Entrepreneurship and Organizational Change in Growing Firms

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I. Introduction

Systematic transformations of firm organizations are frequent and can have many causes. Among them are, on the one side, deliberately initiated transformations following a strategy change, e.g., the implementation of internal diversification strategies (Kazanjian and Drazin 1987) or the adaptation to new technological competencies (Teece, Pisano and Shuen 1997). On the other side, organizational change may be driven by developments that are either not under managerial control like changes of the firms' environment, or that are unintended side effects of the strategies that have been chosen. In this paper the focus is on one of the most frequent causes of systematic organizational change, viz. the transformations triggered by the growth of the firm organization. As the outcome of the firm's hiring activities, an expanding staff is always intended and usually seen as a sign of a successful business. However, the consequences which the expansion has for the organization are often not, or not fully, anticipated and, in this sense, unintended. Where they result in irritations, frictions, and losses of organizational coherence and coordination they are even unwelcome.

Sustained organizational growth over a longer period of time has therefore been identified quite early as source of a systematically developing adaptation pressure to which firms respond differently moving down along different developmental paths (Penrose 1959, Greiner 1972, Brown and Eisenhardt 1997, Aldrich 1999, Rathe and Witt 2001, Siggelkow 2002). Adaptation pressure is typically building up latently till it takes on critical forms. The critical phases occur when the organization size arrives at certain thresholds. Efforts are often triggered then to reconfigure the firm's resources in one way or other. A first threshold seems to be a size of about 80 firm members. At this size, Sapienza and Gupta (1994) observed a high frequency of having a first round of IPO; Gulati and Higgins (2003) found a frequent entering into strategic alliances; Graeber and Eisenhardt (2004) identified a peak in the probability of being acquired. Earlier literature also described signs of a first growth crisis occurring at that firm size but, in addition, signs of a second crisis at about a size of 300 to 400 firm members (Clifford 1973; Albach, Bock and Warnke 1984; 1985, pp.324)

Pointing to rather regular threshold patterns, these findings suggest a systematic, growth-driven process of organizational development. Some attempts have been made to interpret the development as a life-cycle process with characteristic, successive stages that firms run through as time elapses (Greiner 1972; Kazanjian and Drazin 1987; Van de Ven and Poole 1995). It is clear, though, that for firms there is not only an alternative between following a uniform progression of stages or exit as the life-cycle metaphor would suggest. Firm organizations can, and in the majority of cases do, stagnate in their size for long periods of time or even over all their life span. Furthermore, if they indeed grow so that critical phases emerge, the ways they respond to a growth crisis are far from following a uniform progression pattern. Accordingly, there seem to be a whole set of typical developmental paths a firm organization can run through that differ in both the number, the sequence, and the timing of stages attained.

From a logic point of view, a developmental path originates from the entrepreneurial act of founding a business venture and hiring staff. While such an act always aims at realizing in a joint effort an envisioned business opportunity that cannot be realized by ordinary market transactions

alone, the way the joint effort is elicited in the firm organization can differ significantly. Of the many external and internal factors determining the further fate of a firm, a most important internal one is the entrepreneurial governance regime, i.e. the way of coordinating and motivating the firm members (Witt 2000, 2007). With its style of leadership, the mix of incentives and controls, and its impact on the organizational culture that emerges, it determines the degree of coherence and has an impact on the performance of the newly founded firm.

The question of whether and when, in case of a successful growth of the firm, the initially chosen entrepreneurial governance regime can turn ineffectual, trigger a growth crisis, and thus initiate a developmental path on which the firm organization is transformed is the topic of this paper. It is essential, we will argue, for understanding the relationships between entrepreneurial regimes of coordinating and motivating on the one hand and the development paths a firm organization can take. Backing our hypotheses by case study evidence, we will show why and how the growth of the firm organization can challenge the initial entrepreneurial regime, how this manifests itself in a crisis, and what organizational transformations, expressed as transitions between alternative entrepreneurial regimes, typically follow. We will argue that the forces that drive the transitions emerge in a self-organizing way and therefore often lead to sudden, and surprising changes.

The paper proceeds as follows. Section II outlines the entrepreneurial background of our approach to governance in firm organizations. Section III presents case study evidence on organizational crises and transformations. Section IV describes the possible developmental paths our theory predicts and elaborates the model of the growth-driven transitions between the entrepreneurial regimes. Section V offers the conclusions.

II. Entrepreneurial Regimes of Coordinating and Motivating Firm Members

Firm organizations are founded and the corresponding resources are acquired on the basis of employment contracts when entrepreneurial agents envision business opportunities which they cannot seize by ordinary market transactions alone. [1] However, envisioning business opportunities is one thing. Quite another thing is to develop such imaginings into a mental model of how to do the business. Such a mental model is needed to guide the design of the firm organization to be set up and to structure the corporate activities considered suitable to seize the business opportunity. For sake of brevity, these more or less complex mental models will be called entrepreneurial *business conceptions* here. [2] Though they may inspire detailed business plans and strategies, entrepreneurial

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[1] Witt (1998), Shane (2000), Eckardt and Shane (2003), Alvarez and Barney (2005). One of the reasons for choosing employment contracts and the organizational form of the firm may be the inability to pre-specify what exactly the deliverables under the contract are (see Coase 1992). Another reason may be that the pursuit of the business opportunity requires commitment to multi-party cooperation that is unlikely to be feasible in arm's length market transactions (Moran and Ghoshal 1999).

[2] Following Penrose (1959, p. 32), entrepreneurial services are interpreted here as being distinct from "...managerial services which relate to the execution of entrepreneurial ideas and

business conceptions are not themselves plans or strategies. They rather are a cognitive framework that provides the orientation necessary not to get lost in the details and to assess, and account for, experience.

When, in the pursuit of their business conception, entrepreneurial agents hire staff, the newly hired employees do not know of the underlying business conception. To take advantage of their dispersed knowledge and skills, their activities therefore need to be coordinated on the pursuit of the entrepreneurial business conception. Furthermore, the employees must be motivated to undertake the physical and mental efforts necessary to use their knowledge and skills for this goal. The way in which these two task are tackled jointly make up the entrepreneurial governance regime by which the firm organization is run. Concerning the coordination device there are several options. A business can be run by giving detailed directives to the employees, who then do not have to know anything about the entrepreneurial business conception. Alternatively, the employees can be explained the function assigned to them according to the business conception and be given discretion as to how best to pursue it. This, of course, requires to communicate the entrepreneurial business conception to the employees in the first place and to induce them to adopt it as a cognitive frame on their work.

Concerning the motivational side, the options are constrained by the kind of work motivation the chosen coordination device evokes. If employees are given directives on each and everything, this leaves little, if any, room for them to develop task identification and commitment, creativity, and achievement motivation. Under such a coordination scheme extrinsic work motivation dominates (William and Yang 1999). This means that doing their work well is not felt intrinsically rewarding by the employees. Work effort is elicited primarily by extrinsic (mostly material) rewards, and the effort is reduced where this is possible without reducing the extrinsic rewards. Hence, it is necessary to make the extrinsic rewards contingent on a tight monitoring of the employees' performance in carrying out the given directives. Because of principal-agent problems, even this may, however, not be sufficient to induce the employees to fully perform.

An entrepreneurial governance regime characterized by detailed directives as coordination device and tight controls combined with only extrinsic rewards as motivational device may be called a "monitoring regime" (cp. Alchian and Demsetz 1972, Williamson 1979, Holmström and Tirle 1989). It binds the more time and effort of the entrepreneurial agents to exert control on the employees the larger the number of employees grows. With a growing organization size a creeping loss of control of the individual employees' performance is thus inevitable. Even though this may not be noticed immediately by all employees, some of them may reduce their work effort and experience no sanctions. While not noted by the entrepreneur, under the conditions of social learning processes this is likely to be observed by their fellow employees. Given their extrinsic work motivation they are likely also reduce their effort under these conditions so that in a band wagon effect the entire firm organization eventually operates on a low work effort level. The process can only be reversed by the entrepreneur by appointing managers and by delegating the monitoring tasks

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proposals and to the supervision of existing operations." Hence, both entrepreneurial and managerial services may be provided by one and the same person, and entrepreneurial services may be provided by both firm owners (residual claimants) and paid managers.

to them, keeping own control only of the managers. By the same logic, a growing monitoring regime tends to develop into an increasingly more hierarchical structure in which inefficiencies and administrative costs can increase more than proportionately ("managerial diseconomies of scale", Mueller 1972).

An alternative motivational device is possible, if the employees can be induced to adopt the entrepreneurial business conception, exert own discretion on the functions assigned to them, and take on outcome responsibility. In this way it is possible to stimulate their task identification and commitment, creativity, and achievement motivation which, in turn, lead to a high degree of intrinsic work motivation (Deci and Ryan 1985). Moreover, if the agents perceive themselves and others as contributing with their work effort to a common goal – as they do if the entrepreneurial business conception is socially shared in the firm organization – this can enhance intrinsic work motivation further (Osterloh and Frey 2000). Combined with a balanced ratio of intrinsic and extrinsic rewards, controls can be less tight, focusing on an outcome assessment at large. However, to induce the employees to indeed adopt the entrepreneurial business conception – the prerequisite of this motivational device – is no trivial task. To recognize where the problems lie, a short digression into the cognitive and motivational underpinnings of human behavior is necessary.

A feature of human "bounded rationality" is the limited, and therefore highly selective, information processing and memorizing capacity. What pieces of information are selected is determined by discriminative attention processes which, in turn, hinge on spontaneously produced cognitive cues and interpretative frames (see, e.g., Anderson 2000, Chap. 3). At any point of time, only one cognitive frame is in operation. This means that, while in use, such a frame cannot at the same time be made the object of cognitive reflection. (Different cognitive tasks can, of course, be pursued on the basis of different frames at different times.) Furthermore, at any point in time, the prevailing cognitive frame determines what information is interpreted and how. Hence, information about alternative courses of action not fitting the cognitive frame is simply not considered unless one is forced to pay attention to it by strong outside stimuli.

As explained above, an entrepreneurial business conception is a cognitive framework that provides general orientation with respect to the business as conceived to be done by the entrepreneurial agent. Once in operation as a cognitive frame, a business conception constrains the interpretation of, and reflection on, alternatives relating to the business so that possible course of action gain no attention that would be considered, if another cognitive frame were in use. Since all firm member operate on the basis of an individual cognitive frame, their knowledge, skills, and efforts would be concerted most effectively, if they all were to share the entrepreneurial business conception as their own cognitive frame. Their task perception would be framed such that their attention is directed more to solving problems in the interest of the firm's goals than to figuring out alternatives serving other interests. How can this be accomplished?

The formation of individual cognitive frames is a complex, socially contingent process in which communication with, and observation of, other agents play an important role (Bandura 1986, Chap. 2). The more frequent the face-to-face communication between agents is, the more likely they are to develop collectively shared interpretation patterns. (These cognitive commonalities result not least from the fact that, in intensely communicating groups, the agents' selective information processing is occupied with much the same topics.) Accordingly, for the formation of the interpretative frame the employees bring to bear in pursuing their function, face-to-face

communication with the entrepreneurial agent who tries to convey her or his business conception is one important influence, but not the only one. Having formal power over the firm organization, an entrepreneurial agent may be able to determine the structure and the agenda of formal communications, but not necessarily the agenda of the informal communication spontaneously taking place between employees. At that level, an attempt to make the employees adopt the entrepreneurial business conception as their own interpretative frame may rival with other cognitive influences.

Observational learning within the firm organization can challenge the entrepreneurial interests also at the motivational level. Employees tend to pay attention to the motivational attitudes of others. In particular the motivational attitudes of the most influential firm members can serve the others as a model of behavior. A model of behavior tends to be imitated and may thus become a socially shared model and take on a normative character (Bandura 1986, Chap.7). Models of behavior that emphasize task commitment, cooperative problem solving, fairness, and frankness are supportive to intrinsic work motivation and keep intra-organizational frictions and individual frustrations down (Mullen and Goethals 1987, Paulus 1989). From the entrepreneurial point of view, they would therefore be highly desirable. However, at the informal level at which observational learning takes place it is difficult to control what model of behavior actually emerges. Moreover, when a desirable model of behavior indeed prevails this may always be challenged by some firm members who engage in behavior undermining commitment and cooperation in an opportunistic fashion. Such an event is likely to attract considerable attention and may make other firm members aware of action alternatives their cognitive frame had prevented them from considering before (Levine 1989). If such deviating behavior is observed as being successful it may undermine the intrinsic work motivation and invite the imitation of opportunistic attitudes.

Hence, in order to make their business conception a shared interpretative frame within the firm organization, entrepreneurial agents have to win in the informal face-to-face interactions over rivaling cognitive influences and undesirable models of behavior and persuade their employees to follow their conception and a desirable model of behavior. This is likely to be an enduring wrestling for "cognitive leadership" (Witt 1998) in which particular social skills like communicativeness, persuasiveness, and persistence, as well as fairness, credibility, appreciativeness are important. The attractiveness of a business conceptions also plays a role. If a business conception is too complex or obviously unsuited, it will be difficult to make it a shared frame. The same holds if it frustrates intrinsic motivation, e.g. by overdrawn claims with regard to working abilities, or if it grossly ignores extrinsic motivational features of the employees like remuneration, qualification enhancement, and possible career promotions.

An entrepreneurial governance regime characterized by the entrepreneurial business conception as the socially shared cognitive frame and a strongly intrinsically motivated organization may be called a cognitive leadership regime – pointing to what it presupposes. Where it could be implemented in a newly founded firm, it is likely to increasingly challenge the persuasive entrepreneurial skills when the firm grows. By necessity, the frequency of informal face-to-face interactions between the entrepreneurial agent and the other firm members on average then declines. The theory would predict that such a trend increasingly deprives the entrepreneurial agent of her or his influence on interpretative frames of the employees and their models of behavior and sooner or later can become critical for the motivational basis of a cognitive leadership regime.

It is one of the robust features of human behavior that the probability for switching from an extrinsic motivation to an intrinsic one has in general been found to be significantly smaller than the opposite switching probability (Deci, Koestner, and Ryan 1999). This asymmetry in changing one's motivation is a crucial constraint on the developmental paths a firm organization can take. It implies among other things that, once the strong intrinsic work motivation existing under a cognitive leadership regime is crowded out by an extrinsic one, this is unlikely to be reversible. The implications of this significant asymmetry will be discussed further below.

The specific combinations of coordination and motivation devices that make up the two types of entrepreneurial governance regimes is summarized in the cross tabulation of Figure 1. The combinations in the lower left cell and the upper right cell do not allow coherent governance regimes. Running a business by permanently giving directives to the employees does not stimulate their task identification, creativity, achievement motivation, and an intrinsic commitment to their functions. Likewise, granting discretion in pursuing their functions would contradict tight action controls. Moreover, given the just mentioned asymmetry, the granted discretion would tempt extrinsically motivated employees to reduce effort rather than to become intrinsically motivated. Even if these combinations were attempted, they would therefore not result in stable organizational states.

Figure 1 about here

What is always possible, of course, are states of the firm organization in which entrepreneurial agents fail to establish any working governance regime. Be it that they are unable or negligent of sufficiently enforcing directives and controls, or that they are negligent of, or lose out to rivaling influences in, wrestling for cognitive leadership. In both cases, the resulting lack of coordination, commitment, and coherence within the firm tends to generate a state of organizational disarray accompanied by an inferior performance and declining competitiveness of the firm.

III. Entrepreneurial Regimes and Growth Crises – Evidence from Business History

The question which the discussion of the entrepreneurial governance regimes raises is what happens in an organization that is run on such a basis in case of a successful growth. Since relevant firm data are not available and experiments that could be claimed to be representative cannot be made, we resort here to qualitative evidence from business history on processes of organizational change. Business history records are particularly well suited to keep track of how coordination and motivation devices employed by the entrepreneurial agents are affected by, and may change as a consequence of, the growth of the organization. Analogously to multi-case-study method (see Eisenhardt 1989) we discuss the development of four firms on the basis of, first, a descriptive within-case analysis and then a synoptic cross-case analysis. [3] The four firm organizations are

[3] The former serves to identify factors that may be causal to the investigated phenomenon in one case. The latter compares causal factors across cases and tries to distinguish

chosen from different industries, different time periods, and different cultural background: Southwest Airlines, Siemens & Halske, Andersen, DeLany & Co., and Bouchayer et Viallet (see Table 1).

Southwest Airlines began its service as a Texas based regional operator in 1971. By the year 2004 it had become the third largest airline in the US market in terms of passenger figures (194,000 passengers per day), in terms of the number of flights operated per day even the largest national carrier, and had the highest market capitalization in the US airline industry. The business opportunity that the founders Herbert D. Kelleher and Rollin W. King had seen was to capture market shares from competitors by providing reliable low-fare air travel to customers (see Ito and Lee 2003). By reduced fares passenger traffic should be increased to make even the less frequently flown city connections profitable (Gittell 2003, pp. 7).

Table 1 about here

Arthur E. Andersen and Clarence M. DeLany founded their company in 1913. Arthur Andersen & Co, as the firm was soon renamed, became one of the largest, internationally renown accounting firms. The business opportunity which the founders had envisioned was stated in their opening announcement as "the designing and installing of new systems of financial and cost accounting and organization, or the modernizing of existing systems" (Arthur Andersen & Co. 1974, p. 3). The idea was to better satisfy the needs of customers, particularly large corporations, by assuring a high quality standard of accounting services and to offer the newly developed systems and standards by employees with the status of partner having their offices distributed over the country (Squires, Smith, McDougall and Yeack 2003). The idea was indeed appealing to the emerging large corporations that needed professional accounting services in their neighborhood.

Werner Siemens, Johann Georg Halske and Johann Georg Siemens started their telegraph manufacturing firm "Siemens & Halske" in 1847 for which they saw a business opportunity in serving an expanding market with improved technical equipments and the offer to install them. Werner Siemens, the driving force in the company, had an engineering and science education and was already strongly engaged in developing and patenting in electrical technology, particular the telegraph technology, in a military position before he became entrepreneur in that business. After its founding, due to lacking competitors, the company quickly won large-scale contracts such as installing submarine cables and international telegraph lines among others to Russia and India and grew rapidly (see Weiher and Goetzeler 1984, Kocka 1969).

Bouchayer et Viallet was founded in 1870 to pursue a business opportunity in the emerging heating and ventilation industry and other metal construction. With the eldest son of the founder, Aimé Bouchayer, taking over as sole entrepreneur in 1898, the company moved into the

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replicative causal factors from non-replicative ones that should then be attributable in a plausible way to circumstances of the specific case (Yin 1984; Eisenhardt 1989; Graebner and Eisenhardt 2004).

hydroelectricity market and the pressure pipeline industry (see Smith 2001) and started to grow significantly. During World War I the company profited from the booming demand for war supply by adding ammunition manufacturing to its portfolio and expanded to a size of more than 3000 employees. However, the size declined again in the post-war period when ammunition manufacturing was closed.

Concerning the entrepreneurial governance regime the four companies started with on their developmental path, the first two firms can be associated with a cognitive leadership regime, while the latter two show characteristics of a monitoring regime. In the case of Southwest Airlines the business conception which the two founders Kelleher and King pursued focused on some specific organizational practices. The reason for this is that, in the case of short-haul flights on which Southwest Airlines had specialized, average productivity is lower than in the case of long-haul flights. The reason is simply that the ratio between flying time during which the revenues are earned and time for turnarounds on the ground is simply more unfavorable. Furthermore, Southwest Airlines basically served point-to-point city connections lacking a hub-and-spoke network that allows the airlines to realize scale economies (Melconian and Clarke 2001). Given such conditions, low-fare flight operations were not considered possible in the airline industry. Kelleher and King had to compensate for these disadvantages by organizational practices that improved turnaround processes on ground.

The turnaround process on the ground involves twelve distinct functional groups: pilots, ramp and baggage transfer agents, cargo agents, mechanics, fuelers, aircraft cleaners and caterers, ticketing and gate agents, flight attendants, and operations agents (Gittell 2003). To speed up the turnarounds without frustrating customer satisfaction requires very efficient interactions between all of them. The founders' business conception tried to accomplish this goal by organizational practices that were based on a specific model of behavior. It was called "relational coordination" and emphasized shared goals, shared knowledge, and mutual respect in the relationships both between the entrepreneurs and their employees and between the functional groups involved on the ground operations (Gittell 2000, 2003). By creating a shared vision of "relational coordination" to get the aircrafts back in the air as quickly as possible after landing and by supporting it in intense face-to-face communication on site, Kelleher and King conveyed their business conception to their employees (see O'Reilly 1995).

As many of their interview statements reveal they were concerned from the beginning to back the interpretative frame, to be shared by the employees in their task perception, by promoting suitable organizational practices and a cooperative model of behavior (see, e.g., Lee 1994). By careful, interview-based hiring procedures applicants were screened for cooperative attitudes. All firm members were given continuing training not only on their functional tasks but also on the company's organizational approach, and the employees were encouraged to learn about the work in functional groups other than their own. Supervisors were urged to adopt a coaching and counseling attitude in managing frontline staff. Mentoring and constructive approaches to conflict management were implemented (Gittell 2003). Communication between all functions, particularly on suggestions for improvement, was encouraged and practiced also when improvements were suggested by the entrepreneurs.

In the case of Andersen and DeLany, the business conception was not to create just another

accounting office preparing periodical audits and certifying financial statements. The specific feature of their conception rather was to assure the provision of high standard, innovative accounting and auditing services throughout the country by employees located in major centers. In view of the low profile of the accounting business at that time, this was quite an ambitious conception. [4] The challenge it faced was that the firm could only live up to these high expectations with employees able and motivated to apply the new tools at a high level of expertise, with a consistent service quality, and in a coordinated way exactly as they had been designed by the entrepreneurs. The provisions that Andersen and DeLany took basically tried to accomplish these goals by implementing their own business conception as a shared vision of the business and the self-understanding of the accountants and by establishing a proper model of behavior.

First, they considered a more equal background and an academic education conducive to create a workforce sharing the high standards they wanted to ensure. They therefore upgraded the hiring requirements and became the first accounting firm formally recruiting college students. Moreover, coming from rural Illinois, Arthur E. Andersen preferably hired young men who had graduated from college with the same small-town or farming background and a strong Midwestern work ethic like himself. The corresponding model of behavior emphasized integrity and honesty (Squires, Smith, McDougall and Yeack 2003, Chap. 2). Second, intense face-to-face communication between the entrepreneurs and the employees was given high priority. After entering the firm, the newly hired accountants participated in an intensive apprenticeship either directly with Arthur E. Andersen or with one of the senior staff members. The apprenticeship not only served to train the recruits in the new accounting and auditing methods and in delivering an uncompromised service quality. The close apprenticeship relation was also a device to induce the young accountants to adopt a shared interpretative frame and to strengthen their commitment to the shared values of integrity and honesty.

Fostering in this way the creation of a shared business conception and a shared model of behavior was also meant to help maintain coherence within a firm that was supposed to operate through regional branches distributed all over the country. It was considered important for this end that the firm organization presented itself as one voice to the outside world. Any partner office should practice the same high standard of professionalism and service quality. In addition to a coherent presentation and performance of the firm, the one-firm-one-voice policy could also serve to maintain an attitude of solidarity and cooperation between the regional branches of the firm.

Unlike the previous two cases, the German company Siemens & Halske was a firm organization in which the two founders from the beginnings pursued their business conception on the basis of a monitoring governance regime. Their business conception emphasized the development of new technology in the telegraph sector, combining engineering services and manufacturing in on hand. According to the partnership agreement, Werner Siemens was supposed to do contract acquisition on the basis of his inventions and to manage contract execution, while

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[4] The dedication to engage in developing new methods and systems of accounting may have to do with the fact that, before founding the firm, Arthur Andersen held an assistant professor position at Northwestern University. He later became head of the accounting department of the business school and full professor (see Squires, Smith, McDougall and Yeack 2003, Chap.1).

Halske was seeing through the development of the necessary processes and the details of the products at the shop floor in the factory. The business was organized hierarchically in the traditional form with masters as foremen and craftsmen as workforce. Throughout the 1850s and 1860s the firm's products were handcrafted in a production with a low capital intensity.

Halske's authority as an entrepreneur on the shop floor derived from his extensive knowledge and skills in mechanics and his paternalistic attitude towards the workers. Werner Siemens' relationship to the employees was characterized by respect for the individual person on the one hand and the expectation of their strict compliance to his and the superiors' directives on the other hand (Weiher and Goetzeler 1984, Chap. 1). Kocka (1969, pp. 79 and p. 83) describes Siemens as an entrepreneur aiming at enforcing discipline and loyalty while at the same time trying to create an own interest on the part of the employees in improving the firm's operations. In a letter to his sons, advising them with retrospect to his own conception on how to lead the firm, he wrote for instance "… break what is not bending – because a large and complex company as ours will simply not work without a strict command!" (Heintzenberg 1953, p. 330). In line with this entrepreneurial monitoring regime, Siemens & Halske introduced in 1854 a system of monetary incentives for the firm's employees (Kocka 1969, pp. 84).

In the fourth case discussed here, that of Bouchayer et Viallet in France, Aimé Bouchayer, (as of 1898 the sole entrepreneur) tried to realize his business conception with an understanding of leadership based on the view that a patron is the unquestioned master in a firm similar to a patron's role in a family in those times. In this paternalistic variant of a monitoring governance regime, workers were required to strictly comply with the directives given to them and show discipline in carrying out the tasks assigned to them. On the other side, the patron would feel obliged to account for the interests of the workers (as he understood them) and to provide some social benefits to protect them. Bouchayer was used to walk to the shop floor and, as long as the factory was small enough, had face-to-face contact with his employees so that he knew many of them by name (Smith 2001). However, this was not implying any communication about, or even sharing of, the entrepreneurial business conception. It may be assumed instead that this attitude was to support discipline and to strengthen the social model of a dominance-subordination relationship between the entrepreneur and the employees.

All four companies discussed experienced a significant growth in their operations and, as a consequence, a growing size of the firm organization. The theoretical reflections in the previous section suggest that, with a growing organization size, both entrepreneurial governance regimes sooner or later face problems. These problems differ and have different reasons, but they identically affect the performance and the further development of the firm. The cognitive leadership regime has been argued to suffer from the declining frequency of informal face-to-face interactions between entrepreneurial agents and the other firm members. The influence of the entrepreneurial agents on interpretative frames of the employees and their models of behavior fades in a process that is often hardly noticed until a critical threshold is reached at which the coordination and motivation of the employees runs into troubles. This conjecture can indeed be supported in the case of the two companies that were founded with a cognitive leadership regime.

Southwest Airlines started an expansion beyond Texas and the neighboring states with the opening of a connection to Los Angeles in 1982 and later to Baltimore Washington International

Airport. However, with a rapid opening of new branches in the new destinations and the immense demand for the low-cost air transport services, the organizational practices at the core of the entrepreneurial business conception could no longer fully be upheld. As expected, with the growing number of employees in the new branches, personal face-to-face interactions with the entrepreneurs became rare. Moreover, the rapid growth of sales, resulting in an understaffing of the ground operation and an attempt to quickly compensate for it, undermined the company's careful hiring and training practices. As a consequence, coordination of the newly hired staff on a shared business conception and a corresponding model of behavior suffered, and so did organizational coherence and performance. In the new branches, failure to implement the "relational coordination approach" resulted in disorientation in the ground operation. Newly hired staff lacked the understanding and engagement for a smooth coordinating processes across the twelve distinct functional groups. Significant delays threatened the operational goal of a quick turnaround for the aircrafts on ground, the very basis of the low-fare services.

Andersen, DeLany & Co. business conception was successful so that the company slowly grew in the first years. However, the growing number of employees seems to have induced the two entrepreneurs to develop different assessments of their business conception (see Spacek 1985). DeLany's more traditional understanding of how to run an accounting firm set limits to the expansion. Andersen's belief in the strength of a professionally trained staff applying sophisticated accounting methods, strongly guided in their activities by a common vision and shared values of integrity and honesty, saw no such limits. DeLany resigned after only five years. Andersen managed to continue the expansion of the business with a basically unchanged cognitive leadership regime until his death in 1947. Yet, with his decease it abruptly became clear that the organization had grown to a size where none of the partners were able to step in for Andersen as equally accepted cognitive leader. All of a sudden the company faced an existential crisis that brought it close to being broken up.

The problems a monitoring regime faces when the organization grows have been argued above to be of different nature. The increasing number of employees to be directed and controlled at some point overcharges the entrepreneur's capacity. The monitoring crisis can be remedied (at the cost of bureaucratization) if the monitoring task can successfully be delegated to employees in a managerial role. If an entrepreneur fails to take this step, the firm is likely to suffer in its performance, probably to an extent where its existence is threatened. Indeed, the significance of the crisis can be illustrated by the two firms identified here with a monitoring regime.

After eight years in business, the Berlin branch of Siemens & Halske had grown to a size of about 100 workers overseen by 5 masters. This was a size at which Halske apparently started to feel uncomfortable with administering and monitoring the shop floor, not least because of his strong preference for tinkering with new products and processes (Kocka 1969, p. 75). The two entrepreneurs addressed the problem by creating a new managerial layer in the workshop, assigning the most senior of the five masters the head of the workshop with the function of coordinating and supervising the other masters. Moreover, a chief engineer and executive director, William Meyer, was hired to relieve Siemens in his work. He was a friend of Siemens and his former officer comrade in the Prussian army. He formalized the interactions in the growing organization by numerous bureaucratic procedures designed to better direct and keep control of the business, not least to accommodate for the international expansion of the firm.In the 1860s the further growth of the firm

brought a challenge in the form of organizing the transition from craftsmanship as main production method to industrial piecework as a preparation for mass production. Halske objected to this transition and, consequently, withdrew from the company (Weiher and Goetzler 1984, p. 17).

With Werner Siemens' brothers William and Carl in charge of the branches in London and in St. Petersburg, the firm became an internationally operating family enterprise that expanded even more rapidly. Several divisions and subdivisions were created with managers usually recruited in house. Also an R&D department was created and its direction assigned to a scientist. He was supposed to substitute Werner Siemens' own engagement in research and development which, as he complained in a letter, suffered from "the expansion of our business (that) absorbs ever more of my personal time for the actual management of the company" (Matschoss 1916, p. 385). The transformation of the firm into a multi-layered, bureaucratic organization did not go through without frictions between the department managers who argued about competencies. Formal task descriptions were introduced to improve coordination. At the lower ranks of the hierarchy, the monitoring of the subordinates often took on a military tone (Kocka 1969, p. 235). Nonetheless, despite the managerial diseconomies of scale the company continued to grow rapidly.

The situation was very different in the case of Bouchayer et Viallet. With a workforce of more than 3000 employed in ammunition manufacturing during WWI, the company had reached its maximal size. After the war, Bouchayer had to refocus the firm's activities on the pre-war business fields. With the experiences collected in mass-production of ammunition, he aimed to enlarge the scale production of the hydroelectricity and pipeline businesses to retain employment at that level. However, the attempt failed as Bouchayer was not willing to transform the traditional patron-lead firm structure by introducing a multi-layer management as it would have been necessary to ensure coordination and control at a mass production level (Smith 2001, p. 67). As a consequence, the firm size rapidly declined to the pre-war level and the firm entered into a long struggle for survival. When resigning for age reasons, Aimé Bouchayer decided to hand over the succession of the company to his eldest son Jean who, unfortunately showed little entrepreneurial spirit and talent. It was only after a major crisis in 1953 that external consultants were hired for the first time (ibid., p. 147).

Following the earlier patterns, Jean Bouchayer's eldest son Robert took over at that time, but he too continued the paternalistic, family-centered governance regime so that some attempts to modernize the firm organization failed. He basically remained an isolated patron described by Smith (2001, pp. 161) as follows: "His inability to recruit and lead an effective managerial team prevent him from developing … Bouchayer et Viallet. … Robert maintained a cool … relationship with (the managerial personnel). (They) attested to Robert's limited capacity to shape the firm's culture …" After four generations of failing to implement an efficient management-based monitoring regime, the company's performance had eventually reached a level where its competitiveness was undermined. The decision to liquidate Bouchayer et Viallet was taken in 1971.

The comparison between Siemens & Halske on the one hand and Bouchayer et Viallet on the other shows that, if properly expanded in time into an ever more differentiated bureaucracy, the monitoring governance regime does not seem to face endogenous bounds to its growth, despite obvious managerial diseconomies of scale. In contrast, for an entrepreneurial cognitive leadership regime there seems to exist such an upper bound, where the entrepreneurial capacity to prevail with the own business conception and the desired model of behavior in the interactions with the growing number of firm members is exceeded. The size of the firm organization at which this happens may

vary with individual factors, but once the bound has been exceeded, the governance regime runs into a crisis with direct consequences for organizational coherence, efficiency, motivation and, ultimately, performance of the firm. The question then is in which way the crisis can be overcome or, more specifically, what options exist for transforming both the entrepreneurial governance regime and the organization itself to make further growth possible. The cases discussed provide some hints as to how to answer this core question in a developmental approach to the theory of the firm.

Bouchayer et Viallet over several generations of owners failed to implement an extended managerial hierarchy to efficiently direct and control the business facing the needs of mass production. The smoldering crisis of the paternalistic monitoring system could have been mastered, it may be argued, if leeway had been made with the necessary extension of the monitoring hierarchy. In the case of the growth crisis of Southwest Airlines something similar could be argued to have been an option, i.e. the introduction of an extended managerial hierarchy based on directions and controls rather than the attempt to further uphold the "relational coordination" approach. This would, of course have meant a transition from a cognitive leadership regime to an (extended) monitoring regime with deep-going effects on self-perception, motivation, and the prevailing social model of behavior in the organization. Likewise, the sudden revelation of an organizational crisis when Arthur Andersen's death left a vacuum in the cognitive leadership regime in the company grown large, could be imagined to have been followed by a similar transition to a company wide monitoring regime or by a breaking-up of the entire company into independent regional companies which, because of their size, could each have maintained a cognitive leadership regime.

However, in both cases, something different happened. To tackle the emerging problems, Southwest Airlines did restructure by creating new managerial layers. A number of vice president positions and the position of regional directors were newly created. The latter supervised staffing, union matters, facility management, and budgeting issues in all cities served by the airline in one of the following five regions: Heartland (Texas and surrounding states), California, Remaining West, Midwest, and East. However, Southwest Airlines also launched an attempt to revitalize and adapt its organizational practices. The aim was to secure a sustained intensive communication and interaction within and across the functional groups operating on the ground. To this end, the competencies and responsibilities of the station managers overseeing the ground operations at each single airport were strengthened to an extent unknown at other airlines. Enlarging the managerial capacity of the company and, at the same time, nurturing an entrepreneurial spirit in all managerial layers of the organization was conceived as crucial balancing step to maintain the relational coordination approach (Gittell 2003).

To assess what kind of governance regime resulted from the restructuring, the relative entrepreneurial independence of the station managers is important. All of them were selected from inside the firm organization and therefore had experienced before both the entrepreneurial business conception and the desirable model of behavior. They were given the competence and time to revive the careful, hiring procedures by which applicants were screened for the proper attitudes and to make the hiring decisions. They were expected to engage in a constant, two-way communication with all their team members and to convey Southwest Airlines's business conception to the newly hired ones. Following Kelleher's social model of mutual respect, station managers were trained to appreciate the skills, contributions, and suggestions, of their employees and to promote them where

possible. Station managers were given sufficient autonomy in running the business to experiment with new procedures either proposed by themselves or by their employees. Such reorganizations had to be reported on a monthly basis to the regional directors, but did not require approval from them or the headquarters beforehand (see Oliva and Gitell 2002).

Thus, although Southwest Airlines's responded to the growth crisis by stocking up the managerial resources, efforts were taken to avoid a transition to a bureaucratic monitoring regime. Firm members who had already acquired a shared understanding of the company's "relational coordination approach" before were appointed to the new managerial positions and they were endowed with competencies and resources to exert entrepreneurial discretion at their layer of operations. The entrepreneurial governance regime that resulted may be called "divided cognitive leadership" (Witt 2000) as it required the managers with entrepreneurial functions to make the employees at their layer of operations adopt the company's business conception and model of behavior in their daily activities.

A divided cognitive leadership regime also emerged in the case of Arthur Anderson & Co. as might be expected, given the firm's structure based on partnerships and regional branches operating independently within the one-voice policy dominated by Arthur Andersen's cognitive leadership. However, the transition was not a trivial act. Upon his death in 1947, Arthur Andersen had held more than 50% of the votes in the company's board. Any single partner stepping into his shoes would therefore have been able to determine the company's fate even against the rest of the partners or a majority of them. Since it was not clear whether and to what extend the shared business conception would be modified or even abandoned by such a successor, the partners feared that they could be forced to implement changes that were in conflict with their conception and model of behavior. An exit option was blocked by the fact that a partner withdrawing from the company was contractually bound to pay a high penalty.

Under these conditions, the crisis triggered by Andersen's decease culminated in a vote by the partners in 1947 to liquidate the company. [5] However, during the same night a group of partners crafted a plan that implied significant changes in the organizational structure, but would hold the company together. Suggesting to keep to the one-voice policy while at the same time adopting the principle of "one partner, one vote" the plan implied that the majority of partners would determine the firm's further fate, while in the single branches each of the partners would be compelled to exert cognitive leadership on the basis of the commonly agreed business conception. The partners accepted this arrangement the next day and thus created the basis for a divided cognitive leadership regime that allowed to company to enter a period of an even more rapid growth. [6]

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[5] The crisis was preprogrammed by a latent controversy among the partners about how to re-structure the growing company. There were considerable tensions built up on this question between a Chicago fraction and a New York fraction, see Squires, Smith, McDougall and Yeack 2003, p. 41).

[6] See Landry and Nanda (2000). In the 29 years from 1918 when DeLany's resigned to 1947, Arthur Andersen & Co. had grown to a size of roughly 900 employees. In the following decades it grew by about 900 employees every five years.

IV. A Model of Transitions Between Entrepreneurial Regimes

The evidence from the history of selected business firms that has been presented in the previous section points to crises that a successfully implemented entrepreneurial governance regime is sooner or later exposed to when, as a result of its success, the firm organization grows. These crises challenge the existing governance regime and, if the challenge cannot be tackled, result in a significant reduction of firm growth or even a decline. In the case of a monitoring regime, a creeping degradation process results from the fact that the entrepreneur's limited capacity of directing and controlling implies an on average decreasing monitoring intensity with regard to the individual employees' performance as the number of employees continually grows. A band wagon effect already mentioned in Section II triggers the crisis. The underlying process has some self-organizing features, characterized by a shift of a critical mass point caused by the continuous growth. This eventually results in an abrupt breakdown of the level of work effort in the organization as can already be shown with a simple, bi-modal model. This means that the core feature – the employees' level of work effort – can only be either high or low.

Let the relative frequency of firm members with a high level of work effort at time t be denoted by F(t). Furthermore, let q(t) be the likelihood that someone with a high level of work effort changes her or his attitude at time t to a low level. The likelihood of a converse switch (by someone with a low level of effort) may be denoted by r(t). Under conditions of intense intra-organizational communication and social learning, increasing incidents of low work effort that are not sanctioned are very likely to be observed by the employees. When employees still operating on a high effort level see a low effort level disseminating in the firm, they are increasingly likely to also switch to a low level, given their extrinsic work motivation. This amounts to the assumption that q(t) is a more than proportionately increasing function of F(t),

$$(1) \qquad q(t) = \phi\,(F(t)), \quad \text{where } \phi' > 0,\ \phi'' > 0.$$

For simplicity, let us assume a quadratic specification of eq. (1). Assuming further that social cognitive learning works also in the opposite direction, the probability of switching from a presently low level of work effort to a high level can be made dependent on the relative share 1-F(t) as in

$$(2) \qquad r(t) = \varphi\,(1-F(t)), \quad \text{where } \varphi' > 0,\ \varphi'' > 0.$$

Again a quadratic specification will do here.

If the number of firm members n(t) grows over time as a concomitant of a favorable performance of the firm, it becomes increasingly difficult for the entrepreneur to monitor the individual employees' performance. In the present model this condition can be expressed by a bias variable b(t) that affects the individual employee's likelihood of switching between the levels of effort. b(t) is assumed to vary with n(t) and a parameter λ, $0 < \lambda \leq 1$, which reflects the entrepreneur's tolerance towards slack: a value of λ close to 0 indicates a low tolerance, λ close to 1 a high tolerance. A functional form satisfying these assumptions is

$$(3) \qquad b(t) = 1 - 2^{(1 - \lambda\, n(t))}.$$

Eq. (3) states that, for appropriate values of λ, b(t) goes from close to -1 to 1 as n(t) grows larger. This means that the bias becomes the greater the larger n(t).

For a large firm organization, the probability of finding a randomly chosen employee to work on a high level of effort at time t can be approximated by 1-F(t) and the probability of finding a low work effort by F(t). Since switches between the work efforts are possible in both directions the change over time in the relative frequency of employees operating on a low level of work effort can be written as a first-order difference equation

$$
\begin{aligned}
&= 0 \quad \text{for } F < 0, \\
(4) \qquad F(t+1) \quad &= F(t) + (1-F(t))\, q(t)\, (1+b(t)) - F(t)\, r(t)\, (1-b(t)) \quad \text{for } F \in [o,1], \\
&= 1 \quad \text{for } F > 1.
\end{aligned}
$$

Inserting eqs. (1) and (2) in quadratic specification into (4) and rearranging yields within the constraints of the interval [0,1]

$$(5) \qquad F(t+1) = b(t)\, F(t) + (3-b(t))\, F(t)^2 - 2\, F(t)^3.$$

The non-linear difference equation (5) implies a bifurcation. The more the size of the firm organization grows, the more likely the level of work effort among the employees will break down despite all monitoring effort. When, for small values of λ, b(t) in eq. (4) goes from close to -1 to 1 as n(t) grows, the attractors of the process given by eq. (4) bifurcate. For b(t) = -1 the attractor F* = 0 would be globally stable. As n(t) and, thus, b(t) grows another attractor occurs in F** = 1. The bifurcation is graphically displayed in Figure 2 by the changing basin of attraction of F* and F**. When two attractor exist simultaneously in the interval [0,1], each one is only locally stable. Their respective basin of attraction is separated by an unstable fixed point F˚. As can be seen from Figure 2, for b(t) = -1, $F^{\circ}_{(1)} = 1$ [7]; the entire interval [o,1] is the basin of attraction for F*. Upon further growth of n(t) and b(t) F˚ moves down the 45°-degree line into $F^{\circ}_{(2)}$ and further on into $F^{\circ}_{(3)}$. For b(t) = 1, F˚ converges to 0. The attractor F* vanishes and eventually gives way to a globally stable attractor F** with [0,1] as the entire basin of attraction. [8]

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[7] F˚ is a point satisfying eq. (5) which lies on the 45˚-line and is not a stable attractor. For all points on the 45˚-line the l.h.s. of eq. (5) is equal to the r.h.s. Setting b(t) = -1 and F(t+1) = F(t) = F in eq. (5) and solving for F yields F=1. Since for b(t) = -1 the only stable attractor F* = 0, F = 1 must be a separation point.

[8] Note that the first order difference eq. (5) and the corresponding graphs in Figure 2 represent mean processes. In the realization of the stochastic switching process based on the individual probabilities q(t) and r(t) the actual increment $\Delta F(t)/\Delta t$ fluctuates around the expected one given by (5). Consequently, the closer F˚ approaches 0, the greater the chance that by a cumulation of random fluctuations F(t) is pushed beyond F˚ and the process then is attracted to F** = 1. For a detailed discussion cf. Weidlich (2000).

Figure 2 about here

This is a point of organizational crisis to which the entrepreneur may, or may not, respond. Without any response by the entrepreneur to the emerging growth crisis the further development of the firm organization is likely to result in a low profile state of organizational disarray. This is a situation in which an entrepreneur who owns the business may be tempted to solve the problem by selling the company. Indeed, it is not unusual that firms running into a crisis after an extended period of initial growth become objects of mergers and acquisitions. However, the example of Siemens & Halske in the previous section shows that a monitoring regime can avoid or overcome growth crises when extended by introducing additional layers of management that takes over the monitoring tasks. What thus results remains a monitoring regime – only with an ever more differentiated hierarchical structure.

A very similar self-organizing transition process underlies the crisis of a cognitive leadership governance regime. though a further growth of the firm definitely requires a metamorphosis of the governance regime into a divided cognitive leadership regime. The mechanisms underlying the crisis of the cognitive leadership regime are based on motivational attitudes, communication, and social cognitive learning as discussed in Section II. Let the relative frequency of firm members who conflict in their attitude with the entrepreneurial business conception and, moreover, are little intrinsically motivated at time t is denoted by F(t). Let p(t) be the likelihood that someone changes at time t to such an attitude. The likelihood that someone who has so far diverged from the shared vision and model of behavior may be denoted by v(t). However, given the characteristic asymmetry in transition rates from extrinsic to intrinsic motivation that was mention in Section II, v(t) is very small. Under the influence of intra-organizational communication and social learning, i.e. the observation of the behavior of other firm members and the consequences of their behavior, the respective probabilities can again be written as a function of the corresponding relative frequencies of the two attitudes:

$$(6) \qquad p(t) = \xi\,(F(t)), \quad \text{where } \xi' > 0, \xi'' > 0$$

and

$$(7) \qquad v\,(t) = \zeta\,(1\text{-}F(t)), \quad \text{where } \zeta' > 0, \zeta'' > 0.$$

If again a quadratic specification is chosen for the two functions, the motivational asymmetry implies that $\zeta' << \xi'$.

Now let n(t) grows over time. The frequency of a face-to-face interactions with, and the entrepreneur's influence on, each single organization member declines. Exercising cognitive leadership therefore becomes increasingly more difficult. Let this again be expressed by a bias variable b(t) as in eq. (3), this time with a parameter λ, $0 < \lambda \leq 1$, reflecting the entrepreneur's social skills and the intrinsic quality of her/his business conception. The change over time of the relative frequency of those employees diverging from the entrepreneurial business conception can then be written as a first-order difference equation

$$= 0 \quad \text{for } F < 0,$$

$$(8) \qquad F(t+1) = F(t) + (1-F(t))\, p(t)\, (1+b(t)) - F(t)\, v(t)\, (1-b(t)) \quad \text{for } F \in [o,1],$$

$$= 1 \quad \text{for } F > 1.$$

If eqs. (6) and (7) are inserted into (8), a non-linear difference equation results, that again implies a bifurcation phenomenon. However, this time the analogue to the unstable fix point $F^{o}_{(2)}$ on the 45˚- line is significantly closer to 0 than in Figure 2. This means that, unlike in the monitoring regime, there is a strong asymmetry: the probability for a random cumulation driving out the intrinsic motivation attitude as a prevailing model of behavior is much larger than the probability of going from an extrinsic motivation as a prevailing model to an intrinsic motivation as a social model.

In other words, once the underpinnings of a cognitive leadership regime in terms of a shared cognitive frame and a shared model of (intrinsically motivated behavior) are lost, this is next to impossible to restore. A return to a cognitive leadership regime is then very unlikely, even when the organization size is reduced. Without any response by the entrepreneur to the emerging growth crisis, or in case of an aborted transition attempt, the further development of the firm organization is likely to result in a low profile state of organizational disarray. This is again a situation in which an entrepreneur who owns the business may be tempted to solve the problem by selling the company.

However, as the discussion of the cases of Southwest Airlines and Arthur Andersen & Co. has shown, under certain a transition to a divided cognitive leadership regime may be possible. This requires on the one hand that cognitive leadership to be taken over by managers in separate divisions of the organization. On the other hand, these managers with entrepreneurial function must be coordinated on an overarching business conception which they share among them. From the logical point of view, yet another alternative open to the entrepreneur is to try to make a transition to a monitoring regime. To succeed a more or less extended hierarchy of managers directing and controlling the activities of the firm members would have to be created, and the managers would have to be supervised. Yet, in view of the asymmetry in changing motivational attitudes of the employees, the strong reliance of a monitoring governance regime on incentive schemes based on extrinsic motivation makes it impossible to return from a monitoring regime to cognitive leadership (or, in general, to go from a monitoring regime to a cognitive leadership regime).

In the present analysis of the growth driven organizational development, four organizational states have been distinguished: the cognitive leadership regime, the monitoring regime, the divided cognitive leadership regime, and a state of organizational disarray. These states are depicted in Figure 3. The three double circled states represent possible points of departure for a firm's developmental path. If the firm founder(s) fail(s) to implement any of the two other governance regimes, a firm can start right away in organizational disarray. The arrows in Figure 3 represent the

possible transitions between organizational states implied by the theory. [9] Because of the asymmetry in changes of motivational attitudes, the state of a cognitive leadership regime can, for instance, not be reached from any of the other possible states. A divided cognitive leadership regime, to give another example, can only be reached when a cognitive leadership regime had been implemented before.

As far as the factors relevant for coordination and motivation are concerned, the growth driven development of a firm organization can thus be characterized by a possible transition or a sequence of possible transitions between organizational states along the arrows in Figure 3. Altogether eleven different developmental paths not passing through any of the states twice can be enumerated: five single possible transitions, four transitions passing through one intermediate state, and two passing through two intermediate states. The number of possible paths can, of course, be arbitrarily extended by allowing repeated transitions between the states of a monitoring regime and organizational disarray.

Figure 3 about here

As it turns out, thus, the theoretical restrictions derived above imply a rather small number of distinct developmental paths a firm organization can take regarding its mode of coordination and motivation. Moreover, the developmental paths are clearly directed in the sense that they cannot arbitrarily be reversed. From a logical point of view, the states of a monitoring regime and organizational disarray represent an absorbing set, since they can be reached from any of the two other organizational states, but the converse is not true. However, this does not mean that the historical development of firm organizations is likely to end up in this set (before a firm ultimately exits). In fact, in the present analysis we did not try to assign probabilities to the various transition possibilities, and we do not see a basis for any such attempt.

V. Conclusions

In search for systematic influences on the development of firms, focus has been here on the growth of the organization. More specifically, we have investigated the impact that a growing organization size can have on accomplishing the specific entrepreneurial tasks of coordinating and motivating the firm members. Within this framework it has been explored whether there are growth thresholds at which existing entrepreneurial governance regimes start to face a crisis and, if so, why. The answer to this question is crucial for understanding the developmental path of firms. A second important question is how the firms respond to the emerging growth crisis. Constraining the analysis to the interaction between organizational growth on the one hand and the entrepreneurial approach to accomplishing coordination and motivation of the employees on the other, two different

[9] The exit option that can, in principle, be exerted by selling/closing the business or by declaring insolvency in any state at any time is suppressed in the Figure and in the argumentation based on it.

entrepreneurial governance regimes have been singled out as point of departure of a firm's developmental path. The one is a cognitive leadership regime, the other a monitoring regime. They differ fundamentally in the way in which coordination and motivation is achieved. It has been argued that they differ systematically also in the way in which the growth crisis materializes, in the options for overcoming the crisis, and in the chances for restructuring the governance regimes so that further growth becomes feasible.

In support of the developmental approach presented here and the hypotheses that were derived from it, evidence from the history of four companies has been discussed: Southwest Airlines, Andersen, DeLany & Co., Siemens & Halske, and Bouchayer et Viallet. These companies were deliberately chosen to represent different industries, different cultural background, and different historical epochs. Given the focus on coordination and motivation, a limited number of developmental paths has been identified and theoretically explained. The paths are characterized by transitions between different governmental regimes as the firm organization grows. In a simplified model, the transition process was shown to display self-organizing features, in which the organization size is indeed the crucial explanatory variable.

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employees motivated by \ employees coordinated by	detailed directives	sharing business conception & allowing discretion
primarily extrinsic rewards, tight action controls	*monitoring regime*	----
outcome responsibility, balanced intrinsic/extrinsic rewards	----	*cognitive leadership regime*

Figure 1: Entrepreneurial Governance Regimes

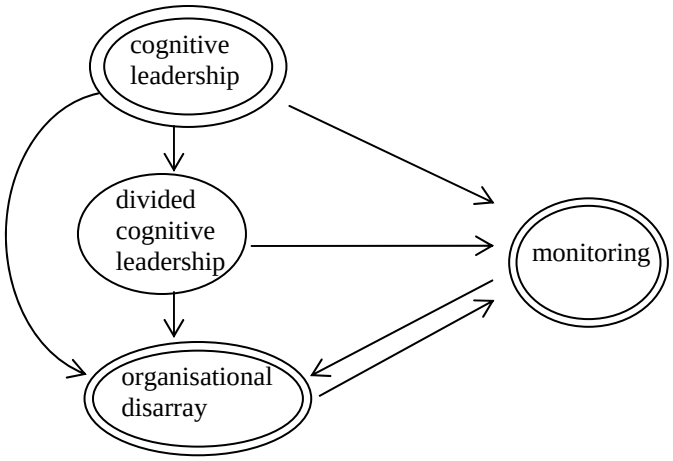

Figure 3: Possible Transitions Between Organizational States

Firm	Founders	Country, Year of Founding	Industry
Southwest Airlines	Herbert D. Kelleher Rollin W. King	U.S.A. 1971	Air Passenger Transport
Andersen, DeLany & Co.	Arthur E. Andersen Clarence M. DeLany	U.S.A. 1913	Services (Accounting)
Siemens & Halske	Werner Siemens Johann G. Halske Johann G. Siemens	Germany, 1847	Engineering and Manufacturing (Electrical Equipments)
Bouchayer et Viallet	Joseph Bouchayer Félix Viallet	France, 1870	Manufacturing (Metal Constructions)

Table 1: Investigated Firm Cases

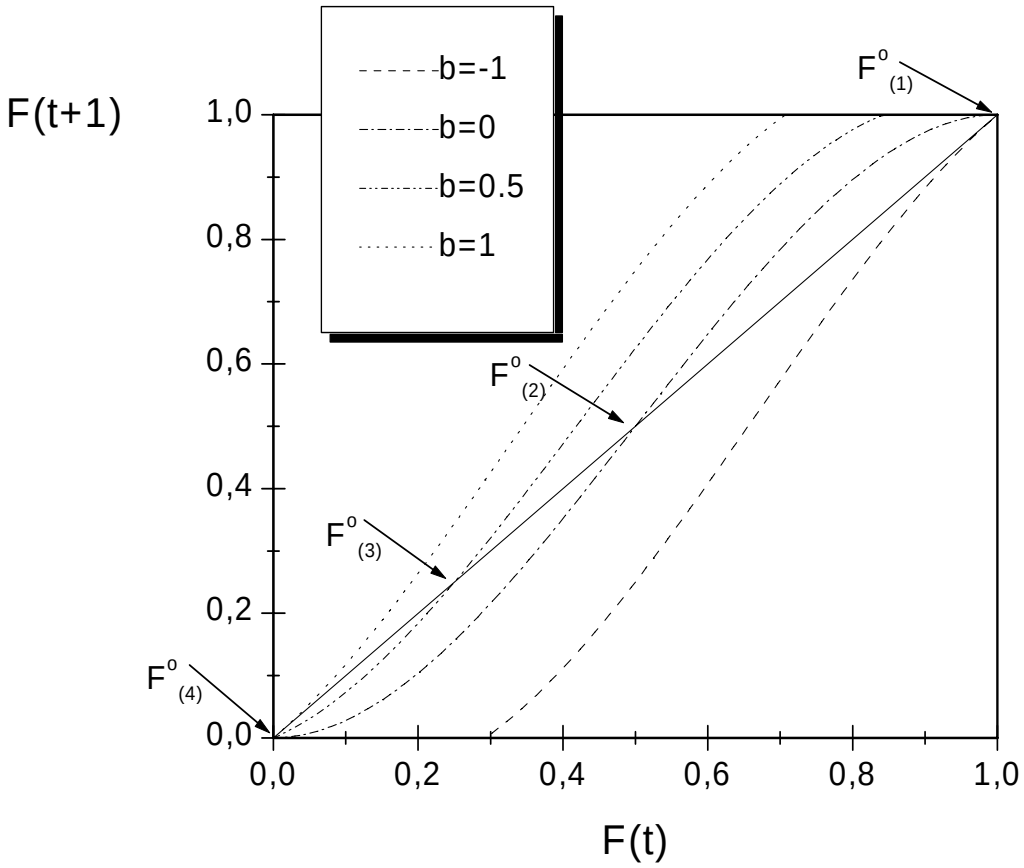

Figure 2: Bifurcation of Attractors in the Transition between Entrepreneurial Regimes