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Author(s): James A. Stimson, Michael B. Mackuen and Robert S. Erikson

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## DYNAMIC REPRESENTATION

JAMES A. STIMSON *University of Minnesota*

MICHAEL B. MACKUEN *University of Missouri, St. Louis*

ROBERT S. ERIKSON *University of Houston*

**I**f public opinion changes and then public policy responds, this is dynamic representation. Public opinion is the global policy preference of the American electorate. Policy is a diverse set of acts of elected and unelected officials. Two mechanisms of policy responsiveness are (1) elections change the government's political composition, which is then reflected in new policy and (2) policymakers calculate future (mainly electoral) implications of current public views and act accordingly (rational anticipation). We develop multiple indicators of policy activity for the House, Senate, presidency, and Supreme Court, then model policy liberalism as a joint function of the two mechanisms. For each institution separately, and also in a global analysis of "government as a whole," we find that policy responds dynamically to public opinion change. This responsiveness varies by institution, both in level and in mechanism, as would be expected from constitutional design.

**H**ow, if at all, does the force of public opinion enter into governance in America? We propose that public opinion moves meaningfully over time, that government officials sense this movement, and that—for a mixed set of motives—those officials alter their behavior in response to the sensed movement. This is dynamic representation, a simple idea and an old one. Public sentiment shifts. Political actors sense the shift. And then they alter their policy behavior at the margin. Close to our naive intuition of how representative government is to work, the story has a familiar ring. We examine the postwar United States to see whether it makes sense.

Then we turn to matters of mechanics. We consider two main ways that public preferences might get turned into policy: elections and politicians' rational anticipation of elections. We also explore the common expectation that the main institutions of the U.S. national government vary in how they serve dynamic representation.

Finally, we turn to dynamics. We ask whether the national system is efficient in turning popular sentiment into policy or whether it responds only partially. And then we see whether the government responds mainly to long-term or short-term signals about public preferences.

This dynamic representation is a macro concept. Its focus is electorates and governments, not individual voters, not individual representatives. It differs from the dominant treatments of representation in altogether ignoring the geographical dimension. Nor is it tied to legislatures as the exclusive focus of representation. Representation exists when changing preferences lead to changing policy acts. It is dynamic representation because the idea, in its essence, is structured in time.

But what is "represented" into what? At this point, one usually shifts from the general and abstract statement of the theory to some case or instance—a particular policy act or a set of particularistic mea-

sures of public opinion. We differ by measuring public opinion and policy change at a level close to the generality of representation theory. We look at (domestic) policy, not a single policy, and at opinion, not discrete opinions, all structured over time.

### REPRESENTATION AS A PROCESS IN TIME

What does it mean that a government represents public feelings? Responsiveness must be a central part of any satisfactory answer. Representative governments respond to—meaning act as a consequence of—changes in public sentiment.<sup>1</sup> To "act as a consequence of" changes in public sentiment implies a sequence, inherently structured in time. We may say that if, by knowing about earlier changes in public sentiment, we can improve the prediction of public policy over what we could have done from knowing only the history of public policy itself,<sup>2</sup> then opinion causes policy, and this is dynamic representation. The demands of research design are more vexing than the simple question, Does Y follow X? But at its core, the idea is uncomplicated.

The *dynamic* character of representation has a second aspect. Most political decisions are about change or the prevention of change. Governments decide to change health care systems, to reduce environmental regulations, to develop new weapons systems, or to increase subsidies for long staple cotton growers. Or not. Thus, political decisions have a directional force to them, and their incremental character is inherently dynamic. Further, most public opinion judgments concern change as well. The public expresses preferences for "more" or "less" governmental action across different spheres: "faster school integration," "cuts in welfare spending," "getting tougher on crime," and so on. The main difference is that public

sentiment is generally more vague, diffuse, than the more concrete government action.

This understanding suggests something akin to the familiar "thermostat" analogy (see, e.g., Deutsch 1963; Easton 1953; Wlezien n.d.). The public makes judgements about current public policy—most easily that government's actions need to be enhanced or trimmed back. These judgements will change as policy changes, as real-world conditions change, or as "politically colored" perceptions of policy and conditions change. And as the simple model indicates, politicians and government officials sense these changes in public judgment and act accordingly. Thus, when public policy drifts away from the public's demands for policy, the representation system acts as a control mechanism to keep policy on course.<sup>3</sup>

The question now is how. If public opinion governs, how does it find its way into the aggregation of acts that come to be called public policy.

## THE MECHANISMS OF DYNAMIC REPRESENTATION

Start with a politician facing a policy choice. With both preferences over policy options and a continuing need to protect the electoral career from unwanted termination, the elected official will typically need to balance personal preference against electoral expediency. We presume that politicians have personal preferences for and against particular policies and also that they value reelection. Then for each choice, we can define (1) a personal ideal point in the space of policy options and (2) an *expediency point* (that position most likely to optimize future reelection chances). The expediency point might be the median voter of the relevant constituency or some similar construct. We are not concerned here about particular rules. All that matters is that the politician have a *perception* of the most expedient position.

The static choice then weighs policy preference and electoral security. Politicians create an appropriate margin of safety: those who highly value policy formulation or who feel safe at home choose policy over security; those who face competitive challenge in the next election lean toward "expediency" and security. There is a stochastic element deriving from the fact that individual actors have little agenda control; they can optimize only over *available* choices. Therefore we expect each actor to have a *distribution* of acceptable positions. While a wide range of possibilities can be envisioned, often in contemporary American politics Democrats will be arrayed with ideal points to the left of most expedient positions and Republicans similarly to the right. This is a commonplace view of practical politics.

In this static model, electoral turnover stems from events that overwhelm the margin of safety that the politicians select. Campaign finance, personal scandals, challenger tactics, the framing of electoral choice—all affect outcomes. The victims come both

from those who take electoral risk by pursuing policy and also from those who ignore personal preference and concentrate solely on reelection: what matters is the force of electoral events relative to the politician's expectations. Here these factors should run independent of policy preferences: conservative surprises and liberal surprises will cancel each other. In this static model, election outcomes provide little systematic influence over public policy.<sup>4</sup>

To breathe life into this system, let us put it into motion to see its aggregate and dynamic implications. Assume that public opinion—global attitudes toward the role of government in society—moves over time. Immediately we can expect greater turnover as the force of public opinion augments the normal electoral shocks to upset incumbent politicians' standard calculus. Now, the changes in personnel will prove systematic: rightward shifts in public opinion will replace Democrats with Republicans, and leftward shifts Republicans with Democrats. Cross-sectional representation becomes dynamic representation. Changing policy by shifting ideal points (i.e., turnover) is the standard electoral connection.

### Rational Anticipation, Turnover, and Policy Consequence

Turnover from elections works most transparently with politicians who are neither well informed (until hit on the head by the club of election results) nor strategic. But that does not look at all like the politicians we observe. The oft-painted picture of members of Congress, for example, as people who read five or six daily newspapers, work 18-hour days, and leave no stone unturned in anticipating the electoral problems that might arise from policy choices does not suggest either limited information or naïveté.

We explicitly postulate the reverse of the dumb and naïve politician: (1) elected politicians are rational actors; (2) they are well informed about movements in public opinion; and (3) they agree with one another about the nature of those movements. This was said well by John Kingdon: "People in and around government sense a national mood. They are comfortable discussing its content, and believe they know when the mood shifts. The idea goes by different names. . . . But common to all . . . is the notion that a rather large number of people out in the country are thinking along certain common lines, that this national mood changes from one time to another in discernible ways, and that these changes in mood or climate have important impacts on policy agendas and policy outcomes" (1984, 153).

*Postulate 1: Rationality.* Political scientists tend to emphasize calculation and strategic thinking when talking about rationality. We wish to stress another dimension. Rational actors make decisions in the present, but the utility they maximize lies wholly in the future. And except as evidence for inferences about the future, the past has no importance at all.

The political import of that future orientation is that *all is anticipation*. In particular, if politicians are rational, the only elections that ought to influence their calculations are those to come in the future.

Thinking about future elections then, by postulate, is of great importance but is also extremely difficult. Politicians face a serious information problem, which becomes a desperate information problem as they push the problem out two, three, or four elections into the future. They cannot know *who* will be their opponents (an even more ugly problem as the threat of primary election challenges is added to the muddle), and they cannot know *what* issues will be raised.<sup>5</sup>

*Postulate 2: Information.* Given those difficulties, and the presumption that public policy preferences matter, what sort of information about preferences would be most valuable? Almost anything about specifics has an exceedingly low probability of being relevant. Because public preferences only rarely crystallize on specifics, this sort of information, even if relevant, is exceedingly difficult to know.

For anticipating an uncertain future, we believe trends in global sorts of preferences (e.g., whether more or less government is desirable) offer the greatest promise. At that level, public attitudes are real, knowable, and likely to be relevant to the electoral future. We postulate that politicians do attend to this information by a variety of mechanisms (personal and social, as well as formal) that are open to them.<sup>6</sup>

*Postulate 3: Consensus.* The community of politics (not only politicians but also journalists, commentators, academics, and others) talks incessantly about where public opinion is going. This talk is both face-to-face (the dialogue of the cloakroom) and public, as figures in the Washington community swap sequences of ideas with one another—for which statements and responses in the *Washington Post* or on the *McNeil-Lehrer Newshour* serve as a kind of bulletin board. The end result is a public opinion that carries clarity probably beyond its genuine ambivalent character. Were beliefs about the fundamental direction of public opinion of a random or conflicting character, then the force of opinion would be neutralized. To the degree that consensus arises on the direction of opinion change, the net effects of common beliefs can become large.

Elected politicians, we believe, sense the mood of the moment, assess its trend, and anticipate its consequence for future elections. Changes in opinion, correctly perceived, will lead politicians to revise their beliefs about future election opportunities and hazards. Revised beliefs imply also revised expedient positions. Such strategic adjustment will have two effects: (1) it will dampen turnover, the conventional path of electoral influence; and (2) it will drive policy through rational anticipation.

When politicians perceive public opinion change, they adapt their behavior to please their constituency

and, accordingly, enhance their chances of reelection. Public opinion will still work through elections, however. When they are surprised by the suddenness or the magnitude of opinion change or when they are unable credibly to alter their policies, politicians, despite their best efforts, will occasionally face defeat at the polls. Rather more fitfully than was the case with dumb politicians, public preferences will operate on electoral institutions by changing the personnel and thus the aggregated preferences of elected officials.

But that is not the only public opinion effect. Changing policy from shifting perceptions of what is electorally expedient we will refer to as *rational anticipation*. In a world of savvy politicians, rational anticipation produces dynamic representation without need for actual electoral defeats.

Politicians modify their behavior at the margin. Liberals and conservatives do not change their stripes, but they do engage in strategic behavior either to minimize risk from movements adverse to their positions or to maximize electoral payoff from movements supportive of their positions. For example, in a conservative era, such as the early 1980s, conservative Democrats found it easier to break with their party and did it more often, while liberal Republicans found it more difficult and dangerous and did it less often. The result of such conditions can be substantial shifts in winning and losing coalitions without any change of personnel.

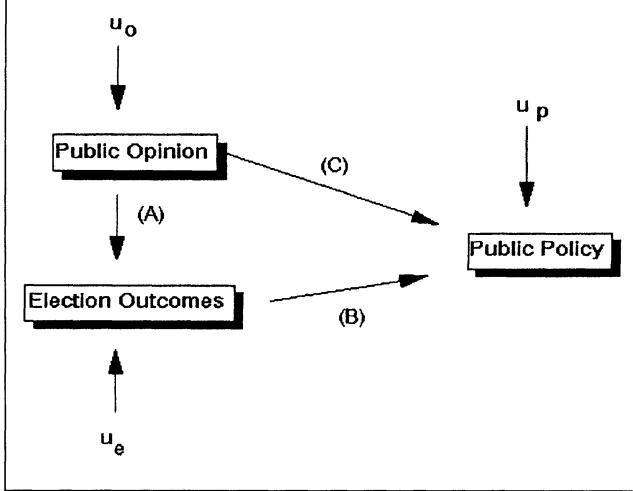
Moreover, such direct anticipation of the electoral future does not exhaust the possibilities. For other actors also anticipate the effects of future elections on the current behavior of elected officials. Those who advance policy proposals—bureaucrats, lobbyists, judges, and citizens—are concerned with what can be done successfully, be it administrative act, judicial decision, or legislative proposal. And other politicians—those who pursue a leadership role or advocate particular policies—may choose to push ahead of the curve, to multiply the effects of even marginal shifts in opinion by anticipating others' anticipated reactions.<sup>7</sup>

The impact of rational anticipation is thus a net shift in policy outputs from the aggregation of all these smallish strategic decisions, which (responding to the same signal) tend to move all in the same direction. It should be observable as the direct response of policy to opinion change, when election turnover effects are controlled.

## A DESIGN FOR ASSESSING REPRESENTATION

This two-part setup permits three possible empirical outcomes: (1) two-stage representation may occur through the mechanism of electoral turnover, where candidate success depends upon the public opinion of the moment, which is then reflected in policy behavior; (2) movements in policy acts may reflect

**FIGURE 1**  
**The Pathways to Dynamic Representation**



opinion without changes in elite personnel, the rational anticipation scheme; and (3) no representation might occur if both schemes fail. The alternatives are laid out in Figure 1. There we can see three testable linkages. The first, A, is the first stage of the electoral sequence. The question to be answered is, Does public opinion affect election outcomes? The second stage, B, is not much in doubt. Its question is no cliff-hanger: Is there a difference in policy behavior between liberals and conservatives? The third linkage, C, is rational anticipation. Its question is, Does public policy move with public opinion independently of the effects of (past) elections?<sup>8</sup>

*Causal Ordering.* Consider the possibility that we observe spurious covariation between public opinion and policymaking, which is in fact the response of opinion to policymaking. Stimson (1991), Durr (1993), and Wlezien (n.d.) each postulate a negative response of opinion to previous policymaking. How can we know that such opinion reaction is not producing the evidence we see? First, we know by design, from time ordering. We design the tests in such a way that opinion is always measured at  $t - 1$ , policy-making at  $t$ . This cannot rule out the possibility that opinion responds to policy, but it definitively precludes the possibility of opinion responding to current policy. Second, the opinion reaction thesis predicts negative association between policymaking and opinion; current opinion responds contrary to previous policymaking. We observe positive association between contemporary opinion and policymaking. Finally, empirical causality tests confirm our proposed ordering. A Granger analysis of opinion and a summary average of six policymaking indicators (two each from the presidency, House, and Senate) shows that opinion Granger-causes policymaking. For the proposed ordering, the key coefficient on opinion is .522 (.249) with  $p = .044$ . For the opposite, it is  $-.062$  (.034) with  $p = .086$ . This

evidence, limited though it is, tells us that previous opinion predicts current policy, even controlling for previous policy, whereas previous policy fails (but not by a lot) to have statistically discernible ability to predict current opinion.<sup>9</sup>

*Enriching the Specification.* The scheme of Figure 1 takes account of reality by positing other sets of causes of all phenomena as disturbances. The first,  $u_o$ , is the exogenous factors that account for changes in opinion. Not a focus of attention here (but see Durr 1993), they are such plausible forces as national optimism or pessimism arising from economic performance and reactions to past policies as experienced in daily life.

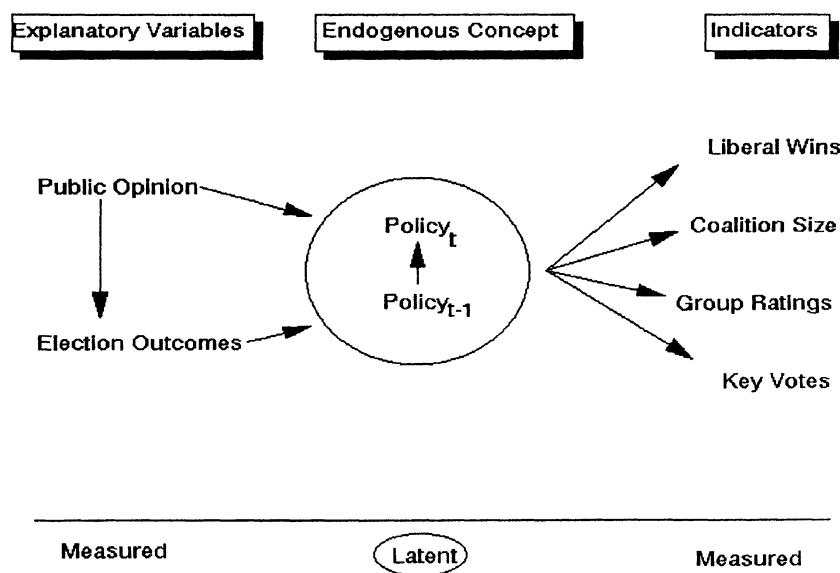
Elections are influenced by factors such as incumbent party performance (Erikson 1989, 1990; Fiorina 1981), incumbency, macropartisanship (MacKuen, Erikson, and Stimson 1989), and so forth. Those factors appear as  $u_e$  in Figure 1. And finally,  $u_p$  captures sets of causes of public policy other than representation—such things as the events and problems to which policy is response or solution. Some of these “disturbances” are amenable to modeling, and will be. Some are irreducible, and must remain unobserved.

## STATISTICAL MODEL

The modeling problem is simple in essence. We have information about the composition of government (Congress, the White House, and the Court) and about public opinion. There is a large array of possible indicators of the ideological tone of policymaking, our dependent variable. We wish to estimate coefficients that will represent the policymaking effects of turnover and of rational anticipation.

It is the left-hand side of the equation that presents modeling problems and opportunities. One reason our indicators of policymaking are so abundant is that no one of them is so obviously appropriate for the concept *policymaking* that we would wish to use it alone as a test of the model. We regard the ideological tone (liberalism as it is eventually to be measured) of policymaking as a latent cause of the observed policy indicators. Each of the indicators reflects some portion of that latent causation, we believe. But each also moves systematically over time as a result of forces specific to the indicator. In the terms of measurement theory, the reliable variance of each indicator has portions of both common and specific variance. And of course, all have the usual dose of stochastic fluctuation and measurement unreliability.

The estimation issues are laid out in Figure 2, a generic version of models to be estimated for the two houses of Congress. The explanatory variables (on the left) we have already discussed. Our dynamic dependent variable—the concept *policy*—is latent. We have multiple indicators of the concept, four in this illustration, which are measured variables. The estimation problem is to leverage the information in both

**FIGURE 2****An Estimation Model: The Kalman Filter DYMIMIC Setup**

explanatory and indicator variables (1) to estimate the latent policy concept and (2) to map its structural association with explanatory variables.

Thus we have two modeling issues, first the structural model relating exogenous variables to the latent endogenous policy concept, then the measurement issues mapping the flow from latent concept to observed (endogenous) indicators. It is possible to take on this problem in two steps—measurement, then structure—as we did in preliminary analyses. The measurement question can be understood as one of extracting the common variance from a set of indicators to produce an estimate of the latent concept. This is the usual measurement application of the family of models of factor analysis and principal components. The structural issues are then resolved by some form of time-series regression, where the standard problems are present and the standard sets of solutions are appropriate. In particular, we expect dynamics—that the climate of policymaking will show some residual influence of last year's climate, for example. Thus we need to formulate an estimation strategy that can handle dynamics.

This two-step approach (e.g., principal components followed by regression) is not, however, optimal (Beck 1990; Engle and Watson 1981; Watson and Engle 1983).<sup>10</sup> The measurement model can be strengthened by information from the structural analysis, and the structural analysis can be strengthened by (otherwise unused) measurement information. Thus a model that combines measurement with structural analysis is preferable. Our requirement then is a *dynamic* (DY) model with *multiple indicators* (MI) and *multiple exogenous causal variables*, a specification called DYMIMIC by Watson and Engle (1983). The challenge of the DYMIMIC specification is that the left-hand side

variable (policymaking, in this instance) is both itself unobserved and a function of its unobserved past values.

The DYMIMIC specification involves a dynamic factor analysis modeled simultaneously with a more standard regressionlike structural model. It postulates a single-factor explanation of the covariance of the dependent indicators. The latent dependent variable problem is inherently nonlinear. Maximum likelihood is an appealing estimation strategy for such problems. But regression and its varied extensions have a serious shortcoming for such a specification: regression errors cannot reasonably be assumed independent of one another, an assumption necessary for maximum likelihood. Following the lead of Watson and Engle (1983) and Beck (1990), we turn to the Kalman filter as a device for the application of maximum likelihood to this otherwise intractable problem.

The Kalman filter is a linear model, like regression. It differs in approach to the time-series case. Regression uses all sample information—time points 1 through  $T$ —about  $X$  and  $Y$  to predict all individual values of  $Y$ . The Kalman filter, in contrast, proceeds recursively through time. It too makes a prediction for each  $Y_t$ . But unlike regression, that prediction is based only upon information available before  $t$ . Thus all parameters are estimated  $T$  times—on every possible subsample from times 1 to  $T$ . The advantage to all this computational tedium is that the Kalman filter errors, the difference between  $Y_t$  and the  $Y_t$  predicted, conditional on information about  $X$  and  $Y$  through  $t - 1$ , are mutually independent. With an assumption of normally distributed errors, we can use maximum likelihood to solve this otherwise intractable problem in nonlinear dynamic estimation.<sup>11</sup>

The Kalman filter consists of a "transition" model,

which shows the structural association among exogenous variables and the latent dependent concept (called the *state* variable) and a set of measurement models (one for each dependent indicator) that map the estimated state variable onto the observed indicator. Information from the transition model may be interpreted roughly as if the model were a dynamic regression. Information from the measurement models is of two kinds: slope and intercept analogues that relate the scale of the latent concept to the varied scales and metrics of the indicators<sup>12</sup> and correlations between state variable and indicators, whose squares become estimated communalities. The former are of limited theoretical interest, because differences of scale render them noncomparable. The latter is interpreted as the valid variance of the indicator.

Linear regression presents an obvious alternative to the Kalman filter for estimating the relationships of interest. It can estimate only a single left-hand-side variable at a time, and its error assumptions are often troublesome for the dynamic case. It has, nonetheless, the virtue of familiarity. As a check on the theoretically superior but unfamiliar Kalman filter estimations, we redo the major analyses with dynamic regressions in the Appendix. Selecting a single endogenous indicator from each table to follow, we repeat the major tests for dynamic representation as straightforward lagged variable regressions (see Appendix A). The regression analyses support the same inferences as the Kalman filter estimations in all cases.

## MEASUREMENT

The raw materials of dynamic representation are familiar stuff: public opinion, elections, and public policy together form the focus of a major proportion of our scholarly activity. But familiar as these concepts are, longitudinal measures of them are (excepting elections) ad hoc at best and more often nonexistent. It is easy to think of movements of public opinion over time and public policy over time. It is not easy to quantify them. The situation—familiar concepts but novel measures—requires more than the usual cursory attention to measurement concerns. We begin with public opinion.

### The Measures: Public Opinion and Elections

To tap public opinion over time we have the measure DOMESTIC POLICY MOOD (Stimson 1991).<sup>13</sup> Mood is the major dimension underlying expressed preferences over policy alternatives in the survey research record. It is properly interpreted as left versus right—more specifically, as global preferences for a larger, more active federal government as opposed to a smaller, more passive one across the sphere of all domestic policy controversies.<sup>14</sup> Thus our public opinion measure represents the public's sense of whether the political "temperature" is too hot or too cold, whether government is too active or not active

enough. The policy status quo is the baseline, either explicit or implicit, in most survey questions. What the questions (and the mood measure) tap then is relative preference—the preferred direction of policy change.

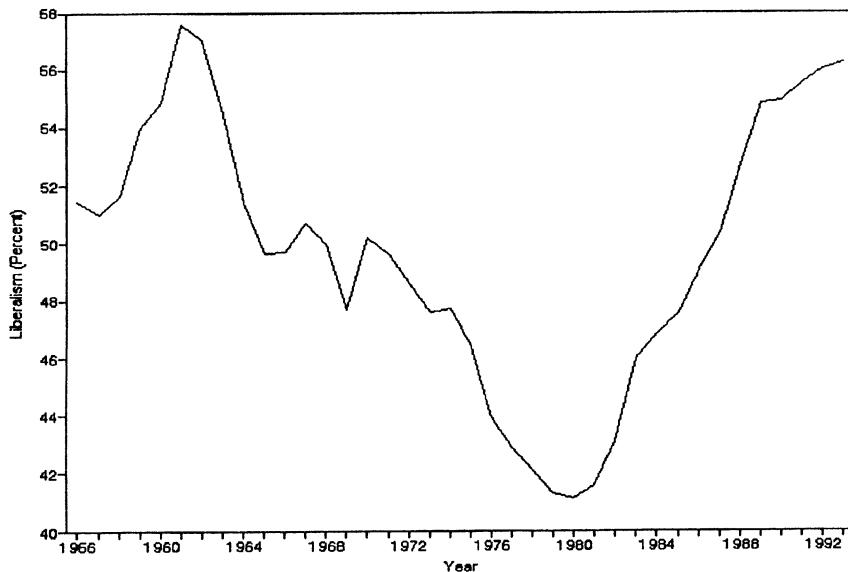
Displayed in Figure 3, the POLICY MOOD series portrays an American public opinion that moves slowly back and forth from left (up on the scale) to right (down) over time and is roughly in accord with popular depictions of the eras of modern American politics. It reaches a liberal high point in the early 1960s, meanders mainly in the liberal end of its range through the middle 1970s, moves quite dramatically toward conservatism approaching 1980, and then begins a gradual return to liberalism over the 1980s. Note as well that the neutral point (50% liberal, 50% conservative) means something: points above 50 mean that the public demands more liberal policy, points below 50 mean that the public wants more conservative policy. Thus, while the public's conservatism peaked in 1980, the public continued to demand more conservative policy (though by smaller margins) until 1984. (Thus we may think of our mood measure as a signal to politicians about the intensity and the direction of political pressure. It represents a demand for change.)

As instruments for the partisan drift of elections, we employ measures of partisan and ideological composition. Varying by focus of analysis, these instruments include factors such as the party of the president and the Democratic percentages of the House of Representatives and the Senate. These latter numbers measure seat turnover in the two houses (which follow different paths) and thus capture what is probably the main carrier of the electoral message—the introduction and disappearance of personnel in the body. Real changes in real people clearly indicate changes in the houses' policy preferences. Further, they also hammer home the partisan electoral message to incumbents who, cleverly or otherwise, escaped electoral judgement.

### The Measures: Policy Change

What is policy liberalism, and how can we measure it? What we observe is decisions such as congressional votes—not quite "policy." Our view is that each involves policy *change* at the margin. The issue as it is typically confronted is, Should we move current government policy in more liberal (expansive) directions or in more conservative ones? What we observe is who votes how. We see, for example, a particular vote in which the liberal forces triumph over conservative opponents. We take such a vote to mean that in fact the (unobserved) content of the vote moves policy in a liberal direction—or resists movement in the conservative direction.

This is a direct analogy to public opinion as we measure it. We ask the public whether government should "do more" or "spend more" toward some particular purpose. We take the response, "do more," "do less," "do about the same" to indicate the

**FIGURE 3****Public Opinion over Time: Domestic Policy Mood, 1956–93**

preferred direction of policy *change*. In both cases direction of change from the status quo is the issue.

Measuring this net liberalism or conservatism of global policy output seems easy enough in concept. We talk about some Congresses being more or less liberal than others as if we knew what that meant. But if we ask how we know, where those intuitions come from, the answer is likely to be nonspecific. The intuitions probably arise from fuzzy processing of multiple indicators of, for example, congressional action. And if none of them by itself is probably "the" defensible measure, our intuitions are probably correct in netting out the sum of many of them, all moving in the same direction. That, at least, is our strategy here. We will exploit several indicators of annual congressional policy output, each by itself dubious. But when they run in tandem with one another, the set will seem much more secure than its members.

**Congressional Rating Scales.** Rating scales are a starting point. Intended to tap the policy behaviors of individual House members and Senators, scales produced by groups such as Americans for Democratic Action (ADA) and Americans for Constitutional Action (ACA), later American Conservative Union (ACU), are now available for most of the period in question. Neither of these is intended to be a longitudinal measure of congressional action; and from a priori consideration of the properties such a measure would want, this is not how we would derive one.<sup>15</sup> But if scales move similarly across chambers and scales from different organizations move in common over time, then we begin to believe that whatever it is they are measuring is probably global liberalism or

conservatism of roll-call voting. Thus, as a measure of NET GROUP RATING, we take the yearly average of the House's (or Senate's) ADA score and (100 minus) the ACA/ACU score.

**Congressional Roll-Call Outcomes.** The strength of the rating scales is their cross-sectional validity: they discriminate liberals from moderates from conservatives in any given year. Their weakness is longitudinal validity: we are less confident that they discriminate liberal from moderate from conservative Congresses. For greater face validity, we turn to the roll calls themselves as measures of policymaking. A quite direct measure is the answer to the questions, On ideological votes, who wins? and By how much do they win? Provided that we can isolate a set of roll calls that polarize votes along the left-versus-right main dimension of American domestic politics, measuring the degree of, say, liberalism is as easy as counting the votes. If we know which position on the vote is liberal and which conservative, then all that remains is to observe who won and by how much (and then aggregate that roll-call information to the session).

We exploit the cross-sectional strength of the rating scales (specifically, ADA) to classify roll calls. For each of the 25,492 roll-call votes in both houses for 1956–90, we classify the vote as left-right polarized or not (and then in which direction). The criterion for the classification as polarized is that the vote must show a greater association with member ADA scores than a hypothetical party-line vote for the particular members of each Congress. The intuition of this criterion is that we know we are observing a left-right cleavage when defection from party lines is itself

along left-right lines—conservative Democrats voting with Republicans, liberal Republicans voting with Democrats. Although the party vote itself might be ideological, we cannot know that it is.<sup>16</sup> One measure of the net liberalism of a session (for each house separately) is then simply the median size of the liberal coalition (on votes where the liberal and conservative sides are defined). A second approach to the same raw data is to focus on winning and losing, rather than coalition size.<sup>17</sup> In this set of measures we simply count the percentage of liberal wins. We are observing quite directly then who wins, who loses, and by how much.

*The Dramatic Acts of Congress: Key Votes.* Scales of roll-call votes tell us about the overall tenor of public policy. Probably an excellent basis for inference about the net direction of policy movement, they do not distinguish between minor matters and those of enormous public consequence and visibility. Getting a good measure of "importance" presents a formidable challenge, requiring great numbers of subtle judgments about content and context. It is nonetheless desirable to have some indication of whether legislative activity produces something of import. A particular subset of legislation, the *Congressional Quarterly* "key votes" for each session of Congress, does attempt to distinguish the crucial from the trivial. The virtues of this set of votes are that it reflects the wisdom of expert observers of Congress at the time about what was important, and the measures are readily coded into liberal or conservative actions (and some that are neither).<sup>18</sup>

We quantify the key votes as a combination of who wins and by how much. Accordingly, we average (1) the percentage of liberal wins and (2) the size of the liberal winning coalition. Crude, the measures nonetheless tap the issue in question, the direction of highly visible outcomes. The resulting time series are noisy (as would be expected from the small numbers of votes for each year), evincing a good deal of year-to-year fluctuation that seems meaningless. But they also show a picture of episodes of major policy change occurring exactly when expected for the Great Society (liberalism, peaking in 1965) and the Reagan Revolution (conservatism, peaking in 1981) periods respectively.

To get a sense of how legislative policy has moved over the years, look at Figure 4. (Figure 4a) presents our four measures for the House of Representatives. (To keep the eye on systematic movement, we have smoothed the graphs by taking a centered three-year moving average for each series. Note that we smooth only in this graph: we use the measured data for the statistical analysis.) It is clear that each indicator (wins, coalition size, ADA-ACA ratings, and key votes) contains both a common component and an idiosyncratic component. The lines move together, with a bit of zig and zag around the main flow. The panel for the Senate (Figure 4b) carries a similar message. Peaks of liberalism came during the early 1960s and late 1980s, with conservatism at its height

around 1980. While thus similar in outline, the patterns are not quite identical.

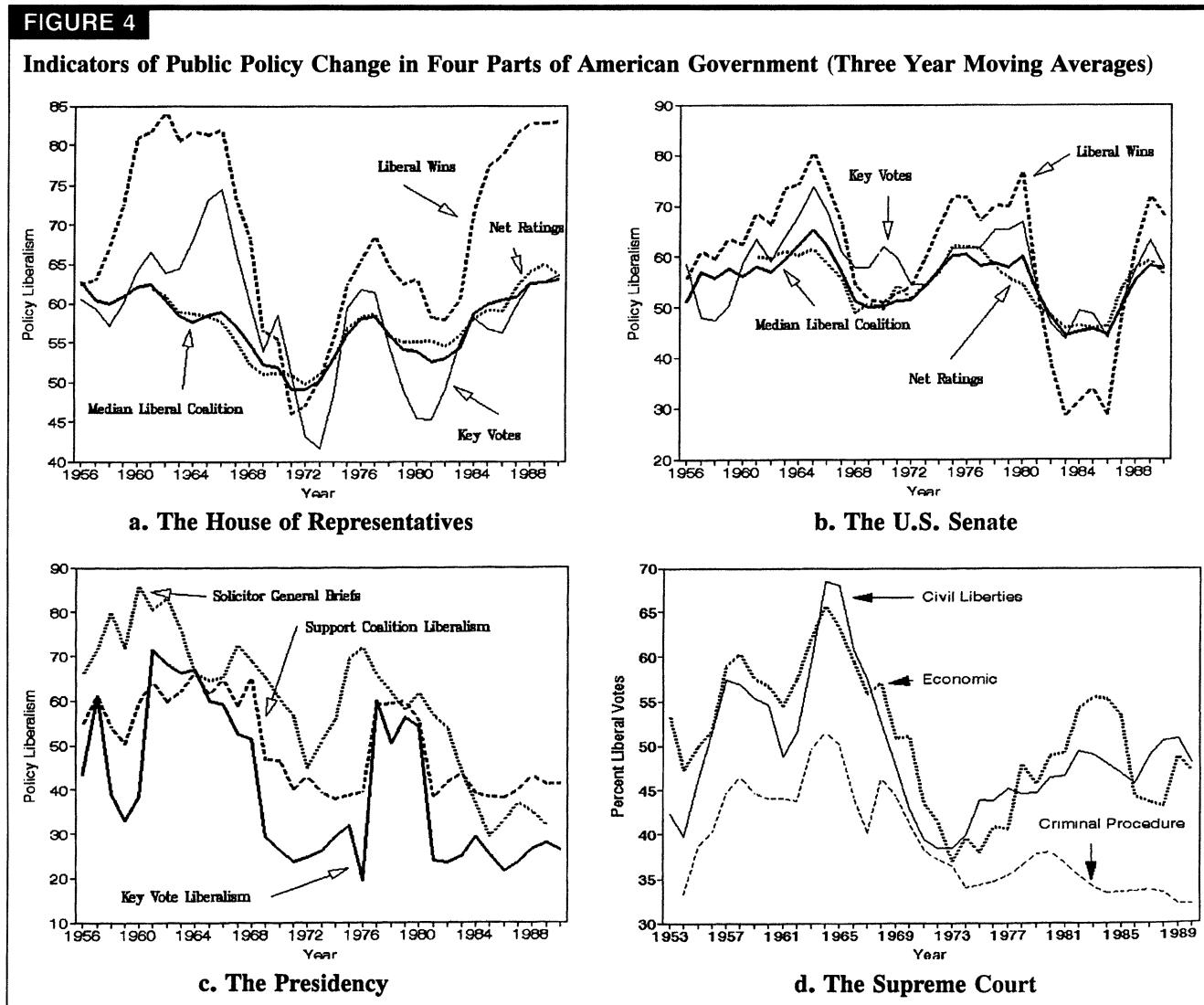
*Presidential Policy Liberalism.* The beginning point of dealing with the presidency is noting the near impossibility of direct measures of presidential liberalism from what presidents say and do. While we have an intuition about various acts and speeches, any attempt to quantify that intuition, to extract acts from the context of actions, quickly becomes hopelessly subjective. The alternative is to look instead at presidents through their quantifiable records of interacting with the legislature and judiciary.

We know how often particular members of Congress support and oppose the president. And we can measure the liberalism of individual members in several ways. The most convenient of these is ADA scores, which are present for the entire period, as other comparable indicators are not. And we know that ADA ratings are very highly correlated with other ratings when available—positively or negatively—so that they can serve as a useful instrument of the underlying concept.

How then to combine these different pieces of information? A first approach is to ask the question, How liberal are the regular supporters of the president each year?, and then adopt that standard as a reflection of what the president wanted from Congress. That, however, is confounded by shared partisanship between president and member. We expect members of the president's party to be more likely to be regular supporters—*independent* of ideological agreement with the president's program. To deal with shared party ties as a confounding factor in presidential support, we opt instead to focus on presidential support within party. The strategy is first to divide each party into support and opposition groups based upon whether member presidential support is above or below the average for the party. The mean ADA rating of each party's "support" group is then an estimate of the president's ideological position. The opposition groups similarly measure the reverse. The measurement question then may be reduced to how such separate estimates are to be combined. For a summary measure of presidential position we perform a principal components analysis of the eight indicators (*support* vs. *oppose*, by party, by house). That analysis shows decisively that each of the eight taps a single underlying dimension. Such a dimension is estimated with a factor score and rescaled (to mean 50, standard deviation 10) to approximate the ADA scales from which it was derived.

For a second legislative presidential position measure we simply take the recorded presidential position for the key votes and compute the percentage of presidential stands each year that are liberal, where again the votes are classified by polarization with individual ADA ratings.

*Presidential Interaction with the Court.* With less regularity and on a quite different set of issues, presidents make their policy views known to the U.S. Supreme



Court. The mechanism for doing so formally is the *amicus curiae* brief filed by the presidency's designated agent to the courts, the solicitor general (Lee 1986; Segal 1988; Salokar 1992). On over 700 occasions in the 1953–89 terms, the solicitor general went on record with the Court, arguing that the holdings of particular judicial decisions ought to be affirmed or reversed. About 90% of these briefs take positions on cases that are themselves classifiably liberal or conservative.

We employ the solicitor general briefs data as leverage to measure presumed presidential position on judicial issues. Using the direction coding from the Spaeth Supreme Court data base for the case and our knowledge of whether the solicitor general argued to affirm or reverse,<sup>19</sup> we code each of the briefs as to direction—liberal, conservative, or nonideological. It is then an easy matter to produce aggregated annual scales as percentage liberal of the ideological positions taken.

A quick comparison of the presidential series with the legislative series (in Figure 4) suggests less coher-

ence in the presidential measures. Much of the discord comes from the SOLICITOR GENERAL series (which we retain, nevertheless, for its substantive value). Note also that the presidential series is typically more conservative than the two congressional series, as we might reasonably expect from the historical party control of the two institutions.

**Supreme Court Liberalism.** For data we have the Supreme Court data base for the period 1953–90. From that, we can content-classify the majority position in individual cases as liberal, conservative, or neither; and from that, the lifetime liberalism or conservatism of individual justices is readily derived. Then we return to the individual cases and scale the majority and dissenting votes by the justices who cast them. This allows a content-free second classification of the majority position as liberal, conservative, or not ideological.<sup>20</sup> From this we build annual measures of the major-case content categories. We have chosen four such categories—CIVIL RIGHTS AND LIBERTIES, CRIMINAL PROCEDURE, ECONOMICS, and OTHER<sup>21</sup>—the num-

ber a compromise between separating matters which might in principle produce different alignments and grouping broadly enough to have sufficient cases in each for reliable annual measures.

For each measure we construct a time series consisting of the percentage of all votes cast by the justices on the liberal side of the issue, whichever that is, for the year. This focus on justice decisions, rather than aggregate outcomes of the Court, appears to produce a more moderate measure over time than the alternative. This is in the spirit of Baum (1988), who argues that the liberalism of the Warren Court and the conservatism of the Burger Court both tend to be overestimated from outcome measures (i.e., which side won or lost).

We examine the first three domains in Figure 4.<sup>22</sup> There we see that the issue domains move pretty much in tandem. All domains show the famous liberalism of the Warren Court in the mid-1960s and the conservative reaction of the Burger Court. Most show a modest rebound of liberalism in the early 1980s, which then reverses from the influence of new Reagan justices.

The pattern of more substantive notice is that the "CRIMINAL PROCEDURE" cases produce no liberal rebound in the 1980s. This is an interesting exception, for public attitudes toward crime and criminals are themselves an exception to the growing liberalism of the 1980s (Stimson 1991). This is a case where the conservative message ("The solution is more punitive law enforcement") is still dominant.

## THE EVIDENCE FOR DYNAMIC REPRESENTATION

Representation, from our perspective, works on all governing institutions. If we were more adept at measurement, for example, the national bureaucracy could be a focus for analysis. We do have decent indicators for the presidency, each of the houses of Congress, and the Supreme Court. We take them up separately. We begin our representation analysis with the presidency.

### The Presidency

Presidential policy positions contain a bit of subtlety around a pattern of brute simplicity. The latter is that presidential position varies to an extraordinary degree with presidential party: Democrats are liberal, Republicans conservative. This is not the sort of pattern that merits much modeling attention. Our goal here is to model out the brute simplicity (with a presidential party dummy variable) in order to see the subtlety. That allows us to observe variations within party and year-to-year variations within a presidency.

*Analytic Design.* In Table 1 and those to come our analysis will be in three parts and use two methods. The problem at hand is to estimate the impact of

opinion on policy and then to apportion that impact into composition and rational anticipation linkages. Thus for each analysis we undertake three steps. First, we ask the question, Does opinion move policy? To answer it, we estimate a reduced-form equation in which the endogenous effects of elections are left out of the model. The estimation technology is the Kalman filter setup, with latent dependent variable and multiple dependent indicators. Second, we ask, Does opinion influence election outcomes?, and estimate the opinion-elections link to answer the question. Here we model the effect of opinion on changing the personnel of government. With a single dependent variable (e.g., percentage of House seats Democratic), dynamic regression is the technique of choice. Third, we ask, Through what mechanisms does opinion work on policy?, and estimate a full model of representation in which both opinion and the endogenous composition variable work on policy outcomes. Again we employ the Kalman filter setup to model a latent-variable-multiple-indicator setup. This provides estimates of the composition to policy link and, most important to us, the direct effect of opinion on policy (rational anticipation).

We begin by examining the simplest (but perhaps the most fundamental) relationship. Table 1, column 1, shows the reduced-form equation, where we model PRESIDENTIAL POLICY LIBERALISM on previous POLICY LIBERALISM<sup>23</sup> and on PUBLIC OPINION (at  $t - 1$  in this policy equation and most subsequent policy analyses). Here we pay no attention to process but instead ask the question, Is PRESIDENTIAL LIBERALISM associated with opinion change by whatever route? The answer, clearly, is yes. Here we see that each point change in opinion produces about .49 points in PRESIDENTIAL LIBERALISM.

We know from earlier analyses (Stimson 1991) that presidential elections turn, in part, on public opinion (measured by policy mood). A skeletal version of that work appears in an OLS regression reproduced in Table 1, column 2. Here the dependent variable is simply whether the elected president is Democratic (or Republican), and the two independent variables are MACROPARTISANSHIP (the Democratic percentage of partisans) and PUBLIC OPINION (very roughly, the percentage liberal on a "typical" policy question, at the time of election.) We expect MACROPARTISANSHIP and PUBLIC OPINION to be both theoretically and statistically important in determining which party captures the presidency—and they are.<sup>24</sup>

Given the party differences in presidential behavior, this electoral connection itself produces representation of a sort. Here we wish to pursue the more subtle issue of public opinion influence on the presidency beyond the elections that produced the incumbents. In the analyses to follow presidential party captures the electoral turnover route to representation and PUBLIC OPINION represents the rational anticipation effect. Also included is the usual dynamic term (PRESIDENTIAL LIBERALISM of the previous year). The estimation also produces measurement models for the congressional KEY VOTE LIBERALISM, the PRES-

**TABLE 1**
**Estimating the Links to Presidential Representation: Three Structural Models with Coefficients and Standard Errors (in Parentheses)**

Variables	Model and Estimator		
	Reduced Form (Kalman Filter)	Presidential Party (Regression)	Full Model (Kalman Filter)
DYNAMICS ( $Y_{t-1}$ )	.764 (.121)	—	.192 (.081)
PUBLIC OPINION <sub>t-1</sub>	.490 (.216)	.061 <sup>a</sup> (.027)	.741 (.273)
PRESIDENTIAL PARTY	—	—	24.360 (2.319)
MACROPARTISANSHIP	—	.098 (.028)	—
Intercept	-21.428 (11.879)	-9.510 (2.855)	-22.403 (16.578)
Number of cases	35	9	35
Adjusted R <sup>2</sup>	—	.583	—
Measurement model (communalities)			
KEY VOTE LIBERALISM	.900	—	.988
PRESIDENTIAL SUPPORT COALITION	.994	—	.911
SOLICITOR GENERAL	.381	—	.346
AMICUS BRIEFS			

Note: In this and the tables to follow, column 1 is a Kalman filter estimation of the simple effect of public opinion on presidential policy, column 2 estimates the public-opinion-to-elections link with linear regression, and column 3, a Kalman filter estimation, models policy as a function both of party and of public opinion directly.

<sup>a</sup> The prediction of presidential party uses contemporaneous public opinion, not lagged.

IDENTICAL SUPPORT COALITION series, and the SOLICITOR GENERAL AMICUS BRIEF series.

The result, in Table 1, column 3, provides support for the obvious party effect: Democratic presidents are about 24 points more liberal than Republicans. Of more interest, the coefficient estimated for PUBLIC OPINION shows a quite substantial effect, even after controlling for presidential party. Because their empirical ranges are nearly the same, the relationship between OPINION and PRESIDENTIAL LIBERALISM (estimated in the Kalman "State" variable) can be summarized simply: each point movement in PUBLIC OPINION produces about .74 points movement in presidential policy position. That discriminates both between presidents (Eisenhower among Republicans, and Kennedy and Johnson among Democrats are more liberal than their successors) and within terms.

The measurement analysis in Table 1 provides the communalities of the indicators.<sup>25</sup> They provide a rough idea of the overall "fit" of the model to the empirical measures. Here, the communalities (col. 3: .99, .91, and .35) suggest that the indicators of pres-

idential liberalism derived from the president's interactions with Congress are closely tied to the latent concept, the SOLICITOR GENERAL series less so. That is an expected result because the two congressional indicators of presidential position are more reliably estimated than the judicial materials permit. This should not obscure the genuinely strong association between estimated presidential liberalism and the judicial positions scale.

### The House of Representatives

The House of Representatives is by name and constitutional tradition an obviously appropriate target for our representation theory. Contemporary conventional wisdom, however, suggests that modern practices might make the House less than fully responsive to public opinion pressure. It is widely believed (particularly by those who propose to cure the disease with term limitations) that the modern House is insulated beyond the public's ability to move it. (For thoughtful discussion on this matter, see Fiorina 1989 or Jacobson 1991.)

The first-cut analysis (see Table 2, col. 1)—wholly inconsistent with the conventional wisdom—confirms representation for the House.<sup>26</sup> PUBLIC OPINION shows up as statistically significant, with a coefficient indicating a translation (.85) from changes in PUBLIC OPINION to public policy. That is to say, every percentage change in public opinion liberalism produces about eight-tenths of a point change in House policy liberalism. PUBLIC OPINION matters for House policy: the question is how.

Given the well-developed reelection skills of its members, the first linkage, that between public opinion and electoral control over the House, might be expected to be attenuated. Our straightforward, conventional model (see Table 2, col. 2) for such a linkage produces little support for an opinion-election connection in the House of Representatives. Clearly, MACROPARTISANSHIP matters, and so does the standard midterm loss for the president's party. However, PUBLIC OPINION falls short of statistical significance ( $t = 1.715$ ): we cannot say that policy preferences affect the House elections.<sup>27</sup>

We may then ask how public opinion affects House policy. A clear alternative arises from understanding that House members may be so adept at reelection because they practice rational anticipation so well. When we estimate a full model that includes both PERCENTAGE DEMOCRATIC SEATS in the House and PUBLIC OPINION, we see both highly significant. Each additional percentage Democrat (i.e., about 4 House members) produces about .48 percent liberalism in policy; each point shift in PUBLIC OPINION produces an additional (and distinct) 1.01 points shift in policy. Note two things. First, the election turnover force on policy is only marginally connected to public preferences. (It represents shifts in partisanship, midterm effects, and other factors.) Second and most important, the rational anticipation connection is very powerful. It produces a direct, one-to-one connection be-

TABLE 2

**Estimating the Links to House Representation:  
Three Structural Models with Coefficients and  
Standard Errors (in Parentheses)**

Variables	Model and Estimator		
	Reduced form (Kalman Filter)	Democratic Seat % (Regression)	Full Model (Kalman Filter)
DYNAMICS ( $Y_{t-1}$ )	.311 (.124)	.490 (.257)	.230 (.109)
PUBLIC OPINION <sub>t-1</sub>	.850 (.226)	.352 <sup>a</sup> (.205)	1.010 (.249)
PERCENT DEMOCRATIC	—	—	.478 (.230)
CUMULATIVE VIETNAM DEATHS	-.468 (.094)	—	-.488 (.089)
MIDTERM ELECTION <sup>b</sup>	—	-4.928 (1.917)	—
MACROPARTISANSHIP	—	.635 (.247)	—
Intercept	-2.026 (9.946)	-30.904 (26.876)	-34.712 (21.648)
Number of cases	35	18	35
Adjusted R <sup>2</sup>	—	.354	—
Measurement model (communalities)			
% LIBERAL WINS	.881	—	.911
MEDIAN LIBERAL COALITION SIZE	.941	—	.922
NET GROUP RATING <sup>c</sup>	.834	—	.795
KEY VOTE AVERAGE <sup>d</sup>	.511	—	.530

<sup>a</sup> The prediction of election uses contemporaneous public opinion, not lagged.

<sup>b</sup> Scored +1 for Democratic administrations at midterm, -1 for Republican administrations at midterm, and 0 if not midterm.

<sup>c</sup> Scored as average of ADA and ACA/ACU rating reflected in the liberal direction.

<sup>d</sup> Average of % key vote liberal wins and key vote median liberal coalition size.

tween percentage shifts in PUBLIC OPINION and percentage shifts in public policy. House members do not wait for elections to hear the public's message; they anticipate it and produce the appropriate response.

The measurement results in this case again suggest variation in indicator validity. The key vote indicator shows the lowest association with the latent concept. That is an expected result of the measure's lesser reliability, a matter of extracting estimates from 15–20 votes per year rather than the 100–1,000 that contribute to other measures. Again, we retain it for its substantive meaning.

We have also entertained models (for both House and Senate policy change) in which the president plays an agenda-setting role. These become complicated by the fact that there are (at least) two offsetting effects of presidential policy leadership. We expect,

for example, a Democratic president to produce a more liberal agenda. But a rigorously liberal presidential agenda also makes it likely that liberals will win less often (because the proposals are tougher) and by smaller majorities. Including presidential party in the models shows these confounding patterns, with usually small and nonsignificant effects. We do not report them, because we believe they would be improperly interpreted. A valid assessment of presidential agenda setting would require measures of the content of the presidential agenda, which is well beyond our scope here.

### The Senate

By some standards, the Senate should look very different. The original constitutional design (and schoolbooks) expect that the Senate should act more deliberately than the House; it should react less directly to public opinion. Yet political reality emphasizes that senators, compared to their House colleagues, enjoy only a very modest reelection advantage. Having their careers thus more exposed to public opinion shifts, practically minded senators should be especially attentive to the public's policy preferences.

The straightforward reduced-form version of the test (in Table 3, col. 1) shows a clear and strong relationship between PUBLIC OPINION and Senate policymaking. The translation of opinion into policy is even greater than a similar view of the House: every point change in public preferences yields 1.18 points in policy. Thus the Senate clearly reflects public opinion. We next ask, By what route does this force penetrate the institution?

As conventional wisdom expects, the Senate exceeds the other elected branches of the national government in its *electoral* responsiveness to public opinion. The minimal model of Senate elections (see Table 3, col. 2) shows a very substantial and direct link between PUBLIC OPINION and Senate partisan control. Every point in PUBLIC OPINION is worth about one Senate seat (1.022). In comparative terms, the Senate's partisan balance is much more sensitive to policy preferences than is the House's (note the coefficients of 1.02 and .35 for the Senate and House).<sup>28</sup> Clearly, the Senate is the institution for which election outcomes matter most directly.

Happily for dynamic representation, this strong electoral connection produces a corresponding influence on public policy. The Senate policy model (in Table 3, col. 3) indicates that every new Senator produces about 1.17 points in policy change. Notice also that when we control for the electoral connection, we virtually eliminate the statistical evidence for a public opinion effect. Thus, we conclude that the Senate works like a textbook representation mechanism: Senate elections are responsive to public opinion, and then the new membership produces expected policy outcomes. Electoral turnover dominates the rational anticipation connection.

**TABLE 3**
**Estimating the Links to Senate Representation:  
Three Structural Models with Coefficients and  
Standard Errors (in Parentheses)**

Variables	Model and Estimator		
	Reduced Form (Kalman Filter)	Democratic Seats (Regression)	Full Model (Kalman Filter)
DYNAMICS ( $Y_{t-1}$ )	.401 (.130)	.194 (.217)	.161 (.133)
PUBLIC OPINION $_{t-1}$	1.183 (.367)	1.022 (.265)	.443 (.389)
PERCENT DEMOCRATIC	—	—	1.174 (.319)
MACROPARTISANSHIP	—	.818 (.391)	—
Intercept	-37.777 (22.235)	-67.691 (27.808)	-43.622 (22.489)
Number of cases	35	18	35
Adjusted R <sup>2</sup>	—	.715	—
Measurement model (communalities)			
PERCENT LIBERAL WINS	.997	—	.999
MEDIAN LIBERAL COALITION SIZE	.926	—	.911
NET GROUP RATINGS <sup>a</sup>	.700	—	.687
KEY VOTE AVERAGE <sup>b</sup>	.563	—	.564

<sup>a</sup> Scored as average of ADA and ACA/ACU rating reflected in the liberal direction.

<sup>b</sup> Average of % key vote liberal wins and key vote median liberal coalition size.

authority over the direction of American life will anticipate actions of the other branches of government. Further, institutionally minded justices will want to avoid public defeat and the accompanying weakening of the Court's implicit authority: they will compromise in order to save the institution (Murphy 1964). All this implies paying some attention to what the public wants from government. But "paying some attention" is some distance from the immediate concern public opinion demands of elected officials. And so the representation we expect of the Court is respect for the general contours of public expectation but not the omnipresent finger in the wind we expect of the elected branches.

As with the other branches, we begin our look at the Court with the basic representation question, Do Court decisions reflect changes in public opinion? The first-order question is answered by the first equation of Table 4. Court decisions do, in fact, vary in accord with current public preferences. Every point in PUBLIC OPINION shift produces a (significant) movement of .30 points in Court policy. To the extent that the measures are comparable, this dynamic representation is about a third to a quarter as effective as for the House and Senate. Of course, the next question is how that public opinion gets translated into the Court.

**TABLE 4**
**Estimating the Links to Supreme Court  
Representation: Three Structural Models with  
Coefficients and Standard Errors (in Parentheses)**

Variables	Model and Estimator		
	Reduced Form (Kalman Filter)	Court Composition <sup>a</sup> (Regression)	Full Model (Kalman Filter)
DYNAMICS ( $Y_{t-1}$ )	.651 (.159)	.929 (.048)	.567 (.159)
PUBLIC OPINION $_{t-1}$	.302 (.125)	.115 (.079)	.171 (.150)
COURT COMPOSITION <sup>a</sup>	—	—	.132 (.104)
PRESIDENTIAL PARTY dummy (Democrat = 1)	—	1.442 (.722)	—
Intercept	-1.505	-4.429 (4.386)	3.935 (7.510)
Number of cases	35	37	35
Adjusted R <sup>2</sup>	—	.941	—
Measurement model (communalities)			
CIVIL LIBERTIES	.899	—	.880
CRIMINAL PROCEDURE	.513	—	.527
ECONOMIC	.728	—	.751

<sup>a</sup> Justice lifetime liberalism.

## The Supreme Court

Faithfully representing public opinion is no part of the mandate of the Supreme Court of the United States. The Court is to be governed by the Constitution and the law but not by public opinion. Scholars have, however, long suspected otherwise (Adamany 1973; Barnum 1985; Caldeira and Gibson 1992; Casper 1976; Dahl 1957; Funston 1975; Gates 1987; Marshall 1989; Mishler and Sheehan 1993). For the Court deals in public business and is made up in the main of men and women whose careers have led them to be sensitive to how the public wants its business done.

Once on the Court, justices will also have reason to monitor public opinion. Again, we see two main reasons. First, justices care deeply about substantive outcomes. They also share policymaking authority with elected politicians. When competing with politicians, justices must consider the possibility that their decisions will be overridden or indifferently enforced. They compare the policy outcome that obtains when they choose their "ideal point" and engage political opposition against the outcome likely when they compromise in an effort to avoid active political opposition. Thus justices who wish to exert

Again, there exist two main channels: composition and rational anticipation. The composition mechanism is not directly electoral, of course, but instead reflects a blend of congressional and presidential politics. When presidents decide whom to nominate and Senates decide whom to confirm, both will reflect their own policy preferences (their ideal points) and also their sense of what the public will accept. Thus the nomination-confirmation process embodies the electoral and the rational anticipation mechanisms built into the presidency and the Senate. We approximate this composite in the equation reported in Table 4, column 2. Here we find that the composition of the court reflects both the party of the president (1.44 points) and current public preferences (.12 points). Both are of substantively important magnitude and in the predicted direction, but neither is quite significant by the conventional (.05) criterion.

Thus it is with theoretically limited expectations that we model the Court's rational anticipation of public opinion. The full-model specification (Table 4, col. 3) shows that both composition and rational anticipation produce correctly signed but statistically weak effects. Given the collinearity between the series, we cannot distinguish which pathway carries the most weight. In dynamic representation terms,

the Court evinces modest—but only modest—responses to changes in public preferences.

Commenting on Mishler and Sheehan 1993, Norpoth and Segal (1994) argue that the role of public opinion on Court decisions is wholly indirect through the election-nomination-confirmation process. Mishler and Sheehan (1993, 1994) claim a direct public opinion influence. Our results, with similar data but quite different model specification, leave us in the middle of this debate. We believe there is a trace of influence for both processes, but our results are too weak to leave us confident about the matter.

### A Summary Analysis of Governmental Responsiveness

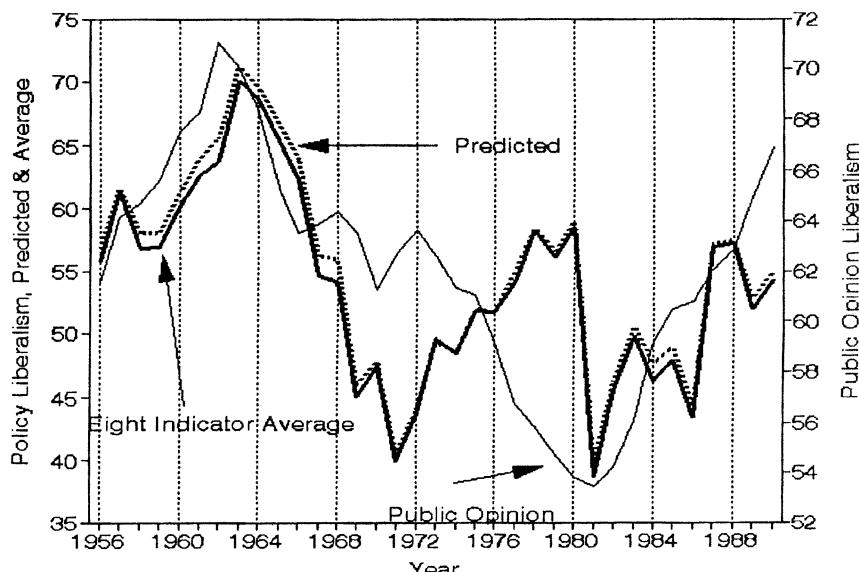
For a final summation of dynamic representation we slice across the institutional structure of American politics, returning to the familiar questions, Does public opinion influence public policy? and By what process? Our combining the policy output of the four institutions is, of course, a fiction: a single national public policy is not the average of independent branches. We "average" across different branches to provide a rough answer to a rough question. Here we

**TABLE 5**  
Estimations of Global Representation

VARIABLES	MODEL AND ESTIMATOR			
	REDUCED FORM (KALMAN FILTER)	PARTY & IDEOLOGICAL COMPOSITION (REGRESSION)	FULL MODEL (KALMAN FILTER)	FULL MODEL WITH VIETNAM (KALMAN FILTER)
DYNAMICS ( $Y_{t-1}$ )	.717 (.084)	—	.437 (.078)	.084 (.083)
PUBLIC OPINION $_{t-1}$	.360 (.101)	.542 (.235)	.502 (.130)	.712 (.096)
COMPOSITION	—	—	.414 (.121)	.704 (.091)
CUMULATIVE VIETNAM DEATHS	—	—	—	-.253 (.031)
MACROPARTISANSHIP	—	1.027 (.229)	—	—
Intercept	-5.806 (6.190)	-38.488 (23.925)	-24.696 (7.957)	-33.815 (6.591)
Number of cases	35	18	35	35
Adjusted R <sup>2</sup>	—	.522	—	—
<b>Measurement model (communalities)</b>				
SENATE PERCENT LIBERAL WINS	.275	—	.471	.474
SENATE MEDIAN LIBERAL COALITION SIZE	.319	—	.447	.448
HOUSE PERCENT LIBERAL WINS	.391	—	.378	.393
HOUSE MEDIAN LIBERAL COALITION SIZE	.193	—	.192	.203
PRESIDENTIAL KEY VOTE LIBERALISM	.688	—	.668	.661
PRESIDENTIAL SUPPORT COALITION	.678	—	.647	.633
SUPREME COURT, CIVIL LIBERTIES	.636	—	.565	.563
SUPREME COURT, ECONOMICS	.482	—	.408	.397

FIGURE 5

## Global Public Opinion and Global Public Policy: Predicted and Actual Policy



select two indicators from each of the four prior analyses (president, House, Senate, and Supreme Court) and then estimate representation as it works on the American national government as a whole.<sup>29</sup>

The estimates of Table 5 sum up the dynamic representation story. Column 1 produces a bare-bones model that posits policy as a simple and direct function of public opinion. While this representation misses much, it has the virtue of answering the first question without complication. And the answer is *yes*: public opinion influences public policy. We see that each point change in public opinion produces about a third of a point (.36) change in the overall policy of the federal government. The result passes statistical muster and produces clear evidence that public opinion matters.

However, the simple model misleads: it underestimates public opinion's power. The underspecification forces the public opinion measure to try to account for policy movement that can be more reasonably explained by our other factors and thus biases our estimates downward. Thus we turn to a richer model. As a proxy for composition, we average across institutions (PERCENTAGE DEMOCRATS in the two houses, PRESIDENCY dummy, and PERCENTAGE LIBERALS in the Court). This composite composition variable is clearly linked (col. 2) to both MACROPARTISANSHIP (1.03) and PUBLIC OPINION (.54)—no surprise.

We may now compare the turnover and rational anticipation linkages. We produce two estimates: one with and one without the Vietnam War variable. In the first (col. 3), we see that both composition and public opinion matter: the coefficients easily surpass statistical significance. Yet we can do better by taking account of the war: we show the estimates in column

4. As can now be seen clearly, both composition and opinion are unquestionably important for policymaking. Each percentage Democratic (or liberal) in composition produces seven-tenths (.704) of a point in policy. Equally, public opinion produces a rational anticipation response of seven-tenths (.712) of a point in policy. It is through elections *and* the anticipation of elections that public opinion drives governmental decisions.

Public opinion is substantially important. Combining the two paths, each point movement in preferences produces an electorally linked policy response (.382 = .542 \* .704) and a direct rational anticipation response (.712), totaling 1.094 points in public policy. That is to say, there exists about a one-to-one translation of preferences into policy.

We get a better sense of the historical dynamic by examining Figure 5. Plotted here are measures of public opinion, public policy, and predicted policy. The first (in the light, solid line) is public opinion, with its liberal peaks during the early 1960s and late 1980s and its conservative peak around 1980. The dark, solid line represents policy, a simple average of our eight policy indicators. Without much work, it is clear that the two series are basically similar: policy reflects the timing and range of public opinion change.

Yet the two paths are not identical. Policy turned much more conservative during the late 1960s and early 1970s than the public demanded. Then, contrary to the continuing turn to the right, policy temporarily shifted leftward under Carter's leadership. Now look at the small dots that show predicted policy (the *state* variable taken from the last equation of Table 5). The exceptionally good fit is apparent. More important, the model is now able to account for

the otherwise surprising conservatism just before 1972 and the liberalism of the late 1970s by including the Vietnam War and the composition variables. Thus, while the main part of policy moves in accord with public preferences, significant deviations can and do occur. Those deviations seem explicable but not by public preferences. Public opinion is powerful but not all-powerful.

Figure 5 takes us back to where we started, public policy preferences, and forward to the end of the story, the policy liberalism of American government, 1956–90. The point is that the two are a lot alike.

## THE DYNAMICS OF INSTITUTIONAL RESPONSE

While we now know that national institutions reflect public opinion, we need to know more before we understand the character of dynamic representation. In particular, we want to know about both the speed of response and the nature of that response. These matters are, of course, central to understanding the dynamic character of democracy. In fact, much of the debate about the "checks and balances" built into the federal constitution centers around the ways that governmental response to "passions of the moment" might be tempered.<sup>30</sup>

There are two ways to think about institutional dynamics. First, and most straightforwardly, we want to understand the immediacy of coupling between public opinion and institutional policy. We want to know how complete the government's adjustment to public opinion is; that is, we want to know the extent to which this year's public policy reflects this year's opinion, as opposed to a residue of opinion impact over the past decade. A closely coupled system would have a relatively short institutional memory in the sense that policy will incorporate recent (as opposed to long prior) shifts in public opinion.

The second and perhaps more fundamental question is the extent to which policy reflects short-term changes in public opinion or whether it reflects the broader sweep of public opinion change. This question echoes the founding fathers' worries about passions of the moment, about whether a democratic system might veer wildly from one direction to the next in an attempt to respond to momentary (perhaps fickle) shifts in the public's views. Abstractly, we may divide the course of public opinion into (at least) two components. One represents a long-term change in the public's preferences, say, trends or cycles apparent over five- or ten-year periods. The second represents the movement around those longish trends, a demand that builds up over a period of months rather than years.

We may get some rough idea of the institutions' responsiveness by translating the dynamic terms (the coefficients associated with lagged policy output) into a time scalar, one that translates response into time units (here, years). We manipulate the *dynamic*  $\phi$

coefficient to produce a *time constant* and a *settling point* for the system—numbers that give a sense of the speed at which the process reacts to change. The time constant represents the time over which about two-thirds of an exogenous shock's impact will be felt; the settling point represents the period over which 99% of the impact will be felt.<sup>31</sup> For the presidency (Table 1), we take the dynamic term (.192) and get a time constant of  $1/(1 - .192)$ , or 1.24 years. The settling point is then  $3 * (1.24)$ , or 3.72 years. In simpler words, PRESIDENTIAL LIBERALISM reacts mostly to the public opinion of the previous year and (almost) entirely to the public opinion of the past four years.

Similar calculations for the House and Senate produce time constants of 1.30 and 1.19 years respectively. While we cannot make distinctions between the three electoral institutions (these differences are not statistically discernible), one inference is clear: all are very quick. That is, to the extent that each institution represents public opinion, it represents (for the largest part) the previous year's public opinion. This may be compared to the Court's time constant of 2.31 years. The Court is identifiably slower than the electoral institutions (about twice as slow) as one might reasonably expect.

While this comparison carries no great surprise, it is reassuring to see that our intuitive understanding about the world bears up under systematic scrutiny. Electorally motivated politics are more immediately responsive to public opinion than are the politics of judicial decision. Note, however, that even the Court's response probably disappoints philosophical conservatives. By simple calculation, almost all of the Court's reflection of public opinion is driven by the events of the past seven years. While thus more tempered than "momentary passion," the Court does seem to float on the tide of political fashions, though of the decade rather than of the year.

Our second question asks whether it is the short-term or the long-term part of public opinion that drives policy. We may approximate an answer by turning to a model that bifurcates the relationship between opinion and policy into a long-term and a short-term response. We model policy (on the left-hand side) as a function of previous policy, previous public opinion, and current *changes* in public opinion (as well as our exogenous variables).<sup>32</sup> For our purposes, we need to examine the relative power of the "levels" of public opinion and the "changes" in public opinion. The first represents the longer-term relationship, the second, the shorter-term relationship. Table 6 produces the analysis for each institution.

The key test is the coefficient for current change in public opinion (row 3). For the Senate, the estimate is negative and statistically indiscernible from zero. Of course, even current levels of public opinion are relatively unimportant once we control for election outcomes. Again, the Senate eschews rational anticipation.

On the other hand, the presidency, the House of Representatives (especially), and even the Court

**TABLE 6****Estimations of Long and Short-Term Components of Public Opinion (Kalman Filter Estimates)**

VARIABLES	MODEL				
	PRESIDENT	HOUSE	SENATE	SUPREME COURT	ALL INSTITUTIONS
DYNAMICS ( $Y_{t-1}$ )	.238 (.070)	.064 (.127)	.156 (.136)	.562 (.160)	-.089 -.100
PUBLIC OPINION <sub>t-1</sub> (level)	.752 (.252)	1.290 (.218)	.499 (.403)	.228 (.153)	.764 (.101)
PUBLIC OPINION <sub>t</sub> (first difference)	1.332 (.727)	2.757 (.761)	-.801 (1.727)	.691 (.285)	.325 (.344)
POLITICAL COMPOSITION	24.746 (2.312)	.847 (.181)	1.119 (.384)	.150 (.106)	.866 (.116)
CUMULATIVE Vietnam casualties	— (.093)	-.508	—	— (.033)	-.266
Intercept	-25.259 (15.388)	-63.037 (16.707)	-43.543 (23.750)	-.354 (8.055)	-37.075 (11.316)
Number of cases	35	35	35	38	35

evince sensitivity to short-term changes in public opinion. The coefficients for current changes in opinion (.133, .276, and .69) pass a one-tailed test of statistical significance and thus suggest both causal and substantive implications.

First, the correspondence of short-term movement in both opinion and policy strengthens the causal inference. Were there only long-term association, our causal interpretation would be subject to the sorts of spuriousness that often characterizes covarying time series (classically, Granger and Newbold 1974). The fact that movement in the series corresponds even when statistically controlled for the long-term trends, reduces the chance that our inference is misleading.

On the substantive side, the three institutions seem to pay attention not only to the overall levels of public opinion (reflecting liberal and conservative eras) but also to the year-to-year shifts in opinion. This sensitivity is least, of course, for the Court. But for the presidency and the House, a point shift in current public opinion yields more than one point in policy. (This shift is, by construction, transitory. It disappears in the face of further "current" public opinion movement.) Hardly indifferent, these politicians are keen to pick up the faintest signals in their political environment.<sup>33</sup> Like antelope in an open field, they cock their ears and focus their full attention on the slightest sign of danger.

## SOME REFLECTIONS ON AMERICAN POLITICS

The past four decades of United States history show that politicians translate changes in public opinion into policy change. Further, the evidence suggests that this translation varies by institution, both in the

mechanisms that produce the link and in the nature of the dynamics.

Most important, dynamic representation finds strong support. Our work indicates that when the public asks for a more activist or a more conservative government, politicians oblige. The early peak of public opinion liberalism during the early 1960s produced liberal policy; the turn away from activism and the steady move toward conservatism was similarly reflected in national policy; and the recent 1980s upsurge of public demand for action was also effective (with the exception of the Court). To be sure, other things matter too. We have modeled a late 1960s shift rightward in policy (beyond that driven by public opinion) as a function of the Vietnam War's dominance over domestic political agendas. In addition, we modeled the shift leftward during the years of the Carter presidency (a shift contrary to the prevailing movement in public opinion) as a coincidence of compositional factors.

While we are confident that the basic result holds, we know that we do not yet fully understand movement in public policy. Nevertheless, the main story is that large-scale shifts in public opinion yield corresponding large-scale shifts in government action.

The link between opinion and policy is undoubtedly more complicated. While concentrating on policy response to opinion, we have seen little evidence of opinion reaction to policy. Elementary analyses generate contradictory inferences: the matter is subtle, the timing probably complex. We do know enough to assert that opinion reaction cannot explain the structural associations we uncover. We do not know enough to characterize the fuller relationship. This, of course, is a compelling subject for hard work.

Beyond the basic result, we can say that American national institutions vary in the mechanisms that

produce responsiveness. It is the Senate, not the House of Representatives, that most clearly mimicks the eighteenth-century clockwork meant to produce electoral accountability. When comparing the effectiveness of turnover and rational anticipation, we find that for the Senate (and also for the presidency), the most important channel for governmental representation is electoral replacement. Equally responsive, however, is the House of Representatives. Its members employ rational anticipation to produce a similarly effective public policy response, without the overt evidence of personnel change. The Supreme Court appears to reflect public opinion far more than constitutionally expected; but, in comparison, it is the institution that responds least.

Finally, the dynamics prove interesting. Each of the electoral institutions translates immediately public opinion into public policy. That is to say, when electoral politicians sense a shift in public preferences, they act directly and effectively to shift the direction of public policy. We find no evidence of delay or hesitation. The Court, not surprisingly, moves at a more deliberate speed. But equally important, rational anticipation is based not only on the long-term trends in public opinion but also on year-to-year shifts. That is to say, politicians constantly and immediately process public opinion changes in order to stay ahead of the political curve. Understanding politics well, the constitutional framers were correct in expecting short-term politics to be a fundamental part of dynamic representation.

The United States government, as it has evolved

over the years, produces a complex response to public demands. The original constitutional design mixed different political calculations into different institutions so that no personal ambition, no political faction, no single political interest, or no transient passion could dominate. We now see the founders' expectations about complexity manifest in contemporary policymaking. Constitutional mechanisms harness politicians' strategies to the public's demands. In the end, the government combines both short- and long-term considerations through both rational anticipation and compositional change to produce a strong and resilient link between public and policy.

## APPENDIX A

Regression estimates in Table A-1 are respecifications of the Kalman filter analyses in the text. For each of the four branches, we employ the first indicator from the Kalman filter analyses. Because these indicators are metric-defining in the earlier analyses, the coefficients reported here are generally comparable. The *all institutions* regression uses an average of eight indicators, the two best (i.e., most valid) from each of the separate analyses. Comparability here is looser. The regressions are specified with a lagged dependent variable on the right-hand side to estimate dynamics and the same exogenous variables as in the Kalman filter analyses. One unavoidable noncomparability is that the regressions lose their first case to lagging.

**TABLE A-1**  
**Dynamic Representation Estimated by Regression**

VARIABLES	MODEL				
	PRESIDENT	HOUSE	SENATE	SUPREME COURT	ALL INSTITUTIONS <sup>a</sup>
DYNAMICS ( $Y_{t-1}$ )	.115 (.106)	.142 (.152)	.107 (.167)	.523 (.156)	.092 (.132)
PUBLIC OPINION <sub>t-1</sub>	.806 (.279)	1.258 (.380)	.352 (.595)	.167 (.312)	.566 (.162)
POLITICAL COMPOSITION <sup>b</sup>	27.075 (3.550)	.147 (.086)	1.464 (.479)	.106 (.180)	.695 (.160)
CUMULATIVE VIETNAM CASUALTIES	—	-.500 (.121)			-.234 (0.050)
Intercept	-24.647 (16.679)	-53.354 (31.035)	-52.386 (32.940)	7.924 (16.158)	-25.667 (9.751)
Number of cases	34	34	34	37	34
Adjusted R <sup>2</sup>	.824	.636	.409	.329	.771

<sup>a</sup> The *all institution* measure is an equally weighted average of the two best (highest communality) indicators for each of the four institutions.

<sup>b</sup> Composition is an equally weighted average of % Democratic seats (House and Senate), the presidential party dummy variable, and the Supreme Court composition variable (% liberal).

TABLE A-2

## Right-Hand-Side Variables for Tables 1-4

YEAR	PUBLIC OPINION <sup>a</sup>	PRESIDENT PARTY	% DEMOCRATIC, HOUSE	CUMULATIVE VIETNAM DEATHS THOUSANDS	% DEMOCRATIC, SENATE	COURT COMPOSITION <sup>b</sup>
1955	61.60	—	—	—	—	—
1956	64.16	0	53.10	.00	48	56.83
1957	64.73	0	53.33	.00	49	57.17
1958	65.63	0	53.33	.00	49	57.02
1959	67.56	0	65.06	.00	64	57.02
1960	68.31	0	65.06	.00	64	57.02
1961	71.04	1	60.46	.00	64	57.02
1962	70.02	1	60.46	.00	64	57.02
1963	68.36	1	59.08	.00	67	61.25
1964	65.35	1	59.08	.00	67	61.25
1965	63.49	1	67.82	1.35	68	61.25
1966	63.89	1	67.82	6.30	68	60.17
1967	64.32	1	56.78	15.55	64	60.17
1968	63.55	1	56.78	29.95	64	61.81
1969	61.24	0	55.86	39.27	58	61.81
1970	62.67	0	55.86	43.49	58	56.94
1971	63.63	0	58.62	44.87	55	56.94
1972	62.60	0	58.62	45.17	55	47.67
1973	61.29	0	57.01	.00	57	47.67
1974	61.02	0	57.01	.00	57	47.67
1975	59.13	0	66.67	.00	61	47.67
1976	56.75	0	66.67	.00	61	45.60
1977	55.85	1	65.52	.00	62	45.60
1978	54.75	1	65.52	.00	62	45.60
1979	53.85	1	62.76	.00	59	45.60
1980	53.44	1	62.76	.00	59	45.60
1981	54.22	0	55.40	.00	47	45.60
1982	56.09	0	55.40	.00	47	41.18
1983	59.15	0	61.15	.00	46	41.18
1984	60.51	0	61.15	.00	46	41.18
1985	60.79	0	58.16	.00	47	41.18
1986	62.06	0	58.16	.00	47	39.50
1987	62.87	0	58.62	.00	55	39.50
1988	64.93	0	58.62	.00	55	39.97
1989	66.91	0	59.31	.00	55	39.97
1990	67.20	0	59.31	.00	55	39.97

<sup>a</sup> t - 1 value used.<sup>b</sup> Justice lifetime liberalism.

## APPENDIX B

These two tables document first the right hand side variables as used in Kalman filter analyses of Tables 1-4, and then the "state variables" estimated from full model specification in those tables. The state variables are empirical estimates of the latent policy construct, weighted linear combinations of the right hand side variables. Not included, for space limitations, are the measured indicators of policy or the components of the composition regressions. These are available from the authors on request.

## Notes

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1. For an instance of modeling representation of public opinion from a theoretical perspective similar to what we advance here, see Bartels 1991.

**TABLE A-3****Estimated Latent Policy Liberalism Variables for Tables 1-4**

YEAR	PRESIDENT	HOUSE	SENATE	SUPREME COURT
1956	42.31	72.18	54.89	56.56
1957	57.10	69.47	66.82	56.83
1958	39.96	73.23	56.34	58.15
1959	34.84	85.72	67.46	52.34
1960	41.18	85.60	63.52	54.52
1961	68.88	77.34	75.64	48.97
1962	65.74	81.04	60.67	56.70
1963	65.40	73.17	84.02	71.83
1964	66.75	75.63	79.78	66.46
1965	59.70	82.70	79.92	55.90
1966	60.48	73.29	64.47	56.39
1967	54.23	54.61	56.01	55.45
1968	54.94	61.88	42.51	52.30
1969	31.26	48.39	55.68	44.22
1970	28.18	50.69	54.47	46.05
1971	24.20	43.34	48.45	39.52
1972	25.94	44.77	58.01	38.83
1973	25.18	61.58	72.21	41.70
1974	27.41	63.08	68.22	41.03
1975	29.50	73.47	76.02	43.02
1976	21.30	73.79	71.75	44.16
1977	57.32	67.61	54.67	43.09
1978	51.60	55.70	83.84	47.85
1979	55.60	62.92	70.58	43.81
1980	52.69	65.95	74.24	47.62
1981	23.70	47.05	15.99	48.18
1982	23.63	62.52	27.97	49.97
1983	25.38	75.74	43.16	48.10
1984	27.06	75.29	23.80	46.58
1985	24.20	74.04	35.51	47.38
1986	21.58	79.16	28.35	40.22
1987	23.69	85.41	80.75	49.22
1988	26.78	85.29	75.42	49.51
1989	27.34	82.36	59.02	44.30
1990	26.92	84.47	69.04	45.40

2. To be sure, the idea that policy reproduces itself is not merely a naïve null model. Policy creates its own constituencies—policy networks—that have incentives to perpetuate themselves. This *positive feedback* is the standard inside-the-Beltway expectation.

3. Note that this doubly dynamic model differs at its root from the typical cross-sectional view of representation. The cross-sectional (or geographic) model pits permanent interests against one another with change owing itself to political strategy and fluctuations in political power. The dynamic representation model incorporates systemic learning, or collective deliberation, through which the government and the social system consider and then reconsider the merits of policy decisions.

4. This verbal sketch represents what is surely a more complex process at equilibrium. Some politicians will, of course, make mistakes or take principled policy stands. Folklore, however, suggests that most share in their appreciation of the electoral imperative and act upon it. Our assumption about the independence of electoral surprises, policy preferences, and politicians' professional sophistication is, to be sure, a simplification.

5. This focus on anticipation as the quintessential behavior of elected politicians has much in common with Arnold's

(1990) statement about the congressional side of government. Note that given the enormous personal commitment required for launching a political career, politicians must plan on winning a *sequence* of elections before the expected rewards exceed the costs (Erikson 1976). Thus they must make judgements about a series of future moments, not merely the next press conference. A House member or a Senator must anticipate the electoral climate over a two- to six-year time horizon. Clearly, savvy politicians will pay more attention to climate change than to the swirl of day-to-day weather patterns. They must look for trends, not momentary movements.

6. Their careers at stake, politicians energetically consult multiple sources of information about the public's policy judgements—opinion polls, constituency newspapers, chats with ordinary voters, monitoring mail, "lobbying" efforts, and comparisons with other Washington politicians. (Note that while we, as scholars, rely solely on public opinion polls to do our work, politicians surely do not.)

Not all the change derives from expediency. Politicians also have conversations with close friends and supporters, their *personal* constituencies (Fenno 1978), whose views may genuinely alter the politicians'. Further, politicians may be influenced, again genuinely, by changes in the "intellectual" climate that also simultaneously changes public judgements. As Kingdon (1973) suggested some time ago, personal views and strategic positions may become indistinct in some politicians' minds.

7. We here ignore the details of policymaking. Clearly, the major institutions of the U.S. government differ considerably in their internal structure and thus will differently reflect changes in public preferences. Theory and empirical evidence are not absolutely clear about how these structural differences will matter.

However, for intriguing evidence on the matter, see Huber and Powell (1994). Their examination of 38 governments in 11 nations (not including the U.S.) indicates that coalition governments, better than clear-cut majoritarian governments, represent median voter preferences. Thus, we should not be surprised to see that the loose coalition bargaining that typifies U.S. politics might faithfully represent public opinion.

8. Here we add to previous evidence on this matter. Compared to other work, we focus on policy more broadly defined and over a longer time horizon. For careful empirical analyses of these issues, see Asher and Weisberg 1978; Brady and Sinclair 1984; Bartels 1991; and Page and Shapiro 1983, 1992.

9. This evidence should not be taken as disconfirmation of the reaction thesis. The coefficient does turn out to be negative (in the Granger setup) as expected. And the annual aggregation used here may undermine the case for opinion reaction both by making significance difficult to achieve (from small N) and by misgauging the time sequence of response. In some exploratory analyses we have used current opinion to predict policy-making with the common result of slightly attenuated coefficients. That small attenuation may well be due to opinion response. Such effects can be seen, for example, within 1981, where early sharp conservative moves in policy direction produced movements away from conservative preferences within the calendar year.

10. Attacking the problem one indicator at a time is even more problematic. We believe that the indicators contain both specific and common (i.e. valid) variance. When they appear alone on the left-hand side, then not "policymaking" but "policymaking plus something specific to the indicator" is being modeled. That produces divergent results, depending upon choice of indicator, when we believe there is but one underlying concept. This may be seen as a seemingly unrelated regressions issue; modeling one indicator at a time makes inefficient use of the information we possess about indicator mutual associations.

11. See Kellstedt, McAvoy, and Stimson (n.d.) and Beck (1990) for a treatment of the Kalman filter as applied to political science research. Watson and Engle (1983) develop

both the logic and estimation technology of the Kalman filter in earlier papers.

12. Because the latent state variable has no identified metric, by convention it is assigned one from one of the indicators. Here the first indicator measurement model is set up with a fixed slope of 1.0 and a 0.0 intercept, so that the state variable takes on the metric of this indicator.

13. See also Durr (1993) and Mishler and Sheehan (1993) for applications of the mood concept and measure. Here we employ an updated version of the measure (see Appendix B).

14. Although derived from all domestic policy preferences, the major dimension of mood is unrelated to the abortion controversy.

15. The essential problem is year-to-year comparability of roll calls or lack thereof. If, say, an ADA scale aggregated for all members increases from one year to the next, we cannot know for certain whether the second Congress was more liberal or the ADA picked an easier set of votes to scale in the second year. Having multiple indicators is thus important because different "rating houses" are unlikely to have identical motives in shifting the liberal-conservative anchor points for their scales. Of course, it is important that the different rating houses are interested in a similar common dimension. For reassuring evidence on the matter, see Smith, Herrera, and Herrera 1990.

16. The logic here is much the same as the commonly used "conservative coalition" criterion. We prefer it because we are uncomfortable with the assumption that the position of the American South in party and ideological politics is constant over time.

17. This speaks to concerns such as Riker's (1962) size principle, which would suggest that gains on one or the other side would not result in larger coalitions but, rather, ratchet up the content of votes so that "better" votes could be won by minimum winning coalitions. Recent research (Mouw and MacKuen 1992) shows that the party leaderships and presidents do, in fact, alter their political agendas to accord with political circumstances and with the strength of their coalitions. Thus, from a theoretical point of view, it is critical that we include both wins and coalition size. (Empirically, as we shall see, this subtlety matters little for our aggregate analyses.)

18. The subset of domestic policy legislation is employed. Of those bills, a small number is screened out because the outcomes have a voting split (more than 80% in the majority) suggesting consensus rather than ideological disagreement. The final set of key votes ( $N = 668$  for the years 1956–90) is all domestic issues that can be coded as to direction with outcomes in the 20–80 range.

19. We are grateful to Jeff Segal for aiding our task by providing his solicitor general data. We have supplemented the Segal data to fill out the time period under analysis.

20. Votes that are unanimous or with a computed difference in aggregate liberalism between majority and dissenting positions of less than 10 points are classified as nonideological. Our two-step approach is motivated by concern that human coding of case content is likely to err from time to time: things are not always what they seem to be. Such errors readily succumb to aggregation over the full career of the justice, producing a judgement-free (if arbitrary) classification in the second step.

21. CIVIL RIGHTS AND LIBERTIES includes the data base categories "Civil Rights," "First Amendment," "Due Process," and "Privacy;" CRIMINAL PROCEDURE is the "Criminal Procedure" category alone; ECONOMICS includes "Unions" and "Economics;" OTHER is everything else.

22. We drop the OTHER category because it fits the overall pattern so poorly. This category is less distinctive over time than the others, as would be expected from its catch-all character. More than the others, it probably includes many classification errors—cases where liberals vote against conservatives without any ideological case content on which to disagree.

23. We make no special provision for transitions.

24. We make no claim for this particular model. It is, after

all based on only nine observations. ML probit or logit models fail for lack of real variation.

25. The communalities are estimated from the (squared) empirical correlations of the indicators and the state variable. They can be interpreted, in a standard "factor-analytic" way, as keys to the substantive meaning of the common dimension. However, we refrain from leaning on a validity interpretation because in these models the communalities seem to be dominated, instead, by the relative measurement reliabilities of the indicators.

26. Note that the model includes a marker for the Vietnam War. A model without such a specification leaves public opinion nonsignificant. More distressful, it also tells us that the party composition of the House has no effect on policy outcomes. These results demand improved specification. Close inspection of the time path of both opinion and policy, however, convinces us that policy became unexpectedly conservative during the late 1960s and early 1970s—just when controversy over the war took over American politics. Our contextual understanding of the politics of the era indicated that this Vietnam (cumulative American casualties) proxy properly accounts for an exogenous (i.e., not opinion-related) deflection from a theoretical path.

27. This is not to say that such a linkage does not exist, only that we cannot identify it. A pooled analysis (Stimson 1991) finds statistically significant electoral linkages between MOOD and House elections. The result shows some sensitivity to sample period as well. The sample we use for the election analyses is the set of elections of 1954–88, that produced the members whose behavior we model for 1956–90.

28. The metrics are comparable: each composition variable is scaled in percentages of the respective house. This point is further underscored when we note that the public preference-composition model accounts for about 54% of the House variance and about 74% of the Senate variance.

29. We have forced the "variance" of each of the measures to be equal and fixed the scalar translations of the indicators to unity. This trick corrects for a tendency for the estimation to track the Senate (the most opinion-sensitive institution) and ignore the rest.

30. This recalls a famous interchange between George Washington and Thomas Jefferson. When Jefferson asked over the breakfast table why a second legislative chamber had been created, Washington asked, "Why did you pour coffee into your saucer?" "To cool it," Jefferson answered. "Even so," said Washington, "we pour legislation into the senatorial saucer to cool it" (quoted in Sundquist 1992, 27).

31. The number is simply  $1/(1 - \phi)$ , where  $\phi$  is the dynamic term. The settling point is simply three time constants (see MacKuen 1983). We model a single dynamic for all inputs.

32. This format is similar, but not identical, to the popular error correction mechanism (Davidson et al., 1978) or cointegration (Engle and Granger 1987) model. The qualitative inferences, about short-run and long-term change, will be similar. For this timing analysis alone we drop our usual concern for the time ordering of opinion and policy, using opinion at time  $t$ . This may have the effect of slightly attenuating the coefficient for current opinion, combining the strong and positive representation effect with the weak and negative policy reaction effect.

33. We strongly suspect that this sensitivity makes political sense. The efficiency of House short-termism passes a statistical test. We regressed current policy on previous policy and previous opinion and current change in opinion (and composition and the rest of the standard specification), adding *public opinion two years' hence* (and hence beyond the next House election). Intriguingly, future public opinion exerts an independent statistical influence on current policy change. In other words, House policy anticipates true changes in public opinion. Further, the previously robust effect of public opinion change now disappears. Presumably, politicians use information about public opinion change to make inferences about likely future directions. While all this satisfies our theoretical perspective, we are hesitant about making strong

claims. The data are far too sparse to produce firm conclusions of this subtlety.

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James A. Stimson is Arleen Carlson Professor of Political Science, University of Minnesota, Minneapolis, MN 55455.

Michael B. MacKuen is Professor of Political Science, University of Missouri, St. Louis, MO 63121-4499.

Robert S. Erikson is Distinguished University Professor of Political Science, University of Houston, Houston, TX 77204.