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Growth in Chandler's The Visible Hand¹

Denise Fleck²

The paper scrutinizes Chandler's The Visible Hand addressing the question "What is Chandler's theory on how and why did the modern business enterprise (MBE) appear and grow?" Four processes have been identified - MBE formation, MBE development, industry formation, industry development. Their analysis within a process-oriented view has disclosed chains of necessary conditions in growth-related processes. The examination of the microcomputer industry growth in the light of Chandler's ideas provides evidence that his insights are potentially transhistorical.

1 INTRODUCTION

The management of complex issues cannot afford simplistic approaches. Growth is a case in point. Managing growth requires skills and capabilities to deal with deliberate and emergent transformations taking place inside and around the firm. Although essential for succeeding in growth efforts, understanding the main patterns of change is anything but simple. In fact, several scholars have devoted considerable effort to advance the knowledge on growth. One such scholar is Alfred Chandler.

It is widely recognized that Chandler's research provides a data-rich, broad perspective of the evolution of business in the last 150 years. Given the nature of his work – longitudinal historical studies on the economic development of business enterprises – Chandler reaches a diversified audience that includes those interested in economics, in business history, and in management. The impact of his ideas on these fields has been widely acknowledged.

Coriat and Weinstein (1995), for example, include Chandler in the select list of ten influential thinkers whose contribution to the development of economic theories of the firm has been major; a list that comprises well-known economists such as Adam Smith, Karl Marx, Joseph Schumpeter, Ronald Coase, and Herbert Simon. Another evidence of Chandler's

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influence, this time in the business history field, is provided in the numerous discussions taking place in academic journals in the field around the Chandlerian model (Abe, 1997), Chandler paradigm (Jones, 1997), post-Chandlerian lines of analysis (Galambos, 1997), Chandlerian analytical framework (John, 1997), to the point of having researchers categorized as “Chandlerians” or not, according to their affinity with Chandler’s ideas. As a matter of fact, it is not unusual for researchers in the business history field to self-proclaim as “Chandlerians”; as illustrated by Amatori’s paper (1997) paper entitled *Reflections on Global Business and Modern Italian Enterprise by a Stubborn “Chandlerian”*. In management, the widespread use of Chandler’s notions of functional (U-form) and multidivisional (M-form) organizational structures provides evidence of Chandler’s significant influence on strategic management research.

Though very influential, Chandler’s ideas have not gone unchallenged. For example, in an essay that considers the influence of Chandler’s *The Visible Hand* twenty years after its publication, John (1997) identifies three broad categories of business historians: “*champions* who elaborated on Chandler’s analysis and share his basic approach; *critics* who probed anomalies between Chandler’s framework and their own research; and *skeptics* who challenged Chandler’s basic assumptions and rejected his argument outright” (p. 177). The well-known debate concerning which comes first, strategy or structure (Hall and Saias, 1980), also illustrates the questioning of Chandler’s theses among academics.

Notwithstanding the ample evidence that Chandler’s work has been a source of inspiration and debate in a number of fields of study, the degree to which Chandler’s ideas have been scrutinized is not commensurate with the amplitude of their reach. In the business history field, John (1997) mentions that examination of Chandler’s *The Visible Hand* has often been superficial, stating: “It has been commonplace for historians to subject the most truly seminal works to detailed, line-by-line scrutiny. Measured by this criterion, *The Visible Hand* has still to take its place as one of the central works in American historiography” (p. 173).

The situation in the strategic management field is hardly different, yet perhaps more disquieting. Not only Chandler’s ideas have not been examined in detail, but they seem to have undergone a dangerous process of oversimplification, to the point of acquiring a ritualistic character. His historical studies have described numerous change processes occurring inside and around the firms, as these underwent growth. These studies have also advanced explanatory mechanisms of change at several levels of analysis. However, only a few isolated propositions – such as structure follows strategy – have been retained, tested or debated in strategic management studies.

Widely recognized as Chandler's most representative works, his three books report three major research projects whose results build on each other. *Strategy and Structure* (Chandler, 1962) examines the transformations in strategy and structure of four large American companies, suggesting among other things that as the firm grows, the internal structure of firms sooner or later also undergo changes of certain kinds. The second one, *The Visible Hand* (Chandler, 1977), examines the rise and growth of large American enterprises, thoroughly examining how the modern multiunit business enterprise ended up replacing the traditional enterprise. Finally, *Scale and Scope* (Chandler, 1990) performs a comparative historical analysis of the rise and growth of the modern industrial enterprise in three countries, the United States, Great Britain, and Germany, suggesting the occurrence of different types of capitalism in each country.

From a longitudinal perspective, Chandler's works have been content cumulative, and mostly scope expanding. In *Strategy and Structure*, Chandler has studied organizational innovation by performing "an experiment in comparative history" (Chandler, 1962, p. 1). He examined organizational changes in four American companies as they grew, suggesting the existence of patterns of change, including the celebrated connection between strategy and structure. In *The Visible Hand*, Chandler investigated the rise of the modern business enterprise in the United States advancing the view that the new class of managers, metaphorically called "the visible hand" in opposition to Adam Smith's "invisible hand", lay at the heart of such transformation. In *Scale and Scope*, the focus of the study is both enlarged and narrowed. It is enlarged geographically by examining the rise of the modern industrial enterprise in the three countries – United States, Great Britain, Germany – that "accounted for just over two-thirds of the world's industrial output in 1870" (Chandler, 1990, p. 3); it is narrowed by studying only the modern industrial enterprise - "a subspecies of the modern business enterprise" (Chandler, 1990, p. 14). Therefore, in terms of cumulative content, all the works have addressed organizational innovation but also the theory advanced in *The Visible Hand* is reinforced in *Scale and Scope*. As for the expanding scope of analysis, while *Strategy and Structure* performs a detailed investigation on four firms, *The Visible Hand* examines the evolution of a large number of industries in the United States, while *Scale and Scope* analyzes the evolution of the 200 largest companies in three countries, although it concentrates on a subset of the modern business enterprise.

Understanding that Chandler's works have provided a comprehensive account of the evolution of business, and in particular, of the growth of the firm, this essay aims to uncover, within a process-oriented perspective (Mohr, 1982), the growth-related theory in Chandler's research. Although his three books – *Strategy and Structure*, *The Visible Hand*, *Scale and Scope* – each relate to the growth of the firm issue, this essay focuses on *The Visible Hand*.

For the purposes of this study, *Strategy and Structure* is both content and scope limited, and *Scale and Scope* has had to trade some content richness for a larger geographical coverage. On the other hand, *The Visible Hand* provides rich descriptions and explanations of the growth process and transformation of the American economy, and what is more significant, it advances the bulk of Chandler's theory on growth.

Two investigations have been undertaken: the literature in strategic management was reviewed to identify the retention, disputing and testing of Chandler's ideas in *The Visible Hand*; and the book itself was scrutinized to uncover its theoretical content on the growth of the firm process. The lenses used to examine Chandler's work are oriented to the strategic management of the growth of the firm, to explore Chandler's theoretical contribution to understanding the growth process, its management and dynamics. As a result, the outcome of this approach bears little resemblance to the way Chandler has structured his writings – as historical accounts of economic transformations. Instead, this essay has organized Chandler's ideas in terms of processes occurring inside and around the firm. Chandler's ideas have been mapped into four main classes of processes: formation of the modern business enterprise, development of modern business enterprises, formation of industries, and development of industries.

The review of literature that cited Chandler's theory revealed retention of fragments of the theory, but no evidence was found that ideas have been tested. Moreover, no single work was found to view *The Visible Hand's* ideas as an integrated perspective of the growth of the firm. Instead, the literature has captured, discussed and criticized only fragments of Chandler's ideas.

This essay seeks to fill this gap. By scrutinizing and organizing Chandler's ideas on the growth-related processes he has identified, the essay suggests the main contributions of Chandler's towards a theory on the growth of the firm. His account of the rise and continuing growth of managerial business enterprises was found to provide comprehensive rather than simplistic descriptions and explanations. Chandler's account not only suggests a number of contributing factors occurring inside and around the firm, but also identifies mechanisms pertaining to the co-evolution of firms and industries.

However, his account of the continued dominance of large firms was significantly less comprehensive. Also, in view of *The Visible Hand's* well-defined scope and purposes, Chandler does not discuss firm contraction and its eventual decay. The analysis presented in this essay distinguishes chains of necessary conditions in Chandler's account of growth-related

processes to identify instances of misinterpretation and undue extrapolation of Chandler's work in the literature.

Four sections constitute the body of this essay. In the first, the research method is described; next, the results of the analysis of the reviewed literature on strategic management are advanced; then, the results of the thorough examination of *The Visible Hand* are presented; and finally, the results of both analyses are discussed. The concluding section emphasizes the contributions of a process-oriented perspective towards escaping from simplistic analyses of the growth of the firm, and towards the development of dynamic theories of growth.

2 RESEARCH METHOD

Two investigations have been carried out. The first one consisted of researching representative literature in the strategic management field in order to depict the retention, disputing, and testing of Chandler's ideas in *The Visible Hand*. The other one comprised a close examination of *The Visible Hand*, so as to bring forth the theory on growth inside *The Visible Hand*. Given the distinct nature of these investigations, different research methods were employed for each investigation. Each method is described below.

2.1 Researching the Strategic Management Literature: Method Description

To identify the impact of *The Visible Hand*'s ideas within the strategic management field, eleven journals were selected to undergo scrutiny. Macmillan's survey conducted among business scholars (Macmillan, 1991), concerning a Forum for Strategic Management Scholarship, provided the reference list of representative journals in the field. Then, the Social Sciences Citation Index (SSCI) was examined in order to identify citations of *The Visible Hand* appearing in the previously selected journals over the period 1977-1995. The breakdown of the 109 articles identified in SSCI is shown in table 1.

Among the articles read, there were eight book reviews two on *The Visible Hand* (Brooks, 1978; George, 1979) and one on *Scale and Scope* (Leblebici, 1991). The other five book reviews (Nielsen, 1980; Perrow, 1992; Pitts, 1980; Sockell, 1988; Sproull, 1990) focused on books by different authors mentioning Chandler's ideas. The examination of these books revealed that in only one of them (Best, 1990) a number of notions Chandler had advanced in *The Visible Hand* had considerably been referred to, some of which had been disputed. As a result, this book was included in the set of representative literature on *The Visible Hand* to be analyzed.

Table 1 - SSCI references on The Visible Hand

Journal title	1976 - 80	1981 - 85	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	TOTAL
AMJ - Academy of Management Journal		3				1				1	1		6
AMR - Academy of Management Review	2	4	1		3	1	3	1			1		16
ASQ - Administrative Science Quarterly	1	6	2	1	1		4	2	2	1	2	1	23
CMR - California Management Review		6		2		1	1						10
HBR - Harvard Business Review	2	3			1								6
JM - Journal of Management		1		1				1	1	1	1		6
JMS - Journal of Management Studies		2	2	1		2			2	2	1	2	14
MS - Management Science			1	1		1					1		4
RJE - Rand Journal of Economics													0
SMJ - Strategic Management Journal	1	4	2		4		2	3	3	1	1	1	22
SMR - Sloan Management Review		1						1					2
Total Visible Hand	6	32	9	6	9	6	10	7	8	7	8	5	109

2.2 Examining *The Visible Hand*: Method Description

Thorough examination of Chandler's ideas entailed a line-by-line scrutiny of the book. The analytical procedures employed are described below:

- a) **Data Collection** - comprised the reading of chapters in the original sequence of their arrangement in the book, identifying portions of text to undergo detailed analysis. The selection procedure sought to identify statements that contained propositions, definitions, descriptions of processes, explanations, in sum, statements that potentially are theory builders. Factual historical descriptions were ruled out unless some theory-related element could be identified;
- b) **Data Preparation and Data Analysis** - consisted of transcribing and analyzing the selected texts using a two-columns document. The selected text was placed in the left column of the document and given a reference number. Immediately after its transcription, the text was content analyzed so as to identify definitions, process descriptions, explanations, prescriptions, and predictions. Based on the original text, statements were phrased in a generalization-oriented style and placed in the right column of the document. These statements were given an alphanumeric identification indicating they had been derived directly from the author's work. In addition, theoretical ideas and conceptual interconnections inspired by the text were also recorded under a special code indicating they constituted the analyst's inferences. Finally, evidence for elements of a process theory (Mohr, 1982) was sought for: phases, cycles, states, and the corresponding necessary conditions for phase-, cycle- and state-change to occur. The search for necessary conditions sought to identify expressions like need(ed) to, require(d), necessary, necessitate, essential to, have(had) to, requisite, as well as the negative expression associated with a necessary condition: "in the absence of X, Y does not occur". In addition, elements of a variance theory (Mohr, 1982) were also identified, i.e., relationships where a precursor constitutes a necessary and sufficient condition for a certain outcome;
- c) **Synthesizing** - After the anatomization of the text described above, the process of putting together the ideas comprised identification of interrelated concepts linked by necessary conditions or necessary and sufficient ones. The ideas were then represented in the form of text, and diagrams that have combined, whenever possible, elements of process and variance theories.

3 THE VISIBLE HAND IN THE STRATEGIC MANAGEMENT LITERATURE

Retention of Chandler's ideas throughout the literature has taken two forms. Either the book has been a *source of historical data* or the retained ideas' *contribution to theoretical development* has been acknowledged. As shown in table 2, nearly one fourth of the reviewed articles referred to Chandler's historical descriptions.

Given the broad scope and the multiple levels of analysis in *The Visible Hand*, it is not surprising that its ideas have been referred in works addressing a large variety of theoretical perspectives, such as, agency theory, organization theory, population ecology, resource-based view, technological change, transactions cost theory. Other perspectives included various types of growth – business alliances, diversification, joint-ventures, related acquisitions, vertical integration – and a number of issues that address some of the core ideas in the book concerning the visible hand concept. Nearly one fifth of the articles overtly focused on the visible hand concept, while almost another fifth indirectly addressed it by emphasizing cooperation efficiency and productivity, managerial choice, middle managers, organizational control, organizational innovation, rationality. *The Visible Hand* was also associated with perspectives as varied as business ethics, managerial buy-outs, organizational decline, planning. Surprisingly, the book was cited in association with organizational structure and strategy, the core issue in Chandler's *Strategy and Structure* (1962), but significantly smaller in *The Visible Hand*.

The literature retained but fragments of the complex web of statements Chandler built to describe and explain the rise and growth of the firm. In ten papers (identified by an * in table 2), Chandler's ideas in *The Visible Hand* were criticized, shown their limitations, misinterpreted or wrongly extrapolated. These ten articles together with Best's Book (1990) which disputes some of Chandler's ideas are commented in the discussion section of the essay.

Table 2 – Retention of Chandler's ideas in the literature

Use of Chandler's Ideas	Papers
1. History related issues	
Historical data	Barley & Kunda (1992) Bettis (1983) Bluedorn et al. (1994) Brooks (1978) Brown & Schneck (1979) Carney & Gedajlovic (1991) Cespedes (1990) Conner (1991) Drucker (1988) Fombrun (1986)

	Freeman & Boeker (1984) Harrigan (1984) Harrigan (1985) Hennart (1994) Huber (1990) Kerfoot & Knights (1993) McCraw (1984) Mizruchi & Stearns (1994) Mosakowski (1991) Mowery & Rosenberg (1985) Porter & Millar (1985) Roy (1981) Schoemaker (1993) Stone & Luchetti (1985) Warner (1987) Wren (1987)
Historiography	Goodman & Kruger (1988)
2. Theoretical perspectives	
Agency theory	Jones & Butler (1992) Oviatt (1988)
Business alliances	Gerlach (1987)
Business ethics	Donaldson & Dunfee (1994)
Cooperation	Jorde & Teece (1989)* Nielsen (1988)*
Diversification	Mahoney (1992)
Efficiency & productivity	Morrison & Roth (1993)
Information technology	Child (1987) Porter & Millar (1985)
Joint-ventures	Kent (1991)
Management buy-outs	Wright (1986)*
Management of meaning	Czarniawska (1986)
Managerial choice	Cameron (1986) Delacroix & Swaminathan (1991) Geeraerts (1984) Knights & Morgan (1995)
Middle managers	Van Cauwenbergh & Cool (1982)
Nonprofit institutions strategy	Nielsen (1982)
Organization theory	Astley & Van de Ven (1983)
Organizational control	Gaertner, Gaertner & Akinnusi (1984)
Organizational decline	D'Aveni (1989)
Organizational effectiveness	Miller & O'Leary (1989)
Organizational innovation	Hayes (1979) Lant & Mezas (1990) Lieberman & Montgomery (1988) Mezas & Glynn (1993)
Organizational structure and strategy	Gaertner & Ramnarayan (1983) Miller & Leary (1989) Miner (1984) Ollinger (1994) Palmer, Jennings & Zhou (1993) Rowlinson (1995)* Sanchez (1995)
Planning	Leontiades (1982)* Nielsen (1981)
Population ecology	Aldrich, McKelvey & Ulrich (1984)* Astley (1985) McKelvey & Aldrich (1983)*
Rationality	Brunsson (1982) Kent (1991) Useem (1982)
Related acquisitions	Leontiades (1982)
Resource-based view	Mahoney & Pandian (1992)

Technological change	Anderson & Tushman (1990) Burkhardt & Brass (1990) Lazerson (1995) Leatt & Schneck (1984) Pavitt, Robson & Townsend (1989) Schroeder (1990) Tushman & Anderson (1986) Tushman & Nelson (1990) Williams (1983)
Transactions cost theory	Donaldson (1990) Dow (1988) Hennart (1988) Hesterly, Liebeskind & Zenger (1990) Nayyar (1993) Oviatt (1988) Robins (1987)*
Vertical integration	D'Aveni & Ravenscraft (1994) Gay & Salaman (1992) Harrigan (1984) Harrigan (1985) Harrigan (1986) Horwitch & Thietart (1987) Swanson (1994)
Visible hand concept	Balakrishnan & Wernerfelt (1986) Bettis & Prahalad (1983) Buchan (1981) Butler & Carney (1983)* Cameron (1986) Donaldson (1990) Gerlach (1987) Nielsen (1983) Nielsen, Peters & Hisrich (1985) Oviatt (1988) Pennings & Harianto (1992) Pitts (1980) Podolny (1994) Swanson (1994) Whitley (1989) Wholey & Brittain (1986) Williamson (1991)
Obs.:	
a) Book reviews	
<i>The Visible Hand</i> review	Brooks (1978) George (1979)
Other books review	Leblebici (1991) Nielsen (1980) Perrow (1992) Pitts (1980) Sockell (1988)* Sproull (1990)
b) Reference for further reading	Goldhar & Jelinek (1983)

It is our contention that most criticisms of Chandler's ideas in *The Visible Hand* are inappropriate. This may be a result of misunderstanding or disregard for the book's scope and purposes. Either way, a process-oriented analysis of *The Visible Hand* is presented next, aiming at clarifying the main growth-related ideas in it. Then, in the following section, both analyses are discussed to assess the criticisms made and *The Visible Hand's* theoretical content.

4 CHANDLER'S IDEAS IN *THE VISIBLE HAND*

Being an economics historian, Chandler is concerned with describing, understanding and explaining historical economic processes. As he states in the introduction to *The Visible Hand*, "the book concentrates specifically on the rise of modern business enterprise and its managers. It is a history of a business institution and a business class" (p. 1). Moreover, the study aims at explaining "the initial appearance of modern business enterprise: why it began, when it did, where it did, and in the way it did", as well as its continuing growth, i.e., "where, how, and why an enterprise once started continued to grow and to maintain its position of dominance" (p. 11).

Embedded in his descriptions and explanations of the rise and continuing growth of the modern business enterprise (MBE) are descriptions and explanations of the formation of industries and of the industry concentration process. Four main classes of processes can therefore be identified: Formation of MBEs; Development of MBEs; Formation of industries; Development of industries. This section is, therefore, organized along these four classes of processes. Figure 1 provides an overview of the processes identified.

Figure 1 – Overview of growth-related processes and mechanisms

	MBEs (Managerial Business Enterprises)	INDUSTRIES
FORMATION	<p><i>Appearance</i> process of emergence of the MBE</p> <p><i>Replacement</i> process of substitution of the traditional firm by the MBE</p> <p><i>Form evolution</i> evolution of MBEs from family- and financier-controlled into management-controlled</p>	<p><i>Industry growth capability</i> process of formation of standards in emergent industries</p>
DEVELOPMENT	<p><i>Continued existence</i> process that provides the seeds of MBEs continued existence</p> <p><i>Continuing growth</i> mechanism whereby MBEs keep expanding in volume and scope</p> <p><i>Self-perpetuation</i> MBE's self-perpetuating capability</p>	<p><i>Industry concentration</i> process of formation of oligopolies</p>

4.1 MBE Formation Processes

Chandler distinguishes three main arrangements of the economic activity: *single-unit firms*, *multiunit firms* and *federations of firms*. The traditional American business firm was a single-unit business enterprise. This kind of firm has the following characteristics (p. 3):

- a) an individual or a small number of owners operated the establishment out of a single office;
- b) it normally handled only a single economic function, dealt in a single product, and operated in one geographical area;
- c) its activities were coordinated and monitored by market and price mechanisms.

A *multiunit firm*, on the other hand, contains many distinct operating units - such as production, distribution - each of which has the following characteristics (p. 1, 3):

- a) it has its own administrative office;
- b) it is administered by a full-time salaried manager;
- c) it has its own set of books and accounts which can be audited separately from those of the large enterprise;
- d) it could theoretically operate as an independent business enterprise.

Finally, *federations* consist of a group of autonomous units whose owners and managers maintain an agreement on common buying, pricing, production, and marketing policies. In the absence of managers, these policies are determined and enforced by legislative and judicial rather than administrative means (p. 7).

Maintaining that in the traditional capitalist firm "owners managed and managers owned" (p. 9), Chandler reasons that "the traditional capitalist firm can, therefore, be properly termed a *personal enterprise*" (p. 9). In contrast, the MBE "required more managers than a family or its associates could provide" (p. 9). Moreover, depending on who held the majority of stock, three types of MBE could be distinguished: *entrepreneurial (family-controlled) enterprise*, *financier-controlled enterprise*, and *managerial enterprise*.

Entrepreneurial MBEs were those where "the entrepreneur and his close associates (and their families) who built the enterprise continued to hold the majority of stock" (p. 9); *financier-controlled* MBEs, those where "the creation and growth of an enterprise required

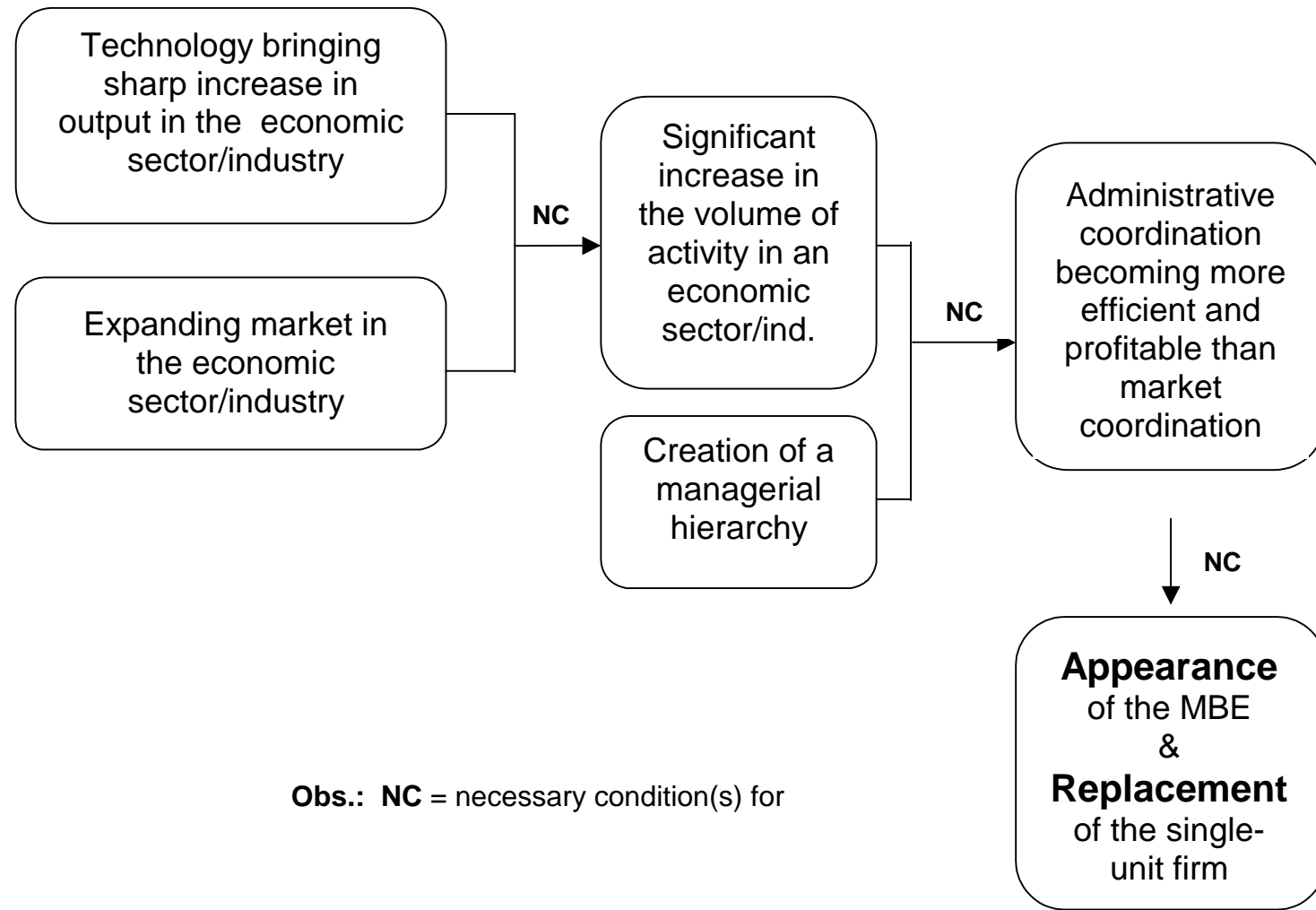
large sums of outside capital" (p. 9); and *managerial MBEs* those where "neither banks nor families were in control" (p. 9-10).

Three processes associated with the formation of MBEs can be identified in Chandler's work: the *appearance of the multiunit firm process*, the *replacement process* of single-unit by multiunit firms and the *form evolution process* of multiunit firms from entrepreneurial and financier-controlled to managerial MBEs. In view of the close interconnection between the appearance and replacement processes, their discussion is integrated in a single topic.

4.2 Appearance and Replacement Processes

In a number of statements, Chandler advances the favorable conditions for the appearance of the multiunit enterprise and for the replacement of the single-unit by the multiunit firm. His assertions can be synthesized by means of a chain of statements identifying necessary conditions for changes to occur (refer to figure 2).

Figure 2 – Chain of necessary conditions in the appearance and replacement processes



Chandler's assertions are presented next:

a) The MBE "first appeared, grew, and continued to flourish in those sectors and industries characterized by new and advancing technology and by expanding markets. Conversely, in those sectors and industries where technology did not bring a sharp increase in output and where markets remained small and specialized, administrative coordination was rarely more profitable than market coordination. In those areas modern business was late in appearing and slow in spreading" (p. 8).

While the relationship between enlarged markets and volume of economic activity is quite straightforward, further understanding is needed regarding the reasons why traditional technology was a major constraint to the development of multiunit business enterprises both in commerce and production. As Chandler explains, "the traditional transportation technologies offered little opportunity for improvement. By 1840 the speed of a stagecoach, canal boat, or sailing ship, or the volume carried by these facilities, could not be substantially increased by improving their design. ... New technology had not yet lifted the old-age constraints on the speed a given amount of goods might be moved over a given distance. Such constraints, in turn, put a ceiling on the volume of activity a commercial enterprise was called upon to handle" (p. 35-36). In what concerns the traditional enterprise in commerce (distribution), Chandler notices that despite "a steadily increasing population ... spreading across the continent" (p. 49), and the concomitant increase in the volume of trade through the economy, the MBE did not appear "as long as the movement of goods through the economy continued to be powered by the traditional sources of energy -- wind and animal power" (p. 49). What in fact happened as the population grew and expanded geographically was the growth in the number of units handling the trade, and their increasing specialization. As a result, although the number of transactions between units multiplied, "the amount of goods and the number of transactions handled by an individual unit within a given time period remained much the same" (p. 49).

Although scarcity of labor in the United States was a more important constraint on the size of the production firm than it was in the commercial one, Chandler maintains that "the technological limitations on output appear to have been even more of a constraint to the growth of the enterprise than the scarcity of labor" (p. 50). Defining *factory* as a "large industrial establishment, with its battery of machines, foundries, or furnaces that relied on a central source of power and heat and was operated by a large number of workers who had no other source of income than their wages" (p. 51), Chandler reports that in only two types of manufacturing firms had factories appeared in substantial numbers: textile and firearms. "Textile manufacturers overcame technological constraints by harnessing the power of large

rivers" (p. 51), while "firearms manufacturers were willing to pay the high costs of production and distribution because the army guaranteed their market in order to have a domestic supply of arms" (p. 51).

In sum, as long as technological development could not provide a significantly higher speed of movement of goods nor a central source of energy to operate factories the traditional enterprises in commerce and production did not become multiunit firms. Therefore, both expanding markets and technological development constituted necessary conditions for a sharp increase in the volume of the economic activity.

b) MBEs "appeared for the first time in history when the volume of economic activities reached a level that made administrative coordination more efficient and more profitable than market coordination" (p. 8).

This statement advances the idea that the attainment of a certain volume level of economic activities constituted a necessary condition for administrative coordination to become more efficient than market coordination.

c) The advantages of "internalizing the activities of many business units within a single enterprise could not be realized until a managerial hierarchy had been created" (p. 7).

Chandler claims, in fact, that in the absence of the formation of a managerial hierarchy, internalization of activities could not take place, i.e., the formation of a managerial hierarchy was a necessary condition for the firm to profitably perform administrative coordination. In addition, without such managers, a multiunit firm "remains little more than a federation of autonomous offices (p. 7), and as it is shown in iv below, federations fell short of reaping all the benefits that administrative coordination could provide.

d) The MBE "replaced the small traditional enterprise when administrative coordination permitted greater productivity, lower costs, and higher profits than coordination by market mechanisms" (p. 6).

The *explanatory mechanism* for the superiority of administrative coordination over market coordination comprehends a number of characteristics the MBE has developed. The MBE came into being by internalizing activities - for example, buying, distributing - and the transactions between them. The internalization of such activities allowed for the routinizing of transactions between units, the linking of production units with buying and distributing units,

the coordination of the flow of goods between units, and the scheduling of flows. The advantages these features provided were (p. 6-7):

- Routinizing transactions: the *costs of transactions* between units were lowered;
- Linking production, buying and distributing units: *costs for information* on markets and sources of supply were reduced;
- Flow of goods between units: more effective *scheduling of flows*;
- Scheduling flows: more intensive use of production and distribution, i.e., greater *productivity*;

In addition, administrative coordination provided “a more certain cash flow and more rapid payment for services rendered” (p. 7). Finally, the savings resulting from administrative coordination, the argument goes, were much greater than those resulting from the market coordination.

Market coordination (the invisible hand) enabled a reduction in transactions and information costs, by means of the *specialization* mechanism. As a matter of fact, in the traditional enterprises in commerce, “transactions became increasingly routinized and systematized. Information on a single trade in a few ports was easier to come by than for many trades in many ports. Specialization in this way reduced transactions and information costs” (p. 38). However, it was *administrative coordination (the visible hand)* that not only enlarged the scope of these reductions but also enabled gains due to greater productivity. Mass marketers, for example, “replaced the merchants as distributors of goods ... because they internalized a high volume of market transactions within a single large modern enterprise. They reduced the unit costs of distributing goods by making it possible for a single set of facilities to handle a much greater number of transactions within a specific period than the same number of workers could if they had been scattered in many separate small facilities” (p. 236).

Market coordination produced small-sized firms, while administrative coordination brought about large enterprises. However, in MBEs “*economies* resulted more from *speed* than from *size*” (p. 244). As Chandler explains, “it was not the size of a manufacturing establishment in terms of number of workers and the amount and value of productive equipment but the velocity of throughput and the resulting increase in volume that permitted economies that lowered costs and increased output per workers and per machine” (p. 244). According to Chandler, *increased productivity* and *decreased costs* were key factors in the superiority of administrative coordination over market coordination, a necessary condition for the appearance of MBEs and for the replacement of single-unit firms by MBEs.

As for federations, these were “formed to control competition between units or to assure enterprises of sources of raw materials or outlets for finished goods and services” (p. 7). Although they were “often able to bring small reductions in information and transactions costs” (p. 7-8), they fell short of reaping the benefits provided by the scheduling of flows of goods, i.e., federations could not increase productivity. In sum, federations could not provide *administrative coordination* “that became the central function of modern business enterprise” (p. 8).

In sum, in the absence of administrative coordination, small firms were not likely to be replaced by MBEs. In other words, administrative coordination was a necessary condition for the replacement of single-unit firms by MBEs.

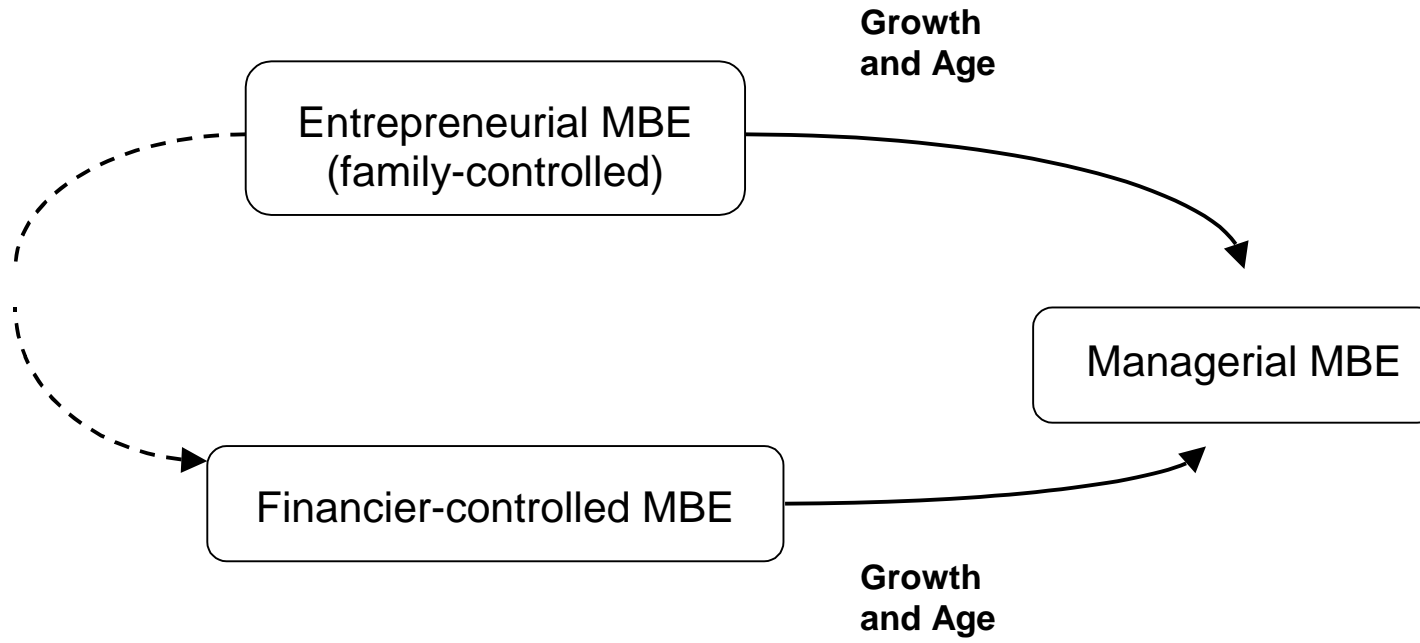
4.3 Form Evolution Process

The MBEs took three forms: entrepreneurial (family-controlled), financier-controlled and managerial. Mass marketers, for example, were entrepreneurial, since the builders of the firm and their families remained the major stockholders, making the long-term planning and the corresponding resource allocation. Railroads, on the other hand, required an amount of capital that barely no family or small group of associates had. Financiers were called upon to invest in the roads, integrating therefore the group of senior executives in charge of major decisions. Chandler maintains that, as MBEs grew over time, they tended to take the managerial form, i.e.:

- a) The MBE “grew in size and diversity and as its managers became more professional, the management of the enterprise became separated from its ownership” (p.9);
- b) “As family- and financier-controlled enterprises grew in size and age they became managerial” (p. 10).

As figure 3 illustrates, entrepreneurial and financier-controlled firms might then be conceived as initial or intermediary forms in the process of growth of MBEs.

Figure 3 – Form evolution process of MBEs



Chandler *explains* this transformation in terms of the time, information and experience required from owners and representatives of financiers to fully participate in top-level decisions. Over time, as firms grew in size, their complexity increased requiring full-time dedication of decision-makers in order to acquire information and experience. As Chandler states, "Unless the owners or representatives of financial houses became full-time career managers within the enterprise itself, they did not have the information, the time, or the experience to play a dominant role in top-level decisions" (p. 10). Moreover, although owners and representatives of financiers, as members of the board, did hold veto power and could even replace senior managers, "they were rarely in a position to propose alternative solutions. In time, the part-time owners and financiers on the board normally looked on the enterprise in the same way as did ordinary stockholders. Of necessity, they left current operations and future plans to the career administrators" (p. 10). In sum, increased size and administrative complexity took "full-time salaried executives to dominate top as well as middle management" (p. 416) leaving owners no place to administer the firm.

Until full-time salaried executives took over top management, growth tended to result from ad hoc, emergent processes rather than from planned moves. While owners still managed, "the growth of the enterprise was only occasionally planned with an eye to long-term changes in supply, demand, and technological innovation. Growth came rather as a response to short-term needs and opportunities as perceived by different sets of middle managers" (p. 413). Absorbed in the details of day-to-day operation, owner-managers "did not plan systematically for the continuing growth of the enterprise" (p. 414). Organizational structure had developed in a similar, ad hoc way: "in the entrepreneurial firms, the departments had been built by the middle managers in an ad hoc fashion to meet current needs" (p. 431), whereas at GE, which originated from a merger of two companies, "order was imposed from the top" (p. 430). As a matter of fact, GE took the managerial form right from its inception, since "from almost its very beginning the key policy makers at GE were ... its full-time salaried managers, Charles Coffin and his departmental vice presidents" (p. 431).

4.4 MBE Development Processes

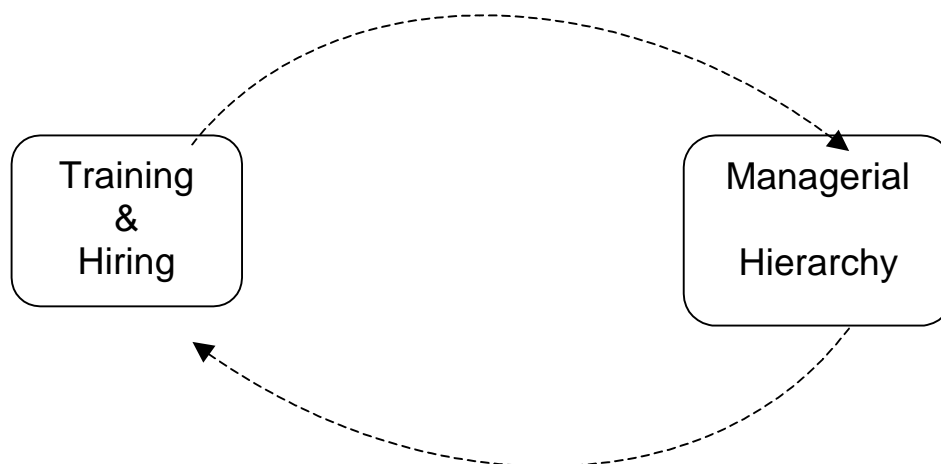
According to Chandler, among the necessary conditions for the appearance of MBEs (refer to figure 2), two play a special role in the development of the modern business firm: the creation and development of a managerial hierarchy, and effective administrative coordination. Managerial hierarchy of professional managers provided the continuity needed for the MBE *continued existence process*. Administrative coordination, on the other hand, gives rise to the *continuing growth process*, whereby MBEs keep growing the volume and

scope of their activities. In turn, these two processes - continued existence and continuing growth - provide MBEs with a *self-perpetuating capability*.

4.5 Continued Existence Process

A hierarchy of managers has occupied center stage in the transformation processes of MBEs into large firms. Among other things, the managerial hierarchy provided the modern firm with the *seeds of continued existence*. While “traditional enterprises were short-lived” (p. 8) because partnerships were often disbanded or reconstituted at the death, retirement or departure of a partner, “when a manager died, retired, was promoted, or left an office, another was ready and trained to take his place” (p. 8). In other words, the managerial hierarchy had a *regenerating capability*, which enabled the firm to outlive its members. As a result, the formation of a managerial hierarchy constituted the starting point of the continued existence process, because the regenerating capability allowed for a steady provision of managers through the training of newly hired or existing personnel (refer to fig. 4a). In Chandler’s words, “the hierarchies that came to manage the new multiunit enterprises had a permanence beyond that of any individual or group of individuals who worked in them” (p. 8).

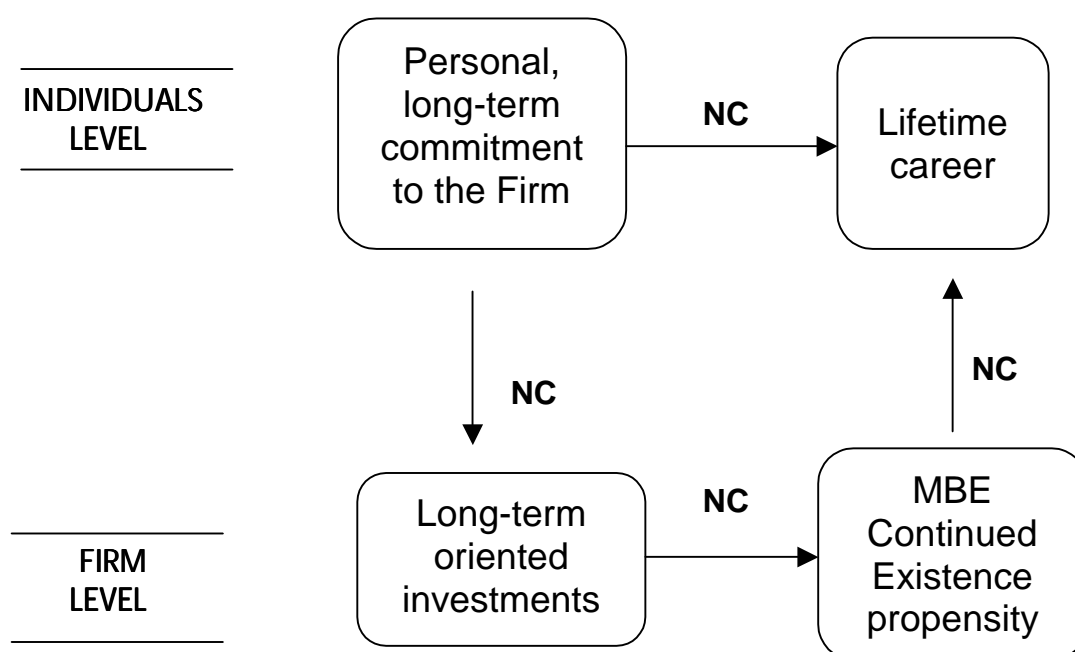
Figure 4a – Regenerating Capability



Another seed of continued existence was the pursuit of a lifetime career by managers. As Chandler asserts, “for salaried managers the continuing existence of their enterprises was essential to their lifetime careers” (p. 10). In other words, the continued existence of the MBE constituted a necessary condition for a lifetime career to develop. In turn, the achievement of lifetime career by managers, and continued existence of the firm required:

- a) at the individual level - managers nurturing a personal and long-term commitment to the firm. After all, a long-term commitment is a necessary condition for one to develop a lifetime career in a firm;
- b) at the firm level - long-term investments. As a matter of fact, long-term investments constitute a necessary condition for a firm to experience a continued existence. Fig. 4b illustrates the two-levels chain of necessary conditions, which relate the individual and organizational behaviors involved in the continued existence process of the MBE.

Figure 4b – Continued existence process



Obs.: NC = necessary condition(s) for

In this respect, career managers not only had a “personal commitment to the continuing health of their enterprise” (p. 87), but they also “preferred policies that favored the long-term stability and growth of their enterprises to those that maximized current profits” (p. 10). Chandler emphasizes the role career managers played in long-term oriented policies as opposed to entrepreneurs, financiers and speculators. Except for speculators, who made of instability a profitable way of living, the other actors favored stability. Entrepreneurs and financiers would give priority to “maintaining dividends that would assure a reasonable continuing rate of return on their investment” (p. 146). Managers, on the other hand, would be “willing and indeed usually preferred to reduce dividends to assure long-term stability” (p. 146).

This apparent conflict of priorities was handled in different ways. As long as entrepreneurial firms enjoyed a high-volume cash flow, as meat-packers did, owners “rarely asked for budgets. In the more routine expansion of existing operations and facilities they responded to ad hoc requests of middle managers. These were normally approved. As owners -- and very wealthy ones at that -- they saw little reason to veto such plans for expansion. On the contrary, as owners they had much to gain. What could be a better investment than to plow back profits in order to make existing resources still more lucrative?” (p. 414).

However, when cash flow was insufficient to fund expansion, as was the case of railroads, “investors were ... reluctant to spend large amounts of capital for expanding a road’s facilities” (p. 146). In such cases, should speculators create disturbances that might threaten the long-term survival of the firm, investors would play “a passive role and the managers and speculators an active one” (p. 148). As a matter of fact, speculators would play a catalyst role at convincing investors to undergo expansion strategies. Reporting the formation of the large railway transportation systems that would replace existing alliances between railroads, Chandler maintains that speculators “were the first to disrupt the existing alliances. They undermined the viability of the regional railroad cartels since they had more to gain from violating than from maintaining rate agreements” (p. 148). As a result, “once the moves of speculators helped to emphasize the futility of depending on cooperation to assure continuing traffic and dividends, ... , the investors had little choice but to delegate the making of strategy and its execution to their managers” (p. 170).

In sum, the seeds of the continued existence of the firm lay in the ability to easily replace members of the managerial team (fig. 4a), and in the managers’ pursuit of lifetime careers, an objective that, as fig 4b illustrates, favors individual and organizational behaviors that constitute necessary conditions for the continued existence of the firm.

4.6 Continuing Growth Process

The growth of the firm is anything but an spontaneous process. Expansion moves result from decisions to commit time and resources in order to increase the volume or scope of activities. Notwithstanding this purposeful trait of expansion decisions, administrative coordination contains the *seeds of a self-reinforcing mechanism of continuing growth*.

As Chandler maintains, increased productivity and decreasing costs were key factors in the development of the superiority of administrative coordination over market coordination; and managers’ primary goal “was to assure continuing use of and therefore continuing flow

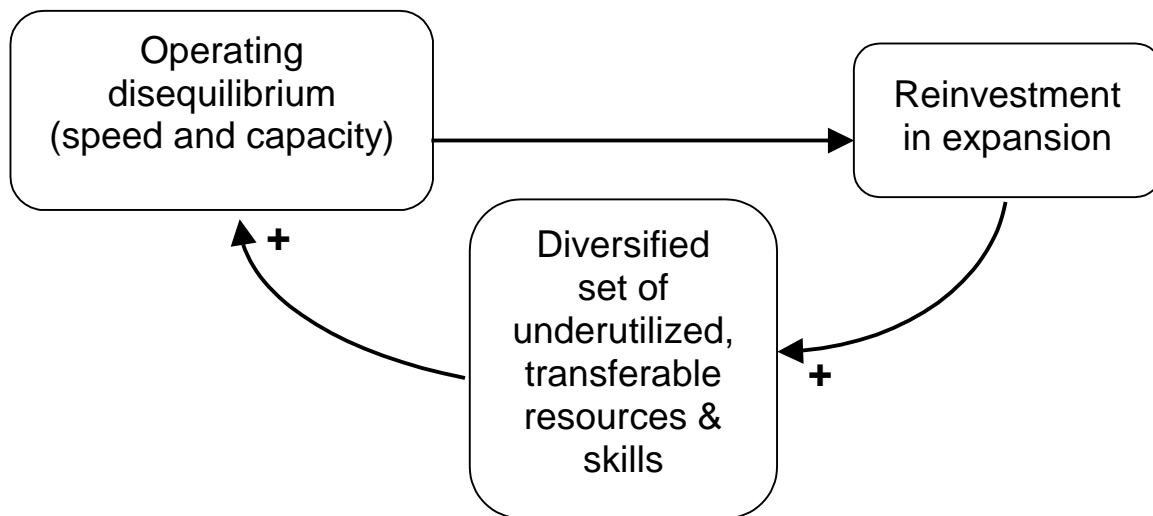
of material to their facilities" (p. 10). Accomplishing this goal required the identification of threats and opportunities to the full and profitable use of existing resources and skills.

Sources of threats and opportunities to the continuing, profitable use of resources and skills were found both inside and outside the firm. *External sources* comprise all sorts of technological, economic, political, legislative and social changes. In particular, Chandler stresses the managerial concern for eventual shortage of supplies, disruption in the distribution of the firm's products, or entry of new competitors. Be it internal or external, an opportunity would induce expansion into new products and markets, while a threat would inspire vertical integration backward or forward. On the other hand, *internal sources* of opportunities and threats to the continuing use of resources included:

- a) Underutilized or idle resources;
- b) Resources and skills that were transferable to the production and distribution of other products and markets;
- c) Cash flow pressures exerted by high fixed costs, which might lead to a higher but less profitable use of resources.

As Chandler describes, after World War I a strategy of diversification into new products for new markets evolved from the previous concept of full line of products: "top managers began to search consciously for new products and new markets to make use of existing facilities and managerial talent. ... Their goal was ... to use more intensively all or part of the existing organization. ... The new strategy was aimed at assuring the long-term health of an enterprise by using more profitably its managers and facilities" (p. 473). The process of growth for the purpose of using existing facilities more intensively had a *self-reinforcing capability* that would result in the continuing growth of the firm. In the packing industry, for example, "the pressure to keep existing facilities fully used caused the managers at Armour and other packers to push the enterprise into obtaining additional facilities. Such expansion, in turn, required the creation of new, autonomous managerial suborganizations to evaluate, coordinate, and plan the activities of these units" (p. 399). In addition, the increasing number and types of operating units increased "the likelihood that units might be underutilized" (p. 489). As a matter of fact, "it was rare for all units in such an enterprise to be operating at the same speed and capacity. Such disequilibrium provided constant pressure for the growth of the firm" (p. 489). Figure 5a illustrates the self-reinforcing mechanism in the continuing growth process.

Figure 5a – Self-reinforcing mechanism of continuing growth



Chandler distinguishes two types of *motives* guiding expansion decisions: *productive* and *defensive*. While productive motives would *promote change*, defensive ones would *control change*. Productive expansion, also called positive, aimed to “add new units, permitting by means of administrative coordination a more intensive use of existing facilities and personnel” (p. 487). As Chandler states, this type of expansion “increased productivity by lowering unit costs” (p. 487). The other type of expansion, called defensive or negative, “stemmed from a desire for security. Its purpose was to prevent sources of supplies or outlets for goods and services from being cut off or to limit entry of new competitors into the trade” (p. 486). Defensive expansion rarely increased productivity.

Productive expansion was associated with opportunities while defensive expansion with threats to a more intensive use of facilities and skills. Therefore, the managerial goal of assuring their continuing use could be attained in two different ways, which either promoted or controlled change:

- a) by increasing the volume and scope of operations, i.e., by fostering further use of existing resources and skills in new products and markets (productive growth);
- b) by keeping steady the volume, scope and throughput of operations, i.e., by assuring a continuing inflow of inputs, a continuing outflow of products, as well as by limiting the intensity of competition (defensive growth).

Productive growth started up a diversification process having an expansion-generating capability. Diversification into new products and markets resulted from two *mechanisms*:

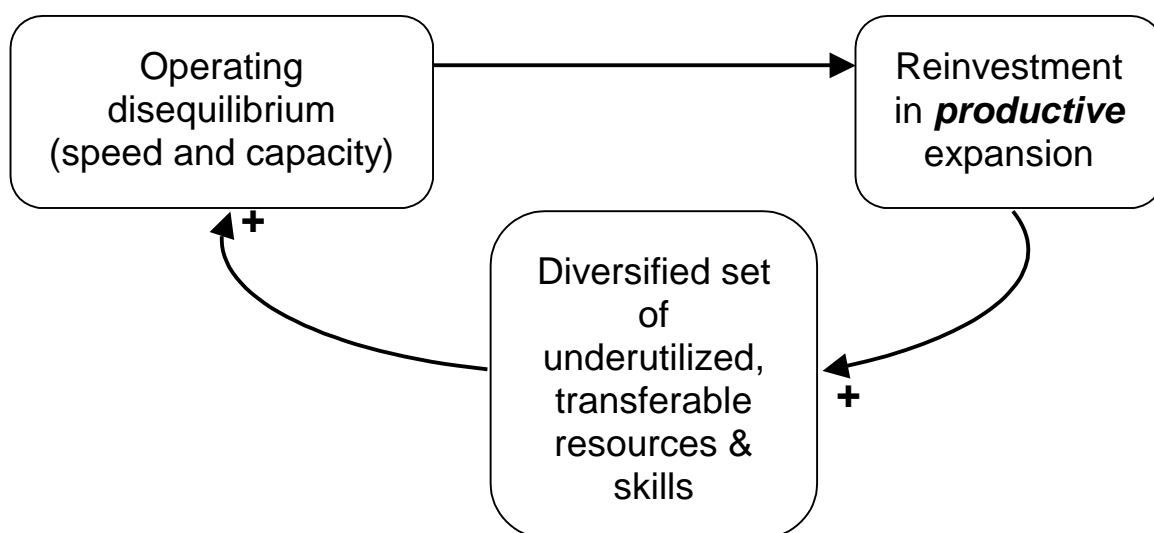
- a) Detection of underutilized resources;

- b) Identification of existing resources and skills that might be transferable to the production and distribution of other products for other markets.

As long as the undertaken expansion would continue to produce some degree of idle resources, and/or to enrich the set of resources and skills that might be transferable to other products and markets, growth would contain the seeds of further growth. In other words, this kind of diversification had a self-reproducing feature that would generate *continuing growth*. As a result, Chandler maintains that “such productive expansion was inherently more profitable than defensive expansion, and so set the direction in which the enterprise grew” (p. 489). Figure 5b adjusts the representation of the self-reinforcing mechanism of continuing growth by specifying the kind of reinvestment expansion more likely to foster continuing growth.

Finally, depending on the kind of business activity, continuing growth was more or less likely to occur. Large integrated industrial firms, for example, “had a wider variety of resources that could be transferred to the production and distribution of other products for other markets” (p. 489). In addition, “because the large integrated industrial had more and different types of operating units than other kinds of business enterprises, the likelihood that units might be underutilized was greater” (p. 489). In sum, the more diversified the set of skills and resources the greater the likelihood that the enterprise would experience continuing growth.

**Figure 5b – Self-reinforcing mechanism of continuing growth
(clarifying the kind of expansion)**



4.7 Self-Perpetuating Capability of MBEs

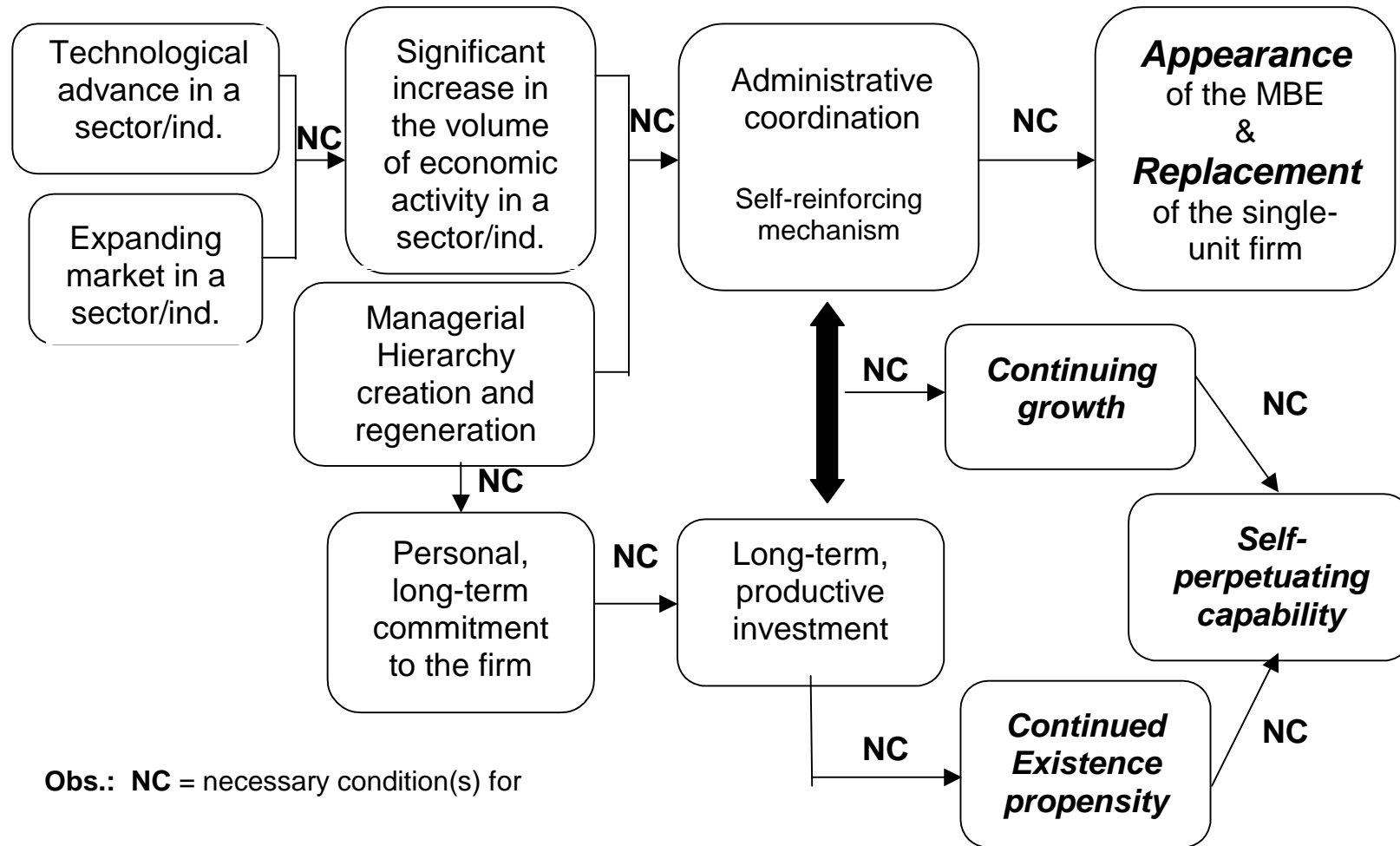
The self-perpetuating capability of MBEs is the outcome of two processes: continued existence and continuing growth of the firm. As Chandler maintains, “once an enterprise had

set up a managerial hierarchy and once the organization had provided efficient administrative coordination of the flow of materials through the processes of production and distribution it became self-perpetuating" (p. 372).

Nevertheless, self-perpetuation will not occur in the absence of the necessary conditions for: the very existence of the MBE; its continued existence; its continuing growth. As Chandler states, "these self-perpetuating human organizations appeared and continued to flourish only in those industries where the technology of high-volume production and the needs of high-volume distribution offered the greatest potential for the administrative coordination of the flow of goods through the economy" (p. 372). Moreover, should a firm fail to develop a hierarchy of salaried managers nurturing a long-term commitment towards the stability and growth of the firm, the self-perpetuating capability would not develop.

A synthetic view of the formation and development processes of MBEs is provided in Figure 6.

Figure 6 – Chain of necessary conditions in MBE's processes (formation and development)



4.8 Industry Formation Process: Industry Growth Capability

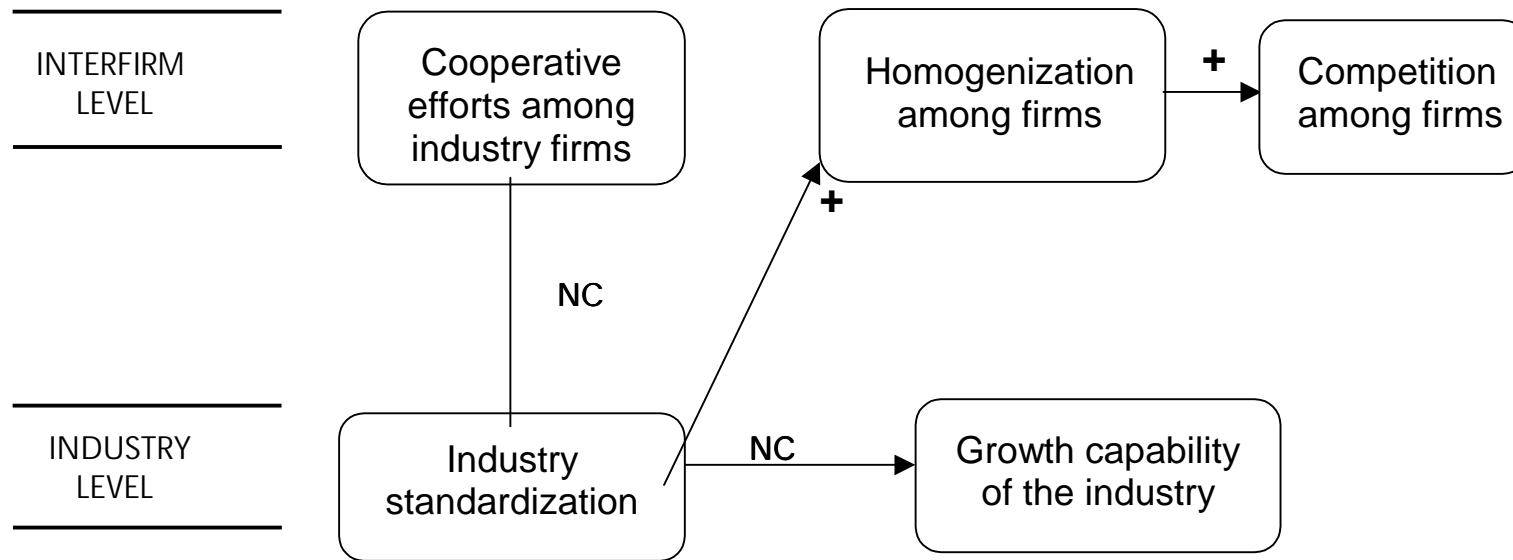
Industries form around some standardized elements, such as technologies, procedures, products and processes. However, at the very beginning of their existence, industries often fall short of standards. American railroads by 1861, for example, “used different gauges and different types of equipment” (p. 122). Differentiation at the early stage of an industry may be simply the outcome of a large number of independent innovation efforts or a defensive weapon vis-à-vis competitors. In railroads, for example, differentiation had been used as a defensive weapon. As Chandler reports, “in the early years this differentiation had been made purposely so that freight shipped on a railroad sponsored by the merchants of one city could not be syphoned off by those of another” (p. 122). As a result, “cars of one railroad could not be transferred to the track of another” (p. 122).

Whenever differentiation is perceived to constrain business volume in an industry, managers in the industry’s firms become willing to seek some degree of standardization to foster growth. Railroads management, for example, identified important business opportunities in through traffic. As a matter of fact, “as the railroad network grew, as it became more interconnected, through traffic passing from one line to the next was increasingly important to the profits of the individual railroad companies” (p. 121). However, in the absence of standardization, the costs and delays of unloading and reloading freight were quite high, putting a ceiling to the volume of through traffic. According to Chandler, industry standardization constitutes, therefore, a necessary condition for the development of growth capability in an industry.

Industry standardization calls for some degree of cooperation between the industry firms. In the grain trade, for example, modern commodity dealers had standardized and systematized marketing procedures carried out by the exchanges of grain. These exchanges gave rise to “cooperative efforts to standardize grading, weighing, and other procedures on a national basis” (p. 211). In railroads, “standardization of equipment and operating procedures called for detailed and prolonged discussions among the managers of the many roads” (p. 123). Cooperation is thus a necessary condition for the establishment of industry standards.

However, in addition to being a growth-enabler, standardization enhances interfirm competition. As Chandler reports, “the very success of interfirm cooperation increased interfirm competition” (p. 123). In fact, since standardization reduces differentiation among firms in some respects, competition is likely to increase. Figure 7 illustrates the chain of necessary conditions for the development of growth capability in an industry and its effect on the degree of interfirm competition.

Figure 7 – Chain of necessary conditions for the development of growth capability in an industry and its effect on the degree of interfirm competition



Obs.: NC = necessary condition(s) for

4.9 Industry Development Process: Industry Concentration

Cooperation was sometimes looked upon as a vehicle to control competition. Railroads, for example, established alliances and, later on, formal federations to control rates cutting. Chandler reports that “the need to assure a steady flow of traffic created a constant pressure for railroad managers to obtain through freight from other roads on parallel routes. They did so by cutting rates and by aggressively advertising and selling. To control such competition railroad managers turned to cooperation ... creating some of the largest and most sophisticated cartels ever attempted in American business. But these cartels rarely worked. If cooperation to expand the flow of through traffic proved to be a great success, cooperation to control competition was a resounding failure” (p. 123).

Notwithstanding the increased competition that standardization brought about, in some industries a number of firms grew large and their industries underwent a process of concentration. According to Chandler, a number of factors could *not* explain industry concentration and the concomitant firm dominance in certain sectors. Among these were entrepreneurial talents, capital markets and public policy:

- a) “*entrepreneurial ability* can hardly account for the clustering of giant enterprises in some industries and not in others. The most brilliant industrial statesmen or the most ruthless robber barons were unable to create giant multinational companies in furniture, apparel, leather, or textile industries. Yet in other industries, the first to try often succeeded” (p. 373);
- b) “enterprises did not grow large and industries become concentrated because the entrepreneurs who built them had privileged *access to capital* ... What the enterprises that integrated production and distribution did have was a much greater supply of internally generated capital” (p. 373);
- c) “*tariffs* were as high on the products of industries that remained competitive as they were on those that became concentrated” (p. 374). *Patents*, on the other hand, “had a greater effect than tariffs” (p. 374). However, it was the effectiveness of the global organization that provided it with protection: “a set of patents without such an organization could never assure dominance; an organization even without patents could” (p. 374). *Antitrust legislation* had a more substantial impact than did patent or tariff legislation on the growth of the firm and on industrial concentration. However, the existence of this legislation “discouraged monopoly in industries where integration and concentration had already occurred. It helped to create oligopoly where monopoly existed and to prevent oligopoly from becoming monopoly” (p. 375).

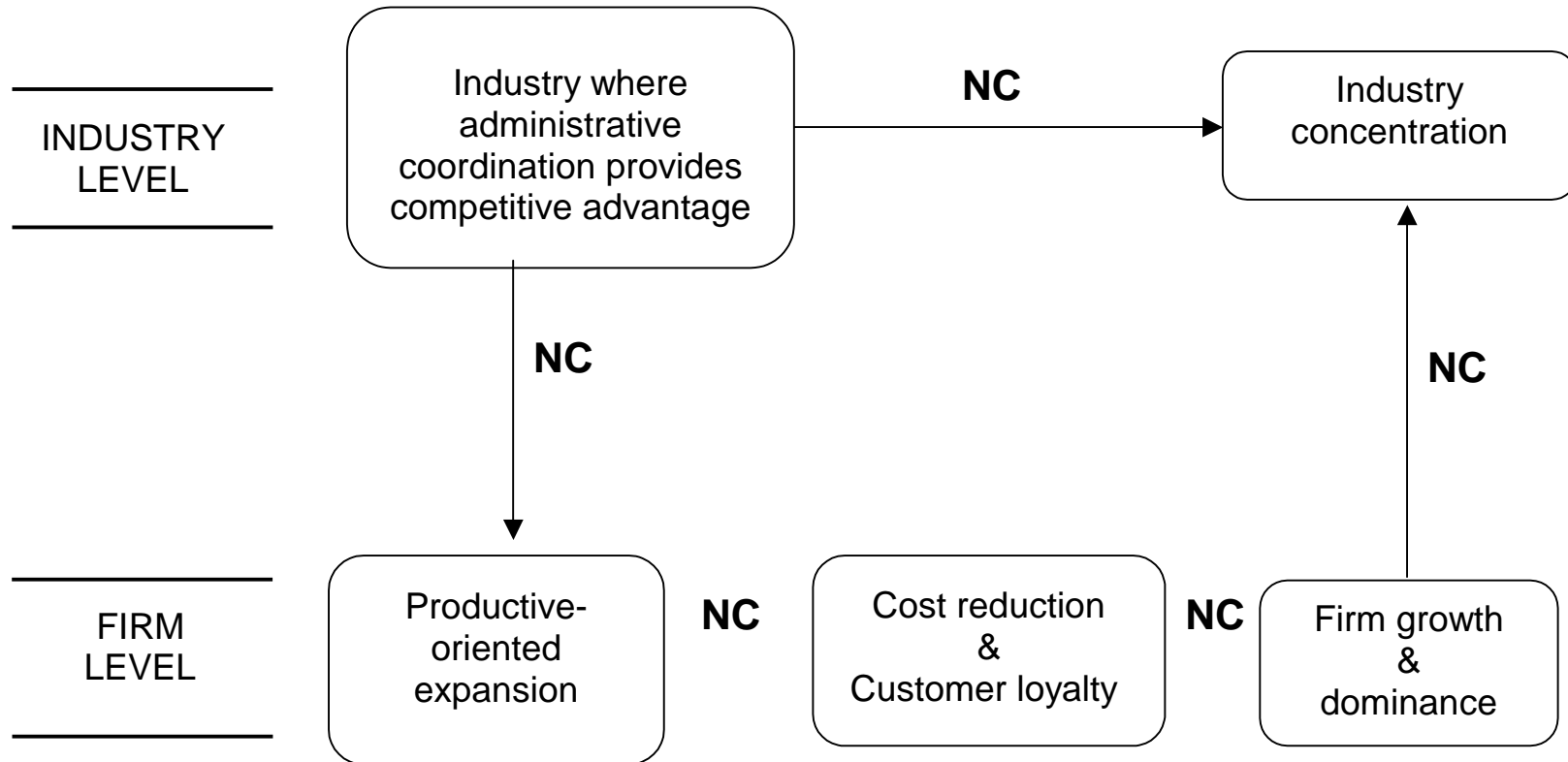
Chandler maintains that industrial concentration only occurred “in industries where administrative coordination provided competitive advantages” (p. 365). Therefore being an industry where administrative coordination provided competitive advantages constitutes a necessary condition for industry concentration to take place. In addition, Chandler asserts that vertical integration into distributing and marketing facilities networks created “formidable barriers to entry. High-volume throughput and stock-turn reduced unit costs. Advertising and the provision of services maintained customer loyalty. Rival firms were rarely able to compete until they had built comparable marketing organizations of their own” (p. 364). With the exception of backward integration undertaken for defensive purposes, “integration brought concentration” (p. 365). Therefore, in order to grow and dominate firms needed to reduce costs and develop customer loyalty.

Mergers constituted another path towards growth. According to Chandler, successful mergers met two conditions: “they consolidated production, centralized administration, and built their own marketing and purchasing organizations. And they operated in industries where technology and markets permitted such integration to increase the speed and lower the cost of materials through the processes of production and distribution. For these reasons the long-lived mergers came to cluster in the same industries in which the first large integrated enterprise appeared in the 1880s” (p. 336). In sum:

- a) administrative coordination was a necessary condition for the success of the two types of growth, merger and vertical integration;
- b) productive expansion constituted a necessary condition for obtaining cost reductions and customer loyalty;
- c) cost reduction and customer loyalty were necessary conditions for firms to grow and dominate;
- d) firm growth and domination were necessary conditions for industries to become concentrated.

Figure 8 illustrates the chain of necessary conditions for industrial concentration and firm dominance.

Figure 8 – Chain of necessary conditions for industry concentration



Obs.: **NC** = necessary condition(s) for

4.10 Chandler's Ideas Summarized

Chandler clearly delimits the scope of the book by mentioning its concentration on the rise of modern business enterprise and its managers. The objectives of the study comprehend explaining the initial appearance of modern business enterprise (MBE) – why it began, when it did, where it did, and in the way it did -- as well as its continuing growth – where, how and why an enterprise once started continued to grow and to maintain its position of dominance.

A number of conditions were necessary for the appearance of this new organizational form, the MBE. Advanced technology, expanding markets, sharp increase in the volume of economic activity, and the creation of a managerial hierarchy inside the firm constituted necessary conditions for the development of the superiority of administrative coordination over market coordination (fig. 2). In turn, this superiority of administrative coordination was a necessary condition for the appearance of the MBE. However, MBEs were likely to appear only in those sectors of the economy for which technology did bring a sharp increase in output and where markets were undergoing expansion.

Depending on who was in control of the major decisions in the MBE, this new organization could take three forms: entrepreneurial (family-controlled), financier-controlled, and managerial (management-controlled). As the MBE grew, it increasingly needed full-time dedication of decision-makers. Consequently, over time the MBE tended to take the managerial form (fig. 3), i.e., a managerial hierarchy of middle and top level managers would be in control of operational and long-term oriented decisions.

Managers provided the MBE with a continuing existence propensity for two reasons: they could be replaced and they sought for a longtime career in their firms (figs 4a and 4b). By performing administrative coordination, managers aimed at assuring the continuing and profitable use of the firm's resources and skills. This, in turn, encompassed a self-reinforcing mechanism of continuing growth whereby expansion undertaken in order to augment the profitable use of resources and skills generated other sorts of underutilized resources and skills, calling for further expansion, and so on. The continued existence and continuing growth properties constituted necessary conditions for the development of the MBE self-perpetuating capability. Moreover, expansion undertaken for productive rather than defensive motives was more likely to contribute to the development of continuing growth (fig. 5b).

The MBE appeared concomitantly with the emergence of new industries where administrative coordination could potentially provide greater efficiency than market coordination. In emerging industries, standards constitute a necessary condition for the

development of its growth capability. However, some degree of cooperation among rival firms is required for achieving industry standardization. In turn, a higher degree of competition is produced, because standardization reduces differentiation among rivals, as well as uncertainty in technology and/or product and process design, stimulating therefore the overall activity in the industry by existing and new firms (fig. 7).

The co-evolution of MBEs and their industries produced firm dominance and industry concentration. The necessary conditions for these transformations to occur comprehend industry characteristics – being an industry where administrative coordination provided competitive advantage – and the firm ability to achieve cost reductions and customer loyalty. These, in turn, required productive- rather than defensive-oriented expansion (fig. 8).

5 DISCUSSION

The discussion of *The Visible Hand* contributions and limitations to the understanding of the growth of the firm is organized in three subsections. The first discusses the extent to which Chandler's historical account of the rise and growth of American firms in the late 19th and early 20th centuries can contribute to our understanding of firm growth in recent times; the second comments on the criticisms of Chandler's ideas stated in the strategic management literature; and finally the third considers the limitations and contributions of the book towards the building of a theory of the growth of the firm.

5.1 Extent of Contribution in Chandler's Historical Account

Maintaining that "historical perspective is the study of a subject in light of its earliest phases and subsequent evolution", Lawrence (1984) distinguishes historical perspective from history. While "the object of historical perspective is to sharpen one's vision of the present, not the past. . . history provides raw materials for historical perspective" (p. 307). This section examines the extent to which Chandler's historical account can potentially help to sharpen our vision of the growth of the firm in the present, rather than in the past. In sum, it seeks to answer the question: What elements in Chandler's ideas on the growth of the firm are transhistorical? (Lawrence, 1984, p. 308).

It is hardly evident that Chandler's account might apply to the study of growth in the present. For one, it explains the emergence and growth of multiunit firms as a result, among other things, of major revolutionary, technological changes in transportation and energy – clearly a historically embedded scenario. In addition, several changes in the business

landscape seem to undermine the suitability of Chandler's descriptions and explanations for modern times:

- a) The incipient managerial job market of the past has become strong and competitive. As a result, it is highly questionable whether the pursuit of a lifetime career in the firm still constitutes a major personal goal for managers;
- b) In view of the current, highly active stock markets, it is doubtful whether managers still favor long-term stability and growth to maximizing short-term profits;
- c) While the firms Chandler described underwent an internalization process of different economic activities as they grew, outsourcing has been prevalent in several industries in the last decades of the 20th century.

It is beyond doubt that Chandler's analysis focuses on a specific time period. For example, his account explains why and how *MBEs appeared for the first time in history* and ended up replacing single unit firms. As a result, Chandler's analysis of the MBE appearance process clarifies a well-defined historical situation:

according to Chandler, MBEs did not appear until goods could be moved at a significantly higher speed and factories were provided with a central source of energy.

However, Chandler's ideas on the appearance and replacement processes are potentially transhistorical. In fact, by advancing necessary conditions for volume increase in a sector/industry (refer to fig. 2), Chandler's account admits that not every economic sector/industry did experience the appearance and replacement processes. Consequently, the chain of necessary conditions regarding the appearance and replacement processes could potentially be tested over time, whenever a sector/industry structure undergoes a transformation from the traditional to the MBE firms.

Interestingly, although the appearance and replacement processes encompass the very essence of the visible hand concept that inspires the book – by the way, the most frequently retained idea (refer to table 2) – other processes provide a potentially far greater contribution to the understanding and building of a theory of the growth of the firm. These are the MBEs development processes – continuing growth, continued existence and self-perpetuation – and the industry formation process.

- ***Continuing growth***

Chandler suggests that, in contrast to the traditional firms, MBEs have a self-perpetuating capability. In addition, he advances two necessary conditions for the materialization of this capability (figure 6): setting in motion continuing growth mechanisms and developing a continued existence propensity. Chandler's continuing growth mechanism

(figures 5a and 5b) explains how MBEs grew by diversifying their economic activities. The continued existence process (figures 4a and 4b) he proposes explains how MBEs came to develop a continued existence propensity.

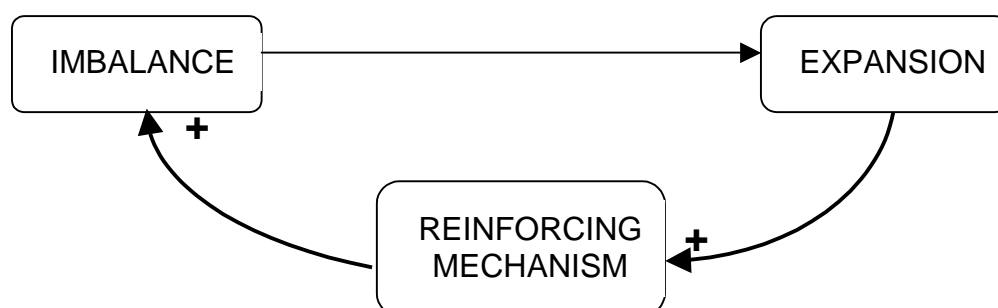
Chandler's account of firm growth mentions a number of internal and external expansion opportunities associated with the continuing, profitable use of resources and skills. In particular, he explains how an operating disequilibrium in productive speed and capacity can potentially set in motion a continuing growth process. In line with Penrose's (1980) notion of excess capacity due to resources indivisibilities, and with one of Normann's (1977) natural driving forces also associated with overcapacity, Chandler maintains that the managerial quest for more intense and profitable use of facilities and skills impels towards firm expansion. Far from solving the disequilibrium, growth fuels the existent disequilibrium by increasing the set of underused resources and skills in quantity and in quality.

Building on these views, a general structure for the continuing growth process of the firm is suggested (refer to figure 9). Three main blocks can be identified:

- a) Imbalance – some sort of disequilibrium occurring inside or around the firm;
- b) Expansion – some type of expansion resulting from the perception of growth opportunities associated with the imbalance;
- c) Reinforcing mechanism – some type of change brought about in the course of the expansion process causes existing imbalance to increase or new types of imbalance to appear.

In view of the atemporal characteristics of its constitutive blocks, the continuing growth process may be considered transhistorical.

Figure 9 – General structure of the continuing growth process



5.2 Continued Existence

Both Chandler (1977) and Penrose (1980) emphasize the fundamental role of managerial skills. In Penrose's view, these skills cannot be bought in the market as commodities, because they include the development of interpersonal relations that take time to evolve. So much so, that the availability of managerial skills constitutes one of Penrose's three types of limits to the growth of the firm. Chandler, on the other hand, suggests that by building a managerial hierarchy the firm develops the seeds of its continued existence. According to him, by hiring and training new and existent people, the firm can regenerate its capabilities (figure 4a), while managers' long term commitment to the firm is a necessary condition for providing the firm with a long-term perspective, and a continued existence propensity (figure 4b).

Two facts seem to challenge Chandler's perspective regarding the continued existence of the firm. For one, the managerial job market has developed to such an extent that one may well wonder whether the pursuit of a lifetime career is still as strong as it may have been throughout the historical period Chandler describes. Moreover, stock markets have become ever more important and short-term oriented. Chandler's perspective on the continued existence of the firm would therefore seem to be historically embedded.

So it is, as far as managerial motivations for developing a lifetime career in a company are concerned. In fact, human motivation may undergo changes as societal values and individual needs change over time. Consequently, as present-day job and stock markets seem to create stimuli that are at variance with the development of a continued existence propensity, it might be argued that Chandler's ideas on continued existence actually are historically embedded.

However, continued existence's historical embeddedness may not be the case. For sure *managers' need* for enjoying a lifetime career in a single firm does not seem to be transhistorical. Yet, the *firm's need* for talented people to develop lifetime careers inside the firm may be so. Inter-firm managerial mobility can be expected to preclude or significantly slow down firm's growth and its continued existence. In fact, such mobility would not only prevent the development of enduring interpersonal relations (Penrose, 1980), but would also inhibit long-term initiatives. After all, by maintaining a short-term commitment to the firm, managers may fall short of inducements to champion long-term investments. Therefore, it seems that although talented managers may not need to spend lifetime careers in a company, the firm still needs this behavior to occur, if it pursues its continued existence.

In sum, should a firm aim at its continued existence, it should find ways to stimulate managerial long-term commitment, as well as long-term oriented investments, despite the highly active managerial job and stock markets. Moreover, failure to promote these conditions would be expected to bring about firm discontinuance sooner or later. This essay takes the view, therefore, that the continued growth process Chandlers proposes also has transhistorical characteristics.

5.3 Self-Reinforcing Capability

According to Chandler, two processes – continuing growth and continued existence propensity –constitute necessary conditions for the MBE self-perpetuation capability to develop. Since both these processes were shown to have transhistorical properties, self-perpetuation can also be said to be transhistorical.

5.4 Industry Formation Process

Chandler's analysis of firm growth identified the concomitant growth of the industry. In fact, his account of firm growth within emerging industries describes how firms and industry co-evolve (refer to figure 7). He advances that developing the growth capability of an industry is a requirement for firm growth to occur and explains how it happens. Cooperation among industry firms is the triggering mechanism that promotes industry standardization, a necessary condition for the growth capability of the industry to develop. Once more, this is a transhistorical process.

To illustrate the pertinence of Chandler's transhistorical ideas in explaining firm growth, the two decades old microcomputer (personal computer) industry is briefly examined next. In the early 1980s, computers had already attained high processing levels. Each new model substantially increased processing power, storage volume and telecommunication capacity. Notwithstanding continuous technological advances in computer design, there was an imbalance involving information needs and the centralized, complex services computers rendered. The personal computer was conceived to fill this gap by providing its user with user-friendliness and full time availability.

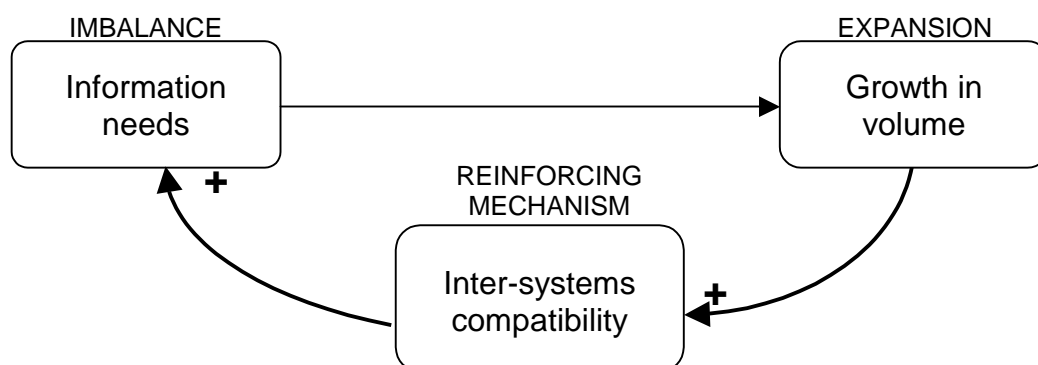
Hardware and software manufacturers teamed up to build and market different models. The two most prominent teams were IBM-Intel-Microsoft and Apple-Motorola. Their products fulfilled similar functions but differed significantly in one important respect: while Apple centralized manufacture and distribution of its products, IBM authorized a large number of manufacturers to produce and market IBM PC-compatible products. As described in figure

7, IBM's cooperative efforts did contribute to accelerate the growth capability in the PC industry, and to turn IBM's design into the winning standard in the industry. However, it also produced homogenization among IBM-PC manufacturers, bringing about an increasingly fierce competition.

It is arguable that IBM's open design was the single most determining factor in the outcomes of the war that Apple and IBM products fought to become the personal computer standard. After all, for a good many years the Apple design was not only more innovative than IBM-PC's, but it was also believed to better fulfil users' needs. On the other hand, IBM-PC's increasing production volume and competition not only brought down its prices, but also gave rise to a continuing growth process.

As important as fulfilling information processing needs of the world population at large, inter-systems compatibility was a much needed property personal computers had to develop. In addition to individual data processing use, people started to communicate among themselves by exchanging digital files. User-friendliness needed to encompass inter-systems compatibility. Compatibility came to constitute a reinforcing mechanism as shown in Figure 10 below.

Figure 10 – Continuing growth process in the personal computer industry



Continuing growth in the PC industry had the following characteristics:

- a) Unfulfilled information processing needs were a source of opportunity for PC manufacturers;
- b) The PC industry would then expand its production volume to satisfy those needs;
- c) The more the industry expanded into more of the same, the greater inter-systems compatibility;
- d) The greater inter-systems compatibility, the more new uses were conceived or perceived for PCs. Therefore, the more information processing needs increased.

Interestingly, IBM's decision to seek cooperation to produce the PC ran counter to IBM's tradition. Much like Chandler's firms, IBM had grown as an integrated manufacturer. Throughout its existence, IBM had developed advanced technological capabilities in software, hardware and telecommunications, yet for non-technological reasons – timing reasons in fact – management decided to enter the PC race by outsourcing components for the product it had designed. By so doing, IBM did not own property rights of outsourced components, including software, the component that came to play one of the most important roles in inter-systems compatibility. As a result, Microsoft, IBM-PC's software manufacturer, underwent a continuing growth process, which is similar to the one described in figure 10, while IBM did not develop any substantial competitive advantage in the PC business.

Apparently, IBM's non-integrated approach contradicts Chandler's view that integration preceded specialization. As a result of the outsourcing of IBM-PC's parts, manufacturing specialization preceded integration. Commenting on Adam Smith's pin factory, Chandler states: "Even here integration preceded specialization and subdivision. Only after the integration of production of all parts of a gun within a single establishment did specialization come in the manufacture of each part of the gun: the lock, stock, and barrel" (p. 72). It should be noticed, though, that Chandler's assertion referred to new, complex developments. In such cases, technological complexity calls for the concentration of activities during the learning period, until a stabilized model is conceived. Thereafter, complexity is progressively reduced and specialization may follow.

What could possibly explain why the IBM-PC, a new, revolutionary product did not follow the integration-precedes-specialization rule? The IBM-PC was undoubtedly a new product that revolutionized the computer industry. Yet, for IBM, the PC was far from complex. In fact, its design was a simplified version of the much larger, sophisticated mainframe computers IBM produced. By outsourcing, IBM aimed at speed to the market, having failed, however, to reap as much benefit as other partners, such as Microsoft.

The preceding analysis of the PC industry has showed the adequacy of Chandler's transhistorical ideas in explaining firm growth in the present. As for self-perpetuation, by its very nature, to be examined, it requires more than a few decades of firm existence.

5.5 Criticisms and Misuses of Chandler's Ideas in the Strategic Management Literature

Chandler's ideas were examined in 10 articles (Aldrich, McKelvey & Ulrich, 1984; Butler & Carney (1983); Jorde and Teece, 1989; Leontiades, 1982; McKelvey & Aldrich, 1983; Nielsen, 1988; Robins, 1987; Rowlinson, 1995; Sockell, 1988) and one book (Best,

1990). Some of them have made criticisms, or pointed out limitations of Chandler's book, while others have misinterpreted or wrongly extrapolated his ideas. Each of the 11 works is addressed next.

- a) *Aldrich, McKelvey & Ulrich (1984)* - Adopting a population perspective, the authors maintain that organizational design should take account of the state of the environment. In addition, they suggest four environmental states. Their critique of Chandler's ideas reads as follows: "The assumption that individual intentionality is the root cause of the behavior of organizational entities is based on a biased sample of all possible behaviors by people in organizations. Descriptions of successful organizational actions ... are invariably constructed after the fact by someone trying to make sense of some outcome" (p. 73).

It is true that Chandler, as much as Penrose (1980), explicitly emphasizes intentionality. Both authors take the view that growth is but spontaneous process and that entrepreneurial and managerial skills are needed for growth to occur. However, Aldrich et al.'s criticism seems inaccurate in two respects. First, though important, intentionality is but one of the intervening factors Chandler mentions. In fact, these also include several sorts of environmental changes – infrastructure, technology, and markets – in the absence of which firm growth cannot occur. Therefore, associating intentionality with the root cause of growth seems to be an overstatement. Second, although Chandler mainly describes successful growth moves, Chandler also accounts for less successful moves. By classifying managerial motivations for growth as productive and defensive, Chandler advances the notion that when inspired by defensive motives, intentionality may not succeed in producing continuing growth, a necessary condition for self-perpetuation, according to Chandler. Therefore, it seems Chandler has observed and sought to explain both successful and less successful growth moves.

- b) Best (1990) – Concerned about the decline of the American industry, the author advances what he calls a new paradigm of competition, whereby continuous improvement takes the place of mass production systems. As the author states: "The argument of this book is that American Big Business suffers from rigid command and control production organizations -- a rigidity made apparent by the emergence of an alternative production paradigm termed the New Competition" (p. 7). Alternative organizational forms to the large integrated industrial American company are analyzed: the Japanese firms, and the Third Italy firms. Criticisms of Chandler are shown below:
- Referring to Bernard Elbaum's and William Lazonick's work that built on Chandler's *The Visible Hand*, Best argues: "Chandler's analysis, as applied to Britain by Elbaum

and Lazonick, does provide a compelling account of the decline of British industry, but it does not explain the decline of American industry, the rise of Japanese industry, or the international success of groups of small firms in Germany, Italy, and elsewhere that have never been dominated by hierarchical organization" (p. 7);

- "the success of regions dominated by groups of small firms ..., from the Chandlerian perspective, are simply cases of pre-modern industrial organization waiting for mass production technology and a managerial hierarchy to bring them into the modern world" (p. 8).

The Visible Hand has unequivocally aimed at describing and explaining growth rather than contraction and decline. Decline therefore lies outside the book's scope. However, as our analysis of the personal computer has shown, Chandler's ideas could help to explain IBM's downturn in the early and mid 1990s. For sure, more work should be done in this direction by examining several other industries and firms which have experienced loss of competitiveness in the global market place. However, IBM's case seems to indicate that Best may have jumped to a conclusion that simply may not hold.

Best also advances that, from a Chandlerian perspective, small firms would be waiting for mass production technology and a managerial hierarchy to be brought into the modern world. As a counter-example, Best mentions the successful Italian industrial districts, constituted by small family-owned firms operating in industries where technology has not brought a sharp increase in output, such as textiles, furniture, and clothing. Our analysis did not identify this sort of implication. On the contrary, it seems clear that Chandler's view does not predict that MBEs will dominate every sector of the economy. His statements maintain that certain major technological changes constitute a necessary condition for MBEs to appear and replace small firms. Therefore, from a 'Chandlerian perspective', all one can say is (a) that given the technological constraint in the industries Best mentions, it is hardly likely that these small firms grow becoming MBEs; and (b) that should these family-owned firms be failing to build a managerial hierarchy, it is hardly likely that such firms develop a self-perpetuating capability.

Moreover, Best's mention of small-firms based successful regions seems to indicate that size has been erroneously equated with success. By the way, their success seems to be in line with Chandler's ideas concerning productive motives. Best describes a cooperative marketing venture in the region of Tuscany. The consortium provides collective marketing- and distribution-related services to its members, small-sized furniture firms. Therefore, cooperation motivated by productive rather than defensive motives is a major factor in their commercial success. However, should success be equated with self-perpetuation, the lack of a

managerial hierarchy would most likely indicate, for Chandler, the prospects of failure in the future.

- c) Butler & Carney (1983) – The authors examine the organizational boundaries issue by analyzing make-buy decisions. According to them, their paper “does not support the view expressed by a number of recent writers (e.g. Chandler, 1977) that markets are inevitably being replaced by internal organization, although we would have to agree with Chandler that the ‘visible hand’ is at work, but within the context of the marketplace and the price mechanism” (p. 229).

These authors seem to misinterpret and exaggerate Chandler’s assertions. In fact, they seem to ignore some of Chandler’s statements, such as “the new bureaucratic enterprises did not, it must be emphasized, replace the market as the primary force in generating goods and services. The current decisions as to flows and the long-term ones as to allocating resources were based on estimates of current and long-term market demand. What the new enterprises did do was to take over from the market the coordination and integration of the flow of goods and services from the production through the several processes of production to the sale to the ultimate consumer. Where they did so, production and distribution came to be concentrated in the hands of a few large enterprises” (pp. 10-11).

- d) *Jorde and Teece (1989)* - The authors suggest the need for a new balance between cooperation and competition among rival firms, stating that “whereas cooperation among firms was once a subject confined to antitrust case books, it is increasingly a topic for discussion in schools of management” (p. 25). They criticize Chandler by stating: “Chandler’s analysis did not, however, continue into the 1970s and 1980s, where much of what he observed earlier began to unravel. By drawing his analysis to a close in the early post-war period, Chandler did not have to contend with a relatively new phenomenon, the venture capital funded entrepreneurial firm. Companies like Sun Microsystems, Genentech, Compaq, Advanced Microdevices, and Apple Computers are archetypical examples. Whereas large integrated firms like IBM and Exxon have relied upon integration and administrative processes to effectuate coordination, the “Silicon Valley” startups have in the main eschewed integration and relied extensively on outsourcing” (p. 29).

The authors correctly notice that Chandler’s study does not continue into the 1970s and 1980s. However, their assertion of the adequacy of Chandler’s notions to explain growth in the last two decades is disputable. For one, our analysis of *The Visible Hand* has depicted the dynamics of competition and cooperation among competing firms, which describes the

co-evolution of firms and industry, rather than an antitrust issue. Also, our brief analysis of the computer industry has shown how some of Chandler's ideas on growth are suitable to explain firm growth in more recent times. Interestingly, it has examined a typical "Silicon Valley" industry that includes some of the firms Jorde and Teece mention. In addition, it has advanced how and why IBM, a company the authors believe to typify the large integrated firms, has recently followed a non integrated path and relied extensively on outsourcing. In sum, Chandler's ideas were shown to apply to a modern industry like the personal computer.

- e) Leontiades (1982) – Arguing that "unrelated diversification is consistent with a historical view of corporate development (p. 5), Leontiades builds on Chandler's *Strategy and Structure* (1962) and *The Visible Hand* (1977) to extend some of Chandler's ideas in the context of unrelated acquisitions. According to Leontiades, "We are again indebted to Alfred Chandler for anticipating that unrelated diversity, to be successful, must include organizational changes for its effective administration. The focal point of change in this instance has been the creation of planning departments, adoption of formalized planning systems and techniques, as well as the development of skilled chief planners to run the systems and departments" (p. 12).

The author seems to have wrongly extrapolated Chandler's ideas. For one, the continuing growth mechanism describes related rather than unrelated growth. Chandler suggests that existing, underutilized resources and skills are found new, more profitable uses. Except for one single type of resource – capital – unrelated acquisitions do not seem to fit the continuing growth mechanism. Moreover, Chandler emphasized that throughout firm's growth, organizational innovation did contribute to increase the firm's productivity. It is rather debatable the extent to which formalized planning and techniques do enhance firm's productivity.

- f) McKelvey & Aldrich (1983) - The authors propose a population perspective to the study of organizational science. On Chandler, they state: "... explanations in the literature invariably attribute the behavior of organizations to individuals in organizations ... Many analysts are reluctant to give up this view, ... Perhaps the critics are correct in resisting a new, possibly very blind, variation; ... or perhaps it is a residue of the pre-Copernican need of people to see the earth as the center of the universe, now replaced by a need to attribute causality to a visible hand (Chandler 1977)" (p. 117).

In line with Aldrich, McKelvey & Ulrich (1984), the paper criticizes the notion that individual behavior in organizations, epitomized in Chandler's visible hand concept, explain

organizational behavior. The arguments advanced when discussing Aldrich et al.'s paper (1984) equally apply in this case.

- g) Nielsen (1988) – the author acknowledges Chandler's contribution to understanding why "internal coordination and cooperative strategies within large organizations can be more efficient than relying on external market mechanisms" (p. 489). He however states that "we do not have, as yet, a rigorous ecosystem or any other theoretical elaboration of why interorganization strategies are efficient, such as Williamson and Chandler have developed for internal coordination within large organizations" (p. 489).

Although Chandler's work does not allow for the elaboration of a rigorous ecosystem on interorganizational strategies, the author seems to have ignored Chandler's description of cooperative interorganization strategies. The co-evolutionary process of firm and industry growth in fact suggests increasing competition as an expected consequence of cooperation among rival firms in emerging industries.

- h) *Robins (1987)* - Transaction cost approaches are reviewed by examining two perspectives of analysis, one of which is historical analysis. Chandler's work is associated with this perspective. Chandler's account of the transformation of market coordination into administrative coordination is qualified as "misleading... The transformation discussed by Chandler involved more than just organizational change; it also involved fundamental change in the nature and level of economic activity in American society. ... The rise of the large firm was associated with an increase in the level of commerce, i.e., with growth in the density and activity of the economy (Bruchey, 1975). The history of nineteenth-century economic development is less a story of hierarchy displacing markets than a tale of social and political centralization creating the conditions for large-scale production of goods" (Knowles, 1967, p. 76-77).

Robins seems to have developed an incomplete understanding of Chandler's proposition. An examination of the necessary conditions for the replacement of the traditional firm by the MBE (fig. 2), i.e., the replacement of the invisible by the visible hand, reveals that the nature of the necessary conditions for the replacement to occur is both internal (managerial hierarchy and administrative coordination) and external (advanced technology, expanding markets, volume of economic activity) to the organization. Another evidence of Chandler's comprehensive account is provided by the multiple levels of analysis involved in several of his chains of explanation (figs. 4b, 7 and 8).

- i) *Rowlinson (1995)* - A case study on the British-based chocolate confectionery Cadbury is reported. A particular period of the firm's history is analyzed, the 1960s, emphasizing the strategy, structure and organizational culture issues. The criticism of Chandler's ideas is stated as follows: "Because Chandler does not specifically examine the cognitive, cultural, structural or political context in which strategic choice ... is "embedded" ..., he ends up invoking the vague "psychological commitment" of executives (Chandler, 1977, p. 463) to explain their decisions. In particular, Chandler does not consider how the culture of a company in general, or labour management issues in particular, might shape the orientation of executives. If culture is closely related to labour management, then Chandler is largely indifferent to it" (p. 122).

Rowlinson (1995) rightly identifies some limitations of Chandler's study. These concern the absence of certain dimensions of analysis including cognitive, cultural, structural and political contexts within the organization. It is worth noticing, though, that from the standpoint of the continued existence process (fig.4b), Chandler associated managerial commitment with the pursuit of a lifetime career in the firm, a goal not so vague as 'psychological commitment'.

- j) *Sockell (1988)* – *The Visible Hand* is cited within another book's review. Mentioning the importance of unions and governments, Sockell states: "It is noteworthy that these factors are often ignored in historical studies of how, when, and by whom enterprise decisions are made (see, for example, Chandler, 1977)" (p. 661)

Sockell rightly points out another limitation of Chandler's work.

- k) *Wright (1986)* – the author refers to Butler & Carney's article (1983) commented in (iii). In line with these authors, Wright states: "As they argued, managed markets use the techniques of internal organizations but avoid the need for buyer and seller to be part of the same legal entity. These types of markets move organization theory beyond Chandler's (1977) notion of market being replaced by internal organizations and hence beyond Williamson's (1975) M-Form organization" (p. 443).

Comments advanced in c equally apply in this case.

Having discussed the eleven works that criticized, pointed out limitations, misinterpreted or wrongly extrapolated Chandler's ideas, *The Visible Hand's* limitations and contributions are summarized next.

5.6 Limitations and Contributions of *The Visible Hand*

Despite its broad scope and multiple levels of analysis, *The Visible Hand's* explanatory reach is not without limits. Chandler's study was conceived to answer specific questions in a particular time period in the history of American business. These constitute fundamental limitations that can only be overcome by undertaking complementary studies. In addition, we contend that certain purposes were more successfully fulfilled than others. Chandler has aimed at explaining the initial appearance of the MBE, and its continuing growth, that is, explaining "where, how, and why an enterprise once started continued to grow and to maintain its position of dominance" (p. 11). Very successful at disclosing the necessary conditions for the appearance of MBEs, as well as at uncovering the continuing growth mechanism, Chandler was, however, less successful at explaining continued dominance.

A number of conditions were required for firm dominance to be achieved: the industry should be such that administrative coordination would generate competitive advantage, investments should be productive- rather than defensive-oriented, cost reductions and customer loyalty should be achieved. However, in what concerns continued dominance, Chandler does not advance an equally dynamic and comprehensive account, although he mentions the need for R&D investments for the firm to maintain achieved dominant positions. Continued dominance should take into account change processes both internal and external to the firm, such as organizational ageing and changing states of environmental uncertainty. In sum, rather than assuming a rest state, where things change in a quantitative way, the study of continued dominance would call for further investigation of the dynamics inside and around mature organizations, something that would considerably extend the scope of Chandler's study.

It is beyond doubt that Chandler's study provides a far-reaching contribution to the understanding of the co-evolution of firms and industry in emergent industries where administrative coordination can be more efficient and profitable than market coordination. The multilevel longitudinal perspective takes into consideration changes occurring both inside and around the firms, providing a dynamic view of the growth process. Besides, some of Chandler's ideas are potentially transhistorical, opening up the way for generalizations and theory testing. Finally, the scrutinizing of Chandler's descriptions and explanations is likely to be helpful in further theoretical development of strategic management issues. Growth is a case in point, and two examples are provided next.

The first one concerns what we call the *growth dilemma*. This dilemma has been inspired by the process that associates cooperation with competition (fig. 7). In several

circumstances, to foster growth firms need to undertake actions that may eventually end up constraining their growth later on. The American railways, for example, in order to benefit from the through traffic market, underwent a strong collaborative effort to standardize technology and procedures, which later on gave rise to a higher degree of competition. A similar situation is faced by those small firms which to get access to venture capital and grow need to patent their inventions. In so doing, they run the risk of having their invention circumvented by stronger, smart rivals which could benefit from the knowledge rendered public through patenting. The growth dilemma might be stated as follows: *to what extent should management undertake certain strategies to foster growth, if these very strategies are likely to constrain firm growth later on?*

Another example relates to what we call *dominance dilemma*. The source of inspiration of this dilemma has been the process describing the achievement of dominance (fig. 8), according to which productive rather than defensive expansion is needed for one to achieve dominance. However, sooner or later, one is compelled to undertake defensive strategies to keep one's dominant position. The dominance dilemma could be stated as follows: *to achieve dominance growth-propelling strategies are required, whereas to maintain dominance growth-constraining strategies are called for.*

As a result, the management of growth would therefore require the management of these two dilemmas. We argue here that although Chandler implicitly identified these dilemmas, he did not elaborate on them.

6 CONCLUSION

This essay reports on a study undertaken in order to identify growth-related theoretical content in Chandler's *The Visible Hand*. A process-oriented perspective was used to scrutinize Chandler's text to uncover process-related elements. Four classes of process have been identified concerning the formation and development of firms and industries. The adoption of a process-oriented perspective, which included the search for necessary conditions for changes to occur, has contributed to clarifying the rich web of processes and mechanisms found in Chandler's longitudinal multilevel account of the rise and continued growth of the modern business enterprise.

In the light of this analysis, the impact of *The Visible Hand* on the strategic management literature was assessed. In terms of retention, it was found that the text has been referred to either as a source of historical data or as an acknowledged contribution to

theoretical development. In what concerns the testing of ideas, no evidence was found that the ideas in this book have been undergoing systematic tests. As for criticisms identified in the literature, most of them seem inappropriate because critics sometimes appear to ignore important details of the complex explanatory web of Chandler's study. In addition, others have misunderstood his arguments, or have wrongly extrapolated his ideas. A process of oversimplification of complex ideas seems to have taken place in the strategic management literature examined.

Chandler's account of the rise and continuing growth of managerial business enterprises is comprehensive and dynamic. Moreover, some of Chandler's statements appear to be transhistorical, allowing for theory building on growth. In particular, this essay has advanced a general structure of Chandler's continuing growth process. However, Chandler is less successful in explaining continued dominance of large firms. We contend that a study of continued dominance should include Penrose's (1980) notions of entrepreneurial judgment (in the absence of which the firm will tend to consistently make mistakes, over-estimate what they can do, guess wrongly the future course of events) and willingness to search for ways of avoiding risk and still expand. This would require the introduction of some additional dynamic elements to account for changes inside and around the organizations.

Through the application of a process-oriented perspective to strategic management theory, the present study has brought to light *The Visible Hand's* main ideas on growth. These, in turn, have inspired the formulation of two dilemmas: *the growth dilemma*, whereby the very strategies undertaken to foster growth are likely to constrain growth later on; *the dominance dilemma*, where to achieve dominance growth-propelling strategies are required, whereas to maintain achieved dominance growth-constraining strategies are called for. The study, however, has limitations. Although it encompasses Chandler's main growth-related ideas, the processes and mechanisms reported in this essay are not exhaustive. As a matter of fact, *The Visible Hand* describes some other not so central processes that have not been covered here, for example, the concomitant process of innovation inside and around the firm. Notwithstanding these limitations, it is our hope that the process-oriented approach used in this essay may have helped to clarify a complex web of ideas while escaping the simplistic approach trap.

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