

Putting path dependence in its place: toward a Taxonomy of institutional change

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Abstract

Stalled progress on explaining institutional change is, in part, the result of two conceptual challenges that hinder effective theory building: concept stretching and concept proliferation. These problems affect a hallmark concept of institutional change, path dependence, whose usefulness has been curtailed by the variety of meanings attributed to it. This article seeks to remedy concept stretching and proliferation by developing a taxonomy of institutional change explanations. Starting with the core attributes of path dependence, increasing returns and endogeneity, we use the procedure of ‘negative identification’ to derive a logically complete set of possible change explanations. The result is a taxonomy in which the scope of path dependence is delimited vis-à-vis other change explanations. We illustrate the usefulness of the taxonomy by assessing stretching in the literature.

Keywords

Concept formation; endogenous change; increasing returns; institutional change; path dependence

1. Introduction

The study of institutions over the last several decades has greatly advanced our understanding of political processes (Hall and Taylor, 1996; Pierson, 2004; Streeck and Thelen, 2005). Nevertheless, there is a growing awareness that, despite the institutional turn, we still lack good explanations of how institutions themselves change (Mahoney and Thelen, 2010). As Mahoney and Thelen write, ‘the vast literature that has accumulated provides us with precious little guidance in making sense of processes of institutional change’

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(Mahoney and Thelen, 2010: 2). In their view, this shortcoming is the result of the literature's focus on institutional stability and exogenous sources of change. Given this diagnosis, it makes sense to respond, as they do, by theorizing endogenous change. In our estimation, however, stalled progress on explaining institutional change is not the result of a lopsided focus on one set of sources and therefore cannot readily be ameliorated by simply theorizing 'the other side'. Indeed, a wide range of causes and causal mechanisms can already be identified in the literature.

We argue, instead, that understanding institutional change is hindered by conceptual challenges faced by any maturing field: concept stretching and concept proliferation. On the one hand, as existing concepts get applied to a range of change phenomena, the boundaries of those concepts are liable to get stretched, resulting in a diversity of meanings ascribed to a single concept. On the other hand, as new phenomena and processes are identified, there is a tendency to capture them by developing new concepts, resulting in descriptive rather than explanatory concepts. These pitfalls of concept development hinder effective and cumulative theory building because logically distinct mechanisms and processes of change get subsumed or obscured, thus artificially narrowing the range of potential explanations. The challenge for theory-building, then, is to find a balance between stretching the boundaries of existing concepts and engaging in concept proliferation.

These challenges are visible in one of the hallmark concepts of institutional change, path dependence. Path dependence has served as the point of departure for the recent and ongoing debate on how to theorize institutional change. In addition to contributions that focus on better theorizing path dependence as such (Boas, 2007; Page, 2006), a number of important contributions to the institutional change literature borrow elements from path dependence and combine these with other mechanisms and processes (e.g. Bednar et al., 2012; Greif and Laitin, 2004; Mahoney, 2000). Perhaps most prominently, path dependence is used as a foil against which newer concepts such as layering, conversion, displacement or drift, are developed (Mahoney and Thelen, 2010; Streeck and Thelen, 2005; Thelen, 2003). As a number of scholars have noted, however, path dependence is often used in a variety of ways to mean a variety of things (Bennett and Elman, 2006; Greener, 2005; Mahoney and Schensul, 2006). In its broadest form, path dependence is used to refer to the vague notion that history matters or that the past influences the future (Sewell, 1996). Some scholars use path dependence simply to express the idea of gradual or incremental change in one direction over time (North, 1990). But path dependence is also more narrowly understood to refer to the idea of institutional 'lock-in' by which change becomes impossible or unlikely (see, for example, the discussion of Pierson, 2004). Some authors have added that this period of stasis and path reproduction must be preceded by a critical juncture (Mahoney, 2000). Still others, however, argue that path dependence is in fact compatible with a number of mechanisms for path change, and that path dependence may even sometimes be characterized by a self-undermining process (e.g. Beyer, 2010; Page, 2006). This variety of meanings and usages indicates, in the first instance, the great resonance that the concept has had among scholars. At the same time, as Pierson has suggested, '[T]he fuzziness that has marked the use of this concept in social science suggests that the greater range offered by looser definitions has come at a high price in analytical clarity' (Pierson, 2004: 21). We too argue that the

variety of meanings taken on by path dependence is symptomatic of concept stretching and indeed problematic.

We propose that a necessary first step for building better theories of institutional change is pre-theoretical and conceptual; it requires assessing the logical limits and connections among existing concepts. The key to avoiding concept stretching and proliferation is to delimit the analytical scope of a concept and to use additional concepts only when that scope is exceeded. A solution, therefore, requires clarifying the core meaning of the concept so that we have a reference point for stretching, and then embedding this meaning in the context of the larger range of institutional change explanations in which it already implicitly exists. We carry out this conceptual exercise by developing a taxonomy of institutional change explanations in which the scope of path dependence is delimited vis-à-vis other types of institutional change explanations.¹ We show that the two defining attributes of path dependence, according to its most parsimonious and widely used definition, are that it is endogenous and exhibits increasing returns. Path dependence can then be distinguished from a number of other mechanisms and processes that are characterized by other attributes, namely exogeneity and non-increasing returns.

We use path dependence as a starting point for the taxonomy because it is one of the best developed and most explicitly theorized explanations of institutional change that is available, and it is often used as the basis for further development of theory. In fact, in the process of developing and applying the concept of path dependence a great deal has been learnt about institutional dynamics. Our point is that many of these compelling accounts are in fact making use of distinguishable change mechanisms, important in their own right, that get obscured by subsuming them under the label of path dependence. The taxonomy exercise, then, aims to enhance the explanatory power of path dependence and to enable us to build more self-reflective, and therefore stronger, theories of institutional change.

We begin, in the following section, by introducing the idea of a taxonomy as a useful tool for addressing the problems associated with concept stretching. In section 3 we then use existing theory to identify the defining attributes of path dependence. These core characteristics form the basis for developing a taxonomy, in section 4, which systematizes various concepts and mechanisms of institutional change. In section 5, then, we use the taxonomy to diagnose the contours of concept stretching in the literature. In conclusion, section 6, we discuss how the distinctions developed in this article can shed fresh light on a number of controversial issues currently being discussed in the institutional change literature, including the relationship of path dependence to critical junctures, and the relationship between continuity and change.

2. Diagnosing concept stretching: the problem and a solution

Creating and applying concepts is a central part of theorizing that is, however, fraught with challenges. Concepts, such as path dependence, gain analytical rigor when they are clearly delimited. But at the same time, knowledge is often built by applying concepts to a range of cases, which in turn often requires adapting or re-interpreting the original concept. In his classic work on concept formation, Sartori calls the application of concepts to new cases ‘travelling’ (Sartori, 1970: 1033). Applying and adapting a concept

across cases is useful in that it allows us to make comparisons and to impose analytical order on the world without requiring new concepts for each phenomenon of interest. The danger of fitting a concept to new cases, however, is that the meaning of the concept can become distorted in a process that Sartori calls 'conceptual stretching' (Sartori, 1970: 1034). Concept stretching runs at least two risks: that of undermining the validity of coding and measurement across cases because scholars use the same concept to refer to different empirical phenomena; and that of hindering effective and cumulative theory building because of the diversity of meanings ascribed to a single concept. The challenge, then, is to achieve 'the virtue of conceptual travelling without committing the vice of conceptual stretching' (Collier and Mahon, 1993: 845).

In trying to strike this balance it is important not to overcompensate for stretching by creating a multitude of new concepts. In the extreme, this could lead to creating a new concept for every new case. We certainly need conceptual richness to help explain social phenomena, but there are at least two dangers associated with concept proliferation: concepts become increasingly descriptive and lose the analytical value inherent in abstraction; and the relationship between multiple concepts may become attenuated and less systematic.

One strategy for avoiding concept stretching and concept proliferation is to systemize concepts into a taxonomy which delineates the scope of concepts relative to one another (Elman, 2005; Sartori, 1970).² The idea of a taxonomy is not to create a theory or explanation, but rather to map out the available explanatory concepts and their logical status with respect to one another. We build our taxonomy in two steps. The first step is to determine a concept's boundaries or, in other words, the set of meanings or attributes that define the category and identify which cases belong to the category. (Collier and Mahon, 1993; Sartori, 1970).³ The attributes of a concept are extracted from pre-existing theories and explanations. We take path dependence as a starting point for our taxonomy because it is the best developed and most explicitly theorized explanation of institutional change that we have, and it is therefore possible to identify its core causal attributes (see section 3).

Second, once we identify the core attributes of path dependence, we can begin to identify and expand the implicit typology that it belongs to in order to provide a fuller account of the entire explanatory space (see section 4). To do this we unpack the core attributes by doing what Sartori calls 'negative identification' and Elman calls 'reverse engineering' (Elman, 2005: 308; Sartori, 1970: 1042). Path dependence has explanatory power precisely because it refers to something rather than to everything; its attributes are determinate and bounded. This means that it is possible to determine what the concept is not, and the negation of the concept, in turn, reveals an alternative concept (Sartori, 1970: 1042). For example, if we understand increasing returns to be a core attribute of path dependence, then implicit in this attribute is the (at least theoretical) existence of alternative concepts characterized by constant or decreasing returns. Thus, we work backwards to fill out the entire logically given domain while keeping clear analytical distinctions between path dependence and other explanatory concepts.

A taxonomy is a useful tool for avoiding both concept stretching and concept proliferation because it identifies each concept's central attributes and thus helps to clarify the boundaries between multiple concepts. It allows for the discovery of cells in the taxonomy that logically exist but are currently empty (that is, have not been theorized or

conceptualized), and it allows us to discover missed or obscured combinations (Elman, 2005). It also helps to determine whether a particular explanation really belongs to the type ‘path dependence’. We want to emphasize that there is no special virtue in having a ‘pure’ path dependence explanation of institutional change; sometimes a combination of concepts will provide the most convincing explanation. What is important is to reflect on whether and when the concepts we use are being combined with other, distinct explanatory concepts.

With the steps needed to build a taxonomy in mind, we turn now to a discussion of path dependence and its core attributes which will serve as the starting point for developing a taxonomy of institutional change explanations in section 4. As Gerring points out, ‘the most coherent definitions are those identifying a ‘core’ or ‘essential’ meaning’ (Gerring, 1999: 374).

3. The core meaning of path dependence and its adoption in institutional theory

The idea that ‘history matters’ has a long tradition in the social sciences. Scholars like Max Weber, Karl Marx and Joseph Schumpeter have constructed arguments in which past decisions limit the available range of current choices, or in which some social pattern causes its own reproduction over time (Stinchcombe, 1968). While the general idea can thus be traced back at least to these classic works, it was not until the 1970s and 1980s that a systematic and deductive theory of why and how past decisions can matter for future ones was developed by W Brian Arthur and Paul David. It is from their formulation of the concept that we extract two core causal attributes of path dependence.

According to Arthur (1994) and David (1985; 2007), path dependence is caused by a process of self-reinforcement. The term self-reinforcement conveys the two central causal attributes of path dependence. First, there is the reinforcing element, which is caused by *increasing returns*. This refers to economists’ understanding of a production process that exhibits increasing returns to scale, defined as a reduction in the cost per unit resulting from increased production. The relevant definition of increasing returns in the context of institutional change is ‘that the more a choice is made or an action is taken, the greater its benefit’ (Page, 2006: 88). We can regard this as a situation in which the returns actors derive from following an institutional rule or practice increase relative to the initial investment. This is in contrast both to constant returns to scale, in which initial choices always yield proportional benefits, and to negative returns to scale, in which initial choices yield decreasing benefits.

The second causal attribute of path dependence refers to the ‘self’ in self-reinforcement. A path dependent process reinforces itself through *endogenous* variables. Endogeneity is given when there is a cause-effect circuit or feedback loop. The idea is that the system being studied (whether a technological standard or an institution) has effects which then become the causes of subsequent effects on the same system, which in turn become causes once again (Büthe 2002). This is in contrast to processes in which factors exogenous to the system are the causes of change.⁴

These two core attributes – increasing returns and endogeneity – give rise to certain features commonly associated with path dependent processes. In particular, Arthur (1994) has shown that equilibrium selection under conditions of increasing returns and

endogeneity exhibits three effects. First, it is unpredictable and contingent. In contrast to negative or constant returns processes, which have a unique equilibrium, a system subject to endogenous increasing returns has multiple equilibria which are initially equally likely to be realized. Second, they are non-ergodic. This means that the order in which choices are made matters for the equilibrium that eventually emerges. This is so because under endogenous increasing returns the choices made in the beginning of the selection process are amplified so that it pays to go along with early choices (even though they may not be efficient).⁵ Third, for that reason, once initial choices have been made, the system eventually locks in to one equilibrium.⁶

Path dependence provides a rigorous theoretical basis for the claim that ‘history matters’ in the analysis of economic, political and social institutions. Past choices may have been purely accidental or have at the time been viewed as unimportant events, but these early choices may prove to have important consequences later on. This also means that the sequence of events is significant and influences outcomes. Moreover, early events get amplified due to increasing returns and get locked in. Thus, there is determinacy at the end of the process (see for example Mahoney, 2000; Pierson, 2004).

Institutionalist scholars of all disciplines tend to converge on this model of path dependence. In doing so, scholars often invoke path dependence to emphasize one or more of its consequences; e.g., some scholars emphasize the constraints path dependence puts on future choices, others the contingency of path dependent processes and others the stability of path dependent processes. All of these consequences, however, derive from the two core attributes of increasing returns and endogeneity. Increasing returns and endogeneity, which are the characteristics on which we will build our taxonomy, are causal attributes of path dependence, meaning that they describe the types of variables and mechanisms that *cause* path dependence. In contrast, initial contingency, the importance of sequence, and lock-in are consequences or *effects* of endogenous increasing returns. While identifying these effects is an important component of path dependence theory, a path dependence explanation will only be complete if it can be shown that there are endogenous increasing returns that cause it.⁷ Indeed, increasing returns and endogeneity are the two main causal attributes invoked in the literature on path dependence.⁸

Arthur and David identify four mechanisms that can produce endogenous increasing returns: *high fixed or setup costs* (leading to decreasing costs for each additional unit produced); *learning effects* (also leading to decreasing unit costs); *coordination effects* (when actors derive utility from going along with the decisions of other actors); and *adaptive expectations* (when all actors expect positive coordination effects in the future) (Arthur, 1994: 112; David, 1985).

Almost all scholars working with path dependence explicitly discuss increasing returns as a defining attribute of path dependence (see the short discussion of the major contributions to the social science literature in Page, 2006; also Pierson, 2004; Greif and Laitin, 2004). Accordingly, these scholars explicitly try to show that many political, social, and cultural institutions are subject to increasing returns. They argue that high fixed or setup costs, learning, coordination and adaptation, are often present in such institutions and that path dependence should therefore be widely observable (North, 1990; Mahoney, 2000: 508; Pierson, 2000; Pierson, 2004). Pierson, for example, argues that politics generally involves increasing returns because democratic politics requires

actors to make high initial investments in institutions (set-up costs), that these institutions tend to complement one another (coordination effects), and that they tend to reinforce shared understandings (adaptation). This may explain, for instance, why party systems are relatively stable over time (Pierson, 2004).

Endogeneity is also widely used as an attribute of path dependence in the literature. This may at first appear to be an unusual claim because many authors do not explicitly use the terms 'endogenous' or 'endogeneity' when discussing the causes of path dependence.⁹ But the major contributions to the literature very prominently refer to the fact that the processes they are interested in rely on *self*-reinforcement or positive *feedback* (see, for example, David, 1985; Arthur, 1994; Thelen, 1999; Pierson, 2004; Page, 2006). These authors make clear that self-reinforcing processes are characterized by endogeneity in the sense of a closed cause and effect circuit (Greif and Laitin, 2004). Endogeneity is what makes the idea that 'history matters' different from a simple time-series notion of causality: cause and effect amplify each other. One example of such endogeneity may be an institution creating a constituency that comes to condition its actions on that institution, and that experiences increasing returns from the continuation of the institution. Thus, the constituency created by the institution has an interest in maintaining and expanding the institution. It has been argued, for example, that the expansion of welfare states in the post-WWII era created a new political constituency of welfare state beneficiaries which successfully rallied against conservative parties' efforts at welfare state retrenchment (Pierson, 1996).

While a close reading of the major contributions to the path dependence literature thus confirms that increasing returns and endogeneity are broadly accepted as core attributes of path dependence, some contributions to the literature expand or refine the concept to include additional attributes. Greener, for example, suggests that path dependence cannot be characterized by increasing returns alone because this would make path change impossible even though we do know that institutions change (Greener, 2005). His conclusion, therefore, is that 'we need some modification of the idea' to include other returns to scale (Greener, 2005: 69). Similarly, Mahoney's (2000: 526–535) suggestion that 'reactive sequences' be considered instances of path dependence can be seen as an attempt to include decreasing returns as an attribute of path dependence.¹⁰ Such modifications of the path dependence concept allow it to fit a wider range of empirical observations, but also lead to complaints of concept stretching (Mahoney, 2000; Pierson, 2004).

We do not propose our definition of path dependence with the aim of denying other possible usages. We do argue, however, that a lax use of the concept of path dependence comes with costs. First, it makes case comparisons across the literature difficult. It is valuable to have recourse to a clearly delimited definition when confusions arise so that these can be adjudicated. Second, expanding the meaning of path dependence runs the risk of obscuring distinct causal processes. Clearly defining path dependence is important especially because it might be necessary to employ multiple processes and mechanisms to fully explain an institution's development. In the following section, we argue that the core attributes that we have derived can be delimited from alternatives that deserve their own conceptual space – and their own theorizing.

4. A taxonomy of institutional change explanations

The utility of defining the core attributes of a concept is that it can then be distinguished from other concepts and positioned into a broader typology. Our aim in developing a taxonomy is to capture and systematize the range of possible categories available for explaining institutional change, and within this to make clear where path dependence belongs and how it relates to other explanations of change. By ‘institutional change’ we mean the full variation in institutional dynamics – from change to no change. Following common practice in the literature, we define ‘institutions’ as ‘the rules of the game in a society’ (North, 1990: 3); the ‘implicit or explicit principles, norms, rules, and decision-making procedures around which actors’ expectations converge’ (Krasner, 1982: 186). This definition is purposefully broad and can accommodate a variety of more specific understandings of institutions, so that we expect our taxonomy to be robustly applicable across a large range of alternative definitions.

Our taxonomy is meant to capture the building blocks for explanations of why and how institutions change. We are not interested in capturing concepts whose main function is to describe particular patterns of change, such as layering, conversion, displacement or drift.¹¹ We also are not interested in including concepts that describe the pace of institutional change; that is, whether change is fast or gradual. Path dependence may empirically be a slow-moving process, but this is best seen as a description rather than an explanation of the process. Excluding such characteristics helps to avoid the conceptual confusion of using path dependence both to *describe* the dependent variable (type of change) and to *explain* that change.

Path dependence gains its explanatory power by specifying a particular type of causal variable (endogenous) and a particular type of causal mechanism (increasing returns) to explain change. Endogeneity is not itself a causal variable but an attribute that describes a particular category or type of cause. Increasing returns, on the other hand, refers not to a type of variable but to a type of causal mechanism. It is a particular kind of relationship between independent and dependent variables. In focusing on specific categories of causal variables and mechanisms, path dependence logically implies alternative categories not specified in the theory. We start from the core characteristics of the given theory and, using ‘reverse engineering’, search for the alternative categories that provide logical completeness. By making explicit the alternatives implicit in path dependence, we can map out a larger explanatory space. We depict the set of alternatives in a taxonomical tree (see Figure 1).

4.1. Categories of causes

Understanding path dependence as a process driven by endogenous causes implies a distinction from other processes in which the causal variables are not endogenous but exogenous. We argue that these two categories, endogenous and exogenous, describe the full range of sources from which the independent variables available for explaining institutional change can be drawn.

The categories ‘endogenous’ and ‘exogenous’ distinguish variables on the basis of their causal relationship to the institution in question. A variable is endogenous when its value is determined or influenced by an institution, and it in turn affects that institution’s

development. Legitimacy, for example, may be a property cultivated by an institution but it can in turn affect the development of that institution by increasing the institution's attractiveness to investors. An exogenous variable, in contrast, is one whose value is itself causally independent of the institution in question. Variables are exogenous to an institution when they are not controlled or determined by that institution, but they may nevertheless affect its development. Unlike endogenous change, which is based on feedback, causality in exogenous change is unidirectional. Environmental parameters (as long as they are independent of the institution in question) are often a source of exogenous change. Technological variation, too, often occurs independently of a particular institution and yet might be a primary cause of change in that institution.

Some institutional changes may best be explained by a combination of exogenous and endogenous factors. For example, Greif and Laitin (2004) identify change processes in which an initially exogenous variable eventually becomes coopted by an institution and therefore acts endogenously over the long term. Whereas they treat this combination as a type of variable in its own right (called a quasi-parameter), in our view exogenous and endogenous variables do not 'mate' to form a new hybrid source of change (even in Greif and Laitin's account quasi-parameters are not simultaneously endogenous and exogenous). Rather, any given variable at any given point in time can be either exogenous or endogenous. Whether a given variable is exogenous or endogenous must be empirically determined based on what relationship it has to the institution itself. Exogenous and endogenous variables may both be at work simultaneously and may interact to produce a change, or a single variable may change from being exogenous to endogenous over time.

Different theoretical approaches favor looking at particular categories of variables for the sources of institutional change. Rationalists, for example, tend to favor exogenous explanations of change. According to rationalists, an institution is an equilibrium from which no actor has an incentive to deviate given other actors' behavior. Logically, therefore, in this account change can only ever be caused by exogenous factors (Greif and Laitin, 2004). Moreover, change in this account means moving from being in equilibrium to being out of equilibrium or from being in one equilibrium to being in another equilibrium. Historical institutionalists, on the other hand, have argued that this understanding of change is too narrow. The institution itself may give rise to dynamic forces because it affects actors and actor behavior. This in turn implies that internal factors may change an institution, and this change may be something less than a move out of or to a new institution. Rather, an institution may become more stable or expand its domain of activity. Historical institutionalists argue that, in order to capture these types of changes, we need to consider endogenous variables (Mahoney and Thelen, 2010: 4–7). What neither of these approaches does well, however, is to recognize that if we can identify two sources of variables (endogenous and exogenous), then there is the possibility that change is the result of an interaction of these two. Carefully distinguishing these possibilities can help us to better tease out and then re-combine the different explanations of institutional change without blurring important distinctions. Thus we argue that our understanding of institutional change can be advanced by being explicit about the circumstances under which endogenous and exogenous variables interact or under which they transform into one or the other over time.

4.2. Categories of mechanisms

Understanding path dependence as characterized by increasing returns, or reinforcing processes, helps us to distinguish it from processes driven by different causal mechanisms, such as constant returns to scale (enforcement) and decreasing returns to scale (undermining). We consider these distinctions in turn.

The *reinforcement* of an institution occurs by means of increasing returns.¹² In terms of cooperative equilibria, this means that cooperative payoffs increase from one round of play to the next so that an institutional equilibrium is not simply maintained but amplified. Thus, reinforcement is a process that increases the stability of an institution by deepening or expanding the range of the equilibrium/institution over time. This leads some to argue that path dependence is really about stability and not about change (see, for example, Greener, 2005; Quack and Djelic, 2007). This is, in our view, a misunderstanding. Path dependence does not mean ‘no change’, which would simply be a constant, equilibrium situation. Rather, path dependence captures a particular dynamic of reproduction over time in which the equilibrium is deepened. In path dependence, what changes is that as it reproduces itself the institution becomes *increasingly* stable, locked-in, and resistant to reversal. So although path dependence does not provide an explanation of path switching – that is, the movement to a different equilibrium – it does provide an explanation of change along a path – that is, the increasing entrenchment of an equilibrium.

The *enforcement* of an institution means that the institution is maintained in stasis. No actor has an incentive to deviate from the agreed upon behaviors or strategies. If we think of institutions as cooperative equilibria, then this means that cooperative payoffs remain the same in each round of play. Enforcement, as opposed to reinforcement, is characterized by constant returns to scale; when we change the independent variable by a certain value, the dependent variable changes by a constant value. Whereas reinforcement leads to institutional amplification, enforcement describes a mechanism that allows particular rules or behavior to come to or stay in equilibrium. It refers, then, to institutional creation – understood both as the move from no institution to an institution and the move from an existing institution to a new institution – and maintenance.

The *undermining* of an institution means that the institution is neither being maintained nor amplified but is, in fact, crumbling. In terms of cooperative equilibria, this means that cooperative payoffs decrease from one round of play to the next until eventually cooperation (and the institution) ceases. Thus, undermining is characterized by decreasing returns to scale such that the value of the institution is decreasing relative to the initial investment. Mechanisms of undermining eventually lead to the breakdown of an institution.

4.3. Combining causes and mechanisms in a taxonomy of institutional change

We can now combine these alternative mechanisms of change with our first distinction between exogenous and endogenous sources of change (see Figure 1).¹³ On the exogenous side, enforcement, reinforcement, and undermining are all the result of variation in factors not themselves causally affected by the institution. On the endogenous side, self-enforcement, self-reinforcement, and self-undermining are all dynamics which

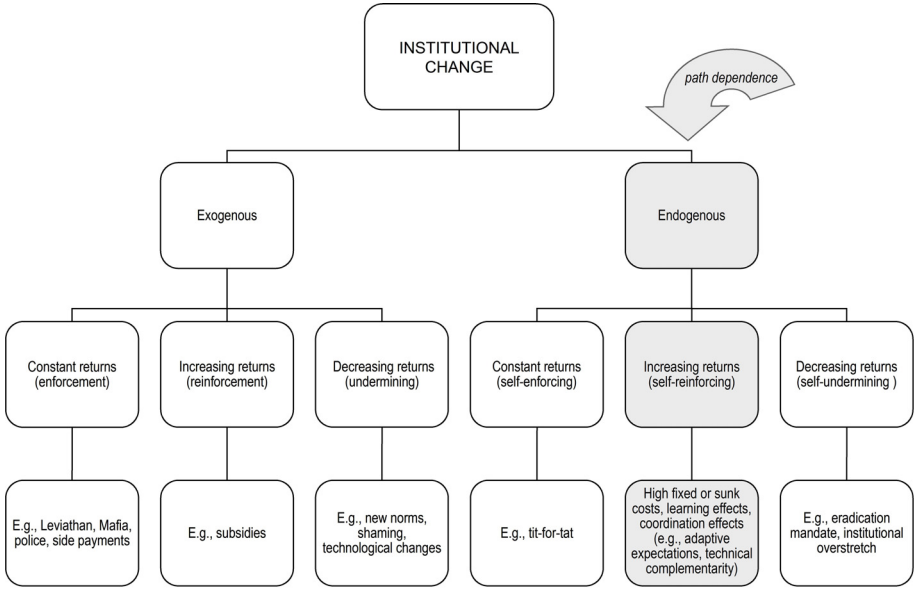


Figure 1. Taxonomy of Institutional Change Explanations.

affect and are affected by the institution. Each pair of processes – enforce/self-enforce, reinforce/self-reinforce and undermine/self-undermine – shares a common logic that can be expressed in terms of returns-to-scale, but each pair is separable according to whether the variables are exogenously or endogenously determined. Below we use the prisoners’ dilemma (PD) game to illustrate the categories in our taxonomy.

In a one-off PD game, there is a unique Nash equilibrium. This equilibrium (mutual defection) is a self-enforcing outcome since no player has an incentive to deviate from it. Self-enforcement is the attempt to stabilize an equilibrium from within and can be considered constant feedback since all information results in a return to a goal state. The Nash equilibrium in a PD, however, is Pareto inefficient because, according to the pay-off structure, there is another outcome that would make some players better off without making others worse off. To achieve this outcome in a one-off game, the optimal equilibrium would have to be externally enforced by, to take some typical examples, a Leviathan, the Mafia or the police.¹⁴ In infinite iteration, the optimal outcome becomes self-enforcing when players use a tit-for-tat strategy; that is, when infinitely iterated all players have an incentive to cooperate and no player has an incentive to defect. Note, however, that the iterated PD is not self-reinforcing. This is because in a classic iterated PD, the pay-off in every round is the same as in the previous round. Cooperation is maintained not because of increasing returns, but because constant return pay-offs accumulate over time.

A PD which is only finitely iterated, in contrast, would be characterized by self-undermining. That is, even if cooperation were possible, the possibility of defection in the last round of play converts all previous strategies into defection thus unravelling cooperation. This is self-undermining because the impetus for the unraveling comes from within

the logic of the game (or institution) itself. In order to prevent self-undermining and maintain mutual cooperation under conditions of finite play, an external enforcer would be necessary. Some institutions might be purposefully self-undermining, like the March of Dimes. The March of Dimes was established to eradicate polio, and when the disease was in fact eradicated the March of Dimes logically faced collapse.¹⁵ An eradication mandate can thus be a source of institutional self-undermining. Another possible source of self-undermining is institutional overstretch. When an institution's original mandate is expanded and it takes on additional tasks that it cannot fulfill, the entire institution might suffer. Snyder, for example, argues that this is one cause of the decline of empires (Snyder, 1991).

In contrast to self-undermining, undermining occurs when an external factor destabilizes an existing equilibrium. This factor, either material or normative, gives players incentives to deviate from their agreed upon behavior. The 'live-and-let-live' approach that spontaneously broke out among WWI trench soldiers, inducing a cooperative cease-fire, was broken by officers who forced their soldiers into battle by demanding to see either prisoners or casualties (Axelrod, 1984). Slavery and apartheid, it has been argued, are institutions that have been undermined by society's changing normative beliefs (Klotz, 1995). Other tactics which attempt to change the payoffs of cooperating actors, such as shaming or boycotting, can have similar institution-undermining effects.

The final combination to be discussed is reinforcement/self-reinforcement. Both of these are characterized by increasing returns. An institution might be reinforced, for example, through the payment of subsidies or bonuses which reward cooperation by increasing payoffs in future rounds conditional on past success. In self-reinforcing processes, in contrast, the increasing returns have an endogenous source. Self-reinforcement is, as established in the previous section, what is commonly referred to as path dependence. Endogenous factors which can lead to increasing returns include sunk costs, learning effects, and coordination effects.

Although we have used the prisoners' dilemma to illustrate the range of change explanations, it is important to note that this taxonomy does not prefer and is not prejudiced against any theoretical predisposition. The taxonomy can be used by any approach, for example, those that Mahoney discusses under the labels of 'utilitarian', 'functional', 'power' and 'legitimation' approaches (Mahoney, 2000: 517–526). The taxonomy can, for example, accommodate traditional rational actor accounts that argue change is the result of exogenously determined actor preferences, but also constructivist accounts that argue preferences are endogenous to an institution. This is because the taxonomy is not itself an explanation but a logical exercise that orders explanatory concepts and makes explicit which explanatory building blocks are available.

At least three significant conclusions can be read from the taxonomy. First, path dependence is clearly only one of a number of endogenous explanations of institutional change. Second, it is also clear that not all explanations that rely on increasing returns are also path dependent. Third, although many path dependence explanations rely on exogenous factors or non-increasing returns to scale for explanatory power, strictly speaking these should be seen as additions that stretch the concept of path dependence. These additions may be necessary to convincingly explain change, but rather than making room for them within path dependence we should instead theorize the multiple ways in which different mechanisms and processes interact to explain change.

5. Applying the taxonomy to the path dependence literature

With the taxonomy in hand, we now have a tool for assessing the path dependence literature. We identify two types of conceptual stretching that risk obscuring a wider range of institutional change explanations. First, there are those who agree that the core characteristics of path dependence are endogeneity and increasing returns, but who then effectively take these characteristics to be ubiquitously present. Second, there are those who argue that the core attributes of path dependence cannot be identified in the phenomenon to be explained and therefore respond by extending path dependence to include also constant and decreasing returns, and/or exogenous causal factors. In both instances, the desire to apply path dependence to an ever wider range of institutional change cases tends to result in stretching.

In this section, we purposefully focus on major contributions to the path dependence literature that clearly aim to rigorously employ the concept of path dependence, as this is where stretching has the strongest implications.¹⁶ Our goal is not to show that those contributions that rely on an extended rather than parsimonious understanding of path dependence are ‘wrong’, but rather to identify instances in which the use of path dependence subsumes and obscures distinct causal processes that are important in their own right. Our argument is that theory building would benefit from recognizing when distinct explanations are at work so that we can theorize those processes and hypothesize how these distinct processes interact with path dependence.

5.1. *The two attributes of path dependence: a broad interpretation*

Two landmark contributions to the study of path dependence have come from Douglass North and Paul Pierson. North’s theory of institutional development in economic history introduced the concept to the study of institutions, while Pierson’s work was instrumental in introducing path dependence to political science. Both of these contributions to the theoretical debate accept increasing returns and endogeneity as defining attributes of path dependence. In broadening the empirical application of path dependence from issues of technological development to institutions – that is, concept traveling – North and Pierson make arguments for why institutions are particularly likely to be subject to path dependence. In their search for more variables that are endogenous to institutions and more reasons why institutions exhibit increasing returns, they come close to arguing that institutions are *per se* path dependent. But the extensions proposed by North and Pierson can only be subsumed under path dependence if they can be shown to fulfill the two conditions of endogeneity and increasing returns. In the following we show that this is not always the case.

North’s substantive interest is in providing an explanation for the long-term success of some economies and the lack of development of others. North is interested in national economies and he takes the individual institutions and organizations that make up an economy as endogenous to this unit of analysis. He then develops the idea that different institutions within a society will complement each other, and these complementarities have coordination effects that produce increasing returns: ‘the interdependent web of an institutional matrix produces massive increasing returns’ (North, 1990: 95). In addition, actors are only limitedly rational and seek to minimize transaction costs. Institutional

structures enable actors to deal with the problems of bounded rationality and transaction costs. Since actors get more adept at using institutions over time, national economies exhibit increasing returns and are thus likely to remain on their respective paths (North, 1990; North, 1981).

So far, these arguments imply that institutions always reproduce themselves and leave no scope for change. But since North acknowledges that institutions may change, he makes room for this possibility by arguing that actors are not only boundedly rational but also innovators and learners. As a consequence, there will permanently be efforts at institutional creation and change driven by actors who stand to gain from a change in the institutional structure (North, 1990). Nevertheless, institutional creation and change will be incremental and bounded rather than rapid and radical because actors interested in minimizing transaction costs will be sensitive to start-up and fixed costs and their efforts will be slowed down by the increasing returns dynamics of existing institutions (North, 1990).

This account has two implications which strike us as problematic. First, North sees path dependence everywhere. Because bounded rationality, the desire to minimize transaction costs, and the interdependence and complementarity of institutions are, in North's account, general features of the social world, all institutions must be subject to path dependence all the time (North, 1990: 101). While these factors are certainly important, it is doubtful that the minimization of transaction costs will always be actors' overriding interest or that this motivation will be strong enough to create increasing returns. In addition, as we will discuss below, it is not necessarily the case that institutions will always complement each other. Rather than showing that these factors are present in the specific case analyzed, North assumes them to be ubiquitous. Consequently, path dependence becomes a general feature of all institutions and is not seen as a particular explanation for specific institutional developments. Significantly, this move means that we can no longer discriminate between path dependence and other processes of institutional change.

Second, North gives up the notion that path dependence is about the reproduction and deepening of the same institutional outcome. Instead he subsumes gradual, bounded or incremental change under the concept of path dependence. However, on the basis of our taxonomy it becomes clear that his account of incremental and bounded change cannot be fully subsumed under path dependence. This is because in his model those agents responsible for change are not sources of increasing returns. One may accept that actors' bounded rationality, their desire to minimize transaction costs, and even actors' interests in changing an institutional structure are endogenous, since North's unit of analysis is an economy in its entirety. One may also accept that the institutional structure exhibits increasing returns because it enables actors to minimize transaction costs and deal with problems of bounded rationality. But it cannot be argued that actors interested in changing the institutional structure are sources of increasing returns. In contrast, since they want to undermine or change the current institution, they may be sources of decreasing returns.

This is not to deny that North presents a plausible account of institutional change, but it would have to be retold in a way that recaptures the variety of processes at work: the desire of actors to change the institutional structure to further their interests is an endogenous undermining force. This undermining force, however, is counterbalanced by an endogenous, self-reinforcing (i.e. path dependent) process of coping with transaction costs and bounded rationality. Thus, without changing the substantive claims of his

account, our taxonomy helps to disentangle the different processes that interact to produce incremental and bounded change, whereas North subsumed all of them under path dependence.

In contrast to North, Pierson proposes a more specific set of factors that make path dependence likely. He argues that the concept of path dependence should be even more relevant in political science than it is in economics (Pierson, 2004), due to additional sources of increasing returns in the political sphere. Four factors of political life are relevant.

First, the central role of collective action and collective action problems makes institutional reforms less likely than in the more competitive and thus flexible environment of a market. Once actors have overcome a collective action problem to form an institution, the operation of the institution will be subject to decreasing costs per unit of the (public) good produced. Second, the high density of political institutions is a source of increasing returns, if the institutions complement each other. Third, political authority and power asymmetries can be sources of positive feedback. Actors may use their power positions to change the rules of the game in a way that further enhances their power positions. Fourth, another source of positive feedback can lie in the complexity and opacity of politics. In contrast to the economic sphere, where success can be measured in terms of monetary units, such a coherent and easily observable indicator of success does not exist in the political sphere. This makes learning through trial-and-error more difficult, which makes it more likely that actors' shared understandings will be reinforced over time rather than changed (Pierson, 2004).

But even though each of these four factors can potentially result in path dependence, there is no a priori reason to believe that they are always endogenous and always result in increasing returns. Pierson's first argument about collective action problems is that solving them involves high fixed or sunk costs and therefore institutions are subject to increasing returns. This is consistent with our taxonomy as long as the specific collective action is also driven by endogenous factors. Note, however, that the level of fixed or sunk costs will vary with the nature of the collective action problem, and so increasing returns cannot be assumed across the board. An institution that is designed to deal with assurance problems, for example, should be cheaper to set up than one that deals with prisoners' dilemma problems. Also, as Schwartz points out, even if institutions have high setup costs this does not mean that there will be decreasing unit costs (i.e. increasing returns) for all of its activities. For example, if an old organization starts to mobilize for a new cause, the unit costs may well be constant (Schwartz, 2004).

Pierson's second argument about the high density of institutions is similar to North's argument about institutional complementarities. This is consistent with path dependence for those cases in which high density does in fact lead to increasing returns. It is important to note, however, that a high density of institutions does not *necessarily* lead to complementarities. We may just as well observe competition among institutions, which may involve decreasing or constant returns for the competing institutions. Thus, in the specific case analyzed, it will have to be established that institutions actually complement each other and benefit from coordination effects. Which one of the two, complementarities or competition, is more likely in a dense institutional field cannot be determined *ex ante*.

It is more difficult to see why, as Pierson's third point contends, power asymmetries are likely to be endogenous and create increasing returns. First, power asymmetries may or may not be endogenous to an institution. If the power of certain actors is derived from the rules of the institution (e.g. voting shares), then this would be the case. If, however, it is derived from sources external to the institution (e.g. private wealth, personal network, etc.) then power asymmetries are exogenous (cf. Beyer, 2010). Second, even if they are endogenous, power asymmetries are not always sources of self-reinforcement, but may also be sources of self-undermining. This is apparent in Pierson's own illustration: actors may use their power positions to change the institution in a way that further enhances their power but undermines the stability of the institution (see also Mahoney, 2000: 523; Pierson, 2004).

Finally, Pierson's fourth point about the opacity of politics leading to positive feedback is also ambiguous. One may indeed argue that shared understandings or social norms are endogenously reinforced, because by applying norms actors also constitute and sustain them. And it may also be argued that applying those shared understandings leads to increasing returns. However, Pierson combines this idea with an argument about the difficulties of learning from bad political outcomes and subsumes both under path dependence. On the basis of our taxonomy, however, we can see that these are actually two distinct processes: the (endogenous) path dependent development of norms and an endogenous undermining process of learning. Whether these opposing processes will lead to institutional stability or to change is an empirical outcome that depends on the strength of the respective processes.

As both North and Pierson argue, there are good reasons to believe that institutions may be subject to path dependent processes. It does not logically follow, however, that all institutional change processes are therefore path dependent. In order to determine which processes are actually path dependent, we need to identify whether the causal variables at work are endogenous and whether the mechanism relating independent and dependent variables is characterized by increasing returns. As the discussion has shown, this often cannot be identified *ex ante* but has to be shown empirically in the specific case analyzed. When the two conditions are not met, then institutional change is indeed caused by another process or the result of a combination of processes.

5.2. Adding attributes to path dependence

Another kind of stretching occurs when additional attributes are subsumed under the concept of path dependence. This tends to happen when researchers identify variables or mechanisms beyond the two core attributes of path dependence to be influential in institutional change. Rather than implicitly subsuming these additional factors under the two core attributes of path dependence, as discussed in the previous section, these studies respond by explicitly extending the concept. We first discuss examples in which path dependence is extended to include the full range of causal variables (i.e. endogenous and exogenous factors), and then turn to cases in which path dependence is extended to include a range of causal mechanisms (i.e. constant and decreasing returns).

An important instance of exogenous causal factors being added to the concept of path dependence occurs in the critical junctures debate. A critical juncture refers to "relatively

short periods of time during which there is a substantially heightened probability that agents' choices will affect the outcome of interest," because in these exceptional situations structural constraints are loosened (Capoccia and Kelemen, 2007: 348). Examples of critical junctures are wars, revolutions, or natural disasters. While most historical institutionalists acknowledge that such events are typically exogenous to the institution in question (Hall and Taylor, 1996: 942), many of them integrate critical junctures into the concept of path dependence.¹⁷ For example, exogenous economic crises play an important role in arguments about the institutional development of party-political systems (Thelen, 1999: 392). Equally, exogenous shocks are seen as key elements in a 'functional explanation' of path dependence (Mahoney, 2000: 519–522). For these authors, critical junctures are the founding moments of path dependent institutional developments and capture the initial contingency of the process (see, for example, Mahoney, 2000; Thelen, 1999).

According to our taxonomy, however, a critical juncture cannot be both exogenous to the institution analyzed and also be subsumed under path dependence. While explanations based on combinations of exogenous critical junctures and (endogenous) path dependence processes are empirically plausible, the taxonomy reminds us that critical junctures as such are not part of the concept of path dependence. Instead of adding critical junctures to path dependence explanations in order to allow path dependence to work in a way that it would not on its own,¹⁸ theory building on institutional change should observe the conceptual distinction between endogenous path dependence and exogenous critical junctures. It could then more rigorously theorize combinations of these causal factors.

The second kind of explicit stretching is the attempt to add decreasing or constant returns to path dependence. Proponents of this strategy often follow the same impulse as Douglass North; they aim at reconciling the notion of path dependence with the empirical fact that institutional change occurs (Greener, 2005; see also Thelen, 2003). However, in contrast to North, who accepted increasing returns as an attribute but then smuggled in decreasing returns, others explicitly argue that increasing, decreasing, and even constant returns ought to be considered attributes of path dependence. One example is Mahoney's concept of a 'path dependent reactive sequence' (Mahoney, 2000: 527). In contrast to self-reinforcement, reactive sequences are marked by 'backlash processes that *transform* and perhaps *reverse* early events' (Mahoney, 2000: 526, emphasis in the original). In other words, Mahoney includes decreasing returns as a possible characteristic of the concept of path dependence.¹⁹ While there can be no doubt that such undermining processes exist and should be analyzed to understand institutional change, there is, in our view, a real risk in subsuming such processes under the notion of path dependence. Stretching path dependence to explain both lock-in and reversal, for example, expands the number of cases the concept covers but limits its analytical power.²⁰

Finally, it is worth noting that some scholars have reacted to the inability of path dependence to explain more instances of institutional change not by stretching the concept but by abandoning it. Consider, for example, Thelen's arguments about incremental change along 'historical trajectories'. She is careful not to label these trajectories path dependent, but her term ultimately attempts to explain similar phenomena. Thelen wants to reconcile the notion of institutional stability with the fact that institutions also undergo

gradual change (Thelen, 2003). Thus, she proposes to focus on mechanisms of institutional ‘reproduction’ and ‘undermining’ rather than path dependence (Thelen, 1999). The distinction between reproduction and undermining is in line with ours between decreasing and increasing returns (but neglects constant returns). However, Thelen does not distinguish endogenous from exogenous causal factors. Consequently, she only offers two types of explanations, whereas we distinguish six different types. Moreover, it strikes us as undesirable that this (implied) typology intentionally sacrifices the thoroughly theorized concept of path dependence. Our taxonomy reserves a clearly delimited space for path dependence while also recognizing other institutional change processes as distinct concepts.

The discussion that has evolved around the concept of path dependence within the social sciences has been highly productive in that it has motivated scholars to develop theoretical accounts of institutional change. The problem with some of these accounts, however, is that they either implicitly or explicitly stretch the concept to accommodate empirical observations rather than to argue that explaining empirical complexity may require a combination of different mechanisms and processes that need not be [bundled] into one concept.²¹ This conclusion in no way diminishes these contributions to our understanding of institutional change. In fact, it is highly plausible that explaining institutional change will often involve a combination of distinct processes. Rather, what we argue is that this explanatory richness can be made more fruitful when explanations are combined in a theoretically-conscious and not ad hoc fashion. With our taxonomy in hand, we can begin to generate hypotheses about how different explanations of institutional change might work together and with what effects.

6. Conclusions

Recent literature has observed that despite the institutional turn we still do not have strong theories of institutional change. In this article, we have suggested that theory development has been hindered by conceptual challenges that arise as a field matures; namely, existing concepts get stretched and a range of new concepts get introduced. To remedy these problems, we constructed a taxonomy that captures a logically complete palette of institutional change explanations and offers a basis for delimiting them from one another. We built the taxonomy by taking the well-developed theory of path dependence as our starting point for identifying a distinct set of change variables and mechanisms. We argued that path dependence has two core attributes; it is characterized by endogeneity and increasing returns. Then, using the technique of ‘negative identification’, we inferred a logically complete set of causal variables and mechanisms (see Figure 1).

The value of this conceptual exercise is that it provides a tool for systematically theorizing institutional change. First, it provides a remedy for the problem of concept stretching. In particular, it strengthens the analytic value of path dependence by clearly delimiting its scope. It is important to address concept stretching because, unheeded, it increases the likelihood that cases of path dependence become over-diagnosed and other concepts of change get smuggled in haphazardly or remain obscured altogether. Second, it distinguishes among existing concepts and mechanisms so that they can be more reflectively combined. This in turn should help scholars identify multiple or configurative

causation in the explanation of particular phenomena, developing hypotheses about the relationships among various causal factors and mechanisms. Finally, it helps us to identify logically missing concepts and mechanisms of institutional change. Interestingly, the path dependence branch of the taxonomy tree is the most and best theorized. Other cells have been used ‘a la carte’ but systematic theorization of alternatives is as of yet lacking. Developing these cells and developing hypotheses for when and how various branches interact are tasks for future research.

The taxonomy also sheds light on three particular issues that trouble the institutional change literature: endogeneity versus exogeneity; temporality; and non-change. First, although path dependence is widely understood to be a self-reinforcing process, the literature has paid much more attention to the increasing returns that characterize ‘reinforcement’ than to the endogeneity that characterizes ‘self-reinforcement’. The power of the path dependence logic, however, rests at least in part on the insight that institutional change can be endogenous. When current theories neglect to distinguish or unwittingly mingle endogenous and exogenous factors, we lose analytical rigor. It is certainly the case that endogenous and exogenous factors work together in reality. But to gain a coherent understanding of how these factors interact, we first need to reflect on which ones are at work when and where.

Second, we have explicitly built the taxonomy around possible explanations of institutional change, including types of causes and mechanisms, rather than descriptions of change, which focus on the pace of change (e.g. whether it is gradual or punctuated) or the scope of change (e.g. whether it is broad or deep). Nevertheless, it may well be that particular causes of change (e.g. exogenous or endogenous) and particular mechanisms of change (e.g. constant, increasing or decreasing returns) influence the pace or scope of change. Endogenous change, for instance, may be correlated with gradual change. These relationships need to be systematically worked out in future work.

Finally, thinking about path dependence as one explanation of institutional change reveals an important difference between the notions of no change, change, and stability. As we have discussed, some interpret path dependence to be a concept of non-change. But in our view this conflates stability and stasis. Stability itself is a property of institutions that is subject to change, even though a highly stable institution might appear to be static. Our discussion suggests, then, that path dependence does indeed capture change – an increase in the stability of an institutional equilibrium (i.e., its robustness to shocks grows over time).

In systematizing various types of institutional change explanations, our hope is that future work can more effectively address outstanding puzzles of institutional change, including those outlined above, by self-consciously theorizing the interaction of distinct variables and mechanisms.

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Notes

1. A few other authors, most importantly Scott Page and collaborators (Page, 2006; Bednar et al., 2012), have also attempted to differentiate path dependence from other kinds of processes. While their endeavor shares our ambition to clarify the concept in order to preserve its explanatory power, it differs from ours in that it (1) aims to expand the explanatory power of path dependence and (2) focuses only on processes in which history matters (in different ways). In contrast, our taxonomy is an effort to sketch both path dependence and the alternative explanations it implies.
2. Another strategy for systematizing concepts is to integrate them into a coherent general theory. This has been the direction of some recent contributions to the field such as Mahoney and Thelen (2010).
3. As the number of observations that fit into a category increases (high extension), the broader the meaning of that category becomes (low intension). Categories with high intension bring high discriminatory and thus explanatory power, especially within cases; categories with high extension bring generalizability and explanatory power across cases.
4. As we will discuss in more detail later, whether a variable is endogenous or exogenous depends on its position relative to the institution in question; i.e., no variable is inherently exogenous or endogenous.
5. While many scholars believe that inefficiency is frequent in path dependent processes (but see Liebowitz and Margolis, 1990; 1995), there is consensus that inefficiency is not a necessary effect (David, 2007).
6. This is in contrast to equilibrium selection under constant or decreasing returns. In such ergodic dynamics, competition can drive out other results. They have a unique equilibrium which, however, cannot be locked in. Early choices can be corrected, reducing the importance of early events.
7. Some of the confusion that has surrounded the application of path dependence is, we maintain, the result of not properly distinguishing between causes and effects of path dependence.
8. Page (2006: 88) claims that path dependence has four related causes: increasing returns, self-reinforcement, positive feedback and lock-in. He does however state himself that positive feedback is essentially the same as increasing returns, and it is apparent from his definition of self-reinforcement that it can be usefully understood as increasing returns plus endogeneity. In contrast to Page, we see lock-in as an effect rather than a cause of path dependence. Overall, Page's discussion underlines our claim that increasing returns and endogeneity are the two causal attributes of path dependence.
9. But see Schwartz (2004: 5), who writes of path dependence's 'powerful, endogenous increasing returns mechanisms'.
10. For a critique of this move see (Schwartz, 2004).
11. For such a classification see (Streeck and Thelen, 2005). As (Mahoney and Thelen, 2010), point out, these are types or 'modes' of change, not explanations of it.
12. It has been argued that both sequential returns and increasing returns can be self-reinforcing (Hathaway, 2001). In our view, however, it is incorrect to distinguish between sequential and

- increasing returns. Sequencing can be better understood as a way to get increasing returns. As the QWERTY example shows, a certain sequence of events can produce increasing returns which would not have been present had the sequence been different (David, 1985).
13. Although we use a taxonomical tree, the typology could also be depicted as a 2x3-matrix, as in Elman (2005).
 14. These traditional examples are of negative enforcement. In fact, external enforcement can be the result of increasing the costs of defecting (which is how the given examples work), or it can be the result of increasing the benefits of cooperating (such as through side payments).
 15. In fact, rather than collapse, the March of Dimes changed its mandate to one of fighting all childhood diseases.
 16. We do not address studies that use a 'soft version' of path dependence, which simply asserts that history matters (Quack and Djelic, 2007). Such studies have been identified as problematic by many scholars, see for example Mahoney (2000), Pierson (2004) and Thelen (1999).
 17. This understanding of critical junctures has also been criticized by Capoccia and Kelemen (2007), who argue that the notion of 'critical juncture' is an important mechanism in its own right.
 18. That critical junctures serve this function in historical institutionalism is generally acknowledged, see for example Schwartz (2004) and Thelen (2003). What is mostly not acknowledged is that path dependence has to be conceptually separated from critical junctures.
 19. His argument for why a reactive sequence can be subsumed under path dependence is that it is also marked by initial contingency (Mahoney, 2000).
 20. Put more strongly, 'a concept that attributes the same outcome sometimes to increasing and sometimes to decreasing returns is incoherent' (Schwartz, 2004: 11). On this point, see also Drezner (2010)
 21. Pierson (2004: 21) makes a similar point with respect to the class of sequencing explanations: 'Limiting the concept of path dependence to self-reinforcing processes in no way precludes the investigation of other ways in which sequences can matter in explaining social outcomes'.

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