

ON THE THEORY OF ORGANIZATIONAL PATH DEPENDENCE: CLARIFICATIONS, REPLIES TO OBJECTIONS, AND EXTENSIONS

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This article reflects on our article of 2009, “Organizational path dependence: Opening the black box,” which received the *Academy of Management Review’s* Decade Award in 2019. We review how the article has been used in subsequent research, discuss the criticism it has elicited, and reexamine our original propositions in light of theoretical insights gained since the text’s publication. We also explore the linkages to related concepts, such as complexity, hierarchy, agency, and expansion. We conclude by outlining new avenues for research on and enhancing the theory of organizational path dependence.

The impact and success of our work on organizational path dependence (Sydow, Schreyögg, & Koch, 2009) is, at first glance, surprising, given that the bulk of recent management research has proceeded from an assumption of constant changeability. Modern organizations are assumed to operate in high-velocity environments that require enormous flexibility to allow for continuous incremental—or even radical—organizational adaptation. What is more, organizations are increasingly conceptualized as adopting a state of fluidity. By contrast, the notion of path dependence highlights the inability of organizations to change. Reflections on the importance of organizational persistence seem to have fallen literally out of time. Does it still make sense to study the emergence and perpetuation of organizational persistence if everything is seen to be continuously changing (Brown

& Eisenhardt, 1997; Langlely, Smallman, Tsoukas, & Van De Ven, 2013)? Our answer remains a resounding “Yes,” and it is encouraging to see that so many scholars are interested in persistence, particularly in organizational path dependence.

Beyond the rhetoric of fluidity and relentless shifts, other persistent phenomena and respective narratives have also attracted attention. They include failures to adapt strategic orientation (Tripsas & Gavetti, 2000), core rigidities (Leonard-Barton, 1992), the lag of digitization (Tripsas, 2009), resistance to change, longstanding traditions, and enduring forces of influence. These topics raise a host of questions: Why have well-known firms, such as those in the field of photography or media, failed to survive digitization and to reposition themselves successfully in the field of digital technology? Why have networks of organizations, including consortia such as Sematech, been unable to arrive at an interorganizational arrangement to speed up technological development in the way originally envisaged? The great challenges confronting societies and organizations also raise worrying questions: Why does it take so long to make widespread use of renewable energy? Why is it so hard to achieve gender equality in societies? Why can deforestation not be stopped? Why does Africa still lag behind economically? In sum, there are many persistent phenomena simultaneously representing urgent issues.

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Our article has already been cited more than 1,600 times. A review of the citation landscape (Sydow, Schreyögg, & Koch, 2020) shows that the article is used globally (predominantly by authors in Europe and the United States) and in a variety of disciplines (primarily business and management, but also information systems and economic geography). The most frequently used methodology is historical case analysis.

The theory of organizational path dependence has also sparked controversies. Some researchers have called its general importance into question (e.g., Liebowitz and Margolis [1995], who made an economic attempt to reduce path dependence to a marginal and negligible phenomenon). Others have taken issue with its allegedly deterministic undertone and missed the agentic view (Garud & Karnøe, 2001; Suddaby & Foster, 2017). These reservations are only two of the prominent ones, and there have been a variety of ideas and suggestions to revise, update, improve, and extend path dependence theory. This article addresses two distinct research questions: (a) What are the objections to the theory of organizational path dependence, and are they well founded? and (b) How can the theory of organizational path dependence be theoretically and empirically extended? Whatever the arguments, the discussion about the importance, status, and impetus of the theory of organizational path dependence suffers partly from the fact that some key aspects of the theory still need clarification.

WHAT IS ORGANIZATIONAL PATH DEPENDENCE?

The basic point of any path dependence argument stresses the relevance of past events for current and future actions. This insight has certainly advanced a time-sensitive understanding of organizational phenomena and has overcome the ahistorical rational-choice view. Highlighting that history matters, however, is not a theoretical explanation. Path dependence theory aims at providing a better understanding of such processes and offers an explanation of how and why history matters. With regard to antecedents, mechanisms, and outcomes of path dependence processes in and among organizations, three phases (I–III) governed by three different regimes have been identified (Sydow et al., 2009).

Phase I, *Preformation*, is characterizable as a largely unrestricted scope of action, where the choices taken cannot be predicted by prior events or determinants (Mahoney, 2000: 511). Because all choices occur in a social space and time, this phase should not be thought

of as a regime of completely unrestricted choice (as per Arthur, 1994, for example). A single choice, whatever its basis, may turn out to be a “small event” that triggers further developments. From the perspective of path dependence, this rather innocent, even random, decision gains importance if, and only if, it sets self-reinforcing processes in motion. At this point in time, nobody can predict whether this initial action or event will end up in path dependence; choices are still reversible.

In Phase II, *Formation*, dynamics triggered by the initial choice narrow the range of options. It becomes progressively more difficult to reverse the course of action. This second phase starts at the critical juncture when a new regime takes over: the dynamics of self-reinforcing processes. Arthur (1994) elaborated on these driving forces, conceiving of them as increasing returns (thereby excluding constant or diminishing returns as explanatory forces). At a general level, the notion of increasing returns highlights positive-feedback processes in which the increase of a particular variable leads to its further increase. The notions of increasing returns and positive feedback describe self-reinforcing processes by which benefits grow when a specific pattern of action or routine is repeated. There is a push for doing more of the same. Eventually, a dominant organizational solution, a “path,” emerges. The flip side is that the whole process becomes ever more irreversible, and alternatives dwindle. The processes are nonergodic; that is, they are not accidental, but they do not fully converge to a fixed point of distribution, either (David, 1985). In other words, a path is emerging, and organizational actors, their decisions, and their practices are becoming increasingly dependent on it.

Several types of self-reinforcing dynamics have been identified. Among them are coordination effects, complementarities, learning effects, and adaptive expectations. The most prominent explanation of organizational path dependence is the coordination effect. It holds that the more that actors adopt and apply a specific institution (e.g., a law, norm, or routine), the more their interaction benefits. In consequence, the more that returns are earned from sharing a rule or routine, the more attractive (beneficial) it becomes for other people to adopt and follow that institution. The other self-reinforcing mechanisms work analogously. Increasing returns are not the only basic driver of these mechanisms, however. Organizational self-reinforcing mechanisms might also stem from emotional reactions, cognitive biases, or political processes. Lastly, self-reinforcing effects are not always separate; they often occur jointly and overlap (see also Dobusch & Schuessler, 2013).

The transition from Phase II to Phase III, Lock-In, can be characterized by an additional constriction that eventually brings about an organizational lock-in. That is, the dominant pattern becomes fixed and develops a quasi-deterministic character. At its extreme, the process is fully bound to a certain path. A lock-in implies that the path has led the organization into irreversibility; alternative solutions are no longer within reach (or have even disappeared). This situation holds true for technological developments, whereas in organizational settings the final phase still leaves some scope, like a corridor, for minor variation (see also Martin & Sunley, 2006; Pierson, 2000).

The most precarious feature of this lock-in phase is the risk of becoming inefficient, since the organization has lost its capability to adapt to new circumstances or to better alternatives. When circumstances change, the pattern that has proved so successful since its inception (during Phase II) becomes susceptible to dysfunctional flip (Leonard-Barton, 1995) because the system has lost its reversibility (Schreyögg & Kliesch-Eberl, 2007). We label this dysfunctional flip a *rationality shift*, which differs from a mere lock-in. A lock-in indicates a loss of flexibility and, hence, an almost irreversible situation. A rationality shift indicates a change in circumstances from beneficial to detrimental. If an organization slips into a lock-in, it has a strategic problem because it can no longer respond to potential changes and is therefore potentially inefficient.

In summary, organizational path dependence is triggered by unforeseeable events, is established unintentionally by positive self-reinforcing feedback mechanisms, and proceeds to at least strategically inefficient lock-in. We conclude this brief recapitulation by posing four questions that serve to clarify the salient open issues in the discussion of path dependence: What exactly is a path and can there be more than one? Is path dependence always dysfunctional? What is the historical nature of path dependence theory? What are the features that distinguish path theory from other theories of organizational persistence?

What Exactly is a Path?

The notion of path is used frequently in management and organization research, but in vastly different ways. Often, a path is taken as a synonym of concepts such as trajectories, vectors, routes, lifelines, and even future options. In other cases, scholars include all forms of emerging patterns. For instance, Garud and Karnøe (2001), not least with their example (Post-it), almost equated a path with any

(technological) innovation. In these variants it is difficult to identify the distinguishing feature of a path. In later works these authors acknowledged this ambiguity and referred to the role of self-reinforcing dynamics, giving the notion of a path more contour (e.g., Garud, Kumaraswamy, & Karnøe, 2010). Djelic and Quack (2007: 162) drew on the notion of path generation to analyze institutional paths at a national and transnational level: “Path generation refers to the creation of a new path or to significant deviation from an existing path through the succession of small, sometimes apparently inconsequential steps, through the aggregation of multiple decision points and critical junctures.” These authors emphasized the creation of new or deviating paths. In this vein, however, paths are equated with patterns on the assumption that these newly created or generated patterns must already be a path. This merely pattern-based view of path has often been a focus in the literature (see also Bothello & Salles-Djelic, 2018). Confusion is compounded by an entirely different use of the notion, as when scholars have construed path to mean a coherent, time-ordered sequence of actions or events in performing work, conceptually linking action to patterning (e.g., Goh & Pentland, 2019).

By contrast, we focus on a very specific constellation by defining a path as “a rigidified, potentially inefficient action pattern built up by the unintended consequences of former decisions and positive feedback processes” (Sydow et al., 2009: 696). Hence, the notion of path always implies dependence building on self-reinforcement (not just recursiveness) in order to systematically explain how particular persistent patterns arise. Resorting to notions such as path creation or path generation thus requires an answer to the question of self-reinforced dependence. Without one, the added value of using the term *path* is difficult to detect.

A related matter is the potential existence of multiple paths at the same time. Although we assume that an organization or an organizational subsystem—understood as a strategically integrated unit—is likely to be dominated by only one organizational path, if at all, our theory nevertheless allows for several paths to coexist. That possibility is even more likely if there is more than one strategic unit involved and if rather decentralized organizational structures permit a certain degree of autonomy, not to mention collectivities of organizations such as strategic alliances or networks, which by their very nature are polycentric systems (see Sydow, Schüßler, & Müller-Seitz, 2016).

Still more likely is the coexistence of different paths at additional macro-levels of analysis. Indeed,

researchers have acknowledged the possibility of coexisting paths at the level of an industry (Bergek & Onufrey, 2013; Singh, Mathiassen, & Mishra, 2015), a region (Frangenheim, Tripl, & Chlebna, 2020; Henning, Stam, & Wenting, 2013), and national or transnational institutional systems (Djelic & Quack, 2007). Once again, the question arises as to whether these patterns actually represent path dependence in the defined manner. More often than not, scholars have actually addressed different routes or trajectories, not different paths in terms of path dependence theory. Although we do not deny that more than one path can exist, it is necessary to clarify whether studies have actually addressed multiple paths in the defined sense at a given level of analysis.

Is Path Dependence always Dysfunctional?

Both the definition and implications of path dependence have been variously discussed in the literature. In our theoretical framework, initial choices or capabilities undergo self-reinforcing development and may end up in a lock-in, which is deemed potentially inefficient. The range of choices at that stage has dramatically narrowed, precluding the chance to seize alternative, possibly better, opportunities.

Other streams of thought consider path dependence in a less problematic way. In strategic management, for instance, the resource-based view (RBV) and related theories cast path dependence as a source of differentiation and value creation (Barney, 1991; Eisenhardt & Martin, 2000; Hoopes & Madsen, 2008). The question of how firms differ (heterogeneity) is paramount here. The focus is on sustainable competitive advantages and particular resources (mainly capabilities) that make it possible to gain such advantages. In this context, path dependence is seen as an enabler. Capabilities that have developed in a path-dependent way constitute a historically specific combination of resources that competitors find difficult to imitate. Path dependence thus explains heterogeneity and, because of that heterogeneity's idiosyncratic historical development, protects against imitation, achieving an advantage for the resource owner (and a disadvantage for the competitors).

This positive view (for the focal firm), which builds on path-guided development, definitely suits our framework, but it tells only half of the story. From a broader process viewpoint it is only a matter of time before this advantage flips over to a disadvantage. Through self-reinforcing processes, path-dependent capabilities become ever more difficult to reverse. Whenever the strategic landscape changes a rationality

shift occurs, and previously successful incumbents encounter "competence-destroying changes" (Anderson & Tushman, 1990). Under such circumstances, new capabilities are needed to create new value for incumbents. By implication, a lock-in and its accompanying path-dependent capabilities can be fatal. Firms that have become too rigid can no longer renew their capabilities (Polaroid and Kodak, for example, did not master the digital transformation of photography). This problem is known under different names, such as "competency trap" (Levitt & March, 1988), "core rigidity" (Leonard-Barton, 1992), "architecture of simplicity" (Miller, 1993), "strategic inertia" (Burgelman, 2002), and "capability erosion" (Rahmandad & Repenning, 2016). Our framework provides a systematic explanation of how and why firms fall into this trap.

A group of capability scholars has sought to enhance the RBV's adaptability by introducing a more flexible perspective called *dynamic capabilities*. Many of these writers have suggested integrating path dependence into their conceptualization of dynamic capabilities. Path dependence has even been thought of as an essential building block of dynamic capabilities (e.g., Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997; Vergne & Durand, 2011; Wang & Ahmed, 2007). The assumption is that path dependence guides the evolution of dynamic capabilities. This supposition, however, seems to overstretch the perspective. It is difficult to see how highly flexible learning mechanisms mix with path dependence. If "dynamic capabilities necessarily rely much less on existing knowledge and much more on rapidly creating situation-specific new knowledge" (Eisenhardt & Martin, 2000: 1111), then one wonders how their evolution can simultaneously be guided by path dependence. Once again, the existence of the lock-in phase (or strategic inertia) seems to have been neglected.

To get a more complete understanding of the efficiency dimension of path dependence, it is necessary to broaden the focus beyond the lock-in phase (the negative side, as it were). In our framework, path dependence evolves through a much more ambiguous process. Any path dependence builds on positive feedback effects, particularly on increasing returns that accrue advantages for incumbent firms. It is this prospect for earning more returns that drives the development of path building. These positive dynamics continue until a rationality shift occurs. The self-reinforcing process ends up in a lock-in and, as an unintended consequence, endangers the firm because of its resulting inflexibility. To answer the initial question: No, path dependence is not always dysfunctional, but it is likely to lead to a dysfunctional

situation. This potential threat should be considered systematically from a long-term perspective.

What is the Historical Nature of Path Dependence Theory?

Path dependence theory gives explanations of a historical nature. But exactly how does history matter in path-dependent processes in and among organizations? The historical dimension is inherent in this theory. Mahoney (2000: 507) put it clearly: “The identification of path dependence therefore involves . . . tracing a given outcome back to a particular set of historical events.” The implication is that this type of historical analysis is quite focused. Contrary to what has often been suggested for historical analysis, it does not explore the wide scope of possible influences. The analysis has to be conducted within the established theoretical framework of path dependence.

At present, studies on path dependence are broadly accepted as historically informed approaches in organization theory. Recently, however, a lively debate has arisen on what (organizational) historical analysis really means, what the epistemological status of historical propositions is, and how historical management and organization studies should be conceptualized (Godfrey, Hassard, O’Connor, Rowlinson, & Ruef, 2016; Kipping & Üsdiken, 2014; Maclean, Harvey, & Clegg, 2016; Rowlinson, Hassard, & Decker, 2014).

What professional historians typically aim to do differs from what management and organization theorists suggest. In consequence, a dualism has been identified: “In the dualism of explanation, historians are preoccupied with the epistemological problems of narrative construction, whereas organization theorists subordinate narrative to analysis” (Rowlinson et al., 2014: 251). From this perspective, path dependence is clearly an offspring of organizational theorists (initially economists). In a further refinement, Kipping and Üsdiken (2014) identified four categories in the understanding of history in organizational thought. They stated that studies on path dependence clearly belong to the category of “history in theory” because they seek to explain current action, behavior, or decisions according to past events and developments.

How does Path Dependence Theory Differ from other Theories of Organizational Persistence?

The theory of organizational path dependence focuses on explaining puzzling persistence and its emergence. What sets it apart from other theories of

persistence, such as structural inertia (Hannan & Freeman, 1984), organizational imprinting (Marquis & Tilcsik, 2013; Stinchcombe, 1965), escalating commitment (Sleesman, Lennard, McNamara, & Conlon, 2018; Staw, 1981), and cognitive inertia (Kiesler & Sproull, 1982; Porac, Thomas, Wilson, Paton, & Kaufer, 1995)? Although all these approaches assume that an organization’s previous history affects its future actions, two dimensions—range and logic—seem particularly important as distinguishing features of path theory.

Differences in range. A group of persistence theories, particularly those dealing with structural and cognitive inertia and organizational imprinting, assumes a more or less general tendency toward stability. According to imprinting, for instance, all organizations in their founding phase experience specific conditions that imprint their future behavior. These early-adopted characteristics (reflecting idiosyncrasies of the external environment dominant at the time) tend to persist. A similar argument underlies thought about cognitive and structural inertia. Contrasting these universal approaches, the theory of organizational path dependence (as well as that of escalating commitment) focuses on a distinctive group of cases only. Not all organizational processes are assumed to become path dependent. This type of persistence emerges only when it becomes dominated by self-reinforcing processes with their specific dynamics. By implication, path dependence theorists do not—as is often erroneously assumed—expect all decisions or routines to become path dependent. Such development is more the exception than the rule.

Different logics. In many persistence theories organizational rigidity and its attendant lack of adaptive capacity are seen as a fixed state, something like a long-lasting trait. Path dependence theory, by contrast, is based on escalation dynamics and treats extreme persistence—a lock-in—as only the final stage of this specific process (again as in the theory of escalating commitment). Path dependence, therefore, does not represent a trait but rather points to a developmental stage of a system, preceded by a positive dynamic and nonlinear process. Path dependence begins—as described above—with an event (usually a small one) that does not in any way allow prediction of a concrete result. During Preformation, or Phase I, actors make decisions consciously or unconsciously. In *some* cases a set of decisions or actions gets reinforced (bifurcation), and momentum stemming from self-reinforcing processes leads, starting in Phase II, to the formation of a path. The more dynamic these forces are, the more likely it is that the process

will narrow the available scope of action. If there are no drastic interruptions (e.g., external shocks), the process will end up in Phase III, Lock-In. By implication, path dependence is more the result of a specific process than of an enduring state of a system.

CRITICISMS OF PATH DEPENDENCE THEORY

Path dependence theory has a distinctive structure: It is by nature selective. It focuses on a few critical elements and does not aim to incorporate as many explanatory variables as possible. This selectivity amounts to a clear profile. On the one hand, this result is an advantage in terms of conceptual clarity. On the other hand, some scholars have considered this explanatory logic too straightforward and not sufficiently nuanced. Other fundamental issues have also been raised. Criticisms have focused on three issues in particular: the lack of agency in the theory, the allegedly positivist character of the theory, and the linear character of the process on which the theory builds.

Is Agency Missing?

One of the major criticisms raised is that path dependence theory largely ignores agency (e.g., Garud & Karnøe, 2001; Suddaby & Foster, 2017). Explanations that path theory offers are structural, not agentic. This objection seems, however, to be a misunderstanding. Human agency has always mattered in theorizing path dependence, even in its classic conceptualization by David (1985) and Arthur (1994). Likewise, agency matters in all three phases of our model, albeit to varying degrees. Preformation (Phase I) of an organizational path—more specifically, the triggering of a path-dependent process—usually results from action. Individual or collective actors make decisions or follow suggestions. The same is true of Formation (Phase II), in which actors observe the positive results of their and others' choices and start to imitate and to reproduce the pattern. One action builds on the other. Even during Lock-In (Phase III), agency continues to matter, though it is radically reduced mainly to actions that reproduce (and slightly vary) the path.

Our theory of organizational path dependence thus accounts for agency throughout the process, in each of the phases but to different degrees. In Phase I agency is prevalent because many choices can be made, though the scope of choice may be funneled and some choices—for reasons of historical or contextual imprints—are more likely to be made than

others. In Phase II, which notably starts from the critical junctures with one or more actions or events, the self-reinforcing mechanisms increasingly unleash their force. They do unfold largely behind the backs of the agents, but they depend on enactment and repetition by agents. The effects of coordination and complementarity come about, for instance, only when organizational actors behave in such a way that such effects become feasible. Nevertheless, from the critical juncture onward, agency becomes increasingly less central and the emerging pattern more central in a process that deserves to be characterized as path dependent.

Even in Phase III, agency remains relevant. Agents have to reproduce the respective pattern by staying on the path. If they did not reproduce the lock-in, it would fade away. In this final phase of the process, we allow for idiosyncratic variation of actions on the path. Any realistic understanding of reproduction by human beings would do so (Giddens, 1984). However, there is clearly a difference between endogenous and exogenous possibilities for agency in Phase III. Actors who are not affected by a path and who are endowed with the necessary material and immaterial resources may intervene in a path-dependent organization from outside it. As for endogenous agency, we allow only for minor deviations from the path, reflected in a corridor of possible deviations on—not from—the path. Whether this “path plasticity” (Strambach, 2010) permits more than on-path change, whether it allows for a break *from* a path, is a different question (see “Going beyond Phase III: Path Extension and Path Breaking,” below).

Is Path Dependence Positivist Theory?

Suddaby and Foster (2017) recently introduced a provocative discussion on the character of the theory of path dependence. They drew a clear distinction between an objective and a subjective view of history, including assumptions about the nature of the past and how this view of the past influences understanding of the changeability of the world. The authors explicitly assigned the theory of path dependence to the category of “history-as-fact,” adding that thought on path dependence has to be regarded as “naïve positivism” because it treats historical development as a “brute fact” and ascribes it to “deterministic fatalism” (Suddaby & Foster, 2017: 23). We find it hard to agree with this conclusion.

In responding to this analysis, we first have to clarify what the authors meant by positivism (aside from “naïve positivism”). Beyond polemics, positivism is a

distinct philosophy of science aiming to ground all insights—or “truth”—in experience. Many current organizational scholars share this conviction, not least those favoring evidence-based management (see Rousseau, 2006). The ideal is to explore reality in order to detect causal laws—which, it is suggested, also apply to the social world. There are many different streams within positivism: Mills, Comte, logical empiricism, and Popper’s critical rationalism (including his seminal critique of inductivism and his verdict on verifiability). To discuss them in detail would obviously go beyond the space available in this article. Above and beyond these important differentiations, there is, however, one overarching distinguishing feature that Suddaby and Foster (2017) probably addressed: Positivists assume the existence of a reality, an external world, that is independent of the human mind. Scientists are expected to explore this outside world with objective measures and methods (a view still broadly accepted in science).

Whatever the reasoning, it is hard to find substantial proof that research on organizational path dependence actually conforms to this line of scientific inquiry. Path dependence research has analyzed a particular constellation of human interaction. The major explanatory focus has been on the evolution of endogenous self-reinforcing processes that are likely to amount to a social trap, and these unintended dynamics ultimately restrict the scope of action more and more. The involved actors experience this situation as something oppressive, as “objective reality” or “objective history” (Berger & Luckmann, 1966: 78). In this context, it is quite clear that such objectivity is socially constructed, but it is nevertheless experienced as being objective through “objectivation” (Berger & Luckmann, 1966: 78). The trap is therefore experienced as oppressive (as is also known from many other examples, such as glass ceilings and racial discrimination). Many such situations and institutions cannot easily be changed, since even social practices experienced as oppressive tend to persist because of self-reinforcing dynamics (Blageov & Schreyögg, 2019). By implication—and unlike the somewhat idealized, unrestricted agentic world of Suddaby and Foster (2017: 35), according to whom “change can occur by reframing our attitudes”—the scope of human agency to effect change is not unlimited. To understand agency and the scope of action, institutional conditions must be examined, including the restrictions. There are situations in which strong, oppressive forces may be at work. However, path dependence theory does not hold that all social situations in which history matters are

restrained or even oppressive. That applies only in specific cases (with all other interpretations being a misrepresentation of this thought).

Is Path Dependence a Linear Process Theory?

Another objection concerns the way we have processed and incorporated time and temporality into our theory. The critique culminates in the allegation that the conception of process underlying the theory of organizational path dependence is a simple linear one (Cloutier & Langley, 2020; Suddaby & Foster, 2017). At root, this line of argumentation is structurally analogous to aspects of agency and history in that the question once again arises regarding the extent to which we apply an objectivistic concept of time and treat it as exogenous.

The idea of historicity itself implies that time is a fundamental aspect of path dependence theory. Paths develop in space as well as time, and thus imply the distinction between before and after. This fact becomes immediately evident through the phase sequence in our model. In addition, this is clearly shown by the idea that individual, singular events (small or even bigger ones) merge and interlock into self-reinforcing mechanisms. During the configuration of organizational paths, this process forms a mechanism-based chain of events to which actors relate with their practices. Two conceptualizations of time play a role: the preceding sequence of events and the spiraling, self-reinforcing relation of events that constitute mechanism-based event-action patterns.

Cloutier and Langley (2020) distinguished between four styles of process theorizing, all of which address time and temporality in a specific manner, ranging from the simplest linear style, through parallel and recursive styles, to the most sophisticated level—the conjunctive style. The authors thereby understood the idea underlying our theory as a classical embodiment of a linear process conception, which they characterized generally as a model that considers “events that affect stage-specific phenomena, contingencies that help *shift* a process from one stage to the next or mechanisms that help explain process *flow*” (Cloutier & Langley, 2020: 10, emphases in original). That view is, however, a misrepresentation of the process dynamics advanced by the theory of path dependence. Contrary to Cloutier and Langley’s interpretation, the theory of organizational path dependence does not assume in any way that a specific event (input) reliably brings about a specific output. Inputs are often random events that trigger potentially self-reinforcing processes that may end up in a lock-in.

Even if events are strategically enacted, neither the actors nor external observers can predict, as assumed by linear models, the outcome of the process. The major point, however, is that the inherent logic of the self-reinforcing processes cannot be fully understood, and therefore cannot be intentionally reproduced a specified number of times. In von Foerster's (1984) framework, the path dependence process represents a "nontrivial" machine, not a "trivial" one.

The nonlinear process theory we advocate implies that time and temporality in our model are not to be understood only as mere clock time but also as process or event time (Reinecke & Ansari, 2017). In other words, the temporality of path processes may well involve organizations with different internal conceptions of time (*Eigenzeiten*). These conceptions might be caused by the different speeds and durations of the organizational self-reinforcing processes, or even by their timing ("too early" vs. "too late").

In this vein, Rhee and Kim (2015) used an agent-based model to address a very particular aspect of the broad debate about time and temporality (see Reinecke & Ansari, 2015) in path dependence theory. The authors inquired about the extent to which, and under what circumstances, organizations become victims of an "early success trap" (Rhee, 2010), trying to answer the question, "When is early success more destructive than later success?" (Rhee & Kim, 2015: 181). This "success trap research" (e.g., Miller, 1993) can meanwhile be described as classic. We therefore build on it in our theory, partly by referring to that other area of endeavor and partly by demarcating it from ours. However, this success trap research rests on a simple, but not further differentiated, chronological sequence: first success, then failure. Timing itself is made a central explanatory variable in order to explain the empirical fact that some firms process early success very well (e.g., Google and Microsoft), whereas others (e.g., Myspace) are unable to turn a first-mover advantage into lasting success. The central focus is on internal processes of organizational learning, and, as in all learning-based trap theories (Levinthal & March, 1993), it is initially about the fact "that organizations learn from past performance, which affects their cognition and behavior after success" (Rhee & Kim, 2015: 181). Whereas path dependence theory distinguishes between general learning processes and those that are self-reinforcing, Rhee and Kim's approach sheds light on the effect of timing in those processes—that is, on a specific time-structured sequence of events, which is seen as decisive for the consequences of early success.

These insights show (again) that the style of theorizing that accompanies the theory of organizational path dependence is anything but linear. They also fit quite well into our concept of path dependence, substantially supplementing and further developing our theory by guiding exploration of specific temporal structures (Orlikowski & Yates, 2002), in this case the timing and speed of specific learning processes and their focus (exploration vs. exploitation), as possible explanatory factors. Timing and speed in this sense could be understood as drivers of learning mechanisms that determine whether a potential learning mechanism induces enough momentum to forge a path in an organization or fails to yield positive feedback and to lead to a path as proposed in our theory.

EXTENSIONS OF PATH DEPENDENCE THEORY

Whereas agency, history, temporality, and a precise understanding of paths are essential themes across *all* phases of path dependence, we next address phase-specific extensions, including suggestions for further research. With respect to Phase I, we explore the role of complexity and uncertainty. For Phase II, we ask the key question of how self-reinforcing mechanisms can develop under the regime of hierarchical power. For Phase III, we discuss the question of path expansion. More specifically, we ask whether a specific organizational path (regarding a set of routines, for instance) can be inscribed within an organization or institutional setting. Lastly, we speculate about the possibilities of extending and breaking an organizational path and thereby going beyond the lock-in phase of our model.

Phase I: Complexity, Uncertainty, and the Emergence of Self-Reinforcing Mechanisms

Path-dependent processes are assumed to begin in Phase I within a complex, uncertain, almost undetermined, though historically and contextually framed, state. The defining characteristics of the initial state are therefore different from those of the two subsequent phases. Hence, the main interest in Phase I is to improve understanding and analysis of the process that promotes the birth of a self-reinforcing mechanism—that is, of when, how, and why self-reinforcing effects arise.

The decisive step in this process comes at the end of Phase I, the triggering of at least one self-reinforcing effect or, more generally, of one positive

feedback mechanism (Dobusch & Schuessler, 2013). Empirically, it is very difficult to identify path-building processes at this early phase of inception. The end of this phase is conceived of as a random small event with profound consequences, an idea derived from chaos theory and what is known as the butterfly effect (Hilborn, 2004). However, Phase I does not focus on the possible consequences of a small event but rather on the core conditions for bringing about such a small (or a larger) event. During Preformation, the need is thus for a perspective that is more capable of capturing how organizational actors deal with and make sense of complex, uncertain, and ambiguous situations and of whether, how, and why this enactment might result in the emergence of a self-reinforcing effect. The concept of emergence is therefore crucial to Phase I and dispels any idea of explanatory models that reduce emergence to simple causal relations.

According to Luhmann (1995), complexity, the central prerequisite and facilitator of emergence, always implies selectivity, and selectivity means contingency and uncertainty. The crucial question for Phase I is whether there are certain selectivity practices that increase the likelihood that organizations will make decisions that trigger, or even render them prone to, the emergence of positive feedback loops. If an event in Phase I is understood as an element, or a relation between elements, then the emergence of a positive feedback mechanism implies that a circular, positive, and spiral relationship between at least two elements forms in such a way that both elements and the specific relationship between them are reproduced and reinforced over time. With regard to understanding this emergence or the process that eventually switches on a positive feedback loop we basically see two promising approaches, both of which focus on examining how organizations deal with complex situations and generate capacity to act despite multiple options and situational ambiguity.

The first promising candidate, a basically methodological perspective, consists of simulations and experimental settings. Although the classical path dependence perspective has drawn some of its key insights from simulation models, no one, to the best of our knowledge, has yet simulated the emergence of and, hence, the “giving of life” to self-reinforcing mechanisms. Arthur’s (1989) seminal studies always started with a setting in which a self-reinforcing mechanism is already in place, and it is only a matter of time before it takes effect. With regard to Phase I, however, simulation models are also needed in order to

determine the possibilities allowing self-reinforcement to occur and the circumstances under which it does not. Moreover, it is important to better understand the conditions under which the rise of a mechanism fosters a sustainable self-reinforcing effect, and when, how, and why emerging mechanisms are only ephemeral phenomena. These questions might be best addressed by simulations, though the required manipulation of crucial contextual factors such as complexity, uncertainty, and ambiguity might also be induced by experimental settings. There has been little research in this direction on the impacts that complexity and uncertainty have on path dependence. In addition, Koch, Eisend, and Petermann (2009) were more interested in complexity effects in Phase II, through the experimental setting in that study could serve for analysis of Phase I as well.

A second promising, but basically conceptual, approach is to consider processes of sensemaking (Weick, Sutcliffe, & Obstfeld, 2005) and to use heuristics (Bingham & Eisenhardt, 2011). Both perspectives deal with the process of how organizations or social actors in and across organizations create sense; define meaning; and transform complex, uncertain, and ambiguous situations into springboards of action. Weick et al. (2005) understood sensemaking as a kind of threefold process that transforms a complex situation into a meaningful event by answering three questions: How does something become an event for organizational members? What does an event mean? and What should the organizational actors do? Weick et al. (2005: 410) argued that this line of inquiry brings “meaning into existence, meaning that [the organizational members’] hope is stable enough for them to act into the future, continue to act, and . . . have the sense that they remain in touch with the continuing flow of experience.” This inherent search for something that is stable enough to act into the future might already be a precursor of an organization’s propensity and sensitivity to create and enact particular kinds of actions or events that resonate most with the current situation and could become a trigger for positive feedback loops. Self-reinforcement then potentially occurs between a specific interpretation of the world and the manner in which organizational members act on that interpretation when the outcome of certain actions begins exclusively to confirm the interpretations underlying that action. A specific combination of interpretation, action, and relation might thus promote self-reinforcement.

When sensemaking emphasizes the interplay of interpretation and action, heuristics focus on the interplay of evaluation and choice. Organizational heuristics have been defined as “articulated and oftentimes informal rules of thumb shared by multiple participants within the firm” (Bingham, Eisenhardt, & Furr, 2007: 31), and build on established theories about individual heuristics (e.g., Gigerenzer & Brighton, 2009; Tversky & Kahneman, 1974). In this context, organizational heuristics are conceived of as enabling organizations to solve “intractable” strategic challenges that complex and changing environments impose (Bettis, 2017), and they permit rapid decision making based on a minimal structure that offers clear guidance. A set of organizational heuristics imposes a strong selectivity structure on an organization by greatly reducing complexity, since heuristics are very general and straightforward. Take, for instance, the Yahoo! case reported by Rindova and Kotha (2001). Yahoo!’s conviction that it should not enter into any “joint venture that limits Yahoo!’s evolvability” has been described by the authors as a heuristic (Rindova & Kotha, 2001: 1274) that gave both clear guidance for making decisions on alliance formation and sufficient flexibility to enable strategic change in rapidly changing environments. The crux of the matter is, of course, where the “limits of Yahoo!’s evolvability” lie. This can serve as a starting point for a self-reinforcing effect. Whatever may happen that is positive will be seen as a confirmation of the focal heuristic. Likewise, whatever may happen that is negative will be seen as a confirmation of the focal heuristic, too, because the negative feedback will be understood as a limitation of Yahoo!’s evolvability.

To avoid any misunderstandings at this point, we stress that the concept of sensemaking and the idea of relying on heuristics are not what prepares fertile ground for the advent of self-reinforcing effects. Rather, it is the down-to-earth way in which sense is made (and reflected in action), how heuristics are created and used, and how the feedback on heuristic-based decision making is processed in an organization.

There are still many open research questions about this emergence of positive feedback out of complex and uncertain system states. For instance, how many elements or repeated actions are actually needed to stimulate positive feedback in a sustainable way, and how does that factor relate to an organization’s capacity to cope with complexities and uncertainties? Probably one of the most intriguing issues is whether the likelihood of positive feedback mechanisms

actually increases with mounting complexity and uncertainty in Phase I.

Phase II: Power and Self-Reinforcing Processes in Hierarchies

The guiding idea behind our model of path dependence in general, and the process characteristics in Phase II in particular, is a scenario of spontaneously unfolding, hard-to-control dynamics. From the perspective of organization theory, this scenario has far-reaching implications. Above all, it raises the question of the relevance of hierarchical power, since this aspect is still a basic constituent of formal organizations. After all, the theory of path dependence was originally developed in the context of markets, an origin that particularly implies independent actors involved in individual or atomized decision-making processes. Translated into organizational modes of governance, this arrangement closely approximates a completely decentralized model of organizing in which evolutionary processes, not hierarchical power, set the agenda.

The logic of a hierarchical organization obviously differs markedly from the market-oriented model. Its actors are not independent. Rather, they are bound to and dominated by formal authority (Weber, 2009). Subordinates are expected to conform, and they risk being sanctioned if they do not. By implication, authorities are empowered to suppress or curb disliked deviations and misconduct, at least in principle. This scenario prompts fundamental questions about organizational path dependence. For example, if authorities in a particular case should dislike the self-reinforcing processes and scope-narrowing of specific evolutionary dynamics, can they then stop such developments and assert the regime of formal organizations? Or are self-reinforcing dynamics strong enough to defy the hierarchical order? This striking question¹ of the hierarchical imperative’s overriding power has received little, if any, attention. The question is whether self-reinforcing mechanisms can spread in hierarchical organizations in the same way as they do in more symmetrical settings, or whether their dynamics—if unwanted—can be overruled by hierarchical fiat. If hierarchical intervention can significantly weaken, constrain, or even halt the potentially hazardous effects of self-reinforcement, then the theory of becoming unintended organizational lock-in

¹ First asked by Pamela Tolbert, then coeditor of *AMR*, who meticulously guided us through the review process of the original paper.

would have to be closely reconsidered. Given the specific character of alliances or networks of organizations, their polycentric structures would lead us to assume that these forms of governance are somewhat more in tune with the market situation. Only in cases of strategic leadership by a powerful “hub firm” (Jarillo, 1988) or “strategic center” (Lorenzoni & Baden-Fuller, 1995) are they closer to hierarchy.

The empirical examination of these countervailing forces encounters obstacles. First, it is difficult to find a research site that actually provides for a longitudinal observation of the two countervailing processes. In most cases researchers conduct path analyses *ex post* to trace the events. Second, a longitudinal design is necessary to observe the struggle between the two forces; it is unclear from the outset how long the struggle will take until a result is reached—it might take years. Perhaps most important is that path dynamics whose relation to the established hierarchical order is to be studied do not proceed, making a lock-in simply unforeseeable (as is the case in linear processes). Built on complexity and chaos theory, path-building processes have an inherently nonlinear character and are thus not predictable.

For these reasons, Petermann, Schreyögg, and Fürstenau (2019) conducted an agent-based computer simulation that permitted the study of intricate dynamics in interactive processes. Their findings indicated that both regimes are effective. The temporal succession discussed above proved important. Initially, the formal rules or order seem to dominate, but the hierarchical influence eventually fades away, and dynamics of self-reinforcing processes become increasingly dominant and culminate in a lock-in. In summary, steep hierarchies can suppress self-reinforcing processes in the short run and in certain contexts (e.g., strong leadership), but self-reinforcing processes gradually win out.

At a more general level, this discussion raises the question of the relationship between power and organizational path dependence. We have treated power, especially formal power, as a rival to self-reinforcing processes. Other authors have suggested an alternative perspective according to which power is assumed to be a driving force in the formation of organizational path dependence (Beyer, 2010). Undeniably, power structures can become path dependent, but can power actually be considered a self-reinforcing mechanism by nature? What would be the drivers behind that process? Increasing returns? If so, what kind?

Pierson (2015) followed this argument when he assumed that power always generates more power in

terms of a further self-reinforcing mechanism. Indisputably, power can create interactive dependence and basically restrict the scope of actions that organizational members can take. This constraint can be persistent, as authoritarian systems demonstrate. However, in our view the argument of power builds on another logic for stability and change. Although a power relation may gradually be intensified by power holders and may become ever more entrenched, it represents an essentially asymmetrical interaction from the very beginning. It is based on a specific, asymmetric allocation and mobilization of resources that allow an individual or a collective actor, such as an organization or interorganizational collaboration, to exert power over others and maintain or even increase that asymmetry over time. This argument, framed by asymmetry from the outset, differs markedly from the decentralized evolution of self-reinforcing dynamics that characterize path-dependent processes in and among organizations. This process starts with more or less random choices (Phase I of our model). In our view, mixing up these different approaches does not get us closer to a better understanding of organizational path dependence. Separating the concepts of dependence and power seems much more helpful (see also Ackermann, 2001).

Phase III: Path Inscription and Expansion

Phase III of our model describes a kind of equilibrium state in which the turbulent path-building phase has ended in a lock-in. A frequent question in this regard (e.g., Beyer, 2010) is whether the increasing returns or other positive feedback mechanisms are still needed in the lock-in phase to maintain the path. If not, then the path is assumed to dissolve automatically. In our view, this discussion heads in the wrong direction. The underlying logic is not the same. If increasing returns were still at work, the organization would still be in the spiraling phase (Phase II), implying that the process of escalation would be underway. Empirical studies and mathematical modeling (in particular Arthur, 1989) show that the lock-in phase (Phase III) is different in character, governed by a new stabilizing logic. But what exactly is this logic?

At first, a lock-in is not a complete standstill. It does not simply exist; it has to be practiced and continuously reproduced, whether mindfully or not, with little deviation in everyday life. However, organizations have additional mechanisms that institutionalize and stabilize a path or, more specifically, a lock-in. Paths are not segregated action units in an

organization. Like all other organizational elements, paths are embedded and therefore part of connecting dynamics. This fact has implications for the unit and the whole organization in question. Koch (2011) and Blagoev and Schreyögg (2019) found an increasing mesh of other organizational elements with the focal organizational path. Empirical analyses have shown that, as the path gains increasing momentum, other organizational elements become adapted to the path. The path may become ever more deeply inscribed within the organization (Joerges & Cziarniawska, 1998).

Furthermore, organizational practices increasingly adapt to the path, building a kind of tightly integrated path-related cluster. In a case study that focused on extra-long working hours in terms of an organizational path (Blagoev & Schreyögg, 2019), other related practices, such as recruiting routines, project pricing, the scheduling of internal meetings, and the creation of calculation tables, came to reflect the essence of the path. Over time, ever more organizational elements became interwoven with the regime of extra-long working hours, stabilizing its lock-in and giving rise within the organization to a web of mutually constituting practices reflecting the path. This interweaving of internal organizational elements amounted to a logic of value creation that entrenched the lock-in. These empirical analyses have extended the scope of the theory of organizational path dependence, particularly that of Phase III, without losing its focus on ultrastabilities of a lock-in.

The abovementioned studies have elaborated on an organization's reactions to the existence of a path that mobilizes a secondary, derived process of ultrastability. To improve understanding of the process, it is important to ask which drivers bring about the path's expansion throughout the organization. A closer analysis reveals that this process is likely to be driven by self-reinforcing mechanisms as well. Blagoev and Schreyögg (2019) showed that each newly aligned element reinforced the existing path practices. Such connected self-reinforcing dynamics closely resemble what has come to be known as the logic of "complementarities" (Milgrom & Roberts, 1995; Siggelkow, 2002). Two elements are complementary when "they mutually increase their benefit . . . and/or mutually reduce their disadvantages or costs" (Schmidt & Spindler, 2002: 319). As a result, a cluster of complementary, tightly interrelated practices and structures gradually surfaces. In the case of emerging new practices, this cluster adopts fitting or complementary practices and rejects incompatible or noncomplementary practices, depending on their contribution to the functioning of the established

pattern and cluster (Koch, 2011; Kremser & Schreyögg, 2016). In summary, this logic of path expansion amounts to stable and ultimately inert organizational settings. To avoid any further misunderstandings, we note that this statement holds only for path-dependent organizations, not for all organizations.

Going beyond Phase III: Path Extension and Path Breaking

As acknowledged in our theorizing right from the start, organizational paths do not last forever. First, should a previously established path be followed, agents are likely to deviate incrementally from it by enacting and reproducing the respective structures that guide their behavior idiosyncratically. With our idea of a corridor we account for these everyday oscillations, even in the lock-in phase. However, in contrast to recent conceptions of organizational routines, this deviation is highly unlikely to be a source of significant organizational change (Feldman, 2000). The binding forces of a lock-in are simply too strong to change or deviate from a path that has been inscribed into an organization in a significant way. In addition, one always has to reckon with organizational agents who actively defend an established path, whether it is of a technological, institutional, or "merely" organizational nature.

If organizational members are unable to change a path in any meaningful way, they may at least temporarily have the opportunity to extend it by making on-path changes. Just maintaining a path requires continuous reproduction. Actively extending it, however, may require much more agency because it entails navigating the path through changing circumstances without questioning its direction. This focus is illustrated by the decade-long search for a new technology (next-generation lithography) in the semiconductor manufacturing industry. In this case of mainly technological path dependence, the same organizations focused on extending the old path by introducing on-path changes to acquire initially unimaginable technological capabilities. The major reason for actively extending the present path was that the organizations involved failed to come up with entirely new technology within the timeframe once thought to be decisive (Sydow, Windeler, Schubert, & Möllering, 2012). Although one may be inclined to equate such path extension with an exploitation strategy (March, 1991), it does not really fit into the schema of exploitation versus exploration. From the perspective of the established path, all activities of on-path change represent a clear case of exploitation. However, to actually and

effectively continue along this path, the organization would require exploration—and appropriate new, creative practices (Rothmann & Koch, 2014)—in order to adapt to changed circumstances.

Quite another question concerns the conditions under which it is possible not only to extend an organizational path but to actually break it. From our theoretical perspective, breaking a once fully developed path is not very likely to occur from within and seems possible only with the insight afforded by an “external lens” (Sydow et al., 2009) or through an exogenous influence on an established path (e.g., by an external shock). Beyond the outsider ontology, we do not assume that path dependence in the lock-in phase “serves to rob actors of any agency, as they find themselves pushed and pulled from one state to another” (Garud et al., 2010: 786, with reference to complex adaptive system theory). An external lens or external shock may create opportunities to break the path, but organizational actors must act on such openings appropriately if they do not want to reinforce the path instead (Martin & Sunley, 2006), as happens with the thread-rigidity effect (Gilbert, 2005; Staw, Sandelands, & Dutton, 1981). This effect may be less likely to occur, though, when key actors (e.g., a CEO) are replaced (Fortwengel & Keller, 2020; Samuelsson, Söderblom, & McKelvie, 2020)—but even that measure is not a guarantee.

Path-breaking change has been conceptualized as the restoration of choice—that is, the intentional creation or reinstatement of at least one viable alternative (Sydow et al., 2009). Only on rare occasions will a single actor or entrepreneur be able to break a path in this sense. In addition, an alternative viable opportunity, not unlike creative ideas (Cattani & Ferriani, 2008), is more likely to appear at the periphery than at the center or core of a social system (Bothello & Salles-Djelic, 2018). Although path inscription and expansion make coordination and complementarity effects likely to be effective as well, the chances of creating a viable alternative are probably greater, depending on the degree to which they are related to what preceded them. Nevertheless, both the interruption of the self-reinforcing mechanisms at work and a reversal of the path inscription (Fortwengel & Keller, 2020) may bring about the desired result.

In any case, it is necessary to understand the process by which the arrangement became path dependent in the first place. Increased reflexivity, even with the help of the external lens and well-organized collective agency, does not suffice to create at least one additional viable, or even superior, alternative. In addition, the question to be

answered is how exactly the self-reinforcing processes that led to path dependence can be either interrupted or redirected. Answering this question about the rules to be enacted and the resources to be mobilized across different levels of analysis calls for new theoretical ideas and empirical insights.

One important starting point may be the assumption that more than one path already exists at a particular time. Despite path and pattern inscription—and, hence, path expansion processes—emerging new or alternative paths may well attract a growing number of organizational actors, particularly in rather loosely coupled systems such as in a decentralized organization or an interorganizational network. Another suggested starting point for understanding the process of path dependence builds on the insight that even established paths “contain within them possibilities and resources for transformation, off-path organization and the creation of new organizational forms” (Schneiberg, 2007: 48). But what exactly are these resources? Do they go beyond the sociocultural and organizational fragments of “paths not taken” (Schneiberg, 2007: 52)? And how can these more endogenous forces combine with respective rules and routines in a process of structuration to create a new organizational path?

Clearly, contextual conditions such as the institutional embeddedness of an organizational path in the environment of an organization or interorganizational arrangement require scholarly attention. Jing and Benner (2016) studied the conversion of firms that developed and manufactured military equipment in two institutionally very distinct regions of China. Firms within the region with a relatively high degree of institutional heterogeneity (conceived of as opportunity spaces provided by institutional regimes) found it much easier to break the present organizational path and to convert from military to civil engineering and manufacturing. Such evidence shows that both the emergence of path dependence and the escape from an organizational path are highly contextual affairs, and therefore need theorizing that is sensitive not only to history and time but to context and space as well.

Beyond these various starting points for the theorization of path-breaking change, important questions remain. For instance, can numerous actions be directed toward breaking an organizational path and, over time, collectively become a significant force (Bothello & Salles-Djelic, 2018; Garud, Hardy, & Maguire, 2007)? Can positive feedback in the light of existing organizational path dependencies be

transformed or cultivated in a manner familiar from the creation of technological paths (van Lente, 1993), in particular from platform technologies? Despite these suggestions, one should not forget that lock-ins are very hard to escape from within. Convincing answers to these rather complex questions require further empirical investigation and theoretical advancement.

The result of our reflections is summarized in Figure 1. It organizes the insights according to clarification, responses to objections, and extensions; it also differentiates between phase-specific and general, across-phase insights. The figure clearly shows the interaction between the elements discussed and their complementary relation that unfolds in the process model. At the same time, the figure brings to light the manifold character of the theory of organizational path dependence. It is not a monolithic theory in the sense of a unidisciplinary approach. It is instead inter- or rather infradisciplinary in nature. It therefore draws on various logics, particularly choice theories, nonlinear process theories, and complexity theories, and it systematically integrates these different logics to afford a better understanding

of the intriguing nature of organizational persistence, its emergence, its perpetuation, and ways to overcome it.

CONCLUSION

Our theory of organizational path dependence has been well-received in the past decade, critiqued (rightly or wrongly), and elaborated in important respects. The proposed improvements extend our previous research by specifying the underlying style of process logic and the time perspective, the role of power in path formation and maintenance, and the dissemination and inscription of paths in and between organizations. Although we believe that our extensions have enriched the theory, more theoretical and, especially, empirical work can and needs to be done to expand our current understanding of path dependence and the reasons why organizational changes are sometimes intractable or even impossible, particularly where they are needed most in the face of great challenges. In research and practice alike, consideration of and debate about the theory of organizational path may help avoid the blind

FIGURE 1
Reflections on the Theory of Organizational Path Dependence

	Phase I	Phase II	Phase III
Clarifications	<p>Path theory does not aim to cover all social interactions; it focuses on a specific constellation characterized by a particular, self-reinforcing dynamic. A potentially resultant lock-in is a rare event in which the scope of action is minimal. Nevertheless, a lock-in is a socially, though largely unintentionally, constructed situation.</p> <p>The notion of path necessarily involves dependence on mainly unintended consequences and positive feedback; allows for more than one organizational path but only under conditions of decentralized structures (distinct strategic units).</p>		
	Triggering actions or events cannot be completely explained or even be determined by foregoing events; they emerge .	Self-reinforcing processes, producing for instance complementarity and coordination effects, mark essentially evolutionary dynamics .	Lock-in does not mean standstill but rather a process of continuous reproduction . In contrast to Phase II, self-reinforcing processes are no longer at work.
Replies to Objections	<p>"Path theory is a positivist theory." Regardless of what exactly is meant by positivism, the theory is definitively of a social-constructivist nature. Historical developments are captured not in an open but a theory-driven, analytical manner.</p> <p>"Path theory is a linear process theory." The core logic is clearly nonlinear, building on complexity and chaos theory. All three phases have different process logics. The theory as such therefore does not easily fit into existing categorizations of process theories.</p> <p>"Path theory lacks agency." Agency remains relevant throughout the process, though varying in degree and kind across the three phases:</p>		
	Agency dominates but is made possible and constrained by structure and imprinted by historical and contextual conditions.	In light of self-reinforcing mechanisms, agency is increasingly decentered but remains important for enacting and reproducing such mechanisms.	The scope for agency is reduced further but even a lock-in needs to be reproduced by agents ; otherwise a path would fade away.
Extensions	<p>By specifying further important phase-specific dynamics, the theory of organizational path dependence offers clear clues for conducting further research, including work on path extension and path breaking. In Phase II it also includes the further clarification of hierarchal power in path-dependent developments.</p> <p>We are used to treating formal power as a force rivaling self-reinforcing processes. In an alternative perspective power is assumed to be a driving force in forming organizational path dependence. In our view power can undeniably create interactive dependence and basically restrict the scope of action of organizational members. This restriction can be persistent, as authoritarian systems demonstrate. But in our perspective the starting point of a power explanation is different, for it is asymmetrical right from the start and lacks the initial equivocality of path dependence.</p>		
	Complexity and uncertainty matter in a distinct way in this phase, and specific processes of sensemaking and sets of heuristics may be potential precursors of emergent self-reinforcing effects.	In most cases self-reinforcing dynamics encounter hierarchical authority, posing the question of whether hierarchy can suppress path building (if unwanted). Findings show that such suppression can occur initially, but self-reinforcing dynamics seem to overwhelm hierarchy later in the process.	Paths are not segregated units, rather they tend to spread throughout the system. Expansion of a path within an organization typically occurs through pattern and path inscription, the latter driven by self-reinforcing processes (particularly complementarities). Beyond Phase III: Path extension is an effortful and creative form of maintaining and further exploiting an established path; path breaking of an organizational path requires "path reflexivity," typically well-coordinated agency, perhaps fragments of paths not taken, and/or an external lens or shock.

spot of organizational rigidities emerging in a world of change, where they are likely to be even more problematic.

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