inventor produces ideas, the entrepreneur 'gets things done'..." (1947: 152). The importance of this distinction between opportunity discovery and its exploitation lies in the fact that many inventions never lead to the realization of the potential value that their discovery may have created. While invention usually comprises the fruition of insight and

capabilities that are resident in only a few minds, innovation more often requires the combination of insights and capabilities of many individuals.

Getting things done, especially new innovative things, often requires a substitution of one institutional context for another - that is, the internalization of some economic activity into a specific organization, often a new firm. Carrying out new combinations typically entails some reorganization of economic activities when the exigencies of established practice favor alternative deployments of the resources needed for the combinations. A new 'administrative organization' (Penrose, 1959) is needed to meld the insights and capabilities of many into a workable whole, one that enhances the abilities of each individual to "cope with the resistance and difficulties which action always meets with outside of the ruts of established practice" (Schumpeter, 1947: 152). We have referred to this ability of accommodating the entrepreneurial judgement of many within a coherent administrative framework as organizational capability. Organizational capability facilitates the carrying out of new combinations by providing the means to cope with the resistance and difficulties typically imposed by established practice on attempts to exercise entrepreneurial judgement. In the views of Schumpeter and of Penrose, it is the development, protection and continuous enhancement of organizational capability that defines the primary responsibility of management, at least for large firms where this capability rather than the mere availability of accumulated resources becomes the primary determinant of the extent to which the firm can exploit its productive opportunities.

Thus, by creating and shaping an institutional context that facilitates the accumulation of new resources and their accommodation with existing resources towards new productive opportunities, management determines the locus of Schumpeterian integration (see Figure 2). Without the ability to design an internal context that can accommodate new resource

combinations, Schumpeterian integration will take place in new rather than existing firms, or not at all. Management's key role, then, is to continuously keep in balance the productive opportunities that are inherent in the firm's accumulating stock of resources and the structure, processes and context of the firm's organization so as to allow the exploitation of these opportunities through the collective entrepreneurial judgement of its organizational members (see Ghoshal and Bartlett, 1994). It is this accommodation, rather than the accumulating stock of resources, per se, that facilitates the use of those resources for an idiosyncratic set of activities - that is, what we describe as the firm's strategy.

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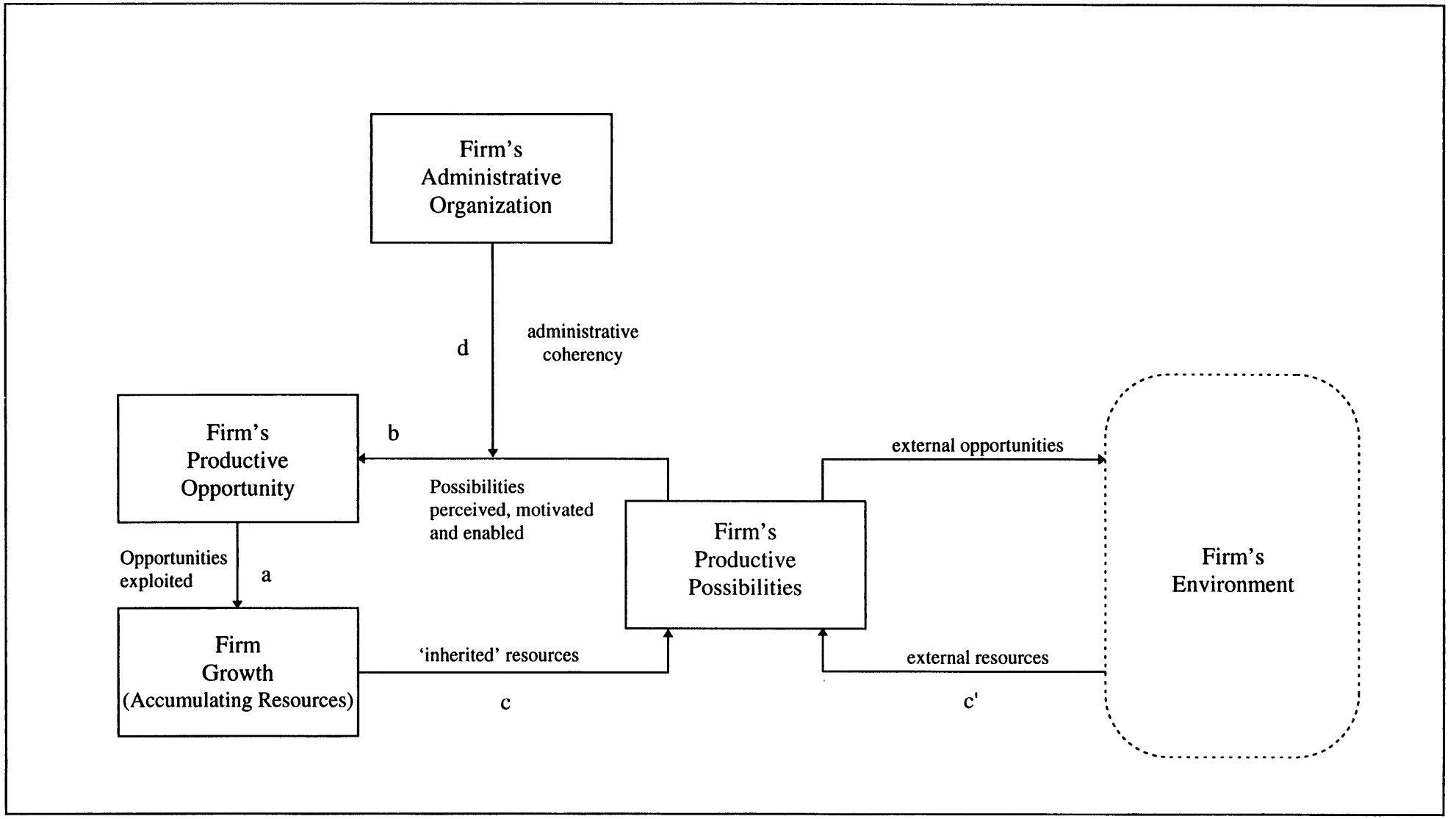

Figure 1 - Penrosean Growth

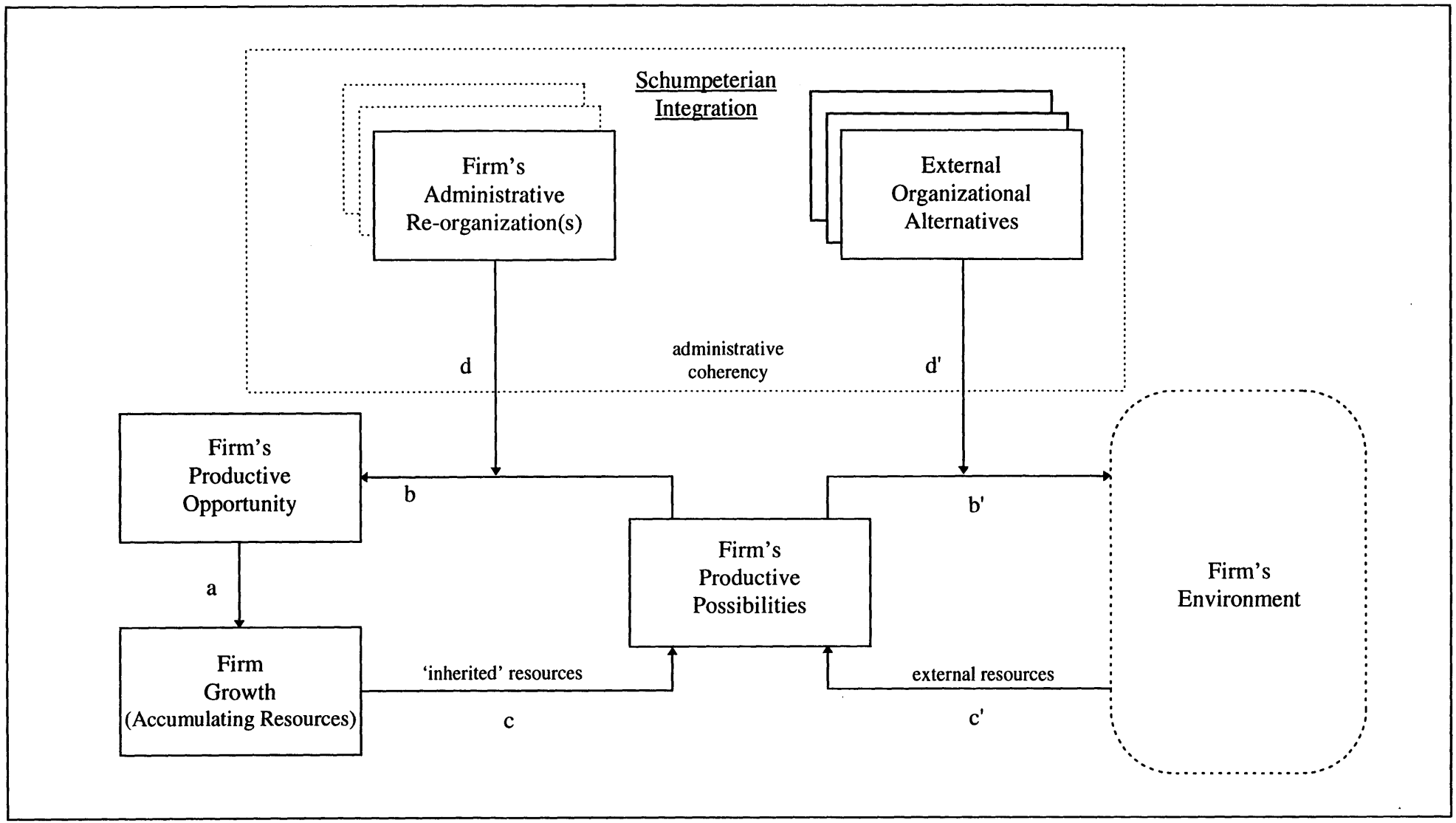

Figure 2 - The Symbiotic Process of Growth: The integration of Schumpeterian Integration with Penrosean Growth