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# Punctuating Which Equilibrium? Understanding Thermostatic Policy Dynamics in Pacific Northwest Forestry

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*A key theme among seminal contributions to policy studies, including Baumgartner and Jones (1993; 2002), Sabatier and Jenkins-Smith (1993), and Hall (1989; 1993), is that “external perturbations” outside of the policy subsystem, characterized by some type of societal upheaval, are critical for explaining the development of profound and durable policy changes which are otherwise prevented by institutional stability. We argue that these assumptions, while useful for assessing many cases of policy change, do not adequately capture historical patterns of forest policy development in the U.S. Pacific Northwest. Differences in policy development concerning state and federal regulation of private and public forest lands governing the same problem, region, and population challenge much of the prevailing orthodoxy on policy dynamics. To address this puzzle, we revisit and expand existing taxonomies identifying the levels and processes of change that policies undergo. This exercise reveals the existence of a “thermostatic” institutional setting governing policy development on federal lands that was absent in the institutions governing private lands. This thermostatic institutional arrangement contained durable policy objectives that required policy settings to undergo major change in order to maintain the institution’s defining characteristics. Policy scientists need to distinguish such “hard institutions” that necessitate paradigmatic changes in policy settings from those that do not permit them.*

## The Study of Policy Dynamics

Political scientists studying public policy have, in the last 20 years, been involved in three projects related to the study of policy dynamics: understanding how longstanding policies might become “punctuated” and shift toward a new “equilibrium” (Jones, Baumgartner, and True 1998; Jones, Sulkin, and Larsen 2003; True, Jones, and Baumgartner 1999) and investigating the dual interaction of enduring institutions on the one hand, and subsystem coalitions on the other, in explaining and shaping this pattern of policy development (Clemens and Cook 1999; Sabatier and Jenkins-Smith 1993). The results of such efforts have been fruitful. The discipline has

a much stronger understanding about items such as legislative “attention spans” and the forces that cause certain issues to come on the policy agenda over others (Baumgartner and Jones 1993, 2002) and of the role of macrolevel institutions in shaping the mobilization of actors and, in turn, their own policy agendas (Weaver and Rockman 1993). The path-dependent effects of enduring policies have been well documented (Hacker 2004; Mahoney 2000; Pierson 1993, 2000), as has the role of ideas (Hall 1989), beliefs, and norms (Leach and Sabatier 2005) in constraining and shaping what policy subsystem members deem appropriate policy change.

Four important methodological, epistemological, and causal arguments have emerged from this research.

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First, there is widespread acceptance that any analysis of policy development must be historical in nature and cover periods of years or even decades or more.<sup>1</sup> Second, scholars engaging in different methodological and epistemological perspectives have hypothesized that enduring policy change usually comes about through the effects of “external perturbations” that cause widespread disruptions in existing policy practices.<sup>2</sup> Thirdly, it has generally been agreed that political institutions and their embedded policy subsystems act as the primary mechanisms of policy reproduction (Botcheva and Martin 2001; Clemens and Cook 1999). Fourthly, “paradigmatic” change, a process in which deep values in the policy subsystem are altered, leading to a fundamental realignment of other aspects of policy development, is understood to occur only when the policy institutions themselves are transformed. In the absence of such processes any policy changes are hypothesized to follow “incremental” patterns (Deeg 2001; Genschel 1997).

Our analysis of 25 years of forest policy development in the U.S. Pacific Northwest (PNW) challenges these last three arguments in the now prevailing orthodoxy on the nature of policy dynamics. In this case, dramatic policy change governing federal forest lands in this region took place in the *absence* of institutional change, prompting a reassessment of the foundations of the orthodox view of policy dynamics.

This effort revealed that widely accepted taxonomies used to describe historical patterns of policy development have, inadvertently, resulted in the conflation of distinct change processes. Our uncovering of these “hidden” and more complex patterns of policy development challenges the way most policy scholars measure and classify overall policy dynamics as either “paradigmatic” or “incremental” (Howlett and Ramesh 2002; Lindner 2003; Lindner and Rittberger 2003). We argue that these shortcomings need correcting if the role and influence of institutions on policy development is to be properly understood and work on policy dynamics is to advance. We propose a new classification of policy elements that helps to overcome these problems, permitting a more empirically rich understanding of policy change and the role played by institutions within it.

<sup>1</sup>This observation is explicitly raised in every project by Baumgartner and Jones on punctuated equilibrium and in Paul Sabatier and Hank Jenkins-Smith’s work on “advocacy coalitions,” as well as being implicit in the broad field of historical institutionalism.

<sup>2</sup>For explicit hypotheses on this relationship, see Hall (1989) as well as the plethora of literature applying Sabatier and Jenkins-Smith’s Advocacy Coalition Framework (ACF) framework. The model we develop allows for distinctions between those “faux paradigmatic” policy changes that “vacillate” back and forth following changes in factors such as the partisan composition of governments from durable paradigmatic cases following 9/11-type shocks.

We demonstrate the validity of our approach in five analytical steps. Following this introduction a second section provides an overview of our analysis of key trends in forest policy development in the Pacific Northwest region over a 25-year time span. This data set was compiled by undertaking a comprehensive review of some of the most controversial and important features of forest management, including measures to “preserve” natural forests, establish riparian zones, limit annual rates of cut, protect endangered species and habitat, and road building. The data set reveals a puzzling pattern of policy change in the region, one which involves different types of policy dynamics on state and federal lands. The prevailing orthodox view of policy change is unable to adequately capture this puzzle, since its emphasis on societal perturbations would have predicted policy convergence. That is, the emphasis on profound societal changes as critical for understanding how the existing order is overwhelmed, leading policy subsystems and governments to undertake dramatic policy changes in response, emphasizes the significance of such historical junctures in which institutions become “dependent” variables first constraining change and then suddenly collapsing and allowing it to occur (Steinmo, Thelen, and Longstreth 1992). The historical patterns of policy development governing the same population and the same problem diverged in our two cases is inconsistent with this prevailing orthodoxy and highlights the importance of solving this anomalous puzzle.<sup>3</sup> The third section details and justifies the new policy component classification framework required to resolve this issue. A fourth section then applies this framework to review change and stability in different levels of Pacific Northwest forest policy development over a 25-year time period. Drawing on this case, a fifth section inductively advances a theory of “thermostatic institutions” to account for the patterns of divergence identified in these case studies.

### **The (Commonly Understood) Puzzle: Divergent Patterns of Forest Policy Development in the U.S. Pacific Northwest**

Forest scientists and conservation biologists have found temperate rainforests in the region delineated by the

<sup>3</sup>Appendix A presents a snapshot of key aspects of change and stability over 30 years of policy development in the U.S. PNW which is based on a lengthier qualitative review. This policy review, as well as our broader research on forestry conflicts, draws on 13 years of research that included primary and secondary document analysis, as well as over 100 semistructured interviews from 1993 through 2004 with members of the forest policy communities in Canada and the United States, including interviews in British Columbia, the U.S. Pacific Northwest as well as Ottawa and Washington, DC.

territorial boundaries of Oregon and Washington State to be home to many threatened and endangered species, and have provided evidence that decades of logging in these areas has caused deterioration of forest ecosystems and the flora and fauna that depend on them (Franklin 1994; Kohm and Franklin 1997; Noss 1993). Responsibility for addressing this deterioration is divided between the U.S. federal government, which has complete jurisdiction over forest lands it owns in this area (roughly 50 percent of the forest land, the bulk of which is managed through the “National Forest System”),<sup>4</sup> and the governments of Oregon and Washington State which have primary, though, as we will see below, not exclusive, regulatory authority on forest lands that are privately held (roughly 40 percent).<sup>5</sup>

Following the “first wave” of environmentalism in the 1960s (Paehlke 1989), and buttressed by increasing scientific research on declining forest ecosystems, a wide range of scholarship has documented the increasing attention of environmental groups, the media, and the general public toward forest management practices, and their impacts on the forest-dependent flora and fauna in this region (Kamieniecki 2000; Pralle 2006; Yaffee 1994).

These dynamics led to significant legislative attention to forest practices within the United States at both the federal and state levels (see Appendix A), and to the creation of new agencies and regulatory boards to monitor and oversee forest management practices (Hoberg 1993). Despite these efforts, however, forest policy subsystems at both levels continued to maintain what can be described as “clientelist” relationships among industry, forestry owners, and regulatory or management agencies (Kohm 1991). For the most part specific decisions regarding “on-the-ground” harvesting practices were made by agency managers in close consultation with forest businesses while other members of the public and environmental groups were given advisory or consultative roles (Anderson 1977; Hoberg 2000; Koontz 2002).

However, these business/governmental relationships, and the discretionary policies they afforded, came under increased scrutiny beginning in the 1980s and accelerated through the 1990s following the “second wave” of environmentalism (Paehlke 1989). Timber harvesting practices in this region came under increased, widespread, and high-profile scrutiny, as scientific evidence about forest-dependent species, especially the spotted owl and later, salmon, caused much consternation among the media and

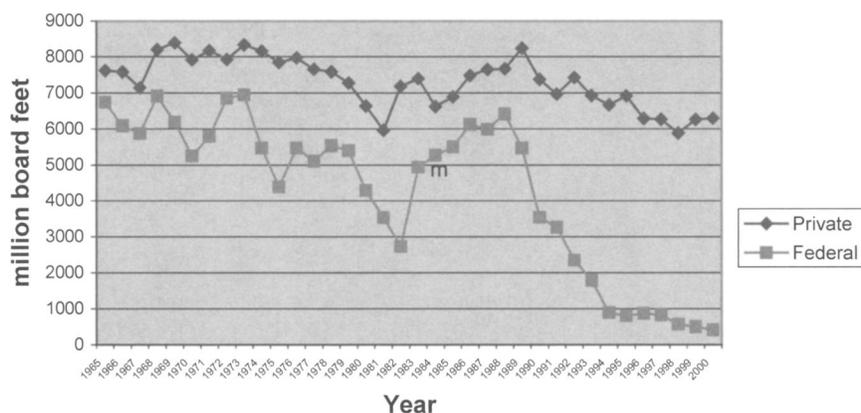
general public. What is noticeable, however, is that despite the impacts of all of this legislation, litigation, societal, and policy attention, until very recently on-the-ground forest practices did not alter enough to have any dramatic effect on commercial harvesting levels (how many trees the commercial forest products industry cut in a given year). That is, until the early 1990s, harvesting patterns on both federal and private forest lands underwent a pattern that the literature would best describe as “incremental”—up and down shifts from year to year, but appearing to maintain some kind of “progressive” or marginal equilibrium over time.

Significantly, however, beginning in the early 1990s a discernible difference could be seen between on-the-ground forest management requirements on federal forest lands and those on privately owned forest lands under primarily state jurisdiction. The cumulative impacts of these changes were significant, with harvesting levels falling by a factor of five on federal lands (Table 1) while forest harvesting levels on private land did not undergo any such decline. Moreover, whereas forest owners and managers continued to enjoy close working relationships, the network of groups influencing and affecting forest management decisions on federal forest lands expanded to include an array of environmental interests. Following this early 1990s “punctuation” on federal lands, however, the specific requirements of forest management practices on both federal and state lands, and the level of harvesting on each, have again settled into what the literature would typically describe as an “incremental” pattern. That is, almost three decades of Pacific Northwest forest policy development has resulted in a more complex puzzle than typically examined by comparative scholars: the existence of relatively similar *patterns* and *levels* of harvest on private and federal lands until 1993; an ensuing punctuation on federal lands but not on private lands; and then a similar pattern of policy development, but at different levels, since this time.

Orthodox explanations of this situation would focus on specific institutional aspects of the case, such as the different nature of the property rights regimes found in each jurisdiction, or on the role played by different exogenous factors, such as different patterns of the partisan composition of governments. It might be argued, for example, that a public property rights regime is more vulnerable to changing currents of interest group and partisan dynamics and would be expected to be more “flexible” than a private property rights regime which would be expected to resist such changes (DeCostner 1994; Lewis 1995; Meltz 1994; Pearse 1990). However, the idea that regulations will always be minimal on private property versus public ownership cannot explain the wide range of U.S. forest regulations that have emerged to address

<sup>4</sup>We use the term “National Forests” when addressing policy development primarily focused on the National Forest System, but also use the term “federal forest lands” to capture other federally owned lands not part of this system.

<sup>5</sup>We are excluding from this analysis policies governing state-owned lands, which are regulated and managed by Oregon and Washington State, and constitute roughly 10 percent of the land base.

**TABLE 1 Timber Harvest in US Pacific Northwest on Private and Federal Lands 1965-2000**

private land-owning firms generally, nor why, in some states such as California, private land regulations are very similar to those found on public lands.<sup>6</sup> This suggests that another explanation is required, one which provides a more subtle interpretation of the factors promoting and preventing policy change.

### A Framework for Understanding Policy Dynamics

A close reading of the existing literature on policy change in light of the facts of the Pacific Northwest forest policy case reveals several problems with the fundamental assumptions upon which the prevailing orthodoxy was built. These problems, we argue, have resulted in several erroneous conclusions about the factors underlying policy dynamics being drawn by many policy scholars. Remedying these problems helps resolve the apparently anomalous aspects of the Pacific Northwest forest policy case, but requires reformulating two of the basic building blocks upon which the orthodoxy was constructed.

**Disaggregating Different Elements of Policy.** The first issue concerns the operationalization and measurement of the dependent variable in studies of policy dynamics: “policy change.” Hall’s (1993) effort in this area was critical to the development of the current orthodox view of policy dynamics because it appropriately challenged existing scholarship that tended to conflate all the elements of a “policy” into one dependent variable (Hecló 1976; Rose 1976). Drawing on divergent cases of economic policy development in Great Britain and France, Hall argued

that distinguishing between the means and ends of policymaking and between abstract and concrete aspects of policy outputs might provide new insights into processes of policy stability and development. Such an approach, for Hall, revealed three principal elements or components of a policy which, he argued, could change at different rates and with different consequences for overall policy dynamics. “First order” changes occurred when the calibrations of policy instruments, such as increasing the safety or emissions requirements automobile manufacturers must follow, changed within existing institutional and instrument confines. The “second order” involved changes to instruments within an existing policy regime, such as switching from an administered emission standard to an emissions tax. “Third order” policy goals involved, as in the pollution example, a shift from a focus upon ex post end-of-pipe regulation to ex ante preventative production process design. More significantly, Hall also linked each change process to a different specific cause agent—first- and second-order changes to activities endogenous to a policy subsystem and third-order change to exogenous events, especially societal-based policy learning, that altered existing institutional arrangements and subsystem goals. Finally, these types of changes were then linked to specific types of overall policy dynamics, with first- and second-order changes remaining “incremental” and only third-order changes linked to larger, more significant, overall “paradigmatic” policy change.

Hall’s work was path breaking in its linking of different policy development processes to the actual order or level of policy in flux. Still, his own conceptual efforts, as well as our own inductive theorizing from the Pacific Northwest case, lead us to recalibrate his classification system and causal model. According to Hall’s own emphasis on distinguishing abstract goals from specific

<sup>6</sup>For a detailed analysis of these differences, see Salazar and Cubbage (1990), Hoberg (1993), Ellefson, Cheng, and Moulton (1997, 1995), and Cashore and Auld (2003).

**FIGURE 1 A Modified Taxonomy of Policy Measures Following Hall (Cells contain examples of each measure)**

		Goals	Policy Content	Objectives	Settings
	Ends	<b>What Types of Ideas Govern Policy Development?</b>  (environmental protection, economic development)	<b>What Specific Requirements Are Operationalized into Formal Policy?</b>  (saving habitat, increasing harvesting levels)	<b>What Are the Specific On-the-ground Aims of Policy?</b>  (optimal size of riparian zones, preferred level of harvesting)	
<b>Policy Focus</b>	Means	<b>What Norms Guide General Implementation Preferences?</b>  (use of coercive instruments, preference for moral suasion)	<b>What Specific Types of Instruments Are Utilized?</b>  (tax incentives, public enterprises)	<b>What Are the Specific Ways in Which the Instrument Is Used?</b>  (higher levels of subsidies, arm's length regulatory commissions)	

content, and instruments (means) from actual policy requirements (ends), we discern six, rather than three, “levels” or “orders” of policy that can undergo change. That is, as Figure 1 details, and according to Hall’s own logic, there exist three conceptual elements of policy content: abstract “goals,” “objectives” that operationalize the goals in general terms, and “settings” or “calibrations” that specify precisely what is required to operationalize objectives in specific real-world situations. But each of these, as Hall also noted, can be further distinguished between their use to describe policy “ends” and “means.” The implication of this taxonomy is that, as we reveal below, every “policy” is in fact a complex regime of ends and means-related goals, objectives, and settings. Attention to these regime differences, and how each element changes or remains stable over long periods of time, results in a much more complex picture of policy dynamics than is found in the existing literature on the subject.<sup>7</sup>

<sup>7</sup>For models based on a similar critique of Hall, see Daugbjerg (1997) and Smith (2000). These six categories are inspired from much of the work on applied policy analysis that teaches students to break policy down into their “goals,” “operationalized” objectives, and specific criteria and who likewise take pains to distinguish policy instruments from “on-the-ground” policy requirements (Weimer and Vining 1999). Such a distinction is also consistent with the work of Howlett (2000), who has hypothesized and empirically demonstrated the important and independent causal impacts of process (means) based policy instruments. Similarly, Sabatier’s ACF distinguishes different causal influences on different measures of policy, theorizing that “core values” or ideas behind policy can rarely change in the absence of societal transformation,

Our reconceptualizing of the number and type of policy elements found in Hall’s work has serious consequences for his (and the current orthodoxy’s) linking of policy elements to specific drivers of policy change and to the number and type of possible overall patterns of policy regime change. In particular, two implications result. First, the link between policy components and endogenous and exogenous sources of policy change are more complex than Hall suggested. Second, it forces us to revisit existing classifications of “paradigmatic” and “incremental” policy development so that we can better capture complex interplays of change processes among the six different policy components. That is, in addition to distinguishing six different levels of policy, which we can use to generate more nuanced descriptions of patterns of historical policy development, it is equally necessary that we have the proper classification tools required to assess the degree and overall type of policy change found in any such description.

**Distinguishing Patterns of Policy Development.** The effort to better distinguish patterns of policy development sensitive to our six regime elements requires revisiting widely accepted assumptions within policy studies that originated in Simon’s (1957) and Lindblom’s (1959) path-breaking works on the subject. The general ideas

but that “secondary belief systems” can lead to changes in what we are defining as “means-oriented” policy objectives and policy settings, as advocacy coalitions undergo “learning” about causal mechanisms within the policy process (Sabatier 1988).

that emerged from these articles, which have influenced generations of scholars including Hall, is that incremental changes are associated with marginal changes in policy means and are treated as being synonymous with patterns of relatively long-lasting policy stability (Bendor 1995; Hayes 1992); while paradigmatic change has been treated as an abnormal, atypical, relatively unstable, and usually short-lived process associated with changes in policy ends (Baumgartner and Jones 1991; Lustick 1980). These two notions were brought together in the 1990s by authors such as Baumgartner and Jones (2002) who argued that in a typical pattern of policy development relatively long periods of incremental policy stability are punctuated by bursts of paradigmatic change. Their “punctuated equilibrium” model underlined the importance of understanding not just incremental or paradigmatic policy processes, per se, but rather the manner in which these two types of change are linked together and the propensity of different sectors, issues areas, or policy subsystems to undergo these processes at different points in time.

Applying such an appreciation of policy dynamics, however, requires a clear taxonomy of the different types of change processes which can occur within a policy area, so that the dominant mode present at a particular point in time, and the various possibilities for change, can be discerned. Most existing taxonomies influenced by the

incremental-paradigmatic debate in the policy sciences have conceived of policy change as comprised of two elements—*mode* (incremental versus paradigmatic) and speed or *tempo* of change (rapid versus slow; Durrant and Diehl 1989; Hayes 1992)—and this is what, in fact, Hall envisioned in linking patterns of change in policy components to overall policy change processes.

What is significant about policy change in the Baumgartner and Jones reformulation, however—in addition to linking incremental and paradigmatic modes of change—is their emphasis on the directionality of changes. This is thought of not in terms of the “size” of moves away from the status quo, but whether these changes are *cumulative*, i.e., leading away from an existing equilibrium toward another, or whether they represent a fluctuation consistent with an existing policy equilibrium (on directionality, see Nisbet 1972). Reconceptualizing policy change as the result of the interplay of tempo and cumulative directionality provides a superior model of policy dynamics to that found in earlier work focusing on mode and tempo, since it directly addresses whether a status quo is being maintained (in equilibrium) or not (in punctuation) in a change process. See Figure 2 below.

This reconceptualization identifies two commonly ignored, misclassified, or incorrectly juxtaposed overall change processes that exist alongside the familiar

**FIGURE 2 A Basic Taxonomy of Policy Change by Tempo and Direction of Change**

(cells contain typical ‘modes’ of change)

		Tempo of Change	
		<i>Fast</i>	<i>Slow</i>
Directionality of Change	<i>Cumulative</i>	“Classic” Paradigmatic	Progressive Incremental
	<i>In Equilibrium</i>	“Faux” Paradigmatic	“Classic” Incremental

Source: Adapted from Robert F. Durrant and Paul F. Diehl, “Agendas, Alternatives and Public Policy: Lessons from the U.S. Foreign Policy Arena,” *Journal of Public Policy* 9 (1989), 179–205.

**FIGURE 3 Key Features of Policy Components in PNW Forestry, 1975–2005**

			Policy Content	
	Goals	Objectives	Settings	
	Ends	Struggle between Environment vs Industry Domination in Private and Public Spheres	Trade-off between Species Habitat and Preservation vs Industrial Continuity in Both Private and Public Spheres	<b>Public:</b> Post-1993 Substantial Reduction in Harvesting Rates vs <b>Private:</b> Continuity in Levels of Production
Policy Focus	Means	Tension between Coercive Regulation vs Property Rights in Private and Public Spheres	Use of Environmental Assessments and Habitat Plans in Both Private and Public Spheres	<b>Public:</b> Development of “Top-down” Stringent “Command and Control” Environmental Policy Requirements <b>Private:</b> Discretion to Forest Practices Boards to Develop Regulatory Policy Specifications and Greater Use of Relatively Flexible Habitat Conservation Plans

paradigmatic and incremental types. One such typical pattern, in which rapid change occurs but is noncumulative, has often been misdiagnosed as paradigmatic—in which significant departures from the status quo occur but then shift back just as quickly to their regular position. These “faux paradigmatic” or “oscillating equilibrium” changes are quite common in political life, as swift changes in policy can occur in many policy arenas with developments such as the arrival of a new political party in government. In such cases pundits and the public often come to believe that a permanent and significant change has occurred, only to see these policies reversed, or sent back to their original position, upon the election of another political party four or five years later. Such rapid changes in policy that end up coming back to their original position must be treated quite differently from other kinds of rapid changes that are actually heading toward a new equilibrium (the “classic” paradigmatic type of change). Figure 2 also distinguishes two different processes that have previously both been incorrectly labeled as incremental—slow changes going in one direction and leading over time to a big change (cumulative, heading towards a new equilibrium), and slow steps that go in both directions but never vary far from the status quo, a kind of noncumulative “random walk.”

Advancing the study of policy dynamics through these reconceptualizations requires the development of

cases of long-term policy change that allow us to empirically match the four overall patterns of policy changes set out in Figure 2 with the six components of a policy set out in Figure 1. This will allow us to empirically assess whether it is actually the case, as Hall has suggested, that a change in goals is associated with paradigmatic change, while changes in setting are indicative of incremental changes, or if more complex patterns of policy change and development are at work (Mortensen 2005). We conduct this assessment through a historical application of the taxonomies set out in Figures 1 and 2 to the case of Pacific Northwest forestry policy development over the last quarter century. The implications of this effort, which uncovers a more complex pattern of policy development unaccounted for by existing empirical or theoretical literature, are then discussed.

### **Applying the Classification Framework to Forest Policy Development in the U.S. Pacific Northwest: 1980–2005**

#### **Policy Regime Development on Federally Owned Forest Lands**

**Goals.** The goals of forest policy governing federally owned forest lands in the Pacific Northwest, the bulk of

which come under the National Forest System, have varied considerably between established industry interests and those held by members of an emerging environmental advocacy coalition. The environmental coalition has long championed the policy “ends” of increased preservation of National Forests lands (where harvesting should occur) and increased regulation of forest practices (how harvesting should occur). Their norms have emphasized the need to maintain and enhance forest ecosystems biodiversity. Their ideas about the best means to achieve these ends have been steady and until recently, emphasized a preference for traditional, coercive, command, and control approaches to industrial regulation that some industry actors have criticized as discouraging innovative efforts to achieve ecological objectives.

The policy ideas promoted by industry, on the other hand, have diverged significantly from environmentalists and have dominated government agendas. Historically their goals have focused on the “end” of maintaining a strong timber supply from the Pacific Northwest in order to preserve jobs and promote economic development, with a desire to see long-term harvesting plans developed which maximize available timber supplies from National Forests. Other aspects of their preferred policy means focused on the retention of flexible and informal arrangements with land management agencies, and a desire to limit influence from other organizations and agencies that might want to be involved in forest regulation. These goals were to be achieved by encouraging a policy regime in which the courts and general public deferred to the U.S. Forest Service to manage National Forest lands.

**Objectives.** Two key provisions in different statutes promulgated in the 1970s created a very stable set of core objectives for government managers. The first provision is found in the 1973 *Endangered Species Act* (ESA) requirement that operationalized the policy “end” that public land management agencies protect threatened and endangered species on publicly owned forestland (which, as we show below, contained very different provisions for private land). The ESA also established the means by which this objective is to be achieved. The ESA is administered not by land management agencies, but by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) and *requires* that these agencies list threatened and endangered species and their “critical habitat” and ensure that a plan is developed that will result in species recovery. The determination of threatened or endangered must be based “solely on the best scientific and commercial data available” (section 4(b)(1)(A)) with explicit direction that the economic effects of such

a decision not be given consideration.<sup>8</sup> A second provision is found in the 1976 *National Forest Management Act* (NFMA), championed in Congress as an effort to reduce the role of the courts in National Forest Planning. The NFMA, whose origins can be traced to an effort to realign industrial and agency visions of forest management following court decisions that outlawed clear-cutting on National Forest Lands,<sup>9</sup> is a complex piece of legislation generally known for the discretion it grants to the National Forest Service (Hoberg 1997). However, a key operationalized policy means was inserted in this legislation directing the Forest Service to produce land and resource management plans (LRMPs) that would “provide for diversity of plant and animal communities.” The resulting regulations issued under the act required that LRMPs maintain “viable populations of existing native and desired non-native vertebrate species,” “where appropriate” and “to the degree practicable.” Buttressing these objectives was the *National Environmental Policy Act*’s requirement that key governmental projects undergo environmental assessments.

These program objectives have remained durable since they were enacted. However, layering of additional policy instrument preferences occurred when the Forest Service developed a new ecosystem management approach in the early 1990s. The newly introduced ecosystem goal added a new layer of landscape and subregional interagency processes alongside traditional Forest Service planning processes as the means to achieve them.<sup>10</sup>

**Settings.** Following the solidification of the institutional features governing Pacific Northwest forestry on National Forest lands in 1978, policy settings did not undergo any significant transformations, and most of the responsibility for making such choices about the content of specific plans and on-the-ground requirements rested with forest officials in the field. These officials, for the most part,

<sup>8</sup>The important caveat to this review is that the ESA provides for the establishment of an “Endangered Species Committee,” or “God Squad” (Davis 1992). This committee has the authority to decide that the “economic and social benefits of the proposed activity outweigh costs to the listed species” and can therefore exempt a particular action from the requirements of the ESA (Smith, Moote, and Schwalbe 1993, 1039). This committee can only be established when no “feasible alternatives” exist and where there is “considerable” economic or social importance (1038).

<sup>9</sup>The courts ruled that clear-cutting in the Monongahela National Forest was contrary to an obscure provision in the 1876 *Organic Act*.

<sup>10</sup>Until the mid-1990s, the Forest Service tended to draw on the 1960s’ Multiple-Use Sustained Yield Act to justify and promote a “multiple-use” mandate, which industry and other interests cited in their efforts to strike a balance between economic goals and preservation initiatives (Fletcher, Adams, and Radosevich 2001).

**FIGURE 4 Overall Pattern of Forest Policy Development on PNW Lands, 1975–2005**

			Policy Content	
	Goals		Objectives	Settings
	Ends	<u>Public/Private:</u> Faux Paradigmatic fluctuations between competing goals	<u>Public/Private:</u> Progressive Incremental moves towards habitat and species protection	<u>Public:</u> Classic Paradigmatic shift to reduced harvesting levels <u>Private:</u> Classic Incremental change in harvesting rates
Policy Focus				
	Means	<u>Public/Private:</u> Classic Incremental development of regulations	<u>Public/Private:</u> Progressive Incremental implementation of assessments and habitat plans	<u>Public:</u> Classic Paradigmatic shift in harvesting guidelines <u>Private:</u> Classic Incremental changes in harvesting plans

continued to enjoy close working relationships with their forest industry clientele. However, by the early 1990s, dramatic changes occurred in policy settings, including sizable reductions in the amount of forestland available for logging, reductions in the size of clearcuts permitted, and the introduction of 300-foot “no harvest” streamside “riparian zones,” which were established for both fish and nonfish-bearing streams—by far overshadowing regulations in Oregon, Washington, and indeed elsewhere in North America (Cashore 1997; Cashore and Auld 2003; Ellefson, Cheng, and Moulton 1995, 1997; Hoberg 1993). The cumulative effect was the lowering of harvesting policy settings we documented above, with the annual harvest rate declining from 1980s levels of over 5 billion board feet to 1.2 billion board feet by 1995.

However, by 1995 policy settings had again reverted back to a classic incremental mode but this time from a very different equilibrium. Fluctuations, both up and down, have taken place since this time. Current data reveals, for example, that harvesting went down as far as 400 million board feet, but this led Congress (often using “rider” provisions of U.S. budgetary appropriations processes) and the Bush administration to attempt to “restore” the equilibrium to the 1.2 billion board feet level (Blumenthal 2004).

### Policy Regime Development on Privately Owned Forest Land

**Goals.** Not surprisingly, the goals permeating forest policy development on private forest lands in Oregon and

Washington State over this time period were similar to those governing U.S. National Forest lands, with clashes existing between established industry interests and the emerging environmental coalition. The main difference is that, largely owing to much more limited access afforded by existing institutions, Oregon’s and Washington State’s environmental advocacy coalition is relatively small compared to those focusing on federal forest lands, despite both covering roughly the same land area.

Environmental coalitions in both states have long championed increased environmental protection on private forestlands, including calling for greater attention to species and biodiversity preservation. And until recently, their broad ideas about the means of achieving these policy goals have emphasized traditional command and control approaches.<sup>11</sup> The goals promoted by industry, however, diverged significantly from those held by the environmental coalition. Historically they have emphasized maintaining a strong timber supply and a “healthy” (read profitable) forest sector. As a result, environmental protection was seen as being undertaken in tandem with, as opposed to suppressing, the promotion of a profitable forest products industry that would then contribute to the economic well-being of the general population. The preferred means was the facilitation of noncoercive forest practices that would permit forest owners’ interests to

<sup>11</sup>Frustration at the public policy level has led many groups to ignore government altogether, creating alternative forms of governance which rely on market recognition for practicing responsible forestry (Fletcher, Adams, and Radosevich 2001).

play a greater role in forest practices decisions and to work in concert with regulatory agencies.

**Objectives.** Like the situation on National Forest lands, once formalized in the 1970s, the policy objectives governing private forest management proved very resilient. The oldest and most highly durable feature stems from common law private property rights, whose rules require that the government give compensation to landlords if any regulatory restrictions amount to a “taking” of their property.<sup>12</sup> The “ends” objective of developing a strong forest industry is accompanied by formalized “means” that give landowners the ability to use the court system and sue regulatory agencies for compensation if any taking occurs, effectively restricting the use of public measures to control industry behaviour on private lands.

The second source of formalized objectives is found in “forest practices acts” statutes that were developed in the early 1970s in Oregon and Washington. Unlike the U.S. federal experience, the state statutes were promoted by industry interests and were justified as a strategy to preempt federal intrusion into private forestland regulation.<sup>13</sup> These forest practices acts were aimed at facilitating timber extraction and created forest practices boards that were dominated at first by industry interests (with incremental tinkering to board membership over time).<sup>14</sup> At the Oregon state level, private land is managed by the state Department of Forestry and its rule-making body, the Board of Forestry. Similarly, in Washington State, the key agencies are the Department of Natural Resources’ Division of Forestry, and the Forest Practices Board. For the most part, these statutory regimes have reduced the ability of state legislatures and administrative agencies to initiate changes independently of the boards.<sup>15</sup> The statutes are worded to avoid litigation (directly at odds with the

<sup>12</sup>A slightly countervailing trend is that any forest owner is subject to common law whereby they are not permitted to damage other people’s property through acts of “nuisance, waste or taking” (Ellefson, Cheng, and Moulton 1995, 30–37).

<sup>13</sup>The key piece of forestry legislation governing Oregon is its 1971 *Forest Practices Act*. The precise timing of the 1971 Act can be traced to the U.S. Congress’ deliberations and eventual enactment of the *Clean Water Act* of 1972.

<sup>14</sup>Originally most of Oregon’s board was made up of industry interests leading to the charge “that the timber industry, is, in effect, allowed to regulate itself” (Anderson 1977).

<sup>15</sup>Washington State is slightly different from Oregon in that court rulings regarding tribal fishing rights and a *State Environmental Policy Act* give it a degree of legalism lacking in Oregon. These formalized objectives regarding species preservation at the state level were written in a way to avoid outside conditions having the same impact as under federal regulation. For example, Oregon’s rules simply required that “consideration” be given to wildlife habitat (Cabbage and Ellefson 1980). In Washington, statutes originally called for

common assumption that U.S. environmental laws tend to promote litigation), and they reduce the ability of non-resource agencies to have influence in the forest regulatory process.<sup>16</sup>

The third source of formal and enduring policy objectives comes from the federal arena, where environmental statutes that affect forest management have been crafted in a way that largely respects state authority over private forest management. The two relevant federal statutes included provisions under the *Clean Water Act* and the *Endangered Species Act*. Under the *Clean Water Act*, forestry is treated as a “non-point source of pollution,” a classification that gives less teeth to the EPA in regulating forestry impacts on water than if forestry had been designated as a “point source.”<sup>17</sup> The *Clean Water Act* is written in a way so that it requires cooperation and voluntary regulation rather than coercive command and control methods, with federal agencies usually supporting and encouraging state-level leadership.

Similarly, and in contrast to popular belief and many scholarly assessments, the approach of the ESA to private forest management is very different from requirements of federal landowners and federal agencies. Unlike their federal counterparts, nonfederal landowners are under no obligation to “recover” threatened or endangered species. In fact, Section 10(a)(2) of the ESA permits nonfederal landowners to seek a permit that would allow them to undertake a forest practices operation that is deemed to

harvesting practices to “leave the area conducive for timber production and encourage wildlife” (1980, 468). These approaches have remained relatively constant over the last three decades.

<sup>16</sup>Slight changes made in 1987 required the Department of Forestry to collect inventories of threatened and endangered species and “ecologically and scientifically significant” sites. If, after conducting this analysis, the Forest Practices Board decides that forest harvesting may conflict with these resource sites, the Board must then “consider the consequences of the conflicting uses and determine appropriate levels of protection” (ORS 527.710(3)(b)). Rules have tended to focus on limiting harvesting during reproductive seasons or specifying areas around particular sites in which no logging can occur. In Washington, any forest practices on critical habitat lands require an environmental assessment under Washington’s SEPA legislation. The 1987 Wildlife Code creates a process whereby the Director of the Department of Fish and Wildlife can ask the Wildlife Commission to list a species if it is “seriously threatened with extinction” though there is no timeline in the listing process. The Forest Practices Board has the power to designate critical habitat areas for individual species.

<sup>17</sup>The Environmental Protection Agency lost a large battle in 2001 to change forestry from a nonpoint source to a point source of pollution (Jacobs 2000; Forest Resources Association 1999). The failure of this initiative, which would have had serious implications for the existing hard institution’s logic of appropriateness governing regulations on *private forestlands*, illustrates the durability and explanatory power of the existing hard institutional features.

result in a “taking,” i.e., that results in the loss of a threatened or an endangered species.<sup>18</sup>

**Settings.** Since the early 1970s, forest policy settings in Oregon and Washington have developed incrementally, and in shorter steps, than occurred on National Forest lands (Hoberg 1993). The “end” settings of private management rule making generally followed a pattern best described as “classic incremental,” and the means with which to accomplish these efforts have also followed this pattern. There remain no policy requirements regarding annual harvest rates and no efforts to permanently remove private forestland from the extractive land base. There have been incremental approaches to endangered species preservation, and most notably, ongoing rule development governing harvesting in riparian zones. Such changes include guidelines that regulate road building near streams and encourage a percentage of original shade to be maintained and, in the mid-1970s, regulated the number of trees that should be left after harvesting near a stream, and created relatively limited (compared to National Forest lands) no- or “special harvest” zones.

Similarly, the use of identified “nesting sites” of threatened or endangered species (The Forest Practices Program 1994) emphasized requirements that landowners notify agencies when harvesting near an identified site and obtain prior approval when harvesting in these habitats. These means-oriented policy settings were developed in a way that critics have asserted focused more on minimizing their impact on harvesting, rather than on what would be required for species recovery (Gjaari 1994).

Likewise species preservation policies have increasingly relied on the means objectives “habitat conservation plans” (HCPs) that rely on complex planning processes which develop policy settings, including commitments to the riparian zone settings noted above, in exchange for the right of private forest owners to undertake practices that may “take” an endangered species. By 1999 such regulatory relief covered 20 million acres of private forest land

in exchange for bringing 6.5 million acres of private forest lands under the HCPs processes. The degree to which additional requirements such as riparian zone regulation are offset by the negative environmental impacts they permit is contested among environmental and industry interests. While a review of the myriad of policy commitments contained in these HCPs is beyond the scope of this analysis, detailed analyses of them reveal that they are following a classic incremental approach, especially vis-à-vis what occurred on U.S. federal lands. Though calling for more research, existing scientific studies have documented gaps in the use of scientific knowledge in determining policy settings (Kareiva et al. 2000; McClure and Stiffler 2005), which stands in contrast to the approach utilized in establishing settings on federal lands. The cumulative effects of these differences in policy settings are reflected in the dramatic differences in harvesting rates during and after this time (Figure 1).

### **Revisiting the Puzzle: Explaining Differing Patterns of Change and Stability in Pacific Northwest Forestry**

Application of a more nuanced classification framework than is typically used to evaluate policy dynamics reveals a more complex pattern of policy change in the Pacific Northwest forestry case than is usually viewed in longitudinal studies of policy evolution. The pattern reveals a similar overall contestation of ideas and goals circulating among members of the policy community in both regions and landownership categories (reflecting conservation versus development agenda), and one in which policy objectives, despite ongoing societal conflict over goals, remained remarkably stable in both policy regimes. These similar patterns of stability in goals and objectives stand in sharp contrast to the divergence in policy settings, highlighted by the early 1990s punctuation affecting federal forest lands and the apparently classic incremental pattern followed on private lands.

While most political scientists’ efforts to explain policy change, following Hall’s lead, would look for evidence of exogenous societal turbulence, such as changes in political parties or changes in societal values in order to explain an apparently paradigmatic shift in Pacific Northwest forest policy over this 30-year period, our above review poses challenges to those explanations because the pattern of change is consistent neither across policy levels nor jurisdictions. Although goals fluctuated in the federal case, the objectives of policy—ones we would expect to change in response to societal pressure or changes in

<sup>18</sup>In return for such a permit, the landowner must prepare a Habitat Conservation Plan (“HCP”) that is supposed to mitigate the impacts from the permitted taking. The discretionary and flexible approach afforded by HCPs is hotly contested by different interests within the forest policy community (e.g., American Lands Alliance 1998). What is undisputed is that the ESA/HCP provisions create far different, and less onerous, policy objectives for private forest landowners than is the case for federal forest owners. For instance, they provide for a much more limited role in responding to scientific data regarding species loss that so drives the policy regime affecting U.S. federal lands. The result, Kareiva et al. (2000) found, was that 84% of the time, HCPs failed to provide basic “conservation and mitigation measures, and/or to use important scientific information and analyses.” Section 4(d) of the Endangered Species Act also provides for the ability of a taking to occur following approval of statewide plans.

political parties—remained durable. Yet durable policy objectives also did not translate into durable settings—the latter proceeded in a classic incremental fashion on private lands, but on federal lands featured a key punctuation or paradigmatic shift in the early 1990s.

### **Thermostatic Policy Dynamics: Advancing the Study of Policy Change**

Our review of these two cases leads us to make two broad observations on the study and theorization of policy dynamics. First, we need to separate out what might be fairly typical processes of policy development in which exogenous factors do prevail through multiple levels of change, from situations, like the Pacific Northwest forest policy case, in which change is more complex or “uneven.” Second, we need to identify the specific factors which explain these very different patterns of change.

In what follows below we undertake an effort, with respect to our story of jurisdictional divergence noted above, to advance the study of policy dynamics beyond the established orthodoxy. We do so by emphasizing the role of a thermostatic “triggering mechanism” within the federal forest lands policy regime that allowed very significant changes to be made to policy settings in response to outside information about species decline—a feature missing in the private forest lands case.

#### **Thermostatic versus Homeostatic Models of Policy Change**

The policy regimes that Hall examined in his path-breaking work featured fluctuating goals which led to changes in objectives and settings and which themselves tended to undergo alteration as a result of changes in societal values or the partisan composition of government. This is a change process which, in cybernetic terms, is roughly “homeostatic.” That is, it involves a system which, like a spinning top, is constantly undergoing change, but remains in one place (equilibrium) until an outside force (a foot, for example) moves it to a new location where, after this “punctuation,” a new equilibrium is established (Steinbruner 1974).

Our case studies, however, reveal a second, nonhomeostatic pattern—in which goals are either stable, or if they do change, have limited causal power in terms of affecting policy objectives and settings. In the Pacific Northwest forest policy case, formalized policy objectives were very durable and survived changing or fluctuating policy goals. This type of change process involves a system in which policy objectives obtain “institutional status” and prevent or

control the amount of change possible in policy settings. Whether such institutionalized objectives will prevent or require changes in policy settings depends on their internal logics, and we hypothesize that two very different types of policy regimes governed federal and private forest lands policy development. That is, neither case conformed, in cybernetic terms, to the homeostatic changes processes identified by Hall and others. The federal lands policy regime instead had defining features that were “thermostatic” (Buckley 1968; Gell-Mann 1992). That is, the objectives of federal forest lands policy acted much in the same way as a thermostat regulates changes in internal temperature in response to changes in outside conditions (Wlezien 1995).<sup>19</sup> Durable policy objectives created an institutionalized “logic of appropriateness” (March and Olson 2004) in which policy settings were likely to follow a classic incremental pattern of development until such time as scientific evidence would reveal that forest-dependent species were under peril—i.e., that a species’ own “equilibrium” was being threatened. The combination of scientific evidence, and interest group notification of these trends, then caused a built-in thermostatic mechanism to be “tripped,” resulting in classic paradigmatic change in policy settings. Likewise the durable institutionalized objectives on private lands lacked such a thermostatic feature and, indeed, contained a logic that did not permit paradigmatic change in policy settings on private lands, or explain the lack of any punctuation in this sphere.<sup>20</sup>

<sup>19</sup>We make this claim, drawing on Clemens and Cook’s (1999) work, that “institutions” can be seen as involving formal and informal rules, policies, and standard operating procedures that bind and guide behavior. The “binding” aspect is important because not all institutions, even those emanating from constitutional sources, are enduring. There can be, for instance, rather “soft” institutions (Abbott and Snidal 2000; Giuliani 1999; Pollock, Lilie, and Vittes 1993) that quickly adapt to outside pressure and have little, if any, explanatory power. Of course even durable institutions at some point crumble and are replaced, or evolve (Thelen 2003), but our interest here is on understanding policy development when particular forms of policy become so durable that they contain independent explanatory power.

<sup>20</sup>Whether, how, and when policy regimes (or other forms for that matter) might gain institutional status has been well discussed and debated in the literature, which has emphasized two ways in which this occurs. First, a policy might become durable when it is initiated during a “window of opportunity,” in which a unique and temporary conjunction of events produces a specific policy that, once the window was closed, becomes durable—often even in the face of considerable societal or legislative hostility towards that policy. This “unique window” feature is, existing literature posits, more likely to occur in a U.S.-style separation-of-powers system in which logrolling (Weaver and Rockman 1993, 18), or the unlikely conjunction of agreement on the part of public, House of Representatives, Senate, and Executive can produce unique or difficult to replicate policy contents and initiatives. A second way policies might become

## Identifying the Thermostatic Element in the Federal Lands Policy Regime

The empirical evidence in the Pacific Northwest forest policy case justifies our attention to the role of “thermostatic institutions” in shaping policy development. The key thermostatic trigger in this case was played by scientific evidence that the Northern Spotted Owl and associated species were in decline. Data collected since the late 1970s showed the Northern Spotted Owl depended on old growth or “late successional” forests for its survival, and the decline of these forest types threatened the survival of the species (Gutierrez and Carey 1985). Land management agencies, part of a policy subsystem marked by strong clientelist relationships with industry interests and professional forestry associations, either questioned the science and failed to respond, or undertook incremental responses. As a result, the Seattle and Portland Audubon Societies launched litigation intended to force land management agencies to dramatically adjust upward implementation targets over Northern Spotted Owl habitat. They drew on the accumulating scientific research that the owl’s decline was owing to a lack of protection of its habitat and scientific evidence that the owl was an “indicator species” of forest ecosystem decline as a whole. This litigation first began as an attempt to force the Fish and Wildlife Service to list the Northern Spotted Owl as threatened, drawing on the durable requirements of the *Endangered Species Act*, the *National Environmental Policy Act*, and the *National Forest Management Act* (Hungerford 1994; Sher 1993; Sher and Stahl 1990).

The litigation eventually forced the listing of the Northern Spotted Owl as endangered, and led to a number of agency and interagency attempts to devise a recovery plan (Thomas et al. 1990).<sup>21</sup> When it was clear that any plan to save the Northern Spotted Owl would result in a

institutions has been highlighted by path-dependency scholars (see Hacker 2001, 2004; Mahoney 2000; Pierson 1993, 2000) who have demonstrated that, often owing to increasing returns processes, policies can become increasingly entrenched *over time*, so much so that eventually they become virtually impossible or very costly to change. In these cases policies themselves can gain significant explanatory power, strongly affecting what future policy choices are possible. In both cases existing institutional designs will permit, or not permit, specific responses to changing societal concerns (Pierson 1993).

<sup>21</sup>The first effort was to develop an interagency committee including the Bureau of Land Management, Forest Service, and Indian Lands, and involved the Fish and Wildlife Service and the U.S. Marine Fisheries Department. Its report, *Scientific Panel on Late-Successional Forest Ecosystems*, commonly referred to as the “gang-of-four” report, was important for establishing and documenting credible scientific information about the decline of the spotted owl and associated species. Following the failure of federal agencies to adopt its recommendations, the Forest Service decided to conduct its own assessment, referred to as the *Scientific Analysis Team* (SAT).

considerable loss of timber supply in the Pacific Northwest (Levine 1989; Kriz 1990), members of Congress attempted to override and in some cases dismantle the existing policy apparatus (Yaffee 1994). However, illustrating institutional durability, such efforts failed to change the operationalized objectives in this sector.

Ultimately the White House initiated a highly publicized “Forest Summit” in Portland, Oregon, in April 1993, at which environmental, industry, labor, and other nongovernmental organizations presented their solutions before the president and members of his cabinet (Begley et al. 1993). The summit resulted in the establishment of the Forest Ecosystem Management Team (FEMAT), comprised mostly of government scientists, which was charged with presenting the Clinton administration with different options for saving the Northern Spotted Owl. In the end, the Clinton administration chose “Option 9,” which they believed would entail the least economic impact while staying within the law, therefore allowing for plausible species recovery (personal interview U.S. Department of Justice). Option 9 contained the punctuated changes at the policy specifications level detailed above.<sup>22</sup>

Most accounts of this story point to the brilliant strategies employed by environmental groups’ litigation campaigns, or environmental groups’ efforts to nationalize the issues (Hoberg 1997; Koontz 2002), or Clinton and Gore’s commitment to the environment, or evidence that the Forest Service was changing its management philosophy (Davis and Davis 1988). However, these accounts fail to note that the ultimate plan for saving the owl was the one that allowed *the most harvesting to occur within the confines of the law*.<sup>23</sup> Without the hard institutional features present in the sector, it is reasonable to hypothesize that the more limited policy responses by governmental agencies before the summit, ones that were ruled time and again by the courts to be out of conformity with key provisions of the formalized objectives of U.S. forest policy, would have produced a different policy response.

Contrary to most of these single case studies, our analysis reveals that it was not changing ideas on the part of the public or agencies (Twight 1983; Twight and Lyden 1989) or of Congress (Davis 1995) that was the key causal mechanism shaping the development of classic

<sup>22</sup>Some changes, such as the clear-cutting rules, were made in advance of Option 9, but as part of initial efforts to implement ecosystem management following the commencement of litigation over the Northern Spotted Owl (see Haddock 1995; Robertson 1992).

<sup>23</sup>Personal interview, senior attorney for the U.S. Department of Justice, June 1994. Such a decision was facilitated by the Clinton administration’s charge to the Scientific Analysis Team, that they assess which option would be consistent with legislative requirements for owl protection, and to explicitly predict how much harvesting would be possible under each scenario.

paradigmatic change in policy settings. Rather, it was the specific and enduring features of the institutionalized policy regime that *required* land management agencies to address species preservation by altering those settings enough to bring back owl populations.<sup>24</sup>

On private lands, this institutionalized trigger was missing. At a time when courts were requiring classic paradigmatic changes on National Forest lands in response to concerns about the Northern Spotted Owl and associated species, the institutional features of policy objectives at the state level directed responses by narrowing the policy options available to regulators, and directing policy development to forest practices boards mandated to ensure the economic health of the timber industry (Hoberg 2000; Koontz 2002).<sup>25</sup>

## Conclusions

Applying our analytical approach to forest policy in the U.S. Pacific Northwest uncovered a much more complex pattern of policy development than is usually presented in the literature on policy dynamics that rely on an orthodox punctuated equilibrium framework (Hall 1993; Howlett 2002). Our identification of six levels of policy, and four patterns of historical policy development, helped uncover two much more empirically and historically accurate patterns of policy development on federal and private forest lands in the U.S. Pacific Northwest than would typically have been identified using orthodox models of policy dynamics. Our explanation for these differences, which we derived inductively from the cases, has profound implications for policy studies generally.

<sup>24</sup>Our account also challenges conclusions that an activist judiciary explains these outcomes—since it was the specific operationalized objectives that judges were compelled to rule on and not their own sense of environmental justice or concern (Wood 2006).

<sup>25</sup>The Washington State Forest Practices board had, for years following scientific evidence of the decline of the Northern Spotted owl, failed to even define critical habitat for the Northern Spotted Owl, relying instead on emergency rules that both industry and environment organizations agreed were not adequate (Rowland 1994). Responses to owl protection in Oregon were deemed equally limited by environmental groups, and ultimately most responses were effected through the company-initiated Habitat Conservation Plans (HCPs) that many scientists, directly criticized by industry interests (Northwest Forest Resources Council and Counties 1991; Northwest Forestry Association 1994), deemed inadequate to address species decline (Associated Press 2000; Giaari 1994; Pollack 1999). The Portland Audubon's analysis of the Board's deliberations over protection of the Spotted Owl, for example, argued that "...[Board of Forestry] did adopt some rules to protect the spotted owl habitat—enough to protect the bird itself—in order to prevent a 'take' from occurring. But it is such a minimal amount of habitat protection it is tantamount to saying, We'll keep from killing the bird but we will make it so uninhabitable that the bird won't stay there" (personal interview).

We argue that two distinct "logics of appropriateness" as to the type and range of policy change that can occur in the face of similar external conditions appear to hold strong explanatory power. Specifically, institutionalized thermostatic mechanisms contained in federal forest policy objectives but not private ones led to the two different outcomes observed in these two cases. On National Forest lands, massive changes in policy specifications were the result of a thermostatic equilibrium process at the program objectives level in which indicators of outside problems were designed to result in cumulative, rapid change in policy settings. In Oregon and Washington State, the institutional features of policy objectives were designed to limit responses to outside environmental indicators, as the dominant role of economic objectives was an enduring institutionalized feature of policymaking. The result was relatively limited (classic incremental) responses in policy settings to environmental policy problems.

Three critical findings emerge from our approach. The first is that broad-based theories of institutional and policy change need to incorporate better explanations of policy development consistent with the logic of an existing institutional order. Path-breaking work by Hall linking the role of exogenous societal learning to types of policy change needs to be modified to take into account the way different institutional structures permit change to occur (Braun and Benninghoff 2003; Daugbjerg 1997, 2003). Our analysis corrects a tendency among many existing theories of policy change to assume that paradigmatic change can only occur when existing institutions crumble or are replaced (Genschel 1997).

Second, while theories of "punctuated equilibrium" attempt to explain rapid policy change over short periods of time, we argue that scholars must be careful to distinguish between the levels, orders, or components of policies they are measuring and describing (Mortensen 1995). Failing to distinguish between different orders of policies can improperly juxtapose several distinct types of policy development and present a misleading picture of the actual pattern of change present in an empirical case.

Third, and related, assessments of policy change and dynamics must take the "direction" of change into account. That is, they must distinguish policy developments that move slightly in different directions over time but never deviate much from the status quo (policies in equilibrium), from those that move in the same direction over time (cumulative change; Deeg 2001; Goldstone 1998; Pierson 2000). Policy scholars must assess whether changes are consistent with a "homeostatic" or self-equilibrating logic of policy system dynamics or with other models, such as the thermostatic one present in the case of Pacific Northwest forest policy.

APPENDIX A Select Review of Policy Development Governing Federally Owned and Privately Owned Forests in the US Pacific Northwest, 1975-2004

Policy	US Federal Lands 1975	Oregon Private 1975	Washington Private 1975	US Federal Lands 1995	Oregon Private 1995	Washington Private 1995	US Federal Lands 2001	Oregon Private 2001	Washington Private 2001	US Federal Lands 2004	Oregon Private 2004	Washington Private 2004	
Clearcutting	NFMA limits clear cutting to when "silviculturally essential." Maximum clearcut size of 60 acres.	None	None	Clearcutting only permitted when deemed essential to meeting forest plan objectives.	Maximum clearcut size set at 240 acres (only permitted to exceed 120 acres with approval of State Forester).	Maximum clearcut set at 240 acres.	Michael Dombeck, chief of the Forest Service, directs an end to clearcutting in national forests of old growth areas.	No change	No change	No change	No change	No changes	
Riparian Zones & Wetlands	No detrimental management practices permitted within 100 ft. from water. Viable populations of existing species must be maintained.	Road and trail construction discouraged near streams. It is recommended that 75% of original shade be left after harvesting.	Certain forest practices are to be avoided near streams. Use of logging equipment limited in Streamside Management Zones.	No harvesting within 300 feet of fish-bearing streams, 150 feet of permanently flowing nonfish-bearing streams, 100 feet of seasonally flowing intermittent streams.	Harvesting permitted. 1987 rule changes require written plans before harvesting near fish-bearing streams. 1994 rules require leaving a percentage of trees standing when harvested near riparian zones.	Riparian Management Zones (RMZ) created after TFW accord in 1987. A percentage of trees required left standing, the percentage of which varies according to the type of RMZ.	No change	Written plans are required prior to any operation within 50 and 100 feet of fish-bearing streams and no harvesting is allowed within 20 feet of a fish-bearing stream or domestic water use stream.	Both fish habitat and nonfish habitat streams have a core zone which is a 50-foot no-harvest area. Beyond this area, rules are prescribed for harvesting and retention of tree snags.	No change	No change	No changes	
Endangered Species/Biodiversity	Federal ESA prohibits "taking" of species on all lands. Requires listing of endangered species, and federal agency plans aimed at species recovery. NFMA requires maintenance of species viability and diversity of plants and animals.	Consideration should be given to critical habitat including wet areas and wildlife escape cover.	Harvesting practices should leave area conducive to timber production and encourage wildlife.	Interagency ecosystem management and planning instituted. Interagency conservation agreements required.	After 1987 resources sites of threatened and endangered fish and wildlife species are to be established. Where forest practices are deemed to conflict with these areas, rules may be established limiting harvesting in these areas.	Wildlife Commission created in 1980 can list species seriously threatened with extinction. Once listed, Department of Fish and Wildlife must prepare a recovery plan.	No change	Management plan for biodiversity includes developing and ensuring a number of different habitats in a functional patch and the Oregon plan was specifically initiated for the recovery of salmon.	Management plan includes developing and ensuring a number of different habitats in a functional patch and the Oregon plan was specifically initiated for the recovery of salmon.	Beginning in 1997, pilot landowners were selected to develop landscape planning systems on their private lands.	No change	Continuing work on habitat conservation plans	Formal adoption of 1997 Habitat Conservation Plan as part of the proposed Policy of Sustainable Forests. Multiple species Habitat Conservation included for upland areas with special management objectives.
Reforestation	NFMA directs Forest Service to allow timber extraction only where such lands can be adequately restocked within five years of harvest.	Restocking required when harvesting reduces acceptable species below 25 percent of original levels. Between 100 and 150 seedlings must be planted per acre.	Reforestation of 300 seedlings per acre required for cuts removing more than 50 percent of trees. Must be replanted within three years or naturally regenerated within five years.	No change	Statewide rules established regarding reforestation of clearcut areas.	No change	No change	No change	No change	No change	No change	No changes	

continued

**APPENDIX A Continued**

Policy	US Federal Lands 1975	Oregon Private 1975	Washington Private 1975	US Federal Lands 1995	Oregon Private 1995	Washington Private 1995	US Federal Lands 2001	Oregon Private 2001	Washington Private 2001	US Federal Lands 2004	Oregon Private 2004	Washington Private 2004
Road Building	NFMA regulations require that road design take into account its effects on land and resources. All non-permanent roads must be designed to reestablish vegetative cover within ten years.	Number of roads issued by Board of Forestry that should be followed. These include minimizing risk of material entering waters and avoiding unstable or sensitive terrain. Road building in riparian areas must have prior approval of State Forester.	Rules require that use of roads be minimized in canyons, riparian, and wetlands areas and not located on steep or unstable slopes. Roads prohibited in areas where wildlife should suffer substantial loss or damage.	Option 9 further restricts road building in riparian zones on Northern Spotted Owl lands. Watershed analysis prior to road construction required.	No change	TFW process agrees that the department of Natural Resources addresses road management, particularly orphaned roads.	Severe limitations to road building with the Roadless Area Conservation rule that prohibits new road construction, timber cutting, sale and removal in areas surveyed within the National Forest System.	No change	The Forest and Fish Agreement addresses roads to be maintained to a higher standard to allow easier fish passage, prevent landslides and property maintained with an approved maintenance plan.	No change	No change	No changes
Annual Allowable Cut	NFMA requires that the annual cut results in a nondeclining low in perpetuity.	No Rules	No Rules	Option 9 withdraws most of the Northern Spotted Owl land from extractive land base, significantly reducing the annual cut.	No change	In 1992 DNR begins preparing annual reports on private land harvesting rates. Harvesting must occur on state-owned lands on an even flow continuing basis.	The new Roadless Conservation Rule further limits the availability of timber to be cut in National Forests.	No change	No change	No change	No change	No changes
Forest Protection	1964 Wilderness Act begins strategic forest protection.	Limited protection on small amount of State-owned lands.	Limited protection on small amount of State-owned lands.	About 80 percent of land under range of Northern Spotted Owl protected.	No change	No change	Clinton issues policy directive to protect 40 million acres of roadless areas in 1999 just before leaving office.	In 1998, idea of greatest permanent value adopted.	No change	No change	November 2004 Measure 37 will impact forested lands. This new law requires the government to compensate landowners or waive regulations when land-use restrictions reduce the value of their property.	No changes

Sources: Based on qualitative review of primary and secondary literature, as well as personal interviews with government officials, of key legislation, regulations, and policy directives that affect forest management.

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