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Innovation and Diffusion Models in Policy Research

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Although most actions by governments are incremental in that they marginally modify existing programs or practices, and much research about policymaking seeks to explain why it tends to be incremental, ultimately every government program can be traced back to some nonincremental *innovation*.[1] Thus, one cannot claim to understand policymaking unless one can explain the process through which governments adopt new programs. Recognizing this, public policy scholars have conducted extensive inquiry into policy innovation.

When people speak of innovation in common parlance, they usually refer to the introduction of something *new*. But when should a government program be termed "new"? The dominant practice in the policy innovation literature is to define an innovation as a program that is new to the government adopting it (Walker 1969, 881). This means that a governmental jurisdiction can innovate by adopting a program that numerous other jurisdictions established many years before. By embracing this definition, students of policy innovation explicitly choose not to study policy *invention*—the process through which *original* policy ideas are conceived. To flesh out the distinction via illustration, a single policy *invention* can prompt numerous governmental jurisdictions to *innovate*, some many years after others.

This chapter reviews the dominant theories of government innovation in the public policy literature.[2] However, we will show that these theories borrow heavily from others developed to explain innovative behavior by *individuals*: for example, teachers using a new method of instruction (studied by education scholars), farmers adopting hybrid seeds and fertilizers (studied by rural sociologists), and consumers purchasing new products (studied by

marketing scholars).[3] We will also show that theories of government innovation share many commonalities with models that seek to explain *organizational* innovation.

Some studies of government innovation have been cross-national, investigating how countries develop new programs and how such programs have diffused across countries (Heclo 1974; Collier and Messick 1975; Brown et al. 1979; Tolbert and Zucker 1983; Kraemer, Gurbaxani, and King 1992; Simmons 2000; Simmons and Elkins 2004; Weyland 2004; Brooks 2005; Gilardi 2005, 2010; Meseguer 2005; Baturo and Gray 2009; Lee, Chang, and Berry 2011; Jensen and Lindstädt 2012; Hughes, Krook, and Paxton 2015). Many other studies focus on American states (e.g., Walker 1969; Gray 1973a; Canon and Baum 1981; Berry and Berry 1990; Mooney and Lee 1995; Mintrom 1997; Ka and Teske 2002; Berry and Baybeck 2005; Volden 2006; Shipan and Volden 2008; Pacheco 2012). Still other studies have focused on innovation by local or regional governments within the United States (Crain 1966; Aiken and Alford 1970; Bingham 1977; Midlarsky 1978; Lubell et al. 2002; Moon and Norris 2005; Shipan and Volden 2006) or local or regional governments in other nations (Ito 2001; Walker 2006; Walker, Avellaneda, and Berry 2011).[4]

Despite the extensive number of studies of government innovation, at a general level, there are two principal explanations for the adoption of a new program by a government: *internal determinants* and *diffusion* (Berry and Berry 1990). Internal determinants explanations posit that the factors leading a jurisdiction to innovate are political, economic, or social characteristics internal to the jurisdiction. By contrast, diffusion explanations are inherently intergovernmental; they view government adoptions of policies as emulations of previous adoptions by other governments. Walker's (1969) seminal study of state government innovation across a wide range of policy areas introduced both types of explanations to political scientists.[5] In the years following the publication of Walker's article, the volume of research on policy innovation has grown enormously. This growth is documented in Figure 7.1, which shows the number of books and articles about policy innovation published in political science, public administration, or public policy journals in each year between 1966 and 2012 (as identified with a JSTOR search).

This chapter begins with separate discussions of the central features of internal determinants and diffusion explanations for the adoption of a policy. We then turn to the methodologies that have been used to test them. Although most scholars have acknowledged that few policy adoptions can be explained purely as a function of (1) internal determinants (with no diffusion effects) or (2) policy diffusion (with no impact by internal factors), most *empirical* research conducted before 1990 focused on one type of process or the other. At the time of their introduction during the late 1960s and early 1970s, the "single-explanation" methodologies were highly creative approaches using

FIGURE 7.1 Growth in Published Research on Policy Innovation, 1966–2012
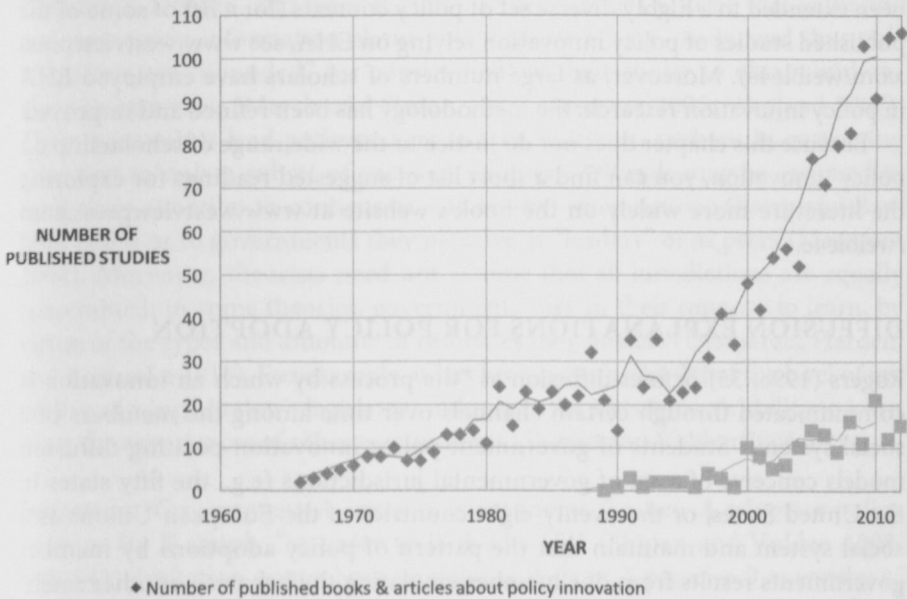
NOTE: Each value plotted is the number of books and articles about policy innovation published in political science, public administration, or public policy journals in a year (as identified with a JSTOR search in November 2013). The JSTOR search command yielding the values plotted on the top curve is as follows:

      ((("policy innovation") OR ("policy diffusion")) AND ((cty:(journal)
      AND ty:(fla)) OR cty:(book))) AND (year:####) AND disc:(politicalscience
      -discipline OR publicpolicy-discipline)

where #### indicates the year being searched. The search command yielding the values plotted on the bottom curve is as follows:

      (((policy innovation) OR ("policy diffusion")) AND (("event history analysis") OR ("proportional hazards") OR ("survival analysis") OR ("Cox model") OR ("Cox proportional"))) AND ((cty:(journal) AND ty:(fla)) OR cty:(book)) AND (year:####) AND disc:(politicalscience-discipline OR publicpolicy-discipline)

Each fitted curve reflects a three-year moving average of plotted values.

state-of-the-art quantitative techniques. However, more recent research has shown that these traditional methodologies are severely flawed (Berry 1994b). In 1990, Berry and Berry presented a model of American state lottery adoptions reflecting the simultaneous effects of both internal determinants and policy diffusion on state adoption behavior and employed *event history analysis* (hereafter, EHA) to test their model. By allowing scholars to test models reflecting the effects of both internal determinants and policy diffusion, the introduction of EHA to the set of empirical techniques available to policy innovation scholars seems to have prompted a dramatic expansion in research over the

last quarter century.[6] As this expansion has occurred, the EHA approach has been extended to a highly diverse set of policy contexts (for a list of some of the published studies of policy innovation relying on EHA, see www.westviewpress .com/weible4e). Moreover, as large numbers of scholars have employed EHA in policy innovation research, the methodology has been refined and improved.

Because this chapter does not do justice to the wide range of scholarship on policy innovation, you can find a short list of suggested readings for exploring the literature more widely on the book's website at www.westviewpress.com /weible4e.

DIFFUSION EXPLANATIONS FOR POLICY ADOPTION

Rogers (1995, 35) defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system." Students of government policy innovation positing diffusion models conceive of a set of governmental jurisdictions (e.g., the fifty states in the United States, or the twenty-eight countries of the European Union) as a social system and maintain that the pattern of policy adoptions by member governments results from one member emulating the behavior of other members. More generally, we can say that policy diffusion occurs if the probability of adoption of a policy by one governmental jurisdiction is influenced by the policy choices of other governments in the system. However, theorists have identified a variety of alternative *mechanisms* by which the policy choices in one jurisdiction can influence the choices of other governments. At least five mechanisms have been discerned: learning, imitation, normative pressure, competition, and coercion.[7]

Alternative Mechanisms for Diffusion

Learning. Learning occurs when policymakers in one jurisdiction derive information about the effectiveness (or success) of a policy from previously adopting governments (Levy 1994; Braun and Gilardi 2006). Therefore, we say that a policy diffuses as a result of learning when the probability that one government— say, *A*—will adopt a policy is influenced by the perceptions of policymakers in *A* about the effectiveness of the policy in jurisdictions that have previously adopted.[8] Note that effectiveness need not be conceived narrowly; it can include success not only in meeting policy objectives but also in achieving political goals such as winning reelection or higher office (Shipan and Volden 2008; Gilardi 2010; Seljan and Weller 2011).

Some theories (e.g., Bayesian updating models from economics) assume that policymakers are rational and that learning is complete; each government observes all information about the effectiveness of a policy in every jurisdiction

in which it has been adopted and is capable of processing all this information (Simmons, Dobbin, and Garrett 2006). Other theories assume that gathering and processing information about policy effectively are costly, and thus policymakers are "bounded" (or constrained) in their ability to obtain and analyze information (March and Simon 1993; Meseguer 2005; Weyland 2007). These constraints lead policymakers to take shortcuts, perhaps by restricting attention to only a subset of previous adopters. Officials may be assumed to limit their attention to contiguous—or nearby—jurisdictions (Berry and Baybeck 2005) or to governments they perceive as "leaders" or as peers (Meseguer 2004). Moreover, theorists need not assume that all jurisdictions are equally constrained; in some theories, governments vary in their *capacity* to learn, by virtue of the types and amounts of resources they possess (Desmarais, Harden, and Boehmke 2015). For example, it has been hypothesized that the level of expertise of a jurisdiction's legislators influences the jurisdiction's ability to learn from the experiences of other governments (Shipan and Volden 2006, 2014).

Imitation. Government *A* *imitates* government *B* when *A* adopts a policy adopted by *B* simply "in order to look like [*B*]" (Shipan and Volden 2008, 842–843). Imitation occurs because policymakers in *A* perceive *B* as worthy of emulation, prompting *A* to adopt any policy that *B* adopts independently of any evaluation of the character of the policy or its effectiveness (Simmons, Dobbin, and Garrett 2006; Meseguer 2006; Karch 2007). The types of jurisdictions that a government seeks to imitate may vary. In some conceptions, policymakers look to "leader" governments; these leaders may be large or wealthy jurisdictions or jurisdictions that have earned strong reputations or high levels of credibility (Walker 1969; Grupp and Richards 1975). In other conceptions, the governments imitated share characteristics that make them particularly valuable role models or peers (Simmons and Elkins 2004; Weyland 2004; Brooks 2005). For example, Volden (2006; see also Grossback, Nicholson-Crotty, and Peterson 2004) finds that policymakers tend to emulate policy adoptions of jurisdictions that share similar partisan and ideological orientations. In a useful clarification of the essential differences among mechanisms, Shipan and Volden (2008, 842–843) note that the major distinction between learning and imitation "is that learning focuses on the *action* (i.e., the policy being adopted by another government), while imitation focuses on the *actor* (i.e., the other government that is adopting the policy)."[9]

Normative pressure. Government *A* succumbs to *normative pressure* when *A* adopts a policy, not because it is imitating any particular government or learning from the experience of other adopters but rather because it observes that the policy is being widely adopted by other governments and, because of shared norms, *A* chooses to conform (DiMaggio and Powell 1983; Sugiyama 2012). Such shared norms can emerge across societies, allowing some policies (e.g.,

women's suffrage) to achieve a status of "taken-for-grantedness" (Braun and Gilardi 2006, 311). Some have pointed to the role of experts (or "epistemic communities") in forging a consensus on norms (Haas 1992). For example, Simmons, Dobbin, and Garrett (2006) note that the diffusion of economic liberalization in Latin America was facilitated by the advocacy of "expert" American economists, which molded views about appropriate economic policies. For policies made by administrative agencies rather than legislatures, the shared norms that facilitate diffusion have been argued to be a product of professionalization. Agency personnel—regardless of the jurisdiction in which they serve—develop a shared understanding of "good" policy by virtue of their common professional training and accreditation (Teodoro 2009). This shared conception of good policy leads agencies to be receptive to adopting policies thought to be "best practices" adopted elsewhere (Walker, Avellaneda, and Berry 2011). Shared norms across jurisdictions are often reinforced by the participation of agency personnel in intergovernmental professional associations that constitute networks across which policies can diffuse (DiMaggio and Powell 1983; Majone 1997).

Competition. A policy diffuses via *competition* when a government's decision about whether to adopt the policy is motivated by the desire of its officials to achieve an economic advantage over other jurisdictions or, equivalently, to prevent other jurisdictions from securing an advantage over it. In diffusion via learning, other governments' adoptions generate new data about the payoffs (costs and benefits) of adopting. In contrast, in diffusion via competition, other governments' adoptions actually change the payoffs of adopting (Simmons, Dobbin, and Garrett 2006). At least two distinct types of competition mechanisms have been described in the literature; we refer to them as *location-choice competition* and *spillover-induced competition.*

In location-choice competition, governments seek to influence the location choices of individuals (persons or firms) who are in position to acquire some good in more than one jurisdiction—usually their own and at least one other (Meseguer and Gilardi 2009). With this type of diffusion, jurisdiction A adopts a policy (e.g., a lottery or a restrictive labor immigration policy) to encourage individuals to (1) acquire within A a good that is beneficial for A to provide, or (2) go elsewhere to obtain a good that is costly for A to provide. Some policies of the US states that have been hypothesized to diffuse as a result of location-choice competition include the lottery (Berry and Baybeck 2005; Baybeck, Berry, and Siegel 2011), casino legalization (Calcagno, Walker, and Jackson 2010), restaurant smoking bans (Shipan and Volden 2008), welfare benefits (Peterson and Rom 1990; Volden 2002; Berry, Fording, and Hanson 2003; Bailey and Rom 2004), various business regulations (Mossberger 1999), and individual or corporate tax rates (Berry and Berry 1992) or sales tax adoptions (Burge and Piper 2012). Crossing national boundaries is certainly more

costly for individuals and firms than crossing state boundaries in the United States. Nevertheless, location-choice competition is relevant in the international setting for policies designed to influence a variety of choices of individuals or firms, including business location, individual and corporate purchasing decisions, and migration (Oates 2001; Genschel 2002).

In spillover-induced competition, an adoption by government *B* has a (positive or negative) externality effect on government *A* that changes *A*'s expected net benefit from adopting. For example, *B* might adopt a pollution abatement project that would reduce pollution in both *B* and *A*; this positive spillover would encourage *A* to "free-ride" on *B*'s adoption, thereby lowering *A*'s incentive to adopt. Other policies that might diffuse via spillover-induced competition involve trade (Elkins, Guzman, and Simmons 2006), military mobilization or conflict (Most and Starr 1980), and commercial standards (e.g., standards trucks must meet to travel in neighboring jurisdictions).

Coercion. Government *A* is *coerced* into adopting a policy when a more powerful government, *B*, takes action that increases *A*'s incentive to adopt or, in the extreme case, forces *A* to adopt. Students of cross-national diffusion have identified cases of *horizontal* coercion, in which a powerful country encourages a weaker country to adopt a policy, sometimes by threatening action if the weaker nation does not capitulate (Simmons, Dobbin, and Garrett 2006). In other cases, one or more countries take actions that create an incentive for another country to adopt a policy. For example, Bush (2011) finds that a developing country becomes more likely to adopt a gender quota for its legislature as the country's dependence on foreign aid from developed Western countries increases or when the country is exposed to international election monitors.

Researchers studying diffusion in the American federal system are more likely to focus on *vertical* coercion, that is, diffusion across levels of government. In some cases, the national government can simply mandate certain activities by states (e.g., the National Voter Registration Act, which required states to allow people to register to vote at the same time they register their motor vehicles), or the Supreme Court can make rulings that constrain state policy choices (Hoekstra 2009; Hinkle 2015). In other cases, the national government uses a "carrot" rather than a "stick," by creating an incentive for a state to adopt a policy. One common vehicle for federal influence is a grant-in-aid creating a financial motivation for a state to adopt. In one example, Derthick (1970) shows how the Social Security Act of 1935 shaped state welfare programs through the Aid to Families with Dependent Children (AFDC) grant to the states (see also Welch and Thompson 1980; Soss et al. 2001; Allen, Pettus, and Haider-Markel 2004). Indeed, international organizations such as the International Monetary Fund (IMF) and the World Bank can play a similar coercive role by requiring a country to adopt some policy as a condition for financial aid (e.g., Weyland 2007; Simmons and Elkins 2004; Barrett and Tsui 1999). McCann, Shipan, and

Volden (2015) found that holding congressional hearings on antismoking laws influenced state policy choices, indicating that activities of the national government can influence state policy even in the absence of formal "carrots" or "sticks."

Complicating matters, multiple mechanisms may underlie a policy's diffusion. For example, at the same time location-choice competition may increase a state's probability of adopting a lottery if its neighboring states adopt one, the state may learn by observing positive consequences of neighbors' lotteries, also increasing its probability of adopting. Moreover, the mechanism responsible for a policy's diffusion may vary in a number of ways depending on the context. First, the mechanism can vary with characteristics of a state. For example, Stone (1999, 54) argues that an "economic recession or crisis, or defeat in war" makes a country more vulnerable to coercion. Also, Shipan and Volden (2008), in their study of the diffusion of antismoking policies, hypothesize that a city's size has a positive effect on its likelihood of learning from other cities and a negative effect on its probability of imitating or competing with other cities or being coerced by its state. Second, the mechanism underlying policy diffusion can vary over time. In one example, Gilardi, Füglister, and Luyet (2009)—who study the diffusion of hospital financing reforms across countries—find that the countries become more prone to learn over time as the quality of information available about the effects of other countries' adoptions increases. Finally, the mechanism by which a policy diffuses can be influenced by the nature of the policy. For instance, Makse and Volden (2011)—focusing on five attributes of policies identified by Rogers—posit that learning becomes more likely as a policy's relative advantage, compatibility, and observability rise and as the policy's complexity and trialability decline.

As we review various diffusion models developed in the policy innovation literature, each focusing on a different channel of communication and influence across government jurisdictions, we will show that each model relies on one or more of the five mechanisms described above to justify why governments emulate other governments when making public policy.

We now turn our attention to three models that dominated early scholarship on policy innovation. One—the *national interaction* model—assumes that policy diffuses because of learning. The others—the *regional diffusion* model and the *leader-laggard* model—are consistent with multiple mechanisms for diffusion.

The National Interaction Model

This learning model was developed and formalized by communication theorists analyzing the diffusion of an innovation through a social system (assumed to be of fixed size) consisting of individuals (Rogers 1995). In equation form, the model can be expressed as: