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ABSTRACT

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This theme paper focuses on political institutions and their effects on social choice. Institutions are argued to play a mediating role between the preferences of individuals and social choices. In addition to playing an endogenous role in molding and channeling preferences, institutions prescribe and constrain the set of choosing agents, the manner in which their preferences may be revealed, the alternatives over which preferences are expressed, the order in which such expressions occur, and generally the way in which business is conducted. The paper surveys the relationship between institutional arrangements and equilibrium outcomes in order to assess the importance of institutions for final outcomes. In so doing, we will have some perspective on the degree to which the traditional multi-dimensional voting model—institution-free and highly atomistic-- is an extreme case. Since institutions are not carved in granite, and are themselves the object of choices, it is important to take the next step of determining the durability of institutional arrangements or, on the other hand, the ways they adapt and evolve or atrophy. This will be the subject of the later part of this paper.

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Several years ago, Morris Fiorina and I, writing for a conference on the topic of political equilibrium, began our paper: "Perhaps it overstates matters to say that there is a crisis in formal political theory, but it is apparent that much mischief has been caused by a series of theorems that depict the chaotic features of majority-rule voting systems... [W]hen majority rule breaks down, it breaks down completely; and it 'almost always' breaks down (Fiorina and Shepsle, 1982)." We went on to describe how that chaos — the "disequilibrium of tastes" — had been overinterpreted by political scientists, in our judgment, much as the apparent equilibrium of tastes in idealized markets had been by general equilibrium economists. In this paper I take a somewhat different point-of-view. The crisis has not yet passed, but surely it is passing as formal theorists devise and discover new ways to reason about the problems of voting instability. We have begun to accept the disequilibrium of tastes as a permanent condition. Reviewing the intellectual history of this lesson, Riker (1980) concludes: "And what we have learned is simply this: Disequilibrium, or the potential that the status quo be upset, is the characteristic feature of politics." But in accepting this fact, we formal theorists, along with many others in political science and economics, have (rediscovered that tastes and their expression are neither autonomous nor necessarily decisive.

First, we have begun studying theoretically the ways in which preferences are induced or molded, on the one hand, and how, on the other hand, they are channeled, expressed and revealed. The endogenous treatment of preferences

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permits us to focus on particular configurations of tastes while, at the same time, turning to environmental features and their effects.[1]

Second, the autonomy or exogeneity of tastes aside, it is becoming increasingly clear that the empirical relationship between social choice and individual values is a mediated one. Standing between the individual qua bundle of tastes and the alternatives comprising available social choices are institutions. Institutions — a framework of rules, procedures, and arrangements — prescribe and constrain the set of choosing agents, the manner in which their preferences may be revealed, the alternatives over which preferences may be expressed, the order in which such expressions occur, and generally the way in which business is conducted.

To observe that tastes are neither autonomous nor decisive, and that social choices are mediated by institutional arrangements, is the first step in a return to an older scholarly interest in the structures of society, polity, and economy. I do not here recommend such a return visit merely to mimic our predecessors. While their focus was (more often than not) squarely on arrangements and outcomes, their modes of scholarship — history-writing, description, and normative discourse — were not principally scientific and have been improved upon during the intervening generations. The price we have paid for the methodological and theoretical innovations of the post-World War II era, however, is the inordinate emphasis now placed on behavior. Our ability to describe (and, less frequently, to explain) behavior — the casting of a vote, participation in committee deliberations, campaigning, the rendering of a judicial or administrative ruling — has diminished the attention once given to institutional context and actual outcomes. On net, the behavioral revolution has probably been of positive value. But along with

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the many scientific benefits, we have been burdened by the cost of restricted scope in our analyses. One of the purposes of this essay is to elevate and reemphasize some of the older themes and to suggest how they might be incorporated into the domain of positive political theory.

The theme of this paper is institutions. I bring to this theme both the more traditional interest in structures of society, polity, and economy, and the more contemporary microeconomic, rational-actor methodology with its emphasis on equilibrium outcomes. Part 1 briefly reviews the equilibrium orientation of positive political theory. Part 2 takes us into the world of institutions and the outcomes they produce, encourage, or enforce. There I contrast preference-induced equilibrium (Riker calls it an "equilibrium of tastes") with structure-induced equilibrium. The latter focuses on organizational conditions, formal arrangements, and institutional practices, and their channeling effects on the revelation and aggregation of individual preferences. Part 3 stands the analysis on its head. If institutions matter, then which institutions are employed becomes a paramount concern. In partic-ular, the selection, survival, adaptation, and evolution of institutional practices need to be understood. Throughout, I make reference to legislative institutions which, I claim, stand as something of an exemplar for modeling institutions more generally. It is only in empirical application, I believe, that one comes to appreciate the tension in modeling between the substantive demands for complexity, on the one hand, and the theoretical necessity of deductive interrogatability on the other.

1. The Equilibrium Perspective of Positive Political Theory

It is useful to begin the discussion with a brief consideration of equilibrium, for surely this has been the dominant concern of positive political theory dating back to Black's (1948) early work. In one sense, however, the prevailing focus on equilibrium stands in tension with some of the dominant theoretical facts of positive political theory ~ namely, Arrow's Theorem, the pervasive cyclicity of majority rule, the indeterminateness of logrolling, vote trading, and general exchange, and the instability of coalitions. Equilibrium theory, consequently, is a peculiar moniker for the development I have in mind, since the thrust of more than three decades of social choice theory is that voting systems in general, and majority rule in particular, lack equilibrium properties. This condition of disequilibrium is captured most elegantly in the theorems of Cohen (1979), McKelvey (1976, 1979), Schofield (1978), and Schwartz (1981).

Let $N = \{1,2,..,.,n\}$ be a committee or legislature consisting of n agents who must choose, by majority rule, an element of the set X (normally modeled as a multidimensional Euclidean space). Assume each agent has well-defined preferences over the points in X satisfying certain technical requirements (typically continuous and strictly quasi-concave preferences, but these technical features need not detain us). Let P_i represent agents i's preferences (xP_jy means x is preferred by i to y) and let P represent the majority preference relation. For two points x and y in X, x is said to be majority-preferred to y (xPy) if and only if

$$|xP_iy| > |yP_ix|$$

(where |A| means the number of agents in the set having property A).

For any point $y \in X$, we may describe the points which majority-defeat it:

$$W(y) = \{x \in X \mid xPy\}.$$

$W(y)$ is called the <u>win set</u> of y.

The "universal instability" result may now be characterized in either of two ways:

(1) For "almost every" configuration of preferences,

   $W(y) \neq \phi \quad \forall y \in X.$

(2) For any two arbitrary points, $x, y \in X$, and "almost every" configuration of preferences, there exists a finite sequence $\{x, z_1, \ldots, z_m, y\}$ such that $z_1 \in W(x)$, $z_i \in W(z_{i-1})$ for $i = 2, \ldots, m$, and $y \in W(z_m)$.

The first statement asserts the generic nonemptiness of win sets: no point is invulnerable to defeat in a majority-rule contest. The second statement asserts not only that win sets are nonempty, but also that their content is sufficiently rich to permit any point to be reached, via a sequence of majority-rule contests, from any other point. In short, there is no equilibrium of majority tastes.[2]

These results are compatible with either of two different interpretations. If there is a monopoly agenda-setter -- someone who is uniquely and completely empowered to pick and order elements of an agenda -- then the results say that there is always sufficient opportunity for him to manipulate the sequence of votes to produce any final outcome he desires; the preferences of other agents are no constraint on the final outcome. On the other hand, if the agenda is built randomly or by an "open" process in which any agent may propose an alternative, then the results imply that, no matter where the process commences, there is no telling where it will end. Majority rule

may "wander anywhere" since all the alternatives are part of one preference cycle. Put slightly differently, the world of the monopoly agenda-setter is a well-behaved one. in the sense that an equilibrium outcome is associated with it — the ideal point of the agenda-setter. It is not, however, an equilibrium of majority tastes for this does not exist. Thus, in some constructed worlds an equilibrium outcome appears. But in a world only of majority preferences, we cannot even count on this.

I emphasize these interpretations, not because I think either is terribly general or helpful, but rather because they represent two widely separated points in the "space" of institutional arrangements. The former is the extreme one in which a distinguished agent makes social choices, constrained only by majority preferences. The nonobvious insight provided by McKelvey et al, is that, for all intents and purposes, this case is indistinguishable from that of the dictator, since the majority preference relation, exploited by the monopoly agenda setter, is not binding on the final choice.

The monopoly agenda setter and dictator mechanisms may appear arbitrary and highly special. Let me emphasize, however, that so, too, is the completely open agenda process. The "open" process of pure majority rule (PMR), like the other alternatives just discussed, is one, rather special, operationalization of a choice process governed by a cyclic P-relation. I claim that this observation has not been fully appreciated in the literature. Just as the nonempty win sets property of majority rule implies different things about two of its operational forms (equilibrium with a monopoly agenda setter and pervasive disequilibrium with an "open" process), so it is more generally. There are, in fact, many majority rules and the cyclic P-relation need not imply disequilibrium for all of them.

Elsewhere I have discussed general issues pertaining to equilibrium (Fiorina and Shepsle, 1982; Shepsle, 1982; Shepsle and Weingast, 1984), so let me here dwell primarily on the fact of "many majority rules." The spate of instability/disequilibrium results have been overinterpreted in light of this fact. While these theorems characterize PMR, and contain truisms about the cyclicity of the P-relation, they have been uncritically imported into substantive realms not characterized by PMR.[3] To see this, it is revealing to examine the structure these theorems take as fixed and exogenous.

The instability theorems of majority rule typically begin with an undifferentiated set N of decision makers. A central feature of many decision contexts, however, is differentiation. Superimposed on N are a variety of partitions: a committee system in a legislature, divisions of a firm, departments in a university, bureaus of an agency., Thus, each house of the Congress is more accurately described not by N but rather by a family of subsets of N, $C = \{C_1, \ldots, C_m\}$, where each C_j in C is a subset of N, and each i in N is an element of at least one C_j in C.

Similarly, the theorems of majority rule take as undifferentiated the set X of alternatives from which choices are made. The elements of X represent, in effect, comprehensive government programs in most applications. Yet, in institutional settings we rarely observe choices posed in terms of one platform of programs versus another (indeed, this orientation is a vestigial remain of models of electoral competition (Downs, 1957)). Rather the set X, too, is partitioned into what may be called jurisdictions, over which property rights are assigned to organizational subunits. Thus, the undifferentiated sets N and X of our formal theories of majority rule are, in practice, collections of subsets and bundles of "rights" differentiating the agenda and choice authority of the subsets of N over jurisdictions in X.

Both of these institutional features should raise a flag of caution. They do nothing to mitigate the results of Cohen, McKelvey, Schofield, and Schwartz. It is still true that the majority preference relation is ill-behaved (W(x) ≠ φ), and this instability underlies and affects ultimate choices. What is now no longer apparent is whether the behavioral interpretations of these theorems -- derived for undifferentiated sets of agents and alternatives -- apply in full force to organizationally more complex arrangements. In short, equilibrium theories to date have only just begun to depart from their institution-free, atomistic formulations.

There is a third feature that bears on this discussion. Most theories of PMR assume that any social comparison is permissible. This, too, is a vestigial remain of models of electoral equilibrium (viz., candidates may choose any platform on which to run). In organizationally and procedurally more complex settings, however, the partitioning of the alternative space into jurisdictions combines with germaneness rules to constrain comparisons. Agenda agents (say, the Rules Committee in the House of Representatives) may impose restrictions (only certain amendments are in order) over and above those already specified in formal rules of deliberation (e.g., the status quo ante is voted on last).

Each of these caveats is not a brief for complexity. Organizational behavior theorists often get hung up on complexity, losing sight of the fact that we always want to preserve in a model the possibility for deductive interrogation. At the opposite extreme, however, lie the theories of PMR, elegant but utterly simple. In terms of structure and procedure, they constitute very special, if not extreme, cases. The sensitivity of their interpretations to institutional arrangements comprises an important agenda of new research.

Such research will, I believe, revitalize equilibrium theories because it will highlight the ways in which the underlying P-relation is embedded in a structure of arrangements among agents (division-and specialization-of-labor), rules of comparison, and mechanisms by which choices and behavior of subgroups are monitored by the entire set of agents. This structure, along with the P-relation, constitutes an institutional arrangement. In evaluating, predicting, or explaining outcomes of an institutional arrangement, we need no longer be tongue-tied by nonempty win sets. While $W(x) \neq \phi$ for all $x \varepsilon X$ remains true, institutional equilibrium points may nevertheless exist. This, at any rate, is the prospect I consider in more detail in the next section.

2. Institutional Equilibrium

Throughout the previous discussion I have taken PMR to describe a majority-rule system in which individual preferences (defined in advance) over a multidimensional space of alternatives (also given in advance) induce a cyclic P-relation. Alternatives are considered (motions are made) by some random device — either individuals are recognized randomly for the purpose of moving alternatives or the alternatives themselves are sampled randomly. This arrangement has no equilibrium outcome, since $W(x) = \phi$ for no $x \varepsilon X$, so that the process will never come to any resting-place. For any alternative, x^0, constituting the current status quo, some new alternative will ultimately appear which majority-defeats it. If the process does produce a final outcome, it is only because of some unexplicated feature -- an arbitrary stopping rule, fatigue on the part of agents, etc. In general, however, the absence of equilibrium in PMR implies complete and pervasive instability.[4]

The instability results of the PMR model would come as something of a surprise to students of empirical committees and legislatures. The PMR formulation, itself, is but a mere shadow of the complex procedures and structural arrangements of real decision-making bodies. Compare, for example, the preceding paragraph where PMR is described and the six-hundred-plus pages of Deschler's Procedures of the U.S. House of Representatives. Now it is entirely possible that the minutia of institutional life are just that, and not the stuff of theoretical significance. I simply claim that it would come as a surprise to legislative scholars, for the bulk of their attention is devoted to detailing the complex political process entailed by the procedures and structural arrangements of decision making. They devote considerably less space to describing the instability of results. Finally, even in those legislative studies which emphasize the cyclicity of majority preferences (Riker, 1965; Blydenburgh, 1971; Enelow, 1982), it is clear that the cyclic P-relation is only part of the story — a prominent fact of institutional life that takes on significance because it may be exploited by agents in various institutional niches. It would seem presumptuous to ignore these caveats implied by substantive research, and hence it would be scientifically inappropriate to deny the significance of structural and procedural arrangements in advance of serious theoretical study.

There is, however, one serious ex ante objection to embedding PMR in a richer institutional structure which I shall mention here and take up in more detail in the next section. If institutional arrangements affect social choices, and if majority preferences over social choices are cyclic, then won't the induced majority preferences over institutional arrangements also be cyclic? That is, will social preferences over institutions inherit the

'cyclicity of social preferences over outcomes? These are extremely pertinent questions, first raised convincingly by Riker (1980). Their thrust reasserts the fundamental nature of cyclic majority preferences, because they suggest that cyclicity and instability cannot be finessed by "institutionalizing" PMR. The question of instability, repressed at the level of choice over outcomes, only reemerges at the level of choice over institutions.

The inheritability hypothesis is interesting, however, only if institutions do matter. For this reason alone, it makes sense to pursue the question of institutional equilibrium first before turning to that of equilibrium institutions. Consequently, for the purposes of discussion in this section, I will take institutional arrangements as exogenous. I neither suppress such arrangements, as is done in most of the literature on multi-dimensional voting models, nor explain it, as I will attempt to do in the next section.

Following my earlier development of institutional arrangements (Shepsle, 1979), I now describe some building blocks of institutions — division-of-labor, jurisdictional specialization-of-labor, and monitoring. To motivate these considerations, consider the difference between global winners and more restrictive winners.

Winners

A $\underline{\text{global winner}}$ is an element $x^* \varepsilon X$ with an empty win set: $W(x^*) = \phi$. Such a point is a $\underline{\text{majority core point}}$ since $W(x^*) = \{y \mid yPx^*\} = \phi$; so it is a "retentive" equilibrium. Once the process reaches x^* it can never escape (absent exogenous change). If, in addition, the voting game is strong, so that xPy or yPx for all $x,y \varepsilon X$ (no ties), then x^* is a $\underline{\text{Condorcet point.}}$ In this case we have two distinct properties satisfied by x^*:

(i) $W(x^*) = \phi$

(ii) $x^* \epsilon W(y)$ for every $y \neq x^*$.

If there are no barriers to entry onto the agenda for x^*, then it is both a "retentive" (property (i)) and an "attractive" (property (ii)) equilibrium. The problem, of course, is one of existence -- "almost never" do the x^*s of properties (i) and (ii) exist.

A more general notion of equilibrium than that of the Condorcet/core condition may be considered. For any $A \subseteq X$, define

$$W_A(x) = \{y \epsilon A | yPx\}.$$

$W_A(x)$ contains the elements of the subset A which majority-defeat x. If A=X, then $W_A(x) = W(x)$, so the Condorcet/core condition for equilibrium is a special case in this construction. If, however, A is a proper subset of X, and is specified by the rules governing comparisons as containing the only feasible contenders against x, then, since x can only be compared against elements of A, $W(x) = \phi$ is an inappropriate condition for equilibrium. Since $A \subseteq X$, it follows that $W_A(x) \subseteq W(x)$ and, therefore, that $\underline{W_A(x)\ may\ be\ empty}$ $\underline{even\ if\ W(x)\ is\ not}$. To give an extreme instance, for A = {x} it trivially follows that $W_A(x) = \phi$ for all $x \epsilon X$ -- any point is an equilibrium of some suitably restrictive scheme of comparisons.[5]

The point of this development is that the emptiness of $W(x)$ is often an inappropriately extreme standard against which to assess the equilibrium-like character of an alternative. To constitute an equilibrium, an alternative need not defeat (or avoid being defeated by) every other alternative. It need only defeat (avoid defeat by) those alternatives the rules permit to be compared against it. Hence, once A is specified by the rules, for whatever reasons and however arrived at, $W_A(x)$ is the relevant win set, and its emptiness is a condition for equilibrium. And, since it is obvious that

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$W_A(x) \subseteq W(x)$ for every $A \subseteq X$, it is clearly possible for $W_A(x) = \phi$, for some A and x, even though $W(x) \neq \phi$ for every x.

The set A is the collection of feasible agenda elements. If $W_A(x^*) = \phi$, then x^* is said to be an A-restricted winner (in contrast to a global winner). The question now becomes one about the features of decision making that restrict comparisons to A. I argue that a more general treatment of the sets N and X, heretofore undifferentiated in traditional multidimensional voting models, provides the key. In addition, let me emphasize that the inspiration for this sort of development is not mathematical but empirical. The distinctions concerning N and X presented below are observed in the. real-world. Indeed, as noted above, legislative scholars have devoted the bulk of their descriptions to precisely these distinctions.

Jurisdictions

The idea that a motion may be declared "out of order" suggests that institutions embody principles of proper order. Thus, even if the majority preference relation is complete , with xPy or yPx for every $x, y \in X$, some social comparisons are proscribed.[6]

Proscriptions governing comparisons are quite common in the proceedings of formal groups, even those without complex procedures or a divison-of-labor. To take an extremely familiar example, consider an ordinary business meeting of a club or society which partitions its agenda into old business, new business, officers' reports, etc. During the period of old business, it is generally out of order to move approval of, say, the treasurer's report. Similarly, during consideration of some new business, it is generally inappropriate to return to a matter pending from an earlier meeting already taken up during old business. Thus, the idea of some specified set $A \subseteq X$, perhaps a subspace of X, which some given $x \in X$ must survive against, is not at

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all foreign to even the simplest of organizations.

The simple partition of business, however, does not capture the way in which the outcome space is parceled up, and comparisons consequently constrained, in professional organizations.[7] To give some concreteness, I develop the idea of jurisdiction. For the space of alternatives, X, a convex subset of R_n^+, let $E = \{e_1,...,e_n\}$ be an orthogonal basis, where e_i is the unit vector for the ith dimension. A jurisdictional arrangement is a covering of E.[8] Thus, $\beta = \{\beta_1,...,\beta_k\}$ is a jurisdictional arrangement if $\beta_i \subset E$ and $U\beta_i = E$. Each $\beta_i \in \beta$ is a jurisdiction consisting of one or more dimensions of E.

Defining the status quo ante as the origin of the space, we shall say that a motion or proposal is jurisdictionally germane if and only if it is entirely within a single jurisdiction:

Let $x \in X$ be a motion with $x = \Sigma \lambda_i e_i$.

Then x is germane to the jth jurisdiction

if and only if $\lambda_i > 0 \rightarrow e_i \in \beta_j$.

Thus, $B_j = \{x | x = \Sigma \lambda_i e_i, e_i \in \beta_j\}$ is the set of proposals germane to the jth jurisdiction. By definition, the status quo is an element of every jurisdiction.

I shall not review all of the discussion in Shepsle (1979). Let me simply note that that a jurisdictional arrangement may be simple (each jurisdiction a single basis vector), complex (each jurisdiction a subspace consisting of several basis vectors), overlapping (some basis vectors common to more than one jurisdiction) or, in the extreme, global (every basis vector in a single jurisdiction). The latter, of course, is the construct of traditional multidimensional voting models.

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A jurisdictional arrangement β allows an institution to split up the various dimensions of choice by permitting only jurisdictionally germane proposals. The agents of an institution may desire this sort of arrangement for any number of reasons. If, for example, an agent's preferences are separable by jurisdiction, so that his preferences over alternatives in one jurisdiction are unaffected by choices made in other jurisdictions, then jurisdictional germaneness may be regarded as an efficient and straightforward way to proceed. That is, though it need have no effect on the final vector of outcomes, it economizes on the costs of doing business by allowing agents to focus on a jurisdiction at a time. No doubt this reason stands behind numerous structural and procedural provisions of organizational decision-making. It is not, however, the whole story. What I argue about legislatures, and perhaps organizations generally, is that the specialization of decision-making in jurisdictionally germane ways is a response to internal forces.[9] The specialization of decision-making allows agents to differentiate their energies and attention, rationally allocating their resources to those jurisdictions that matter most to them. A formal division-of-labor to which we turn next is partial recognition of this preference, though even in its absence an informal division will emerge.

Committees

Having parceled the space X into jurisdictions $\beta = \{\beta_1, \ldots, \beta_k\}$, we may develop the idea of committees in a parallel fashion by parceling up the set of agents, N. Put simply, a __committee system__ is a covering of N. Thus, $\alpha = \{\alpha_1, \ldots, \alpha_k\}$ is a committee system if $\alpha_i \subseteq N$ and $\cup \alpha_i = N$.[10] A simple committee system is a partition of N: $\cup \alpha_i = N$ and $\alpha_i \cap \alpha_j = \phi$ for all i,j. Each agent $i \in N$ is a member of exactly one committee. A complex committee system, like

that of the U.S. House of Representatives, does not possess this property, since each $i \epsilon N$ may be a member of more than one committee. Finally, in the extreme, α contains exactly one element -- $\alpha = \{N\}$. This, the Committee-of-the-Whole, is the familiar structure of traditional voting models, labeled "committee," "electorate," "society," etc. It is apparent, then, that the traditional multidimensional model, consisting of a committee-of-the-whole structure with global jurisdicition -- $\alpha = \{N\}$ and $\beta = \{E\}$ -- is easily embedded in this more general framework and, more importantly, is seen to be a rather extreme special case.

Jurisdictions as Committee Property

A jurisdictional arrangement may make some sense, even in the absence of a division-of-labor. In the earliest Congresses (through the Jefferson presidency and into Madison's), for example, the House divided deliberations according to a crude jurisdictional scheme, but operated almost entirely in Committee-of-the-Whole.[11] Similarly, committee systems may exist, even in the absence of a jurisdictional arrangement, in order to take advantage of properties of small groups.[12] These points aside, however, the interesting and ore common circumstance is that in which a jurisdictional arrangement and a committee system are interconnected. Roughly speaking, I assume that jurisdictions emerge in the form of more-or-less "naturally" separable policy domains, and subsets of agents gravitate to particular jurisdictions because they wish to have disproportionate influence there. The latter, an informal division- and specialization-of-labor, is formalized as a committee system.

In terms of the scheme given above, there is a formal rule, F, that associates a $\beta_j \epsilon \beta$ with each $\alpha_j \epsilon \alpha$. Although perhaps a bit restrictive, it suffices for our argument to make α and β sets of equal cardinality and to

assume F is a one-to-one mapping of a onto B. Thus, a committee has exactly one jurisdiction, and a jurisdiction exactly one committee.

I conceive of the association between committees and jurisdictions as a kind of property right. A committee is a monopoly provider of proposals to alter the status quo in its jurisdictional domain. Committee assent, therefore, is a necessary condition for change. Conversely, committee opposition to change is sufficient to sustain the status quo. Committees, then, are both monopoly proposers and veto groups.

At first glance this arrangement may seem a bit odd. Why would the set of all agents institutionalize an arrangement in which only a subset of them had extraordinary influence in each jurisdiction? This poses the general issue of decentralization and delegation. The rationale for the former resides in ex ante calculations by agents about the relative importance to them of various jurisdictions. Decentralization is the product of a circum-stance in which agents are willing to trade off influence in many areas in exchange for disproportionate influence in the jurisdictions that matter most to them.[13] The rationale for the latter derives from the ability of the parent body to exercise some control over the committees to which it delegates disproportionate influence.

In the case of both decentralization and delegation, then, there is a two-sided calculation in terms of the advantages to each $i \in N$ of having disproportionate influence in some jurisdictions and the costs to that same i of allowing others disproportionate influence elsewhere. Each weighs his own advantages against the potential for opportunism by others. Given the jurisdictionally-specific monopoly proposal power and veto power of committees, the control against opportunism by the parent body is represented by a monitoring arrangement that I elsewhere called an amendment control rule.

Monitoring and Amendment Control

In the theory of agency (Ross, 1973; Mitnick, 1975; Jensen and Meckling, 1976; Holmstrom, 1979; Fama and Jensen, 1982), agents may be controlled by their principals in two distinct ways. First, agent compensation can be tied, if only imperfectly, to outcomes in a manner that gives agents proper incentives to reduce "shirking" and to pursue outcomes valued by the principal. The agent compensation or fee schedule is output-related. The second mechanism of agent control by principals is input-related. Principals may expend resources in monitoring the input contributions made by agents, bestowing rewards on agents whose input contributions are believed to contribute to achieving goals valued by the principal, and inflicting penalties on "shirking" and other counter-productive agent behavior. Organizations characterized by decentralization and delegation typically employ some mix of these two control devices, the relative proportions depending upon their relative costs to the principal.

A committee stands in an agency relationship to its parent body, and the parent body controls its agent in both input- and output-related fashions. In the U.S. House, for example, committees often contain some members who insure that party and institutional leaders are kept informed of deliberations and who serve as vehicles for transmitting leadership preferences. Thus, some monitoring by the parent body, as personified by its leaders, does take place. In many organizations this is the principal device for securing agent compliance. Yet this is resource-intensive and, in legislatures at least, monitoring is done in more indirect ways, on the one hand, and control is exercised on the output side, on the other.

Let me pursue this conjecture briefly. From my work on House committee assignments (Shepsle, 1978) I came to the conclusion that committee composition is determined essentially by self-selection. On the whole, members gravitate to the committees where they wish to exercise disproportionate influence. Party leaders play a relatively reserved role in assignment process proceedings, only occasionally making their assignment preferences known and thus influencing actual assignments.[14] Leadership monitoring occurs more indirectly — by listening. Interested others — lobbyists, constituents, presidents, other legislators — follow detailed committee deliberations and, when committee-qua-agent behaves opportunistically and at variance with the preferences of others, these others howl! Monitoring by party and institutional leaders takes the form of reading the decibel-meter and interpreting the howls (Shepsle and Weingast, 1983a, footnote 4).

So, in legislatures some monitoring does take place. But too much monitoring would defeat the major purpose of decentralization, for it would retrieve for non-committee members precisely the influence they were prepared to trade away in exchange for their own jurisdictional influence. It is my own view that, indirect monitoring aside, the chief form of protection against opportunistic behavior by committees occurs on the output side. Committee proposals must survive amendation by the parent body and, at the final stage, must secure a majority vote against the status quo (that is, must be an element of $W(x^0)$).

Let $x \epsilon B_j$ be a jurisdictionally germane proposal by committee a_j to alter the status quo in jurisdiction P_j. The set $M(x) c X$ is called an amendment control rule if any alternative $y \epsilon M(x)$ may bo offered as a substitute proposal for x by any $i \epsilon N$. Thus, committee $a_j \epsilon a$, in choosing to propose a modification x to x^0, opens the door to a set of possible further

modification proposals, $M(x)$.[15] The parent body stands as the final arbiter in that it chooses, according to established procedures, among a committee proposal x and any proposed modifications $y \varepsilon M(x)$.

On the one extreme, $M(x)$ poses a trivial constraint on α_j ($M(x) = \phi$). Here, α_j is a monopoly provider not just of proposals, but of final policy outcomes in β_j. Slightly less extreme is the <u>closed rule</u>, entailing no amendments and an "up or down" vote between x and x^0 ($M(x) = \{x^0\}$). On the other extreme, there are no constraints on the parent body's capacity to amend ($M(x) = X$ --the <u>open rule</u> -- so that any substitute proposal is in order). Between these extremes lie alternative amendment control rules which may be partially ordered by set inclusion. Typical of such rules is germaneness. For $x \varepsilon B_j$, $M(x) = B_j$ requires <u>jurisdictional germaneness</u> for any substitute proposal. More restrictive still (in which $M(x) \subset B_j$) is <u>proposal germaneness</u> which admits a substitute proposal y only if $y_i = x_i^o$ whenever $x_i = x_i^o$. The former germaneness rule admits any substitute alternative from the jurisdiction of which x is an element. The latter allows only those substitute alternatives from the same jurisdiction as x that change the status quo along the same dimension as the original motion does. Of course, if x proposes changes in x^0 on every dimension in β_j, then the two forms of germaneness are identical.

In my earlier work I took $M(x)$ to be given exogenously, so that if α_j did indeed move $x \varepsilon B_j$, it did so knowing ex ante the amendment possibilities, $M(x)$. In this fashion, $M(x)$, together with the majority preference relation P of the parent body, serves as an incentive structure for each $\alpha_j \varepsilon \alpha$. That is, if $M(x)$ were set in advance, well-defined (though not necessarily identical) for different classes of $x \varepsilon X$, and chosen to induce agent behavior compatible with the values of the parent body (or at least not drastically destructive of

them), then it would look something like the optimal fee structure of the classic principal agent problem.

This formulation for amendment control rules provides a theoretical perspective on the arrangements of delegation and decentralization in institutions. In tying together the amount of delegation with the amount of "parental" control, though not necessarily in any straightforward way, it offers a way to model delegation structures which I hope will be pursued in further research on institutional arrangements.[16]

However, and this is an important qualification, it may not be appropriate to assume that $M(x)$ is provided exogenously. This institutional fact varies across institutions. For example, it is an acceptably accurate description of university personnel decisions. Departments are the decentralized agents of the university whose personnel proposals, in the form of particular nominees for particular positions, are governed essentially by a closed rule. A department's dean (the principal in this case) may approve or veto an agent's appointment proposal. If the latter, then the status quo prevails unless the agent makes a new proposal. What the dean ordinarily may not do is substitute his own candidate in place of the department's nominee and then transmit an offer. For committees of the U.S. House of Representatives, on the other hand, $M(x)$ is endogenous. The Rules Committee, and ultimately a majority of the entire House, determines an amendment control rule only after aj proposes x.

Institutional Equilibrium

With a committee system a, a jurisdictional arrangement p, a property rights system linking monopoly proposers aj ea to jurisdictions Bj eB, and amendment control rules $M(x)$ for every x falling in some Bj, we have the

building blocks of an institution. As noted, the traditional multidimensional voting model of pure majority rule (PMR) -- $\alpha = \{N\}$ and $\beta = \{E\}$ -- falls out as a special case. Because of this special case, we know in advance that the prospects for equilibrium are not independent of institutional structure. On the other hand, however, precisely because PMR is a special case, it no longer follows that the conclusion of generic disequilibrium extends to every institutional arrangement. To see this, let $B_j(x) = \{y | y = x + \Sigma \lambda_i e_i, e_i \in \beta_j\}$. $B_j(x)$ consists of the jurisdictionally-germane ways α_j may alter x. It is the opportunity or feasible set for α_j when x is the status quo. Next, let $W_j(x)$ consist of the points preferred by α_j to x, and $W(x)$ the points prefereed by N to x.[17] A point x is said to be <u>vulnerable</u> if there is a $y \in B_j(x)$ available to some $\alpha_j \in \alpha$ (jurisdictionally germane), preferred by that committee to x, and preferred by a majority of N to X:

$$x \text{ is vulnerable if } B_j(x) \cap W_j(x) \cap W(x) \neq \phi .$$

Conversely, if nothing preferred by any committee to x falls within its jurisdiction or, even if there is such a point, if it is opposed by a majority of N, then x is invulnerable. Invulnerable points are equilibria in the sense that an institution cannot depart from them. Clearly, invulnerable points may exist even if $W(x) \neq \phi \ \forall \ x \in X$. A generically cyclic P-relation is insufficient to render all x vulnerable.

Institutional equilibria, however, are not restricted to invulnerable points. Suppose, for committee α_j, that there were a $y \in B_j(x) \cap W_j(x)$ and that yPx, i.e., x is vulnerable. However, suppose further that M(y) were such that members of α_j feared that, if they proposed y, it would then be amended by some $z \in M(y)$ that ultimately prevailed ($z \in W(y) \cap W(x)$), but that $z \notin W_j(x)$. That is, by "opening the gates" with its proposal of y, α_j ultimately produced

the outcome z which it preferred less than the original x it sought to modify. Under such circumstances α_j will not open the gates and x will be an equilibrium even though it is vulnerable.

Letting

$$V_j(x) = B_j(x) \cap W_j(x) \cap W(x)$$

provide the criterion of vulnerability, we define institutional equilibrium in the following way. First, following Denzau and Mackay's (1983) excellent development, define a <u>legislative outcome function</u>, $L(y,x,M(y))$, to be a function whose range is the element that prevails if a committee seeks to alter x by a proposal y, with $M(y)$ the existing amendment control rule. Presumably, if y=x -- if the committee makes no proposal, keeping the gates closed instead -- then x prevails:

$$L(x,x,M(x)) = x.$$

With the function L we endow each committee with a modest amount of foresight (Denzau and Mackay, 1981), permitting its members to predict what will ultimately transpire if they seek to change x.[18] Now we say that:

An $x \epsilon X$ is a <u>structure-induced equilibrium</u> (SIE)

if, for any $y \epsilon B_j$, $L(y,x,M(y)) \notin W_j(x)$.

Case 1: If $V_j(x) = \phi$ for all j, then the relevant possibilities are (i) $B_j(x) \cap W_j(x) = \phi$, (ii) $W_j(x) \cap W(x) = \phi$, or (iii) $W(x) = \phi$. Condition (i) implies that each committee prefers to veto any change in x in its jurisdiction and so will keep the gates closed. Condition (ii) finds each committee at odds with its parent body. Condition (iii) states that x is a Condorcet/core point. In each of these cases x is invulnerable so that $L(y,x,M(y))$ either results in x, itself, or in some z which the committee regards

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as inferior to x. In neither case is $L(y,x,M(y))$ an element of $W_j(x)$. Notice that $W(x) = \phi$ is a special case of $V_j(x) = \phi$ for all j, so that the Condorcet/core condition of equilibrium common in traditional multidimensional voting models is a special case of SIE.[19]

Case 2: Suppose $y \varepsilon V_j(x)$ for some j, so that x is vulnerable. If the committee forecasts a $z \varepsilon M(y) \cap W(y)$ that will be offered as an amendment, with $z \notin W_j(x)$, then it anticipates either $z = L(y,x,M(y))$ or $x = L(y,x,M(y))$. The latter occurs if $z \varepsilon W(y)$ but $z \notin W(x)$.[20] In either case $L(y,x,M(y)) \notin W_j(x)$.

Discussion

In Shepsle (1979) I proved existence for SIE under extremely simple structural arrangements. I regard that result as parallel to Black's equilibrium theorem for one-dimensional choice sets and single-peaked preferences (indeed, it was precisely his theorem that I exploited). Surely, it is not the last word. The SIE concept has been extended and embellished by Denzau and Mackay (1981, 1983), Koehler (1982), Enelow and Hinich (1983), and Shepsle and Weingast (1981a, b), among others. In drawing this section to a close, let me make some concluding comments.

1. SIE generalizes the Condorcet/core equilibrium concept (PIE) by incorporating structural arrangements. The non-empty win set condition for equilibrium is a special case of SIE under general structural arrangements, and is identical to the SIE when $\alpha = \{N\}$ and $\beta = \{E\}$.

2. SIE places a premium on the channeling effect of institutional arrangements. The committee system, α, creates monopoly proposers and veto groups, and the jurisdictional arrangement, β, renders certain social

preferences irrelevant because it makes certain social comparisons infeasible.

3. An SIE is a "retentive" equilibrium, but it need not be "attractive," as Denzau and Mackay (1983) have illustrated. This, in turn, raises the whole issue of dynamics — the path by which the process moves off a nonequilibrium point and ultimately (?) settles on a retentive equilibrium.

4. Procedures, about which I have said little to this point, will figure prominently in characterizing dynamics — the order of voting and motion-making, constraints on amendments, the form of the amendment process,[21] etc.

5. Informational and expectational conditions, behavioral assumptions (sophistication, sincerity), and preference characteristics (attitudes toward risk) need to be incorporated more fully and explicitly.

This agenda of research issues, I am pleased to report, suggests a genuine renaissance of the "institutional connection." Formal models are beginning to touch base with some of the empirical regularities long the concern of substantive students of politics. We may now begin to model real institutions, inquiring about their operating characteristics and equilibrium properties.

Two important omissions have permitted the above discussion to proceed, but it is now appropriate to raise them explicitly, if only briefly. The first, which I examine more systematically in the next section, takes insti-tutional arrangements as exogenous. Yet agents choose such arrangements so that, while such choices normally precede actual decision-making, they need to be made endogenous. Why do the agents in N do things the way they do? Why do changes in procedures and structural arrangements take on particular new forms?

The second omission is the failure to make agent preferences endogenous. In most multidimensional voting models, preferences are taken as entirely exogenous, the work of Denzau and Parks (1979) standing as something of an exception. In any case, agents are taken as the final bearers of burdens and enjoyers of benefits. In most institutional settings, however, agents are really agents, acting on behalf of and (at least nominally) in the interest of "relevant others." Agent preferences, then, are derivative, and the mechanisms by which these "derived" preferences are induced are of considerable interest. Put differently, an understanding of the survival value of derived preferences will tell us something about which outcomes are most likely to prevail in various institutional contexts in which those preferences are revealed and aggregated, and which kinds of agents are likely to come to dominate that institution.

Some work has begun in this area as it pertains to legislative agents elected from geographic constituencies. Formal models of geographic incidence (Weingast, Shepsle, and Johnsen, 1981; Shepsle and Weingast, 1983a; Fiorina, 1983; Cox, McCubbins and Sullivan, 1983) have sought to give formal represen- tation to the substantive context of a decade's worth of research on Congress and the "electoral connection" (Mayhew, 1974; Fiorina, 1977; Fenno, 1978). Here, too, then, the institutional setting has proved important in raising an issue — the sources of induced preferences — that was appropriately left exogenous in the traditional, structure-free, multidimensional model.

3. Equilibrium Institutions

I have not, to this point, ventured to define what an institution is, nor shall I. Before proceeding, however, it will be useful to describe two competing views of institutions, each of which possesses elements that will be valuable to retain in our discussion.

Riker (1980) gives a modern treatment to the subject of institutions by referring to them as "congealed tastes." He elaborates:

> The people whose values and tastes are influential live in a world of conventions about both language and values themselves. These conventions are in turn condensed into institutions, which, are simply rules about behavior, especially about making decisions. Even the [Delphic] priestess in her frenzy probably behaves according to rules and, for certain, her interpreter is constrained by specifiable conventions. So interpersonal rules, that is, institutions, must affect social outcomes just as much as personal values [Riker, 1980, p.4].

Institutions, for Riker, are "condensed conventions" reflecting tastes and values about "interpersonal rules." In referring to these tastes about rules as "congealed," Riker transmits the sense that they possess a sort of constancy that social preferences about outcomes lack, the latter characterized by intransitivity and instability. He is quick, however, to retreat from this unqualified view. Though congealed, tastes about institutional arrangements are still tastes. Therefore, "...rules or institutions are just more alternatives in the policy space and the status quo of one set of rules can be supplanted with another set of rules. Thus the only difference between values and institutions is that the revelation of institutional disequilibrium is probably a longer process than the revelation of disequilibrium of tastes.... If institutions are congealed tastes and if tastes lack equilibria, then also do institutions, except for short-run events (Riker, 1980, p.22)."

Riker, then, views institutions as congealed tastes about interpersonal rules. They consist of attitudes, beliefs, expectations, and preferences about "the way things are done around here."[22] Most important for us, Riker treats institutions like ordinary policy alternatives in an important respect: they are <u>chosen</u>. Thus, institutions reflect the same sort (or at least some sort) of instrumental calculus that rational actors bring to policy choices.

There is an older view of institutions, more sociological, macro-historical, and almost mystical. This tradition is represented in its most developed form 1n studies of the origins and foundations of the law, but it is also well-developed in the study of other political institutions as well. It is a view that emphasizes glacial evolution, long periods of constancy, mutation-like accident in the form of experiments with new institutional ideas, and the survival of some of these new practices via a sort of natural selection. It is an impersonal process, and neither it nor the institutions it fashions is explicable to the individuals whose behavior conforms to them. Sait (1938), for example, asserts that "private property, slavery, a stratified society —such institutions arose naturally out of altered circumstances and not through any 'intelligently controlled approach.[1] New social forms originate and old social forms die without any clear perception, by contemporaries, of what is happening (p.15)." For him, "when we examine political institutions, one after the other, they seem to have been erected, almost like coral reefs, without conscious design (p.16)."

For Sait, the microeconomic rational actor methodology would be of little utility in the study of institutions for, in his view, the latter cannot be regarded as objects of choices, as the products of an "intelligently controlled approach." The question he sought to address instead involved the puzzle of commonality: How did it come to be that widely separated communities, in space and time, possessed institutions that shared many common elements? On some occasions, as in the case of similarities between English common law and Roman law, he argues in favor of the convengence hypothesis, according to which a practice evolves from its environment (Sait, 1938, pp. 201-253; esp. p. 202). Commonalities are accidents of parallel development, and in no manner reflect imitation by one community of the practices of another. Thus, practices in

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communities converge toward one another because their respective environments made such practices propitious. On other occasions, as in the case of representative institutions, Sait's argument supports the diffusion hypothesis, according to which conscious adaptation and imitation by one community of institutions created in another is the predominate mechanism (Sait, 1938, pp. 467-499; esp. p. 469). In either case, his emphasis is on the survival of practices, not on their choice. Institutions, however they originate (and, according to Sait, historical methods, not "theoretical approaches," are the approprite ones to answer the question of origin), survive "unless the soil proves uncongenial. All that we can foretell with assurance is this: there will be accommodation to the environment (Sait, 1938, p. 529)."

Riker emphasizes a rational calculus and the congealing of tastes around "unstable constants." Institutional choices differ from policy choices in degree, not kind. They have more durability (but not much more). Sait, on the other hand, rejects any conscious selection process for institutions. Nature "adopts"; man does not "adapt."[23]

The remainder of this essay seeks to marry these two incompatible views. In this more speculative endeavor, I embrace Riker's emphasis on choice of institutional arrangements, yet reject his view that choosing rules and choosing policies according to these rules represent differences in degree, not kind. On the other hand, while rejecting Sait's more mystical views on natural selection and his in-principle rejection of conscious choice of institutions, I embrace his emphasis on survival of rules regimes.[24] I begin with the "Riker objection" and the "inheritability hypothesis."

The Riker Objection: Inheritability[25]

In the last section, the idea of institutional equilibrium (SIE) was

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formalized. An alternative x^* is an equilibrium because it cannot be dislodged. Competitors in $W(x^*)$ cannot be brought to a comparison against x^*. This may prevail because of formal rules governing comparisons (e.g., germaneness, the closed rule), because of preference differences embedded in the division-of-labor (e.g., $W_j(x^*) \cap W(x^*) = \phi$), because x^* is a Condorcet/core point (i.e., $W(x^*) = \phi$), or because of foresight and sophisticated calculation by agenda agents relative to monitoring arrangements via amendment control (i.e., $L(y,x^*,M(y)) \notin W_j(x^*)$ for all j and all $y \in B_j(x^*)$). I shall assume here that a specific institutional arrangement possesses such an x^*, that the set SIE is nonempty.[26]

If institutional rules and arrangements produce stability in majority-rule decision-making, then the manner in which the rules, themselves, are chosen must be confronted. Riker (1980) argues that preferences over outcomes, combined with well-grounded expectations about the "institutional outcome function," lead naturally to an induced set of preferences over institutional arrangements. Thus, if institutions p and q have SIEs x_p and x_q, respectively, then individual i prefers p to q if and only if he prefers x_p to x_q. From this it follows that a decisive coalition of agents prefers p to q if and only if each of its members prefers x_p to x_q. Finally if, as is normally the case, the social preference relation defined by decisive coalitions is cyclic over outcomes, then the cyclicity will be inherited in social preferences over institutions. To repeat, "if institutions are congealed tastes and if tastes lack equilibria, then also do institutions, except for short-run events (Riker, 1980, p. 22)."

The Riker objection asserts that instability in policy choice, suppressed by some particular institutional regime, reemerges in the selection of regimes. The latter selection process inherits the disequilibrium inherent in preferences

over final outcomes. Let me first take the Riker objection as true and see where that leads. Then I will suggest why I believe the inheritability hypothesis should not be accepted at face value.

Inheritability: Suppose Q is Cyclic

If Q_i is the induced individual preference relation defined on the "space" of institutions -- $p\ Q_i\ q$ iff $x_p P_i x_q$ -- then, as Riker suggests, while Q_i will be acyclic, Q, the social preference relation over institutions, normally will not be. But, of what significance is this condition? I have developed in the last section an argument claiming the cyclicity of P may not be freighted with the significance given it by the universal instability theorems. The same argument applies to the cyclicity of Q. Even though a given institutional arrangement may not be a Condorcet/core point in comparison to other insti-tutional arrangements, the procedures by which institutional arrangements themselves are selected may inhibit change.

Any consideration of changes in the practices of the U.S. Congress, for example, is restricted in some relevant ways by the Constitution. Neither the House nor Senate may alter the basis of representation (proportional to state population in the former and equality by state in the latter). All revenue bills (and by liberal generalization all appropriations bills) must originate in the House. A presidential veto required a two-thirds vote in each chamber to override. The "chairman" of the Senate must be the Vice President of the United States. And so on. In short, against an existing regime of rules, some alternative regimes may not be compared (short of exogenous change in the form of a constitutional amendment). Constitutionality plays a restraining role on institutional comparisons much like germaneness plays on policy comparisons. Some comparisons are proscribed.[27]

Second, the relevance of the cyclicity of Q, like the counterpart fact about P, may be qualified by the manner in which choice among institutional rules is conducted. Specifically, the division- and specialization-of-labor, monitoring arrangements, and the beliefs, expectations, and degrees of sophistication of institutional actors all are relevant here. For example, each chamber of the U.S. Congress has a Committee on Rules possessing jurisdiction over rules changes. They, in turn, have a chairman, a structure of standing subcommittees, and an occasional, specially charged select subcommittee. I shall not here repeat the story of the previous section, but it should be apparent that a parallel to the structural restrictions on the cyclic P-relation exists in similar restraints on the cyclic Q-relation.

Comparisons among rules, like comparisons among policies, are not governed by a system of pure, structurally undifferentiated, majority rule. Consequently, an extant regime of rules may constitute an "A-restricted winner," while it fails to be a global winner in the space of all institutional configurations (given the cyclicity of Q). This is my first qualification of the Riker objection, even granting the inheritability hypothesis of a cyclic Q-relation.

My second response begins to drive a wedge between choice of policy and choice of institutional arrangements, suggesting the latter is not merely an instance of the former. In the policy game in a legislature like the U.S. Congress or a state legislature, to take a prominent example, there is an attitude of live and let live. Each legislative agent seeks to obtain benefits for his constituency and, even in failure, he can claim credit for having fought the good fight. Each agent behaves essentially this way and expects all others to behave similarly. Although there are some exceptions, the general rule does not impose sanctions on those who seek to place the

distributive and·regulatory powers of the State in the service of their constituents. That's the system.

Consider, on the other hand, an effort to change the rules. Could turn-of-the-century progressive legislator George Norris anticipate no sanctions if he tried but failed to reduce the powers of Speaker Joseph Cannon? I hardly think so. It is risky to try to change institutional arrangements in a manner adverse to the interests of those currently in control. Failure has its consequences so that anyone initiating such attempts at change must weigh the expected benefits of success against the certainty of sanctions if he fails. In short, even though some legislative majority might prefer arrangement p to the existing arrangement q (pQq), efforts to promote p will be damped by the risks of failure. These risks would seem not to play nearly so prominent a role in the politics of ordinary policy. Thus, the inherited cyclicity of Q may bear less on the instability of institutional arrangements than the cyclicity of P is alleged to bear on the instability of ordinary policy.

These contentions suggest that even if Q inherits _cyclicity_ from P, institutional arrangements do not necessarily inherit _instability_ from policy. At any rate, a regime of rules may persist over long periods so that it makes sense to refer to it as an equilibrium of sorts. It is a congelation that resists change unless a sufficient amount of heat is applied.

This view and its supporting arguments[28] concede the truth of the inheritability hypothesis, but qualify its force. It is time now to develop a bolder response to the Riker objection which casts doubt on the inheritability hypothesis, itself. I shall argue that agent calculations about institutional arrangements differ from those about policy alternatives. To approach this argument, a brief digression on cooperation is necessary.

Cooperation and Institutional Bargains: A Digression

Cooperation, as it is technically treated in game theory, entails two prominent features:

    (i) pre-play communication and correlation of strategies among agents is possible; and

    (ii) agents may enter into binding agreements.

Thus, in pure economic exchange (Shapley and Shubik, 1967) coalitions are formed among traders which are, in effect, binding contracts enforceable through well-defined property rights, legal principles (contract law, liability law, torts), and enforcement institutions (courts, sheriffs, state attorneys, etc.). In money economies, analogously, a coalition forms between a "buyer" and a "seller." Pre-play negotiation and strategy correlation — bargaining, haggling, "shopping around," and ultimately striking a deal — are clearly characteristic of such phenomena. So, too, is the idea of enforceable agreements (so long as the institutions of enforcement are treated as exogenous to the phenomena of exchange). Hence, a cooperative game formulation in which economic exchange is modeled as a coalition formation process among traders seems eminently reasonable because enforcement is left entirely exogenous.

Communications conditions, while a necessary part of what we regard as cooperation, is often the less problematic of the two features given above for cooperative formulations. Schelling (1960), for example, has persuasively argued and demonstrated that strategic correlation may be arrived at between agents implicitly.[29] The key, rather, is enforceability of agreements (a point also stressed by Schelling). How do agents convince one another that promises made ex ante will be honored ex post? A can promise to trade votes with B across two policy issues. But what is to prevent his renegging on that promise after he has secured B's support?

Clearly, if there were an exogenous enforcement mechanism, like an umpire or a court of law whose services were costless to employ and certain to be forthcoming, then promises could be made binding. Gains from exchange are consumated through promises as a consequence because individual agents now are assured ex ante of restraints on ex post renegging by their partners. Such is the logic (if not the practice) behind the legal enforcement of contract.

The problem, however, for cooperation among criminals, politicians, or sovereign nations is precisely the absence of exogenous enfocement (see, e.g., Laver, 1982; Taylor, 1976; Wagner, 1983). There are no (or few) exogenous mechanisms of enforcement so that cooperation among agents, absent additional features to be mentioned in a moment, will normally be truncated in frequency, scope, and duration. The ex ante prospect of ex post cheating strongly qualifies the ability of agents to exhaust gains from cooperation.

All is not lost — some cooperation does take place even among politi-cians, criminals, and suspicious states — since some forms of cooperation are self-enforcing. In situations, for example, in which there is repeated play, an agent's calculations about cooperating or cheating at any one play will be affected by the impact of current behavior on future plays. Specifically, as Axelrod (1981) and Taylor (1976) have argued, an agent will contemplate cheating on an agreement if the one-time windfall from such behavior exceeds the expected net benefit of all future dealings that are jeopardized by the cheating.[30]

One such mechanism that enables cooperation to occur even in the absence of exogenous enforcement is <u>reputation</u>. A reputation for honest dealings enhances one's ability to enter into new cooperative ventures. Criminals and politicians surely understand this logic, which sustains the maxim, "Your word is your bond." Thus, in the example alluded to above, if A renegs on his

promise to support B's bill, the prospect of B ever doing business again with A declines precipitously. Indeed, if A develops a reputation for renegging, then even those agents who have never been personally victimized by A will not enter into coalitions with him. Similarly, firms develop brand names in order to associate virtues of quality, economy, reliability, etc. with their products.

Unfortunately, self-enforcement via reputation and brand names may not provide a sufficiently firm foundation for cooperation.[31] First, cooperation may be sustained by reputational forces on a bilateral basis between two agents engaged in frequent dealings; but it may be insufficient for multilateral cooperation or intermittent dealings. Thus, a reputation for honest dealings between a retailer and his wholesaler or customer, or between two career legislators on matters in which each is decisive ("favor-doing"), may be sufficient to allow cooperation to transpire. But what of two legislators whose cooperation extends across an election which neither can be certain of surviving? Would A do B a favor, at some personal cost or risk, or would the frequency of such exchanges be very high, if he could not count on B's ability to reciprocate (either because B was subsequently defeated for reelection or A was)? Legislative scholars like to talk about a system of "generalized IOUs" in contrast to specific quid pro quo cooperation in the Congress. The problem with the former, and hence the truncated form in which cooperation based on it develops, is the events which may intervene to short-circuit exchanges.

Multilateral cooperation based on reputation has equally troublesome problems. The identification of cheaters, free-riding behavior, and problems with imposing sanctions (who will do the punishing?) all reduce the efficacy of reputation as a form of self-enforcement (Laver, 1981).

A final point about individualistic forms of self-enforcement of agreements follows from the difficulty of specifying contingencies. Cheating is not dichotomous (cheat, not cheat) and there are many forms of opportunistic behavior. Legislator A, for example, pledges loyalty to his party, except on matters of conscience or constituency. But who is to determine when the exceptional circumstance has arisen? Or, to give another example, legislator A may agree to support B's bill but subsequently claim that his support was only for a weak form of that bill, or for a form that did not contain a particular title, or only for a form that included a specific amendment. In short, it is often costly to negotiate an agreement that pins down the parties to precise terms which reputation can then enforce.

Weingast (1983) likens individualistic forms of agreement and enforcement to a "spot market." If economic agents were unable to write long-term contracts governed by exogenous enforcement, they, too, would be limited to spot-market transactions. Such transactions are more costly, more limited in scope and durability, and generally less satisfactory than alternative ways of doing business (the long-term contract being one such way). Williamson (1975), too, develops an argument which contrasts the problems of spot-market transactions, with all the possibilities for cheating, renegging, and opportunism, with other forms of agreements (e.g., long-term contracts, franchising, organizational integration).[32]

The point here is that, absent exogenous enforcement, the reputational basis for enforcement of agreements is fraught with problems. And because various forms of opportunistic behavior are still possible, cooperation based on enforcement-by-reputation does not exhaust otherwise mutually advantageous exchanges. Some exchanges, that is, which are regarded as beneficial to the cooperating parties, will not take place because of (self)enforcement problems,

Institutional Solutions to Problems of Cooperation

I conjecture that the development of political institutions and specific ways of doing things is partly a response to cooperation problems.[33] Political agents come to a situation and wish to extract as much advantage as they can. But not knowing how conflicts will shape up, now or in the future, they develop mechanisms which enable positive collective action, on the one hand, but which possess aspects of insurance against renegging, opportunism, and other adverse circumstances on the other hand.

One telling example is the practice, in every legislature with which I am familiar, of voting the status quo, x^o, last. Any bill or motion must survive a "vote on final passage," a "motion to table," a "motion to recommit/to committee," a "proposal to strike the enacting clause," etc. In terms of my argument in the previous section, any bill or motion, however perfected by amendment, must be an element of $W(x^o)$ if it is to survive as the final outcome. Consequently, no amount of strategic behavior, opportunism, cheating, or renegging on promises can ever produce a final outcome which makes any decisive coalition worse off than they were under the status quo ante.[34] Because of this institutional practice, some forms of self-enforcement are possible which do not require the force of reputation.

This feature of legislatures permits other institutional practices to evolve, prosper, and survive. Legislators, for example, have differential concerns. Some care principally about one bundle of policy dimensions while others are most concerned about some different bundle. These differences in salience suggest the possibility of gains from trade — each group trading off influence in one area in exchange for disproportionate influence in the other. One possible solution, for example, is the omnibus. Let each set of legislators have disproportionate influence in molding a proposal in their respective areas

of concern. But instead of voting each proposal separately, tie them together into a single bill composed of distinct sections. Such a solution is, in fact, the predominate practice in the U.S. Congress in those policy areas that recur with some regularity, e.g., the biennial omnibus rivers and harbors bill (see Ferejohn, 1974).

However, all the problems of spot markets emerge if these exchanges must take place de nova at each occasion. Deals struck risk coming unstuck. In short, it would seem that, except for those circumstances that recur frequently, the omnibus solution is costly to transact and enforce. A more efficient solution, still entailing protection against opportunism, is complete decentralization via a committee system with the proviso of voting x^o last. This is Weingast's (1983) persuasive argument for the emergence of a division-of-labor arrangement in the U.S. Congress. Each committee may be composed of "interesteds," or Niskanian (1971) "high demanders," and bills may emerge from committees without the requirement that they be linked in an omnibus (thereby economizing on transactions costs). But the proviso of voting x^o last is sufficient to protect *every* decisive coalition from exploitation by committees. If, on the other hand, committees were not merely monopoly proposers of policy in a given jurisdiction, but monopoly providers of final outcomes, in which case they need not observe $W(x^o)$ as a constraint, then no such protection is afforded and it is unlikely that the strong committee system we observe today would ever have developed.

Decentralization to committee, in turn, permits a kind of cooperation that is far more unlikely at the level of atomistic legislators. At the level of committees, reciprocity agreements are self-enforcing in a way that they are not at the level of individual legislators. Individual legislators come and go;

committees persist. The identity of the legislative agent from any specific district may change; the identity of the decisive coalition on a committee changes much more slowly. Thus, the committee system permits reciprocity and other forms of cooperation between committees because self-enforcement 1s more **easily** facilitated.

Institutions as Ex Ante Agreements

The argument developed only briefly here is that cooperation that is chancy and costly to transact at the level of individual agents is facilitated at the level of institutions. Practices, arrangements, and structures at the institutional level economize on transactions costs, reduce opportunism and other forms of agency "slippage," and thereby enhance the prospects of gains through cooperation, in a manner generally less available at the individual level. Institutions, then, look like ex ante agreements about a structure of cooperation.[35]

What is beginning to emerge in this argument is a wedge between choosing outcomes and choosing cooperation structures. The latter, chosen in advance of policy choice, must be assessed over many policy choices and evaluated over the duration it is expected to survive. When legislators in the very first Congress, for example, agreed to let the Speaker appoint all select and standing committees, the likely composition of no one committee dominated this decision. Rather it was the "on average" assessment and was compared to another "on average" assessment of the contending alternative (electing each committee). Both uncertainty and indifference made appointment by the Speaker appear desirable in comparison to a time-intensive alternative.[36]

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Institutional Survival

When Riker (1980) describes institutions as "congealed tastes" and "unstable constants," he conjoins opposites — "congealed" and "constants" vs. "tastes" (known to be cyclic) and "unstable." Institutions, then, are something of a paradox for him. They seem to maintain themselves over short horizons, but ultimately succumb to the instability they repress. For Sait (1938), too, institutions are paradoxical. Strongly conditioned by their environment which changes only slowly, institutions look constant; but occasional abrupt environmental changes, coupled with imitation and diffusion, invest institutions with a longer term dynamic undetectable to individuals in the shorter term of, say, a human lifetime.

What is to be made of this paradox? Let me suggest a paradox of my own. Suppose institution p leads to a determinate SIE, x_p. Then, subject to the caveats I have developed in this section about the mechanisms by which institutions are chosen, p inherits the vulnerability it represses in x_p. Since $W(x_p) \neq \phi$, a decisive coalition may prefer some other structural arrangement, q, for which $x_q \in W(x_p)$. Suppose, on the other hand, that p does not lead to a determinate SIE.[37] For example, as I have shown elsewhere (Shepsle, 1979) and Denzau and Mackay (1983) have developed further, even when SIEs exist they rarely are unique. Thus, for any institution p, the set SIE(p) is normally not a singleton. Ex ante, then, individuals may be uncertain about what the adoption of p implies in policy terms. Their priors will not be as flat as those they would attach to pure majority rule, since probabilistic support is concentrated on SIE(p). But, since SIE(p) is a (possibly dense) set, their priors will not be spiked either.

The paradox I propose is the following. A modest amount of uncertainty
— about individual preferences, about which element of SIE(p) will emerge
ex post, etc. — may be sufficient to congeal tastes about institutions. One
such argument that proposes this logic is Weingast's rational choice model of
the norm **of** universalism (Weingast, 1979), In distributing some fixed pie by
pure majority rule, the unstable world of hard ball politics and minimum
winning coalitions (MWC) applies. Uncertainty, ex ante, over which MWC **will**
ultimately prevail induces a preference by individuals for a specific,
for-certain, sharing rule (in the perfectly symmetric case, this is the "rule
of 1/n" — **see** Weingast, Shepsle, and Johnsen, 1981). This sharing **rule is a**
maximal **element relative** to the set of all sharing rules and relative **to** MWC
politics.

At the level of institutional choice, the uncertainty is two-fold.
Ex ante, **p** may prevail over q because SIE(p) is preferred to SIE(q), the
latter now sets over which individuals have prior beliefs. Although I have
done no analysis, **it** would be worth inquiring whether the conjecture that Q
has maximal elements is plausible under various conditions, i.e., whether
inheritability is short-circuited by uncertainty.[38]

While there is a direct parallel here to the choice of sharing rules in
PMR distributive politics, until the analysis is done we cannot depend on
Q-maximal elements from this source alone. Adding detail about the mechanisms
by which institutions are chosen, as I did throughout this section, lends
credence to the view that even if Q is cyclic (and thus has no maximal
elements) no coalitions may be effective for alternatives to a given status
quo arrangement.

There is, however, a second form of uncertainty. A given institutional
arrangement, p, however uncertain its outcome implications ex ante, becomes

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relatively better known ex post. While always subject to the vicissitudes of exogenous change -- new elections bring a different configuration of preferences to a legislature, for example — it may even get stuck on a specific Xp e SIE(p). Now the uncertainty equation gets turned around. Will every effective set of agents prefer x_p to what they would expect from some alternative institution, q? If so, then p possesses a stability, even though Xp is not P-maximal.

4. Conclusion

It is difficult to bring this essay to a close on so conjectural a note, especially since it, in turn, is based on a more fundamental conjecture. Even though I sought to drive a wedge between policy choice and institutional choice, and thereby qualify the hypothesis of inheritability, I have accepted the common premise of both Riker and Sait that institutions persist in ways that ordinary policies do not. The sources of my belief in this premise are the role institutions play in facilitating cooperation and solving agency problems, and the restricted mechanisms by which institutional change may transpire. I think, however, that this premise requires further scrutiny, both empirically and theoretically.

Are institutional arrangements as stable (relative to policy outcomes) as Riker, Sait, and I presume? Any brief history of the House of Representatives points to particular high-water marks of institutional change — the estab- lishment and general use of standing committees, the accrual of powers by the Speaker, the establishment of a separate appropriations process, various "legislative reorganizations," etc. But between these high-water mark events — and frankly even they occur with some frequency -- are many "smaller" changes and many more failed efforts at change. I suppose we really have not

yet found a precise scientific language in which to characterize institutions and assess magnitudes of change.

And this is where I leave the discussion. Institutions, I have claimed, by their very structure induce an element of stability in policy outcomes that does not emerge in the more atomistic world of pure majority rule. I have further proposed that choices over institutional arrangements, based on ex ante beliefs and calculations about cooperation problems, need not inherit the instability of preferences over outcomes. Yet I have left vague exactly what it is that constitutes an institutional practice or arrangement. I have begun the task of characterizing the "institution space" in my discussion of a divison-of-labor, jurisdictions, specialization-of-labor, and rules of comparison and monitoring. These, in turn, imply particular practices in the formation of agendas and lay bare the strategic character of institutional choice (Shepsle and Weingast, 1981b, 1984). But these hardly constitute a beginning.

FOOTNOTES

1. I refer here not to the work on socialization, which is not at all formal, but rather to the work on incentive structures and the preferences they induce. See the citations in note 32 below on agency theory, as well as the now voluminous literature on incentive compatability and demand-revealing mechanisms.

2. There are a number of qualifications required to give these results a proper formulation. The "almost every" stricture acknowledges that there are conditions, given a general form in Plott (1967) and Slutsky (1979), in which there exists a point y for which neither (1) nor (2) holds. The existence conditions for such a "core point" or "Condorcet winner," however, are so restrictive and so sensitive to purturbations as to be safely ignored, at least in the present discussion. The characterization in the text is, in effect, the Cohen-McKelvey-Schofield Theorem in which voters are nonstrategic, noncooperative agents. Schwartz's Theorem is the cooperative complement to this result,

3. This discussion is based on Shepsle and Weingast, 1981a.

4. I should mention at this point, as Fiorina and I (1982) emphasized, that there are different levels of analysis and hence different degrees of equilibrium. Thus, even in the absence of equilibrium of PMR at the level of outcomes, there are other equilibrium concepts that exist. Ferejohn, McKelvey, and Packel (1981), for example, show that the open agenda process of PMR may be modeled as a Markov process with a stationary limiting probability distribution. Under various conditions they establish the existence of an equilibrium distribution. In short, PMR, lacking a core point in the space of outcomes, possesses a stochastic equilibrium in the space of probability distributions over outcomes.

5. An example of an equilibrium when A = {x}, restrictive though it may be, ls the number of senators per state. The equilibrium number if two since the Constitution prohibits any consideration of other quantities.

6. In anticipation of arguments in the next section, I note here that most institutional rules, like the ones proscribing certain comparisons, may be short-circuited. The ruling of the chair may·be challenged and over-ruled. The rules may be suspended. And so on. Social conventions entailing the observance of rules are in the form of ex ante agreements. Why, in any specific instance, they are in fact observed is an issue we examine shortly.

7. I expect that organization theorists have something to say about the structural features that distinguish the proceedings of amateur clubs from those of professional organizations. The latter, I claim, are character-ized by relative permanence, frequency of decision making, and a division-and specialization-of-labor. The evolution of the system of standing committees in the House of Representatives in the early nineteenth century provide some insight of the transformation of an organization, for external and internal reasons, from amateur to professional status. See Harlow (1917) and Cooper (1970).

8. For any set, S, a _covering_ of S is a finite collection of subsets $\Sigma = \{\sigma_1,\ldots,\sigma_k\}$ such that $\cup \sigma_i = S$. If $\sigma_i \cap \sigma_j = \phi$ for every $\sigma_i, \sigma_j \in \Sigma$, then Σ is a _partition_ of S.

9. I defer until the next section considerations of organizational adaptation to its external environment.

10. For simplicity of exposition, I have written a and B as sets with the same number of elements so that, shortly, we can conveniently match the elements of a and B. While not necessary, it does permit us to avoid notational nightmares.

1.1. Committees existed but the important decisions were _first_ made in the Committee-of-the-Whole only after which a bill or resolution was sent to a committee to be drafted formally. Moreover, the committees were required to report back, thus eliminating any veto power. See Shepsle (1978, Chap. 1).

12. Representative democracy is a system in which a small group is chosen to make social choices for the larger group across all dimensions of policy.

13. Weingast's (1979) discussion of norms follows a similar logic.

14. Throughout the 1970s, however, changes in the assignment process have increased the prospects for successful intervention, both directly and indirectly, by party leaders. See Shepsle (1978, Epilog) and Ray and Smith (1982).

15. For a game-theoretic treatment of a special version of this — in the form of a two-person game between a legislative committee (which picks a motion) and a rules committee (which picks a single amendment) — see Shepsle and Weingast (1981b).

16. As I write, these precise issues are being debated on the front pages of the nation's newspapers. On June 24, 1983, the Supreme Court decided the case of Immigration and Naturalization Service v. Chadha in which it invalidated the "legislative veto." A crucial issue emerging now is how much Congress would have delegated (will delegate) to executive agencies or the President if it did not have (no longer has) an opportunity for a "second look" and an opportunity to negative those exercises of delegated authority of which it disapproves.

17. $W(x)$ is the majority win set defined earlier by the majority P-relation. I remain silent on $W_j(x)$ inasmuch as the ideas below apply to any arrangement by which the ajea arrange their decision-making rules.

18. A more general expectational model is developed in Denzau and Mackay (1983). Also see Enelow and Hinich (1983) for a related development in which expectations are probabilistic rather than deterministic.

19. In Shepsle (1979), I called any $x \in X$ for which $W(x) = \phi$ a preference-induced equilibrium (PIE) and proved that the set PIE of such equilibria is contained in SIE, the set of structure-induced equilibria.

20. If each $i \in N$ is sophisticated, he would not vote to amend y by z, even though $z \in W(y)$. See Shepsle and Weingast (1984) and Ferejohn, Fiorina, and McKelvey (1981). If, on the other hand, the $i \in N$ are not (or are constrained from being) sophisticated, then this possibility exists.

21. In the House, for example, bills are perfected a title at a time whereas, in the Senate, an amendment to any title is in order at any time.

22. For explicitly formal treatments of conventions, norms, and institutions, see Lewis (1969), Ullman-Margalit (1978), and Schotter (1981), respectively. Schotter, in particular, takes a game-theoretic perspective in which institutions are regularities in social behavior that (i) are agreed to by the members of a community, (ii) specify behavior in recurrent situations, and (iii) are either self-policed or exogenously enforced.

23. For a more thoroughly modern development of this latter argument, see Alchian (1950).

24. This latter emphasis is experiencing something of a theoretical revival in economics. See Nelson and Winter (1982) and Hirshleifer (1982).

25. To keep matters somewhat concrete, let me be clear in restricting my discussion to formal political and organizational practices — structural arrangements and procedural methods. I shall have little to say about some of the things Sait took as institutions -- "private property, slavery, a stratified society." For a treatment similar in spirit to mine of these more macro practices, however, see Demsetz (1967).

26. This is clearly false in general, since we know the "traditional" arrangement with $\alpha = \{N\}$ and $\beta = \{E\}$ possesses no equilibrium. That is, the existence of SIEs is not general and must be established institution by institution. Except for some relatively simple settings (Shepsle, 1979; Shepsle and Weingast, 1981a; Denzau and Mackay, 1983), there are no general existence results to report. The assumption in the text, however, permits me to address matters of equilibrium institutions in a deterministic fashion without having to resort to stochastic arguments that would be necessitated by non-deterministic outcomes. Shortly, I relax this stricture by assuming SIEs exist but are not necessarily unique.

27. In response it might quite correctly be argued that just as an institutional arrangement may suppress policy cycles, so too a constitutional arrangement may suppress institutional cycles. But then, it might further be argued, would not the cyclicity of P, inherited by (but suppressed in) Q, in turn be inherited by the social relation T over constitutional regimes? That is, haven't I just pushed the problem back still another step? The answer, I suppose, is yes. But for this to be

important one must be able to continue to maintain that, because preferences are induced from the narrow level to the next broader level, choices at each level are essentially the same, deriving from the same calculus. Riker has argued that choosing over institutions is essentially the same as choosing over policies (since the PJS induce Qis): "In [this] sense, rules or institutions are just more alternatives in the policy space... (Riker, 1980, p. 22)." Now the same must be argued about constitutions. I find this implausible on its face, but will develop the argument further below.

28. Related and additional arguments are found in Shepsle and Weingast (1981a, pp. 516-517).

29. I should add, however, that communications conditions constitute an important aspect of an institutional arrangement — as in rules governing debate and discussion. Such rules may enhance or inhibit cooperation by affecting the transactions costs of coalition formation. This point is developed at some length in Shepsle and Weingast (1983b) in our commentary on an experimental study of cooperation by McKelvey and Ordeshook (1983).

30. The strongest form of sanction against a cheater is that of no future cooperation. This requires that agents be able to identify the cheating and the cheater. In informationally poorer circumstances, cheating may secure a one-time windfall at the risk of some probability of no future cooperation with the cheater. Laver (1981) has pointed out some of the problems associated with punishing cheaters.

31. This point is developed in more detail in Shepsle and Weingast (1983b). Recently my colleague, Barry Weingast, completed an early draft of "The Industrial Organization of Congress" in which he applies principles of the theory of agency and the theory of industrial organization to legislatures. This is an outstanding intellectual effort from which I have borrowed heavily.

32. Also see Klein, Crawford, and Alchian (1978).

33. These are called agency problems in the industrial organization literature. See Holmstrom (1979), Jensen and Meckling (1976), Fama and Jensen (1982), and Ross (1973), among others.

34. This provides probabilistic insurance to each individual. In a simple majority rule legislature, for example, the odds are better than even on average, that any individual is part of a decisive coalition whose wishes serve to constrain final outcomes.

35. Weingast, in personal discussions, suggests the metaphor of a capital structure. Institutions are like the structure of technology, physical, and human capital that characterize the capacities of a production process.

36. As the slavery issue overwhelmed all others from the 1830s on, so that Speakership appointments (especially to the Committee on Territories) took on global significance, Speakership elections became protracted and bitter, and efforts to strip the Speaker of committee assignment authority grew more frequent (see Shepsle, 1978, Chap. 1).

37. See note 26 on the nonuniqueness of SIEs.

38. This orientation equates an institution with a lottery over outcomes, and institutional choice with choice among lotteries. This is precisely the view taken by Fiorina (1982) in modeling the legislative choice of alternative modes of regulation. Some technical results about choice over lotteries is found in Fishburn (1972), Shepsle (1972), McKelvey (1980), and McKelvey and Richelson (1974).

REFERENCES

Alchian, Armen A. 1950. "Evolution, Uncertainty, and Economic Theory."
Journal of Political Economy 58: 211-221.

Axelrod, Robert. 1981. "The Emergence of Cooperation Among Egoists."
American Political Science Review 75: 306-318.

Black, Duncan. 1948. "On the Rationale of Group Decision Making."
Journal of Political Economy 56: 23-44.

Blydenburgh, John C. 1971. "The Closed Rule and the Paradox of Voting."
Journal of Politics 33: 57-71.

Cohen, Linda. 1979. "Cyclic Sets in Multidimensional Voting Models."
Journal of Economic Theory 20: 1-12.

Cooper, Joseph. 1970. The Origins of the Standing Committees and
The Development of the Modern House. Houston: Rice University.

Cox, Gary W., Mathew D. McCubbins, and Terry Sullivan. 1983. "Policy and
Constituency: Reelection Incentives and the Choice of Policy
Intervention." Mimeo. University of Texas, Austin.

Demsetz, Harold. 1967. "Toward a Theory of Property Rights." American
Economic Review 57: 347-360.

Denzau, Arthur T. and Robert P. Parks. 1979. "Deriving Public Sector
Preferences." Journal of Public Economics 11: 335-352.

_____ and Robert J. Mackay. 1981. "Structure Induced Equilibrium
and Perfect Foresight Expectations." American Journal of Political
Science 25: 762-779.

_____. 1983. "The Gate Keeping and Monopoly
Power of Committees: An Analysis of Sincere and Sophisticated Behavior."
American Journal of Political Science 27: forthcoming.

Downs, Anthony. 1957. An Economic Theory of Democracy. New York:
Harper and Row.

Enelow, James M. 1982. "Saving Amendments, Killer Amendments, and a
New Theory of Congressional Voting." Mimeo. SUNY, Stony Brook.

_____ and Melvin J. Hinich. 1983. "Voting One Issue at a Time:
The   question of Voter Forecasts." American Political Science Review 77:
435-446.

Fama, Eugene F. and Michael C. Jensen. 1982. "Agency Problems and the
Survival of Organizations." Unpublished paper. University of Rochester.

Fenno, Richard F. 1978. Home Style. Boston: Little-Brown.

Ferejohn, John A. 1974. <u>Pork Barrel Politics</u>. Stanford: Stanford
    University Press.

_____, Richard D. McKelvey, and Edward Packel. 1981. "Limiting
    Distribution for Continuous State Markov Voting Models." Mimeo. Caltech.

_____, Morris P. Fiorina, and Richard D. McKelvey. 1981.
    "A theory of Legislative Behavior on Divisible Policy." Mimeo. Caltech.

Fiorina, Morris P. 1977. <u>Congress: Keystone of the Washington Establishment</u>.
    New Haven: Yale University Press.

_____. 1982. "Legislative Choice of Regulatory Forms: Legal
    Process or Administrative Process?" <u>Public Choice</u> 39: 33-66.

_____. 1983. "Some Observations on Policy Relevant Models of
    Legislative Decision Making." Delivered at Annual Meeting of Midwest
    Political Science Association. Chicago.

_____ and Kenneth A. Shepsle. 1982. "Equilibrium, Disequilibrium,
    and the General Possibility of a Science of Politics." In Ordeshook,
    Peter C. and Kenneth A. Shepsle (Eds.). <u>Political Equilibrium</u>. Boston:
    Kluwer-Nijhoff. Pp. 49-65.

Fishburn, Peter C. 1972. "Lotteries and Social Choices." <u>Journal of
    Economic Theory</u> 5: 189-207.

Harlow, Ralph V. 1917. <u>The History of Legislative Methods in the Period
    Before 1825</u>. New Haven: Yale University Press.

Hirshleifer, Jack. 1982. "Evolutionary Models in Economics and Law."
    <u>Research in Law and Economics</u> 4: 1-60.

Holmstrom, Bengt. 1979. "Moral Hazard and Observability." <u>Bell Journal
    of Economics</u> 10: 74-91.

Jensen, Michael C. and William H. Meckling. 1976. "Theory of the Firm:
    Managerial Behavior, Agency Costs, and Ownership Structure."
    <u>Journal of Financial Economics</u> 3: 305-360.

Klein, Benjamin, Robert Crawford, and Armen Alchian. 1978. "Vertical
    Integration, Appropriable Rents, and the Competitive Contracting Process."
    <u>Journal of Law and Economics</u> 21: 297-326.

Koehler, David. 1982. "Structure Induced Equilibrium in the Legislative
    Process." Delivered at Annual Meeting of the American Political Science
    Association. Denver.

Laver, Michael. 1981. <u>The Politics of Private Desires</u>. Harmondsworth,
    Middlesex, England: Penguin Books.

_____. 1982. "The Politics of Crime and Vice Versa." Delivered at
    the Public Choice Workshop. Washington University, St. Louis.

Lewis, David K. 1969. <u>Convention</u>. Cambridge: Harvard University Press.

Mayhew, David. 1974. <u>Congress: The Electoral Connection</u>. New Haven: Yale University Press.

McKelvey, Richard D. 1976. "Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control." <u>Journal of Economic Theory</u> 2: 472-482.

_____. 1979. "General Conditions for Global Intransitivities in Formal Voting Models." <u>Econometrica</u> 47: 1085-1111.

_____ 1980. "Ambiguity in Spatial Models of Policy Formation. <u>Public Choice</u> 35: 385-402.

_____ and Jeff Richelson. 1974. "Cycles of Risk." <u>Public Choice</u> 18: 41-66.

_____ and Peter C. Ordeshook. 1983. "An Experimental Study of the Effects of Procedural Rules on Committee Behavior." <u>Journal of Politics</u>: forthcoming.

Mitnick, Barry. 1975. "The Theory of Agency: The Policing 'Paradox' and Regulatory Behavior." <u>Public Choice</u> 24: 27-43.

Nelson, Richard R. and Sidney G. Winter. 1982. <u>An Evolutionary Theory of Economic Change</u>. Cambridge: Harvard University Press.

Niskanen, William. 1971. <u>Bureaucracy and Representative Government</u>. Chicago: Aldine.

Plott, Charles R. 1967. "A Notion of Equilibrium and Its Possibility Under Majority Rule." <u>American Economic Review</u> 67: 787-806.

Ray, Bruce A. and Steven S. Smith. 1982. "House Committee Assignments Revisited: The Democrats Play Musical Chairs." Delivered at Annual Meeting of the American Political Science Association. Denver.

Riker, William H. 1965. "Arrow's Theorem and Some Examples of the Paradox of Voting." In John M. Claunch (Ed.). <u>Mathematical Applications in Political Science</u>. Dallas: Southern Methodist University Press.

_____. 1980. "Implications from the Disequilibrium of Majority Rule for the Study of Institutions." <u>American Political Science Review</u> 74: 432-447. Reprinted in Ordeshook, Peter C. and Kenneth A. Shepsle (Eds.). <u>Political Equilibrium</u>. Boston: Kluwer-Nijhoff. [Citations to latter source.]

Ross, Stephen A. 1973. "The Economic Theory of Agency: The Principal's Problem." <u>American Economic Review</u> 63: 134-139.

Sait, Edward M. 1938. _Political Institutions - A Preface_. Boston: Appleton-Century-Crofts.

Schelling, Thomas C. 1960. _The Strategy of Conflict_. Cambridge: Harvard University Press.

Schofield, Norman. 1978. "Instability of Simple Dynamic Games." _Review of Economic Studies_ 45: 575-594.

Schotter, Andrew. 1981. _The Economic Theory of Social Institutions_. Cambridge: Cambridge University Press.

Schwartz, Thomas. 1981. "The Universal Instability Theorem." _Public Choice_ 37: 487-502.

Shapley, Lloyd S. and Martin Shubik. 1967. "Concepts and Theories of Pure Competition." In Martin Shubik (Ed.), _Essays in Mathematical Economics in Honor of Oskar Morgenstern_. Princeton: Princeton University Press. Pp. 63-82.

Shepsle, Kenneth A. 1972. "The Strategy of Ambiguity: Uncertainty and Electoral Competition." _American Political Science Review_ 66: 555-568.

_____. 1978. _The Giant Jigsaw Puzzle: Democratic Committee Assignments in the Modern House_. Chicago: University of Chicago Press.

_____. 1979. "Institutional Arrangements and Equilibrium in Multidimensional Voting Models." _American Journal of Political Science_ 23: 27-60.

_____. 1982. "The Future Prospects of Formal Models of Legislatures." Delivered at NSF Conference on Legislatures. Iowa City.

_____ and Barry R. Weingast. 1981a. "Structure-Induced Equilibrium and Legislative Choice." _Public Choice_ 37: 503-519.

_____. 1981b. "Structure and Strategy: The Two Faces of Agenda Power." Delivered at Annual Meeting of American Political Science Association. New York.

_____. 1983a. "Political 'Solutions' to Market Problems." Mimeo. Washington University, St. Louis.

_____. 1983b. "When Do Rules of Procedure Matter?" Mimeo. Washington University, St. Louis.

_____. 1984. "Uncovered Sets and Sophisticated Voting Outcomes with Implications for Agenda Institutions." _American Journal of Political Science_ 28: forthcoming.

Slutsky, Steven. 1979. "Equilibrium Under α-Majority Rule." _Econometrica_ 47: 1113-1125.

Taylor, Michael. 1976. Anarchy and Cooperation. New York: Wiley.

Ullman-Margalit, Edna. 1977. The Emergence of Norms. Oxford: Oxford
    University Press.

Wagner, R. Harrison. 1983. "The Theory of Games and the Problem of
    International Cooperation." American Political Science Review 77: 330-347.

Weingast, Barry R. 1979. "A Rational Choice Perspective on Congressional
    Norms." American Journal of Political Science 23: 245-263.

_____. 1983. "The Industrial Organization of Congress."
    Mimeo. Washington University, St. Louis.

_____, Kenneth A. Shepsle, and Christopher Johnsen. 1981.
    "The Political Economy of Benefits and Costs: A Neoclassical Approach
    to Distributive Politics." Journal of Political Economy 89: 642-664.

Williamson, Oliver. 1975. Markets and Hierarchies. New York: The Free
    Press.