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Part III Research Perspectives and Conclusion

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Self-Reinforcing Processes in Organizations, Networks, and Fields – An Introduction

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1   Introduction

More often than not, organizations and also inter-organizational networks, markets or fields are characterized by dynamics that seem to run by and large beyond the control of agents. Even more dramatically, some of these are "hidden" as they unfold behind the backs of agents, either within or beyond the boundaries of single organizations. Among these mostly hidden and emergent dynamics, self-reinforcing processes seem of particular importance; they unfold their own dynamic, turning a possibly virtuous circle into a vicious one (Masuch, 1985). In terms of results they can also explain puzzling organizational and inter-organizational states such as rigidity, inertia, decay, and so on. More than anything else, the ongoing debt crisis has demonstrated the force of self-reinforcing dynamics and their possibly devastating impact on organizations and society in general. However, self-reinforcing processes develop not only at the macro level, but also in organizations as well as in inter-organizational arrangements such as strategic alliances and networks. In order to capture and properly understand those capricious organizational processes and phenomena, it seems promising to include self-reinforcing dynamics in the theorizing of organizations, networks, and fields, thereby partially substituting purely agency- or institution-based explanations.

There are already a number of studies proving the sweeping power of self-reinforcing processes. Among them are escalating commitment (Staw, 1984), group think (Janis, 1972), self-amplifying reciprocity (Browning, Beyer, and Shelter, 1995), herding (Scharfstein and Stein, 1990), bandwagon (Leibenstein, 1950), and network effects (Katz and Shapiro, 1985). Studies of how processes get entrapped or become path-dependent have also recently gained particular attention (cf. Garud, Kumaraswamy, and Karnøe, 2010; Siggelkow and Rivkin, 2005; Sydow, Schreyögg, and Koch, 2009; Sydow et al.,

2012; Weick and Sutcliffe, 2012). Studies on entrapping have also revealed that those processes often run through a checkered history: while generating desirable and rewarding results at first, they are likely to go into reverse and become a burden later on. And correspondingly or paradoxically, all these processes start with agency and become more and more auto-dynamic over the course of time, that is, they amount to unintended dynamics working beyond intentional actions. By implication, these processes – like vicious circles more generally (Garud and Kumaraswamy, 2005; Masuch, 1985; Wender, 1968) – are more often than not hidden; not easy to perceive, interpret, and understand; and even more difficult to get under control.

The aim of this introduction – and of the whole book – is to (re)direct the attention of management and organization researchers to these processes and, at the same time, to advance empirical insights into self-reinforcing processes in and among organizations. This introductory chapter will elaborate in more detail on the practical importance and the logic of self-reinforcing processes in and beyond the boundaries of organizations. It will conclude with an overview of the chapters included in this volume, most of them thoroughly revised versions of papers that were presented on the sub-theme "Self-Reinforcing Organizational Processes: Studying Stabilizing and Destabilizing Dynamics" at the 27th EGOS Colloquium held in Gothenburg, Sweden, in July 2011.[1]

2   The importance and the logic of self-reinforcing processes

It is not the first time that self-reinforcing processes have been brought to the fore of theoretical reasoning. Their existence has occasionally been acknowledged in various disciplines such as economics, sociology, biology, psychology, and political science. In economics, S. J. Chapman's (1908) idea of increasing returns has gained much prominence, as well as – though significantly later in time – Paul David's (1985) and Brian W. Arthur's (1989) work on technological path dependencies and Paul Krugman's (1991) insight into the dynamics of local agglomeration effects. More formally termed "deviation amplifying feedback" (Maruyama, 1963), the idea of self-reinforcement has been adopted in psychology to explain human behavior in socially isolated or interactive settings. In this discipline, the idea of self-reinforcing patterns in learning processes perhaps figures most prominently (Bandura, 1986).

In organizational sociology, the evolvement and stabilization of social hierarchies have been explained by self-reinforcing processes (e.g. Magee and Galinsky, 2008). Status hierarchies, for instance, once established, unfold self-reinforcing dynamics because the status of individuals determines how other individuals perceive and evaluate their behavior. Social interaction

also tends to guide human behavior in such a manner that it conforms to the status hierarchy and its implicit behavioral expectations, thereby reinforcing the hierarchical setting. In most cases deviances from these conformity expectations get socially sanctioned, thereby again activating self-reinforcing effects (cf. Magee and Galinsky, 2008). A well-established paradox in sociological literature is the "self-fulfilling prophecy" (Merton, 1948; in the management context Eden and Ravid, 1982). Similar dynamics are captured by the Matthew-Effect, which refers to the allocation of rewards in hierarchies. Low-status members are likely to get fewer rewards than high-status members for the same performance, thereby unintentionally reinforcing the asymmetry (Merton, 1957).

Self-reinforcing processes also play a certain role in organization theory and strategy research. Recently, the capability literature has paid much attention to the danger of becoming entrapped. Self-reinforcing processes are assumed to be the major driver (Leonard-Barton, 1995; Levinthal and March, 1993; Repenning and Sterman, 2002; Walrave, van Oorschot, and Romme, 2011). The focus is on the paradox that, because of self-reinforcement, success breeds failure in the end, thereby committing to a downward spiral (e.g. Bragger et al., 2003; Flaig and Stadler, 1994). Another field of interest is self-reinforcing attribution errors (Repenning and Sterman, 2002). Sensemaking after failure often leads to a specific causal explanation, on which further action is based. The problem is that the initial causal theory often remains unchallenged because of self-reinforcing effects. Managers attribute the cause of poor performance to workers who react to this (wrong in their view) attribution in a way (apathy, aggressiveness, etc.) that confirms the causal theory. As a result, a vicious circle is likely to emerge. Other examples are escalating commitment (Staw, 1984), group think and perceptual closure (Janis, 1972), and self-amplifying reciprocity (Browning et al., 1995).

In strategy thought other types of self-reinforcing dynamics have also been studied, for instance herding (Scharfstein and Stein, 1990), bandwagon (Leibenstein, 1950), network effects (Katz and Shapiro, 1985), or sunk costs and commitment spirals (Ghemawat, 1991). Inspired by evolutionary economics, the Red Queen effect stands out (Barnett and Hansen, 1996). This effect focuses on interdependent circularity and its potential escalation between competitors. An incremental strategic move to improve the competitive position may be responded to by a similar move by the rival, which in turn triggers a further strategic move on the side of the initiator and so on – so that ultimately a reciprocal system of circular interdependence evolves.

A systematic review and differentiation of various concepts of self-reinforcing processes is beyond the scope of this chapter (see, for instance, Arthur, 1989; Schreyögg and Sydow, 2011). However, it seems obvious that some of them, such as escalating commitment and group think, have more relevance in organizations, while others – such as herding, bandwagon, Red

Queen, and network effects – are relevant beyond the boundaries of single organizations and reflect market or field dynamics.

In sum, self-reinforcing processes point to very important developments in and among organizations. Empirical studies have provided ample evidence for the existence of such self-reinforcing and non-reversible dynamics. In the face of the recent "agentic re-turn" in organization and management theory (cf. for an example in organization theory: Lawrence, Suddaby, and Leca, 2011; for an example in strategy research: Felin and Foss, 2005), these processes are, however, likely to be paid less attention than they deserve.

3   Drivers of self-reinforcing processes

When aiming to classify self-reinforcing processes, at least six types of drivers of these dynamics can be identified (drawing in particular on Arthur, 1994; Cowan, 1990; Katz and Shapiro, 1985; North, 1990; Sydow et al., 2009): economies of scale, network externalities, learning effects, adaptive expectations, coordination effects, and complementarities.

(1) *Economies of scale*: The best-known self-reinforcing mechanisms are scale economies: increasing the output of a good or service (per period) results in decreasing cost per unit, which means in turn – if we take prices as given – an increasing profitability. The logic aims at evermore returns by expanding the volume and reproducing the same procedure. This driver is of outstanding importance in the case of path dependencies.

(2) *Network externalities*: This self-reinforcing effect is well-known from our experience of markets. A user's benefits from a purchased good or service increase over-proportionally the more other persons use the same good or service, too. This network effect works in an intra-organizational environment as well. Take, for instance, knowledge-management systems. They work better the more employees subscribe to them, and it is more attractive to join a network the more employees are using it already and the better it fits in with other information systems (e-mail, portals, etc.).

(3) *Learning effects*: The original version holds that the more often an operation is performed, the more efficiency will be gained when executing subsequent iterations (Argote, 1999). Operations become more skillful (faster, less errors, etc.), which, in turn, means decreasing average cost per unit of output. And the more skillfully an operation can be performed, the less attractive it is to switch to other sites, where the actor would have to start from scratch. Only sticking to the once-chosen solution promises increasing returns.

(4) *Adaptive expectations*: This self-reinforcing effect originally relates to the interaction of demand and preference, that is, preferences are not considered to be individually fixed; instead they vary along with the expectations or activities of others. Often quoted examples highlight the

need for social belonging and the desire to end up on the side of the winners. Self-fulfilling prophecies, self-amplifying reciprocity, and herding and bandwagon effects are often based upon adaptive expectations.

(5) *Coordination effects*: The coordination effect relates to the heart of organizational theory. It builds on the benefits of rule-guided behavior: the more actors adopt and apply a specific institution (a law, a norm, a routine, etc.), the more efficient is the interaction among these actors. As the behavior of the actors is rule-guided, it can be anticipated, reactions can be planned in advance, and so on. In consequence, the more people conform, the more attractive it becomes for other people to also adopt and follow this very same institution.

(6) *Complementarity effects*: Complementarities result from plurality and connectivity between different institutions or (sub-) systems. Essentially, complementarities mean synergy resulting from the interaction of two or more separate and different institutions. In the case of complementarities, the advantages of the institutions do not simply add up, they produce an additional surplus. Take, for instance, marketing skills and R&D knowledge, which when taken together may amount to a joint core-competence of a company that goes beyond their individual functional effectiveness (Prahalad and Hamel, 1990).

The logic of feedback spirals that characterize self-reinforcing processes cannot be captured when focusing exclusively on the individual decision-maker. It is the broader organizational, inter-organizational, and institutional context (the network of interactions, hidden assumptions of the organization, the organizational culture, the status and role system, the structures of the field, etc.) which informs decision-makers and provides, indirectly and inadvertently, the drivers of self-reinforcing loops. This becomes particularly clear when a multilevel lens is adopted, which also accounts for the reverse impact of individual and/or organizational actions on these contexts (Rousseau, 2011). It should be stressed that self-reinforcing effects often do not function separately; rather they tend to occur jointly and overlap.

4   Further elements of a theory of self-reinforcing processes

Attempts to bring the surprising and often paradoxical course of self-reinforcing dynamics into a coherent overarching framework raise several questions. At the core stands the question of the relationship between agency and systemic mechanisms. The conception of self-reinforcing processes has to include both the individual and the systemic levels. The conceptual challenge then is to address both levels systematically and in a way that, first, does not decouple structure from agency (Giddens, 1984) and, second, stays sensitive to mutual multilevel effects. A better understanding of the progressive logic, in which the interplay of structure and

agency is deeply involved, can be gained by looking at the different phases of development.

In most cases the process *starts* with agency, an intended individual or collective action, which is enabled or constrained by structures and triggers reactions that transform the process into a dynamic reaction system beyond individual intentions. It can therefore be understood as an analysis of unintended consequences or side effects – which, however, are likely to become the main effect. Unintended consequences often occur accidentally; thus they are difficult to capture systematically (Masuch, 1985). Opposed to that, self-reinforcing dynamics build a regular pattern of degenerating or escalating *side effects*, which can be explained and at least from a specific stage onwards are to be expected. This is particularly obvious in the case of path-dependent processes that may result in a lock-in (David, 1985; Sydow et al., 2009). Most importantly, similar to path dependence and the resulting lock-in situation, self-reinforcing processes generally are prone to *end up* in a stage of stagnation – a blockade (Masuch, 1985). That means the (escalating) dynamics come to an end but the circular reproduction of the now-routinized interaction, guided by increasingly 'firm' structures, carries on. The final state is often well-equipped to reject any requirements for change; it focuses on defending the derailed status quo. And that makes it so hard to break the circle; any intervention has to overcome the 'defensive routines' (Argyris, 1985). Further research, however, is needed on stopping or interrupting self-reinforcing processes and the resulting stage of ultra-stability. This also becomes obvious when reading the other chapters of this volume.

5   Overview of the other chapters

The remaining chapters of the book are organized in three parts. The first part assembles chapters that investigate path-dependent processes in and among organizations. The second part looks at self-reinforcing processes beyond path dependencies. The third and final part of the book speculates about future research opportunities in the field of self-reinforcing processes in and beyond the boundaries of single organizations.

5.1   Path dependence by self-reinforcing processes

Path dependence is arguably the type of self-reinforcing process discussed most in management and organization theory, not only with regard to technological and institutional but also with regard to organizational lock-ins (e.g. David, 1985; Koch, 2011; North, 1990; Pierson, 2000; Sydow et al., 2009). What makes this type of self-reinforcing process particularly interesting is that path dependencies do not represent only one particular type of self-reinforcing process; indeed self-reinforcing processes are themselves at the heart of the concept.

The first contribution in Part I of the book by *Uli Meyer* takes the example of Advanced Driver Assistant Systems (ADAS) in Chapter 2, and investigates self-reinforcing mechanisms on the field level of analysis, also paying attention to the role of (engineering) professions. The central concept Meyer promotes in his chapter is the 'innovation path', which characterizes a specific form of technology development having gained momentum and inertia, taking place in a particular organizational field, showing a mix of chance events and purposeful coordination, and being supported by self-reinforcing mechanisms. Like all the other contributions to this part, this concept embraces path-dependent dynamics not only in name but also in substance.

Stefan Kirchner studies the intriguing persistence of organizational identity from a path-dependence perspective in Chapter 3. In this purely conceptual piece, the author proposes that research should pay more attention to "identity work". This, however, implies less a deliberate identity change than the following of a trajectory supported by self-reinforcing mechanisms. Despite the resulting "pull" to follow the path (Sydow et al., 2009), the identity work – of individuals as well as organizations – may well, under certain conditions, provide the ground for path breaking or even path creation.

In the chapter that concludes this part (that is in Chapter 4), *Yipeng Liu, Xuanwei Cao*, and *Yijun Xing* use the path-dependence perspective to analyze the economic development of two second-tier Chinese cities: Suzhou and Wuxi. Both cities show path dependencies in quite different ways, thereby pointing not only to the role of the local governments and their regional policymaking but also to the modifying effect of the context.

5.2   Explaining and monitoring self-reinforcing processes

Part II opens with a chapter by *Frank Schirmer, Michael Tasto, and Daniel Knödler* on regimes and reflexivity in organizations, in which they explore self-reinforcing mechanisms fostering and impeding innovation. The authors highlight reflexivity in monitoring processes and explore this feature in two case studies.

Chapter 6 looks at self-reinforcing mechanisms and how they affect organizational decision-making. *Arisha Shollo and Ioanna Constantiou* investigate organizational decision-making in project prioritization and, in particular, how decision-makers treat financial data from IT projects in the process. The authors use a rich dataset built from a longitudinal study of such projects, and their findings indicate that decision-makers are subject to self-reinforcing mechanisms that have adverse effects. In particular, they find a self-fulfilling prophecy concerning the nature of costs and benefits calculations and competency traps in specific practices of decision-making, which reinforce each other in a recurring cycle.

Lidia Gryszkiewicz, Eleni Giannopoulou, and Pierre-Jean Barlatier investigate service innovation in knowledge-intensive organizations in Chapter 7,

applying Schreyögg and Kliesch-Eberl's (2007) theoretical 'dual-process' model of dynamic capabilities. They provide evidence from three research and technology organizations on capability-related rigidities stemming from path dependence, inertia, and cognitive traps such as commitment. To break organizational paths as well as overcome inertia and over-commitment, organizations require 'external' observation to notice that things need to be changed. Time is an additional important resource that allows for the necessary actions, if the structures are too rigid to apply the improvements identified.

Gabriele Faßauer investigates the anomie-driven dynamics of deviant behavior in Chapter 8. While this is viewed traditionally as an abrupt and transitory phenomenon of normative de-regulation, the chapter explores the procedural dimension of anomie and thus introduces anomie as a possible driver of an escalating dynamic of deviant behavior in organizations. The chapter focuses on the principal mechanism of these dynamics and argues that these are particularly common in organizations with all-embracing outcome-oriented performance management.

In the final chapter of this part (Chapter 9), *Anna Blombäck, Olof Brunninge, and Anders Melander* analyze formal corporate-value statements with regard to the imprints they leave on organizations. More specifically, these authors are interested in the role of retention and reinforcement of imprints, which have hardly been considered in the literature, although they may explain how imprints are actually kept alive in organizations (see Johnson, 2007, for an exception). In the three cases studied, these authors find that, because of corporate-value statements, the retention of imprints becomes somewhat independent of active reinforcement by management.

5.3   Research perspectives and an assessment

The final part of this book (Part III) opens with a chapter by *Mona Ericson and Rolf A. Lundin*, who discuss locking in and unlocking as two complementary processes in path-dependence theory. Drawing on three empirical examples, the authors demonstrate the possibility of unlocking in at least one case. In the other two, the focus is on history as continuously re-presented and re-constructed through the actions taken by individual organizational members, thereby demonstrating the necessity to take strategic agency into account even when following an organizational path.

Olivier Berthod and Jörg Sydow clarify the intriguing relationship between organizational path dependence on the one hand and institutionaliza-tion processes on the other, in Chapter 11. Despite early calls by neo-institutionalists like Woody Powell (1991) to seriously consider the potential of the *theory* of path dependence for organizational analysis, the concept has been used, by and large, only in a metaphorical way, not really exploiting its analytical potential. By contrast, in this chapter the authors argue for a

more analytical usage and suggest considering "institutionalized paths" as a particular type of (taken-for-granted, legitimate) organizational path.

Hugo van Driel, in Chapter 12, looks at the role of external events and initial choices, which are of critical importance in path-dependence theory. He does so with the help of three historical cases of cargo-handling innovations in the Dutch seaports of Amsterdam and Rotterdam. The analysis of the cases contributes to a deeper understanding of the interplay between external events, initial conditions, and choices for path-dependence theorizing. In particular, van Driel's study shows the strength of disrupting events, which, in interaction with the initial choice, may induce a path that changes the nature and relative importance of certain initial conditions and thereby, their (possible) effect on actions taken.

In the concluding chapter (Chapter 13) of this volume, *Huseyin Leblebici* provides a thorough assessment of the present state of research on self-reinforcing processes in and among organizations and argues that this research should be embedded in a broader perspective on organizational and social change, thereby commenting on the contributions to this volume.

Note

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