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Understanding the historical turn in the policy sciences: A critique of stochastic, narrative, path dependency and process-sequencing models of policy-making over time

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Abstract. This article evaluates four general models of historical change processes which have emerged in various fields in the social sciences – namely stochastic, historical narrative, path dependency and process sequencing – and their application to the study of public policy-making. The article sets out and assesses the merits and evidence for each, both in general social research and in the policy sciences. The article suggests that more work needs to be done examining the assumptions and presuppositions of each model before it can be concluded that any represents the general case in policy processes. However, since neither the irreversible linear reality assumed by narrative models, nor the random and chaotic world assumed by stochastic models, nor the contingent turning points and irreversible trajectories required of the path dependency model are found very often in policy-making, these models are likely to remain less significant than process-sequencing models in describing the overall general pattern of policy dynamics.

Introduction: The historic turn in the policy sciences

History is a difficult subject for students of policy-making. Although most policy studies focus on changes which occur in government actions over time, the need to carefully examine the often implicit theories of history behind identified patterns of policy development has only been recently recognized (Mahoney and Rueschemeyer, 2003; Saldana, 2003; Pierson, 2004). Sociologists and others at the onset of the 1990s turned to this same historical question and generated an excellent corpus of conceptual and methodological work on the subject (Somers, 1996; Abbott, 2001).[1] However these insights are only now slowly penetrating into the evaluation and critique of the concepts and methods used in the policy sciences.

For many years, policy studies, and especially formal policy analysis, often proceeded along the unspecified and implicit assumption that policy-making followed the precepts of what Andrew Abbott has termed a "general linear reality" (Abbott, 1988). That is, that policy causes and effects could be ascertained empirically and that a general set of social forces drove policy-making, with individual deviations from deterministic outcomes existing as "noise" or random error (Aminzade, 1992; Griffin, 1992; Stinchcombe, 1968). Outcomes from such processes, such as policy decisions, were seen as the realization of stochastic processes, in which some underlying set of factors (independent variables) with certain kinds of parameters combined to "determine" a result. In this "general linear model," as Abbott has termed it, there is an implicit notion that history, per se, doesn't matter. That is, time is thought of as a discrete, infinitely divisible entity and "history" is simply the assemblage of "moments" on a temporal continuum. Which time period is chosen for analysis is immaterial as each outcome is more or less precisely determined at that moment by the existing configuration of variables. As Abbott put it, in this model, "the social world

is made up of fixed, given entities with variable properties" – cases and variables – in which outcomes consist of "the succession of the values of a dependent property or properties over time" (Abbott, 1990).

In most social sciences, including policy science, however, this general conception of the ahistorical temporality of social processes has recently been challenged by investigators who have argued that "sequence matters." That is, that the determination of policy outcomes is not deterministic, in a stochastic sense, but much more contingent than previously assumed; with the sources of contingency being not merely individual actions in a given environment, but also more structural factors such as historical timing or the "ordering" of policy-relevant events (Pierson, 2000b; Abbott, 1990).

This emphasis on structured sequencing, of course, is a significant aspect of many recent neo-institutional approaches to the study of public policy-making (Steinmo et al., 1992; Hall and Taylor, 1996; Kato, 1996). However, as this article will show, the basic model of historical sequencing found to date in many neo-institutionalist studies has tended to focus only upon a single alternative model of historical processes – path dependency – that is only one of several possible alternatives to the stochastic model. Most neo-institutional studies have generally not considered (a) the alternative possibilities and models which exist (Thelen, 2003; Lieberman, 2001) and, more surprisingly, (b) whether or not the specific attributes of the path dependent model in fact fit the reality of most policy-making situations (Kay, 2005; Greener, 2005).

This article addresses both these issues, assessing the merits and demerits of three general alternative models of historical sequencing to the stochastic model – path dependency, historical narratives and process sequencing – both in their application to social phenomena in general and as specifically applied to the study of public policy-making.

Three alternate policy-relevant conceptions of historical sequencing to the stochastic model

Inevitable sequence models: Historical narratives

While path dependency may have emerged in recent neo-institutional accounts of policy-making as a serious competitor to the "general linear model," in general in the social sciences the principal alternative to the stochastic model of historical reality has been one which is much more profoundly historical in nature but often equally un-reflective of its conceptual foundations. This is the reading of history as a causal narrative, a model and methodology prevalent in academic History Departments and many other areas of social, cultural and political studies (Abbott, 1992; Stinchcombe, 1968: pp. 101–29) In this model, an entire sequence of events is read, retroactively, as a single entity. The challenge for the analyst is to uncover the "plot" or "narrative" which can "explain" the development of the process from start to finish, or "birth" to "death" (Abbott, 1990). In this view, "causality" is much more complicated than usually assumed in the stochastic model, in that the sequencing of events is highly significant in terms of gauging the effects of causative agents or variables. At one

point in a narrative story, for example, the presence or absence of a certain variable may have one effect, while later on it may have none, or a different one altogether.[2]

Recent work in the social-sciences by authors such as Czarniawska, Abbott, and others have attempted to develop the outlines of more formal models of narratives, specifying the key assumptions of different narrative models and suggesting their utility and disutilities (Abbott, 1992; Czarniawska, 1998; Ospina and Dodge, 2005). We distinguish between two general approaches, narrative positivism and narrative postmodernism. Abbott, for example, specified three major "story properties" which are methodologically significant in narrative analysis. These are (1) *enchainment* – or the "narrative analogue of causality," in which it is assumed that there are links between one point in the narrative and another; (2) *order* – in which the narrative must proceed in a strict sequence if the observed outcome is to be explained; and (3) *convergence* – in which a narrative sequence might achieve a "steady state;" a special case allowing stochastic analysis to be an appropriate and effective tool for analyzing developments occurring within a narrative chain (Abbott, 1992).

Abbott has also set out some of the major problems which face this kind of analysis. These include problems establishing "endpoints" in the analysis (for example, when the "birth" and "death" of a phenomenon are not easily identified); problems of multiple overlapping and intersecting "plots" which can make a central narrative storyline difficult to discern; and problems with too many characters obscuring the plotlines of a story (Abbott, 1992). All of these problems, of course, emphasize the significance for this model of the role played by the analyst as interpreter of events, who may by force of circumstances choose to simplify a story in order to reveal more clearly its fundamental plot, but who does so at the risk of imposing their own interpretation of events on history (Buthe, 2002).

The question of validating narrative interpretations, of course, has long been an issue in the hermeneutic tradition (Gadamer, 1989; Ihde, 1974). When postmodern social theory embraced its "literary turn," for example, a development that overlapped with but has remained distinct from the narrative interests of historians, it drew on this rich tradition (Lyotard, 1984). The idea that actors make sense of social phenomena by telling stories about them, stories that they use to orient themselves and to guide (or misguide) other actors, is both intuitively plausible and directs theoretical attention to the much-studied hermeneutic mechanisms of enplotment and narratology. However, as Barbara Czarniawska points out, the epistemological status of narratology itself as a method of social inquiry remains an open question and her discussion of the methodological alternatives presented by this technique, which draws heavily on the hermeneutic tradition, pushes the model further than does Abbott (Czarniawska, 2004a).

The first option Czarniawska presents is to treat actors' narratives as partial and sometimes deliberately misleading accounts of "what is really going on" in the social world. The business of the theorist is to unmask the partial and motivated character of actual narratives, sometimes by telling an alternative story but more often in policy studies by appealing to other methodologies to demonstrate the gap between the stories and an underlying reality (see also Buthe, 2002). The second, equally extreme, option is to undermine the very idea that there are other methodologies that are not also forms of story telling so that there is no underlying reality against which the truth

or falsity of particular stories can be checked. The first option is close to the position Buthe, Czarniawska and Abbott have termed "narrative positivism." The theorist is trying to "get the story right" by correctly identifying the causal mechanisms that are actually operating in a world that exists independently of narratives.

The second option, what might be termed "narrative post-modernism" is less well-adapted to social studies, although it should be noted that it is not necessarily anti-realist and confined to the analysis of the imaginary worlds of literature or philosophy and religion (Edelman, 1964; 1988). This is the model built on the observation that there is a world outside of the narrative itself but the moment we try to describe it we are again telling stories (Foucault, 1972). The shock value of the second option has been much exploited in such areas as sociologically-inspired accounts of science and technology, where scientists are analyzed as (mere) story-tellers (Traweek, 1992; Law, 2000).

More often, however, social theorists have sought some intermediate position between the two extremes, one which brackets metaphysical questions about the existence of a world outside stories and focuses instead on the relations between different stories and between story tellers. In Czarniawska's version of narrative postmodernism, which draws on the popular literary concept of intertextuality, for example, texts speak to other texts. The effect is to create patterns and regularities in interpretation and action which Czarniawska calls "institutions." As she puts it: "the reader is able to see how a text was made. . .because reader and writer are both producers and consumers of the same set of human institutions" (Czarniawska, 2004a). In recent work, she has focused particularly on the mechanism of framing and the role played by the existing stock of discursive elements that go to make up such a frame (Czarniawska, 2002, 2004c).

Unlike the case with the stochastic model, in narrative positivism one would expect to find lock-step and irreversible patterns of historical development, ones with specific causal patterns related to historical sequencing. In narrative postmodernism, the role of sequencing is much less clear. Presumably, it matters when framing and reframing take place because of the limited stock of "ideas in good currency" that are available at any particular time (Fischer, 2003). However, in spite of Czarniawska's depiction of frames as "iron cages" (Czarniawska, 2004b), her characteristically postmodern emphases on reframing and free play tend to undermine any sense that history moves in any kind of specific direction meaning, ironically, that this approach in the end shares much in common with the stochastic model.

The contingent sequence model: Path dependency

Although less predominant in the social sciences than the stochastic model, as a result of earlier struggles between critical theorists and advocates of more scientistic 'behavioural' methods of social inquiry (Adorno et al., 1976; Almond and Genco, 1977) narrative models remain very popular in fields such as history and literary studies, as well as in the policy sciences (Yanow, 1996, 1999). These are not the only models of historical sequencing available to help analyze historical processes such as policy-making, however. For a variety of reasons related to high profile disputes between institutional and other types of economists, one of the best known recent

alternatives to stochastic and narrative modes of analysis in the social sciences is the "path dependency" model (Greener, 2002b, 2005).

The contours of the development of the path dependence model in the social sciences are now well known, especially the influence of debates in the economics literature on whether or not it is possible for market transactions to result in sub-optimal outcomes as inferior technologies come to be "locked-in" to specific economic "trajectories" (Arthur, 1988, 1989; David, 1985, 1986; Liebowitz and Margolis, 1990, 1995). Path dependency in this sense represents a kind of failure to achieve a technically efficient solution that is attributed to any one of a number of factors: to "network effects" or the ability of inferior technologies to spread and block the adoption of more efficient ones; to "increasing returns" or the historical accident of the timing of the entry of new technologies into the market place; or to (premature) "standardization" which can also block the spread of superior technologies. Debates in economics tend to turn on issues of what Liebowitz has called the "degree" of path dependency, that is, how hard it is to "turnaround" a sub-optimal process once it is underway (Liebowitz and Margolis, 1995). For some authors turnaround is almost impossible, for others, it is somewhat less difficult to accomplish.

In the social and political realm, the use of the concept of path dependency is less specific than is found in economics and applies to the description of historical processes which observers have found to be highly contingent in origin and inertial in nature. As mentioned above, it is commonly associated with neo-institutional forms of social and political analysis.

Mahoney outlines the three principal elements of a path dependent model of historical evolution as variations on general narrative precepts. That is: (1) only early events in a sequence matter; (2) these early events are contingent; and (3) later events are inertial (Mahoney, 2000). These elements highlight the crucial aspects of path dependent models of historical development that separate this model from narrative analyses and from other models – like process sequencing – which are discussed below: that initial conditions are chance-like, and have a significant influence over the irreversible course of events followed later in the sequence.

Identifying these "turning points" or "conjunctures" is thus critical to path dependency analyses of historical processes, although there is significant debate in the literature over exactly what is meant by characterizing an event as "contingent" (Wilsford, 1985; Abbott, 1997). At its simplest, contingency implies that, although the sequence of events is not a strictly necessary one, predictable from the conditions of the starting point according to general laws, there is nonetheless an explicable pattern which relates one point to another, especially in the early part of the sequence. While a random sequence implies that any event has an equal probability of following from any other, in a contingent sequence each turning point renders the occurrence of the next point more likely until, finally, "lock in" occurs and a general explanatory principle, such as increasing returns, takes over the work of explanation.

Adherents of stochastic methods, like Herman Schwartz, ridicule this conception of contingency as involving a redundant distinction between small causes and big causes. In this view, big causes always supply the ultimate explanation for social outcomes, so why bother with the analysis of little ones? (Schwartz, n.d.). While Schwartz's objection rests on his demand that there be only a single explanation of

historical sequencing that subsumes all the others, combined with an hostility to the idea of structural overdetermination, more positively, his objections raise the important question of the nature of, and reasons for, the "embeddedness" of sequences or "trajectories" in path dependent models. It is important to be reminded that the triumphs of the QWERTY keyboard, VHS standards, or the Windows operating system described and debated by Lane and Margolis and Liebowitz and others, for example, took place in the larger context of the development of large-scale social processes such as bureaucratization. But it is not a fair objection to path dependent explanations to conclude that, therefore, "QWERTY, or more precisely typing, represented not a completely chance outcome, but rather a deliberate choice by designers. . ." (Schwartz, n.d.: p. 7). Contingent does mean random in this model, even if only with respect to initial starting conditions. So while events located later in a trajectory may be less random, they do not approach the status of "designed," unless their ad hoc starting point is ignored. Path dependency attributes outcomes to an overall situation in which microcausation and sequence matter and, hence, "deliberate choices" cannot be assumed but require detailed analysis and explanation (List, 2004).

Punctuated equilibrium models – process sequencing

As this discussion has shown, as the extent of contextual embeddedness of social actors increases to the point where we are concerned with apparently irreversible sequences that could not have been other than they were, we find ourselves in the world of the narrative. At the other extreme, where contextual embeddedness is deemed irrelevant and only chance-like conditions prevail, the stochastic model prevails (along with its post-modern narrative equivalent). In between these two extremes lies the path dependency model, combining narrative's attention to sequence in understanding later trajectories of events, but focusing on contingency and randomness in understanding the causal dynamics of the "critical junctures" which start those trajectories in motion.

Conceptions of history and the analytical methodologies which are associated with them, however, do not line up neatly on a simple spectrum from context-bound to random. This is made clear by the elements and assumptions of a fourth model of history found in the present-day social sciences which provides an alternative conception of the nature of social processes to both narratives and path dependency. In this model, unlike in the stochastic or narrative postmodernist models, sequence does matter. However, unlike the narrative positivist model, it is not concerned with irreversible sequences and, unlike the path dependency model, it does not rely upon random or purely contingent initial conditions to set trajectories in motion. This is the "process sequencing" model which conceives of social processes as "the connections between events in different time periods as reiterated problem solving" (Haydu, 1998). Proponents of this model among sociologists, such as Jeffrey Haydu, argue that it has advantages over both the narrative and path dependency models as it "provides a plausible way to represent and account for historical trajectories; it builds social actors and multiple causal timelines into explanatory accounts; and it offers a richer sense of how earlier outcomes shape later ones" (p. 341).

Rather than connect historical events through stories or paths, Haydu argues, events can be demarcated on the basis of "contrasting solutions for recurring problems"

(p. 354). That is, "continuities across temporal cases can be traced in part to enduring problems, while more or less contingent solutions to those problems are seen as reflecting and regenerating the historical individuality of each period" (p. 354).

Based in part on work in evolutionary biology which suggested evolutionary processes proceeded in a stepped or "punctuated equilibrium" fashion (Gersick, 1991; Eldridge and Gould, 1972; Gould and Eldridge, 1977), this model looks at first blush somewhat like path dependency in its emphasis on turning points and trajectories, and its combination of elements of the stochastic and narrative models. Significantly, however, the model lacks path dependency's emphasis on randomness in the starting points of trajectories and is not wedded to the idea of irreversible trajectories found in narrative positivism. That is, process sequencing stresses not how outcomes at historical switch points are accidents, but how they are firmly based or rooted in previous events and thinking as related structural processes of negative and positive feedback affect actor behaviour (Baumgartner and Jones, 2002). Changes in trajectories in this model are not random or chaotic, but are outgrowths of earlier trajectories. Hence, although process sequencing shares some of the characteristics of the path dependency model, it is not the same. The idea of change occurring as a result of an embedded "crisis," for example, in the process sequencing model, is not the same as that focusing on random critical junctures found in a typical path dependency explanation. Moreover, this model does not require a uni-directional trajectory following an initial conjuncture, but allows for the kinds of reversals in trajectories identified in the narrative postmodern model as the development of ideas and discourses proceeds apace.

This model has become increasingly popular in fields such as political science as an alternative to path dependent models, providing a better explanation of phenomena such as the creation and development of national and sectoral political institutions as well as political ideas, discourses and paradigms (Lieberman, 2002; Lindner, 2003; Lindner and Rittberger, 2003; Pierson 2000c), and appears to be more consistent with the actual empirical record of changes found in many countries and sectors than is the path dependency model (Dobrowolsky and Saint-Martin, 2005; Morgan and Kubo, 2005; Rico and Costa-Font, 2005).

Narratives, path dependency and process sequencing as alternate models in the historic turn in the policy sciences

Before examining their specific application in the policy sciences, it is important to reiterate the several key features identified above which differentiate these several general models of historical sequencing from each other. That is, the key aspect of the stochastic model is its ahistoricism, the notion that sequences don't matter, a point shared with post-modern narratology in the sense that the origin and order of stories is unimportant. The narrative positivist model, on the other hand, emphasizes adaptation within a sequence and the irreversibility of events and trajectories which could not be otherwise than they have been described. In the path dependency model, the key features are the random aspects of critical junctures and hence the possibility of alternative trajectories at early points in a sequence, along with, as in the narrative

positivist model, the irreversibility of sequences once "locked-in." These contrast with the process sequencing model's emphasis on reiterated problem solving as embedding a new trajectory in a previous one, and the ability of trajectories to shift, and even reverse, direction.

Figure 1 below illustrates the principal differences between these general models in terms of their assumptions about the direction and origins of historical sequences.

The existence of these competing conceptions of historical explanation, given the historical development of policies, poses problems for the policy sciences. Since many preliminary methodological and conceptual issues relating to the design of policy studies and the assimilation of their findings are related to the temporal models used, which, if any, is the correct or most appropriate alternative to the stochastic model, is a serious question for those studying public policy. In what follows below, examples of the application to policy-making of each alternative conception of historical sequencing are provided and analyzed in terms of their merits and demerits as a model of historical sequencing appropriate to the policy sciences.

Inevitable policy narratives: Thick descriptions and policy process tracing

The narrative positivist approach has lain largely unnoticed and unacknowledged at the heart of many efforts to analyze policy change and development. Many works which have examined policy development over time, from undergraduate student essays to the autobiographical memoirs of key policy actors, simply adopt a narrative positivist approach, working backwards from ultimate outcomes to trace causative agents and pivotal moments in the historical record of what are viewed as inevitable sequences of policy-making events (Raadschelders, 1998).

This type of policy analysis has often been castigated by adherents of the stochastic model as providing little more than idiosyncratic, non-cumulative "thick description" (Calhoun, 1998). And it is certainly the case that as applied to the policy sciences this model has many methodological difficulties related to its *ex-post facto* character, difficulties involved in the replication of the analysis, and problems with generalizing results across policy "stories" (Griffin, 1993). However, the difficulties do not mean that policy narratives are not, *a priori*, an alternative model of policy dynamics, merely that this approach has usually not been systematically analyzed as a methodology for policy analysis (Thompson, 2001; George and Bennett, 2005).

		Direction of Sequence	
		Reversible	Irreversible
Origins of Sequence	Contingent/ Random	*Stochastic and Narrative Postmodernist Models*	*Path Dependency*
	Embedded/ Cumulative	*Process Sequencing*	*Narrative Positivism*

Fig. 1. Conceptions of historical change compared.

Nevertheless, as described above, both the positivist and post-modern variants of the narrative approach have many weaknesses which are evident when they are applied to the study of policy-making. Although narrative postmodernism dispenses with the idea of a master narrative, its conception of stability as maintained by shared frames of meaning that constrain actors' preferences has the same contours and weaknesses as its stochastic counterpart as a model of policy change. In Czarniawska's account of urban policy in three European cities, for example, she creates a complex narrative of shared frames interpreted in local contexts where reflexivity further ensures that the construction of a city identity is, at least in part, an attempt to construct an "alterity" from other cities' own efforts at identity construction using the same frames (Czarniawska, 2002). Contemporary embeddedness, in other words, can take place at a number of different temporal and spatial scales simultaneously and change is conceptualized as a sequence of reframing through mechanisms such as frame reflection (Schön and Rein, 1994).

The problem with the application of this post-modern narrative model to policy issues is that already identified above as the general problem with this class of explanations of social phenomena. That is, the policy narratives generated through application of either positivist or post-modern methods always tend to be idiosyncratic, retroactive explications of events which have already occurred, where inevitability is observable only in hindsight. This approach, especially, encounters great difficulty in developing periodization strategies which are not idiosyncratic or "pre-determined" by the narrative structure attributed to the story by the narrator (Lieberman, 2001; Lustick, 1996; Clemens, 1999). Again, this is not to say that narrative methods and thick descriptions of process tracing are always inappropriate in the policy sciences, only that they raise special problems in the identification of common patterns and in adherence to methodological guidelines that can generate convincing, replicable, results. Also, and more significantly, this method only "works" when there is a match between the method and the underlying empirical reality of the policy context being examined. That is, while for narrative post-modernism the policy-making world that is being narrated must be relatively chaotic so that fluctuation in frames may be apparent, in its positivistic variant the reverse is true. That is, policy-making must be highly stable, so that the inevitability portrayed in the narrative mirrors the sense of inevitability found in the narratives of the policy actors themselves (Bernstein, 2000).

These problems have led to the need to combine policy narratives with other forms of analysis more suitable to the mixed record of stability and instability apparent in many empirical policy circumstances. Efforts have been made by authors such as Tim Buthe to rectify the inherent problems of narrative methods by, for example, proposing the use of narratives only to provide empirical support for causal models constructed along familiar stochastic principles (Buthe, 2002). Arguing that historical analysis should be focused on understanding processes, he notes that the key challenge for models of history is not to understand policy change which, from the stochastic perspective, is a given. He argues that narrative methods can help explain the policy stability that is missed in purely stochastic formulations.

On the one hand, this analysis proposes a solution much like path dependency; which, in a sense, as mentioned above, can be seen as a synthesis of elements of

the stochastic and narrative positivist models. However, Buthe also assumes that policy processes are driven by actor preferences and that stability emerges from static preferences – defined as "those interests of an actor that determine how an actor rank-orders possible outcomes" (p. 484). Since Buthe argues that changes in preferences arise from learning – that is from changes in ideas and knowledge about preferred and/or likely outcomes – this approach also moves narrative methods far from their origins and distinctly in the direction of process sequencing models. Sequences of events, in Buthe's formulation, can be thought of as sequences of moments of changes in ideas and knowledge that alter actor interests and preferences. Thus, the overall master narrative of policy-making is one of problem-solving and learning, just as it is in the process-sequencing model.

The contingent model: Path dependency in public policy-making

What is there to choose, then, between the path dependency and process sequencing models as a preferred alternative to purely stochastic or purely narrative approaches to policy history? Which, if either, better accords with the empirical record of general policy dynamics?

First, in evaluating path dependency models it must be noted that many policy studies claiming to apply path dependent models are relatively unsystematic and may only be using the term to assert that "history matters" in the development and implementation of policies (Cox, 2004).[3] However, there are examples of the more systematic application of the general model of path dependency to policy-making. Probably the most well known are the analyses of welfare state development in the United States conducted by Pierson and Hacker, among others (Pierson, 2000a; Hacker, 2002). Pierson's version of path dependency uses the concept of increasing returns to explain why a particular path is taken and ultimately "locked in." Hacker also defines the explanatory mechanism of path dependency as increasing returns, although he argues that whether increasing returns actually occur or not cannot be predicted in advance. While both authors suggest that two versions – broad (non-inevitable lock-in) path dependency and narrow (inevitable lock-in) path dependency – are possible, they ultimately opt for the narrow version in their studies and argue that without the concept of sub-optimal lock-in, path dependent analysis simply reverts to the weak causation characteristic of historical narratology.

Pierson sets out an explicit model of path dependency processes in political life which is worth discussing in some detail since it is a model often cited if seldom subjected to detailed analysis.[4] His key hypothesis is that since political life is one involving (1) collective action; (2) institutions; (3) political authority; and (4) complexity, it will generate increasing returns to key players, leading to lock-in and narrow path dependency. Hacker makes a similar argument, stating that the possibilities of path dependence processes are great in politics and policy-making since:

> *first, policy creates or encourages the creation of large scale organizations with substantial set-up costs; second, a policy directly or indirectly benefits sizable organized groups or constituencies; third, a policy embodies long-lived commitments upon which beneficiaries and those around them premise crucial*

> *life and organizational decisions; fourth, the institutions and expectations a policy creates are of necessity densely interwoven with the broader features of the economy and society, creating interlocking networks of complementary institutions; and fifth, features of the environment within which a policy is formulated and implemented make it harder to recognize or respond to policy outcomes that are unanticipated or undesired (Hacker, 2002: p. 55).*

There are several problems with this formulation, however, which raise questions about its ability to serve as a superior model of historical explanation in the policy realm. First, there is the discussion of the collective nature of politics. Here, Pierson uses the analysis of public goods and pluralist arguments to make his case that larger groups are more powerful than smaller ones (Olson, 1965; Skocpol et al., 2000), but ignores the actual reasons for group formation and membership growth (Nownes and Neeley, 1996; Nownes, 1995; 2000; Nownes and Cigler, 1995) and the impact of discourses rather than size of groups on policy influence (Burt, 1990). Taking the empirical evidence on these factors into account it is apparent that size of groups, alone, is not a factor leading to path dependence. Second, Pierson follows Bachrach and Baratz (1970) in arguing that actors may use power to reinforce their other advantages – that power asymmetries are an important source of increasing returns. However, as Deeg (2005) has noted, this does not necessarily lead to lock in if powerful actors wish change to occur. Third, Pierson argues that learning leads to paradigmatic lock-in. However, as Buthe (2002) and others have noted, learning can also involve exogenous lesson-drawing, i.e. bringing new idea into existing subsystems, and undermining existing paradigms (Dobrowolsky and Saint-Martin, 2005, Kay, 2005). Finally, Pierson's argument that institutional densities are a key factor leading to increasing returns since "the cost of exit from institutions is very high" is simply asserted with no proof offered. Although, some studies have found evidence that structures constrain change (Rayner et al., 2001), other studies have found that institutions can also promote and facilitate change, so that the one-way dynamics suggested by Pierson are not present (Gains et al., 2005).

Similarly, the emphasis on contingency in creating a trajectory is assumed but not systematically developed in most works purporting to apply path dependency models to policy events (Greener, 2002a; Thelen, 2003). Studies of policy windows, for example, have found that these only rarely open and close at random (Kingdon, 1995; Howlett, 1998; Keeler, 1993), implying that the path dependency model, while alluring in its possible blend of narrative and stochastic elements may be, in fact, very much like those other two models, only relevant in very limited and specific policy circumstances.

Embedded evolution – process sequencing models in the policy sciences

Probably the best developed empirical evidence supporting a particular model of historical sequencing in the policy sciences is that supporting the 'punctuated equilibrium' form of the general process sequencing model of policy change (Baumgartner and Jones, 2002; True et al., 1999). Much of this evidence has been put forward by Baumgartner and Jones in their many works on US public policy-making (Jones et al., 1998; 2003; Jones and Baumgartner, 2005; True, 2000) although other authors

have also found evidence of such processes at work in other countries as well (John and Margetts, 2003).

In such models, "normal" or marginal, incremental, change and atypical policy dynamics or "paradigmatic" change are linked together to form a particular overall "stepped" or punctuated equilibrium pattern of policy evolution through broken trajectories. That is, change occurs as an irregular, stepped, function in which relatively long periods of policy stability are interspersed with infrequent periods of substantial change. Baumgartner and Jones discovery of leptokurtotic distributions in U.S. federal government annual budgetary allocations provides strong empirical evidence of the expected pattern of policy punctuations occurring in this area (Jones et al., 1998; 2003).

In the policy realm, punctuated equilibrium describes a situation whereby normal policy-making involves fairly common, routine, non-innovative changes at the margin of existing policies utilizing existing policy processes, institutions, and regimes. Atypical, paradigmatic or non-incremental change then involves new policies which represent a sharp break from how policies were developed, conceived, and implemented in the past but are still rooted in the same general concerns and problems (Berry, 1990; Cox, 1992). Frequently cited examples of such changes include shifts in fiscal and monetary policy in most western countries from a balanced-budget orthodoxy to Keynesian demand-management principles and practices in the 1930s and 1940s and a subsequent shift away from Keynesianism to forms of neoliberalism in the 1970s and 1980s (Hall, 1989, 1992).

In these kind of process sequencing models, change is seen as occurring in a series of steps as policy paradigms are constructed and destroyed (Hall, 1990; 1993), a process linked by authors such as Sabatier and Baumgartner and Jones, to the construction and destruction of belief systems in policy subsystems (Sabatier, 1988; Baumgartner and Jones, 1991; 1993). As theorists have come to a better understanding of how belief systems persist and change, the original analogies that the punctuated equilibrium model made between the extended periods of incremental policy adjustment and the Kuhnian idea of "normal science" and, hence, also between punctuations and scientific revolutions, have been replaced with more grounded accounts of the relations between value shifts, policy learning, and change (McNamara, 1998; Coleman et al., 1996).

Because of this work, earlier general criticisms of the punctuated equilibrium model to the effect that, while it assumed long periods of policy stasis, it provided no way of accounting for critical punctuations, which were explained only through narrative positivist or post-modernist methods – that is, in retrospect –, are no longer valid (Schlager, 1999). This is not to say that only this model is appropriate in the policy sciences, however since instances of extreme persistence, on the one hand, and contingent change, on the other, even though rare at the systemic level, do exist and are amenable to treatment using narrative, stochastic and, sometimes, path dependency methods. Moreover, a significant challenge to punctuated equilibrium explanations noted by some of its original exponents is the relation to different levels or orders of change (True, 2000). That is, changes can occur both at the systemic and subsystemic level and between policy elements versus overall policy areas or fields, leading to some consequent difficulties in discriminating the scale and significance of a change at different levels of policy-making (Cashore and Howlett, 2006).

As True (2000) and Cashore and Howlett (2006) have noted, punctuated equilibrium theory suggests that some policy punctuation is always happening in some subsystem or other, or within some element of a policy regime, but that at the systemic or regime level the overall picture may remain one of stability, posing a continual problem for punctuated equilibrium notions of policy dynamics. That is, extreme persistence and contingent change are more likely to be found at the sub-systemic and sub-regime levels rather than the systemic or regime ones and detailed explanations of change at the subsystem or sub-regime level are correspondingly more likely to need other kinds of historical explanation than process sequencing. Explanations of stability and change in particular issue areas within policy subsystems and among the component parts of a policy regime thus require a careful matching of modes of historical explanation to empirical circumstances on the part of the analyst.

Conclusion: Reconciling multiple, competing models of historical sequencing in the policy sciences

At the present time the policy literature has taken a definite historical turn, with the stochastic models favored by many analysts searching for causal determinants in the early years of the policy sciences largely falling by the wayside as contemporary analysts grapple with the dynamics and the phenomena of policy change and stability.

While the stranglehold on analysis of the stochastic model may have been broken, however, the contours of the best alternative model have not been clarified. Although there has been some thought given to systematizing the older tradition of thick descriptions of policy processes through the development of the postmodern and positivist streams of policy narratology, the most interesting new work has a hybrid character that incorporates narrative and stochastic methods in the course of developing models such as path dependency and process sequencing.

Most attention, hitherto, has been paid to the potential for path dependency to synthesize elements of both the narrative and stochastic models into a powerful "mixed" model of historical processes. However, at present, in the policy sciences, "path dependence" remains a much used, and abused, model of historical sequencing. Although it has been applied to such diverse cases of policy-making and political re-structuring as European, Danish, and post-Soviet regime transitions (Holzinger and Knill, 2002; Nee and Cao, 1999; Rona-Tas, 1998; Torfing, 2001) and environmental, industrial and health policy-making (Kline, 2001; Rahnema and Howlett, 2002; Bevan and Robinson, 2005; Courchene, 1993; Wilsford, 1994), most of the works which employ it in the policy sphere have tended to apply it unsystematically, or to somewhat uncritically accept analogies from the economics literature where it developed. As has been shown above, even the work of its most prominent exponents in the policy sciences, while distinguishable from the accounts provided in the economics literature, rests on many unsubstantiated theoretical assertions and incorrect empirics.

As the discussion above has shown, process sequencing is, in fact, a more promising synthetic approach, incorporating elements of the path dependent, narrative and stochastic models in a policy-relevant way with an impressive array of empirical studies behind it. In its punctuated equilibrium formulation, process sequencing has received a great deal of empirical support to back its candidacy for being a superior

general model of the most common type of policy dynamics. There is an increasing weight of evidence from cases studies of process sequencing in policy studies; that is, of trajectories changing while being embedded in previous policy legacies so that their new form is not random or contingent, but thoroughly embedded in the old. The challenge for the theorist remains, however, to correctly identify the circumstances in which "deep embeddedness" lends itself to explication through the methods of narrative, and those where disembedding requires that the narrative be supplemented or even supplanted by alternative methods such as path dependency and process sequencing. Empirical observation suggests that both sets of circumstances will be present at different times and at different levels of policy specificity as policies change. More work remains to be done to determine the best match of model to empirical evidence at the sub-systemic and sub-regime levels. However, at present, at a general level, the kind of hybrid model represented by process sequencing, one that draws creatively on the methods of the literary critic or the economist without seeking to imitate them in a slavish way, has the most potential to provide an historically-sensitive alternative transcending the ahistorical "general linear" model in the study of policy-making over time.

Notes

1. Much of this work appeared in the American Journal of Sociology. For a selection of reprinted articles by a major figure in this discussion see Abbott, 2001.
2. A good example of such analyses is the picture of leadership attributes of the American president put forward in Robert Caro's (2002) monumental study of the career and administration of Lyndon Baines Johnson. At certain points in his career LBJ's aggressive leadership style was said to greatly aid the successful adoption of certain policies while at others it is argued to contribute to their failure or had no discernable impact at all upon policy outcomes.
3. For a critique of such studies see Dobrowolsky and Saint-Martin, 2005.
4. For detailed critiques see Deeg, 2001 and Kay, 2005.

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