

Chapter One

An (Unusual) Introduction to the Study of Congress

Draft. 2.1

In 1994 the Republican party surprised even itself by winning control of the House of Representatives for the first time in a generation. Prior to the election, Republican leaders had convinced their congressional candidates to sign-on to the "Contract with America," a party platform outlining what they would do if they gained control of the Congress in the upcoming election. This campaign tactic had become a staple of Republican electioneering since the mid-1980s, so the press and the voters paid only modest attention to the Contract's contents. Once the impossible happened, all eyes were on the Republicans to see if they would fulfill their promises to pass a balanced budget constitutional amendment, crack down on crime, provide tax benefits to families with children, implement welfare reform, restrict the authority of United Nations commanders over American troops, institute tort law reform, cut income taxes on capital gains, impose term limits on members of Congress, and implement internal reforms of the House.

After a few heady days at the beginning of the 104th Congress when the House Republicans made rapid progress in pushing many elements of the Contract, the going got tough. The change-the-world ardor of the House Republicans ran aground among the Senate Republicans, who allowed one-third of the Contract platform to die there (Bader 1997, p. 363). In the fall of 1995, when momentum for the Contract began to wane, Speaker Newt Gingrich assessed the political problem this way in a speech to House and Senate Republicans: "Let me tell

you what I think the real challenge to us in the next sixty days is. It isn't the left. It isn't the Democrats. It's us."¹

And then, after a year in which Republicans controlled Congress, achieving limited success in pulling national politics in a conservative direction, a strange thing happened. Suddenly, the hottest legislative topic became . . . raising the minimum wage! What made this strange was the fact that the Republicans were the party of free enterprise and limited regulation over the economy. Small businesspeople, who are a core constituency of the Republican party, long had opposed raising the minimum wage — and some even supported abolishing it altogether. So, with both chambers of Congress controlled by the party that was antagonistic toward the minimum wage, why did both chambers vote overwhelmingly (354-72 in the House and 76-22 in the Senate) to raise it?

An important key to getting the minimum wage law passed in both chambers was groups of "moderate" Republicans who announced they would oppose their own party leaders on this issue and vote, along with virtually all the Democrats, to increase the minimum wage. This announcement sent Republican leaders in both chambers scrambling. (That the Senate Republican leader, Bob Dole, was also the presumptive Republican nominee for president in 1996 made the scrambling particularly noticeable.) While they scrambled to re-impose party discipline, Republican leaders tried to postpone floor action. They tried to bottle up legislation in committee. They even tried to attach "killer amendments" to the measure. Try as they might, Republican party leaders achieved only limited success in slowing the minimum wage juggernaut.

¹Jackie Koszczuk and David S. Cloud, "GOP Leaders Tell the Troops, It's Time to Lock Hands," *Congressional Quarterly Weekly Report*, 16 Sept. 1995, p. 2769.

After a period of intense legislative wrangling, the House and Senate finally passed an increase in the minimum wage in September 1996, just in time for the November election. The final bill that was passed and signed by President Clinton (a Democrat) represented a compromise among several interests, and not only those solely interested in the minimum wage. Indeed, an important feature of the final law had nothing to do with the minimum wage at all — tax cuts which had started out as elements of the Contract with America.²

The minimum wage episode presents a number of questions, or puzzles, for the careful observer. Why did some Republicans, and not others, defect from Republican orthodoxy and from their leaders? Why didn't an analogous group of Democrats threaten to *oppose* the minimum wage increase, defecting from *their* leaders? Why didn't the Republican leadership punish the moderate Republicans who opposed them on the minimum wage issue? Why hadn't the Democrats pursued a minimum wage increase in 1993 or 1994, when they had a majority in Congress and control of the White House? Why was a tax cut attached to a bill to raise the minimum wage? Etc.

Questions such as these arise frequently in the analysis of the legislative process. How these questions are answered differs according to who responds. An issue activist would probably approach these questions quite differently from a journalist working for the *New York Times*, for instance, and both would answer differently from the senators and representatives themselves.

The purpose of this book is to help us understand how *political scientists* answer questions about legislative activity. Political scientists are different from activists, journalists, and

²Provisions of the minimum wage bill are reported in the *Congressional Quarterly Weekly Report*, 21 Sept. 1996, pp. 2705 – 2708.

politicians when they approach questions about legislative behavior because they are typically interested in seeking *general* explanations that apply in numerous settings. They also differ because these general explanations operate at a level more abstract than the politics they are meant to explain. Thus, in answering more detailed questions about the effort in 1996 to raise the minimum wage, the political scientist would appeal to certain general, abstract concepts such as ideology, interest, progressive ambition, jurisdictional property rights, agenda-setting power, gatekeeping authority, logrolling, and sophisticated voting.

While there are some important ways in which the minimum wage issue in 1996 was unique, much of what happened was the replay of old stories involving abstract concepts that we understand very well. For instance, "moderate" Republicans typically represent districts whose voters are more sympathetic to the minimum wage than voters represented by "conservative" Republicans. Indeed, they often represent districts that could just as well elect a Democrat in the next election. Therefore, the moderate Republicans who deserted their leaders on the minimum wage were acting to protect their electoral careers, trading off loyalty to party with their own narrower political concerns.

The eventual packaging together of the minimum wage with a tax cut is also part of an old story. In general, if I care intensely about achieving X and not so much about Y, while you care intensely about Y and not so much about X, we might trade our votes: I'll support Y, you support X, and we both are better off. In the case of the minimum wage, Democrats cared intensely about the minimum wage, both for symbolic and practical reasons. As far as they were concerned, a tax cut for the middle and upper classes (even one aimed at families) was less important. The Republicans felt exactly the opposite. A deal was done. The Democrats got

what they wanted on the minimum wage, the Republicans got what *they* wanted on the tax cut, and the final bill passed overwhelmingly among both Democrats and Republicans.

In addition to creating explanations for politics that are more abstract than any one instance of political action, political scientists strive to break down political events into smaller pieces — pieces that are eventually small enough to be understandable. Any endeavor that strives to be scientific, whether it be a natural science such as chemistry or a social science such as economics, relies on breaking reality down into basic building blocks that can later be re-combined to address particular real-world cases. The chemical engineer who wants to design a process to manufacture a new pharmaceutical must start, at least implicitly, with an understanding of chemistry at the atomic level. The biologist seeking a cure for cancer is likely to start with basic genetics. That the chemical engineer may have learned basic chemistry in high school or the biologist may have learned basic genetics as a freshman in college should not obscure the fact that their careers are possible only because they have mastered certain fundamental processes that they encounter in millions of particular manifestations every day.

Like the chemical engineer who starts with atoms and the biologist who starts with DNA, the political scientist desiring to understand how a legislature behaves begins with basic building blocks. In this case, they are the motivations and aspirations of individuals. Individuals, called legislators, seek to achieve certain ends through their legislative activity. They are rarely able to achieve what they want by acting alone — *it is* a legislature, after all — but instead must act through the rules established by the legislature or imposed on the outside by a constitution. Other individuals, called constituents and voters, aim to achieve certain things through the efforts of their representatives. Representatives and constituents sometimes interact directly — as when a

retiree tries to dislodge a check from the Social Security Administration. But they mostly interact in an institutional setting called elections. It is the interaction between individuals and institutions that forms the core of the study of Congress.

The rest of this book is about the interplay between the individuals and the rules that together constitute the United States Congress and its electoral environment. In order to undertake this exploration most fruitfully, we must begin abstractly, laying out basic building blocks and then assembling them together systematically. The remainder of this chapter introduces the reader to the rudiments of rational choice theory as they have been applied to legislatures generally and Congress specifically. It is necessarily abstract, because we want to lay a firm foundation for later chapters in which we analyze more complicated features of Congress. This chapter is not *too* abstract, however, because I don't want us to lose sight of the fact that we are ultimately interested in understanding a flesh-and-blood organization that dominates the news every day. If you want even *more* abstraction, I have provided a bibliography at the end of this chapter to help you explore in even more detail the topics I introduce. If you want *less* abstraction, just wait: subsequent chapters will return to the better-known world of history, elections, committees, and lawmaking.

I. The Politics of Linneland

Goldilocks sat down at the bears' table and spied the bowls of porridge. The first one she tried was too hot. The second was too cold. The third bowl was just right, and she ate it right up.

What do the following stories have in common?

Example 1 (The Supreme Court). In 199*, the Supreme Court heard an important case concerning abortion rights. For twenty years the Supreme Court had consistently held that women had the right to have an abortion in most circumstances during the first trimester of pregnancy. But, these rulings were highly controversial among many state legislators, resulting in many state laws restricting the right to an abortion and, in turn, many court challenges to state laws. Due to retirements and replacements, the Supreme Court had become more conservative over those twenty years. As a result, Court decisions upholding abortion rights were frequently approved by the narrowest of margins — by a 5-4 vote. One person in particular who was usually on the 5-person majority of these decisions was Justice Sandra Day O'Connor, who had expressed some discomfort over the Court's abortion rights rulings. Therefore, on this particular day, although there were nine justices hearing the arguments of the two sides of the case, the lawyers on both sides spoke directly to Justice O'Connor, trying to argue that their position was the right one.

Example 2 (Dick Morris and Robert Reich). Following the 1994 election, which returned Republicans to control of the House of Representatives for the first time in half a century, President Clinton became very worried about his own reelection prospects in 1996. To help him position himself for the 1996 election, he brought in political consultant Richard Morris, who was primarily known for helping Republican candidates. One day, Morris visited Robert Reich, one of Clinton's oldest friends and the Secretary of Labor. (As Secretary of Labor, Reich was responsible for worrying about things such as job training and education, unemployment, and worker safety.) Here is how Reich recounted the dialogue between him and Morris during his visit:

"You have a lot of good ideas," [Morris] says. "The President likes your ideas. I want them so I can test them." Morris speaks in a quick staccato that doesn't vary. Sentences are stripped of all extraneous words or sounds. The pitch is flat and nasal.

"Test them?"

"Put them into our opinion poll. I can know within a day or two whether they *work*. Anything under forty percent doesn't work. Fifty percent is a possibility. Sixty or seventy, and the President may well use it. I can get a *very* accurate read on the swing."

"Swing?"

Morris turns into a machine gun. "Clinton has a solid forty percent of the people who will go to the polls. Another forty percent will never vote for him. That leaves the swing. Half of the swing, ten percent, lean toward him. The other ten percent lean against him, toward Dole. We use Dole as a surrogate for the

Republican candidate, whoever it may be. If your idea works with the swing, we'll use it." . . . "So, what are your ideas?"³

Example 3 (Fratboys buy a car). Three fraternity brothers — Bob, Carl, and Ted — agree to go in together to buy a car. None of them particularly cares about what kind of car it is or what amenities it has, just so long as it runs. After agreeing to buy the car, they realize they haven't agreed on the only thing that's important to them: how much to spend on the car. Since their fraternal bond will be irreparably broken if they back out of the deal to buy the car together, they agree to settle on a car price via a majority vote. Bob wants to spend \$500 for the car, Carl wants to spend \$1,000, and Ted wants to spend \$2,000. Ted suggests they spend \$2,000. Carl counters with \$1,000, which Bob likes compared to the \$2,000. Ted tries a compromise: how about \$1,500? Both Bob and Carl say "too expensive." Bob tries another compromise: \$750. Carl and Ted say "too cheap." One thousand dollars it is.

Each of these examples (two real and one fanciful) has four things in common. First, each involves a choice to be made by a group of people through the mechanism of majority rule. Second, the choices that are available to the decisionmakers can be arrayed along a "more or less" or "greater or lesser" dimension — greater or lesser abortion rights, more or less protection of laborers, and more or less spending on a car. Third, each example has someone directly in the middle of the dimension — Sandra Day O'Connor, who's typically part of one four-person coalition but is thinking out loud about joining the other four-person coalition, the 20% of swing voters, who might or might not support Bill Clinton in 1996, and Carl, who wants to spend \$1,000 on a car. Fourth, in each example, it is this middle person (or persons) who decides the outcome.

Two of these three examples involve some obvious political choice. It is not uncommon in politics to encounter political choices that can easily be arrayed along a single dimension, either a tangible dimension or an abstract one. Political discourse is littered with unidimensional

³Robert B. Reich, *Locked in the Cabinet*, New York, Alfred Knopf, 1997, pp. 271-2.

descriptions of politics. When we talk about liberals and conservatives, we are engaging in a unidimensional political analysis. Liberals are on the left, conservatives on the right, and moderates in the middle. There are shades of ideological conviction — radical liberals, who are "far to the left", and reactionaries, who are "far to the right." A moderate might "lean to the left" or "lean to the right."

Fig. I-1 It is this type of informal understanding of single dimensional politics that gave rise to the whimsical "Completely Unofficial Senate Ideological Spectrum" that is reprinted in Figure I-1 from the newspaper *Roll Call*. The "Completely Unofficial Senate Ideological Spectrum" not only places the senators of the 103rd Congress in a left-right space, but it also places the president, his wife, a passel of journalists, and a well-known filmmaker.

Single dimensional analysis also undergirds statements such as "he's a friend of farmers" or "she's in the pocket of big business." Underlying these labels is the idea that we can rank-order people according to how willing they are to support the aspirations of farmers or business or any other group. "More or less," "friend or foe," "left or right" are all statements that can be thought of in dimensional terms.

As we begin our introduction to the analytical study of legislative politics, I want us to start with this simple, single-dimensional way of thinking about politics. Two things will be gained by doing so. First, we can see how political scientists take a seemingly diverse set of political choices, boil them down to their unifying essence, and then reach more and abstract general conclusions about practical politics as a consequences. Second, we will also begin to explore the most basic analytical tool currently used in the study of legislatures — spatial voting theory. This is the tool that we will return to time and again as we examine how the Constitution

was constructed, how elections are waged, and how internal substructures like committees operate. It is a basic building block of the science of legislatures.

For the remainder of this section, I will take the single dimensional (or *unidimensional*) view of politics very seriously, exploring its basic elements and pointing out how it can be used to illuminate legislative dynamics. Having laid the ground work in one dimension, we will then (in the next section) explore politics when we take the spatial view to allow for politics to exist in more than one dimension — when we move from the politics of Lineland to the politics of Flatland.

Before beginning an exploration of spatial voting theory, a word of advice: most works of history and political science can be read casually, with the reader making an occasional marginal comment or highlighting a particular phrase. The rest of this chapter is unlike most books in political science. It is more like a textbook in math or science. Like such textbooks, it builds from one idea to the next. You should make sure that you have mastered one set of ideas before moving on. You should also read the following pages actively, with a pencil and pad of paper close by, so you can work out the ideas and examples that are explored. Unlike most topics covered in political science, there are right and wrong answers in the spatial theory of voting. You are more likely to understand why certain answers are right or wrong if you have worked through a number of examples. To help with this exploration, the end of the chapter includes a number of exercises.

The history of spatial voting theory

Spatial voting theory traces its roots back to the 1920s, to the work of Harold Hotelling, who examined (among other things) why merchants located their stores where they did. Why, Hotelling asked, did rival merchants tend to locate their stores close by each other? After all, if Mr. Sears and Mr. Penny located their stores across the street from each other, then a customer, looking for a bargain, could easily compare prices in the two stores and shop where the prices were lower. If the stores were located far apart, then it would be harder for customers to comparison shop, easier for stores to have captive customers, and therefore easier for stores to charge more for their goods.

In analyzing this "grocery store problem," Hotelling used the following reasoning. Assume there is one main road running into town, with the town's population located along the road at evenly-spaced intervals. There are two merchants with stores, Mr. Sears and Mr. Penny, who sell identical goods at identical prices. It is costly for customers to travel to a store. (Travel costs are assumed to be directly proportional to the length of the road being travelled.) Because their goods and prices are the same, customers will patronize whichever store is closer. Where should Messrs. Sears and Penny locate their stores?

Fig. I-2

They might choose locations similar to those in the top panel of Figure I-2. With these locations, there is a point exactly half-way between Mr. Sears and Mr. Penny, indicated with a vertical line. Town residents who live to the left of the line will patronize Mr. Penny because his store is closer; likewise, residents who live to the right will patronize Mr. Sears. Note that from the way the example is constructed, the half-way point between the two stores favors Mr. Sears, who will do a more active business than Mr. Penny.

Had Mr. Penny chosen a better location, he could have lured more customers into his store. So, suppose Mr. Penny could costlessly move his store to the center of town, as in the middle panel of Figure I-2. With Mr. Penny in the center of town and Mr. Sears still on the outskirts, Penny increases his business at the expense of Sears. Of course, Mr. Sears could recoup some of his losses to Mr. Penny, by moving right next door to him. With Messrs. Penny and Sears located next to each other, in the center of town, they could split the town's business evenly. Note that neither merchant would have an incentive to move any further, since doing so would only diminish that merchant's business. We would say that the location of the two stores is in equilibrium. In general, if stores sell identical goods at identical prices, and if customers don't like to travel, there is a rational process that will lead to competing stores to locate next to each other, in the center of town.

Hotelling noted the potential political application of this simple model of store locations. At the end of his essay about grocery stores he wrote,

So general is this tendency [of competitors to locate in close proximity] that it appears in the most diverse fields of competitive activity, even quite apart from what is called economic life. In politics it is strikingly exemplified. The competition for votes between the Republican and Democratic parties does not lead to a clear drawing of issues, an adoption of two strongly contrasted positions between which the voter may choose. Instead, each party strives to make its platform as much like the other's as possible. Any radical departure would lose many votes, even though it might lead to stronger commendation of the party by some who would vote for it anyhow.⁴

It took a quarter of a century before Hotelling's political musings were translated into explicit models of politics. But, since the 1950s, Hotelling's insights have been fruitfully extended

⁴Hotelling, "Stability in Competition," *Economic Journal* 39 (1929), **.

to two arenas of political decisionmaking: mass elections and legislative decisionmaking.

Consider, first, the case of mass elections, first developed by Anthony Downs in 1957.⁵

Fig. I-3 The question Downs sought to answer was this: if citizens cast their votes ideologically and if candidates can choose the types of appeals they make to voters in order to attract their votes, what types of platforms will candidates adopt? An answer to this question can be developed by re-labeling Figure I-2, so that the line no longer represents a road into town, but now represents the well-known liberal-conservative ideological continuum. Figure I-3 accomplishes this relabeling. Instead of two merchants, Mr. Penny and Mr. Sears, we have two politicians, Ms Penny and Ms Sears.

In Figure I-3a, Ms Penny and Ms Sears have located themselves a little way out toward the ideological extremes. Taking moderate-liberal and moderate-conservative positions, there is a point exactly half-way between Penny and Sears, indicated with a vertical line. Voters who are to the left of the line will vote for Ms Penny because she is closer; likewise, voters who are to the right will vote for Ms Sears. Note that from the way the example is constructed, Sears wins the election.

Had Ms Sears chosen a better ideological location, she could have received more votes. Consider if she had adopted a perfectly middle-of-the-road position, as in Figure I-3b. Here, Ms Penny can horn in on Ms Sears's support, now winning a majority. Ms Sears, not happy with the new state of affairs, could also moderate, taking a position that is nearly identical to Ms Penny's,

⁵Anthony Downs, *An Economic Theory of Democracy*, New York, Harper and Row, 1957.

as in Figure I-3c. With Ms Penny and Ms Sears located next to each other, they now split the votes evenly.

Ms Penny and Ms Sears have achieved a tie. This is the best that either one could do. If either Penny or Sears moves even a little and the other stays put, she will lose. Thus, if voters base their voting decisions purely on ideological proximity and if candidates can adopt any ideological position they desire, there is a tendency in two-candidate races for both candidates to converge to the center, and for elections to be tied.

In 1958, Duncan Black performed a similar analysis, applying this single-dimensional voting model to committee deliberations.⁶ Now, the question was, If members of a committee have ideological preferences and are presented with two policy alternatives that can be described as lying along that ideological dimension, which alternative will be adopted by the committee? Similarly, if an agenda-setter can decide which motions to propose to a committee, what should those motions be?

In applying the Hotelling-Downs logic to committees, there is one important difference to take into account at the beginning. Mass electorates and economic markets are typically so large that it makes sense to summarize preferences or geographic location with a line, and to assume that individuals are packed like sardines along the line. Committees, by definition, are subsets of the electorate. Its members can be easily identified. Therefore, although we may construct a theoretically-continuous dimension on which to situate committee members, we will (at least for

⁶Duncan Black, *The Theory of Committees and Elections*, New York, Cambridge University Press, 1958.

the moment) specify the location of each member, as well as the location of the motions they vote for.

Fig. I-4 Figure I-4 helps to illustrate how the questions posed by Black might be answered in the context of a minimum wage debate. Suppose, now, we have a five-person committee whose members are arrayed as described in Figure I-4a. The members are named Almay, Belk, Caldor, Dillard, and Eckerd. They are arrayed along a dimension that describes how high the minimum wage should be set. Almay believes the minimum wage should be abolished while Belk believes there should be a minimum wage, but at a very low level. Dillard and Eckerd believe the minimum wage should be set very high, with Eckerd believing it should be \$10/hr. Caldor is somewhere in the middle, preferring a minimum wage of \$5.50 per hour.

Suppose this committee must choose how high the minimum wage is going to be, and they are given a choice between alternatives labeled X (\$3.50) and Y (\$7.00) in Figure I-4a. Which alternative will prevail?

Almay and Belk clearly prefer X over Y; Dillard and Eckerd clearly prefer Y over X. By a small margin, Caldor prefers the greater amount, Y, and so it prevails by a 3-2 vote.

Suppose it were possible to make amendments, and that option X were changed to \$5/hr., leaving Y unchanged. What then? Figure I-4b illustrates that this change would induce Caldor to switch her support, from Y to X, making X the winner.

Finally, allow one more amendment, this time moving alternative Y closer to the center of the *committee members' preferences*, equal precisely to Caldor's ideal minimum wage. This amendment is illustrated in Figure I-4c. With Y now equal to Caldor's position, three members of the committee support Y, 2 support X, and Y wins. A little manipulation of the model reveals

that there is no other amendment to X that would allow it to unambiguously beat Y . The best supporters of X could hope to do would be to amend it so that it, too, perfectly corresponded to Caldor's position. Most people would regard such an amendment as trivial, since it would leave the committee with only one proposal, not two, located precisely at Caldor's ideal minimum wage.

It's no accident that the motions in this example tend to converge on Caldor's ideal minimum wage. Caldor is the *median* member of the committee. That is, there are as many members to the left of her as there are to the right. In general, when a committee can be arrayed along a single dimension, anyone on the committee can make a motion, and voting can go on as long as the committee wishes, the position of the median committee member will prevail.

Each of these three simple examples — the location of a store, the ideological location of candidates, and the choice of a minimum wage — illustrates the power of the *median voter* in one-dimensional proximity models of economics and politics. The median voter result is so important in political science that if outcomes don't respect the median's preferences (assuming the issue can be fairly characterized as unidimensional), then there is a major puzzle to be explained. Even when results *don't* correspond perfectly with the median's preferences — and they rarely do — we can utilize the logic of the spatial voting setting to analyze what happened to cause policy to deviate from the median's preferences. Thus, the median voter result is frequently the jumping-off point for many types of political and policy analysis.

In the preceding pages, we have relied on some simple examples to illustrate spatial voting theory. Spatial voting theory relies on a more formal vocabulary, however, so we must proceed to state, a bit more precisely, what the theory is and how it works. Because the median voter

result is so central to the political science of legislatures, it is in the context of that result that we will next delineate the special language one needs in order to use and understand the theory.

A more formal introduction to spatial voting theory

There are three elements necessary to undertake a spatial analysis of politics: (1) voter *preferences*, (2) issue *alternatives*, and (3) the *rules* by which the alternatives are voted on. The first two elements require some understanding of what the word "spatial" signifies in spatial voting theory, so we begin this section with a small diversion to consider "what's so spatial about spatial voting theory?"

We assume that preferences are *spatial* in the sense that they can be characterized in some Euclidean space. (Euclidean space is the intuitive, everyday coordinate system taught in high school geometry. For this reason, spatial voting theory is sometimes called *Euclidean voting* .) We also assume that all policy alternatives can be described spatially. If the space is one-dimensional, then preferences can be arrayed along a line, as in the minimum wage example we have just explored. If the space is two-dimensional, then preferences can be described on the x-y plane. Etc.

When we think spatially, we need some idea of how many dimensions the space has. Often, it is enough to think unidimensionally, as when we say someone is a liberal or conservative or that a proposal is liberal or conservative. Most people are quite complicated, as are most policy proposals. So, in *reality*, we know that most people and proposals aren't unidimensional. Yet, our willingness to summarize people and policy proposals with a single label speaks to the power of unidimensional spatial thinking in many circumstances. It is often a useful simplification.

In some cases, unidimensionality isn't enough, even as a good summary. For decades the Democratic party was composed of two regional factions, northern and southern. During that time, most Democrats favored some degree of government intervention in the economy, and hence were varying degrees of "liberal." Yet, southerners and northerners differed in whether they believed the federal government should help blacks overcome the political barriers thrown up against them in the south. Very few southerners were anti-segregation, but northerners varied greatly in how anti-segregation they were. Any stylized story of Democratic party politics during this time would miss a number of fundamentals if it didn't take into account both policy dimensions, race and the economy.

Similarly, a classic tradeoff in politics is called the "guns versus butter tradeoff," pointing to the often conflicting demands of domestic and foreign programs. Some believe in activism on both dimensions, such as the late Sens. Henry Jackson (D-Wash.) and Hubert Humphrey (DFL-Minn.); others believe in activism domestically and isolation internationally, such as Rep. Richard Gephardt (D-Mo.); still others believe in exactly the opposite, such as Robert Dornan (R-Calif.); finally, others believe in limited government activity in all realms, such as most libertarians. While it might be possible to summarize a person's feelings about all foreign policy programs via one dimension (do they want more or fewer guns?) and all domestic programs along another dimension (do they want more or less butter?), it often does violence to the politics that emerge at the national level to further summarize feelings about domestic *and* foreign policy programs along a single dimension.

Important political insights can be gained by summarizing issues in a limited number of dimensions. Many important insights can be gleaned by just considering a single dimension; other

important insights require a second. It turns out that few, if any, important *theoretical* insights emerge when we consider more than two dimensions. Therefore, in the pages that follow in this chapter, which explore theoretical topics, we will confine ourselves to one- or two-dimensional examples. In the current case of exploring the median voter result, we will just use *one* dimension.

Preferences

There are two components of voter preferences that need to be specified — the *ideal point* and the *utility curve*. The ideal point is simply the policy that the voter would most want enacted. An ideal point might be an actual number, such as when someone prefers a minimum wage of \$5.50/hr. or a \$1,000 car, or may be a more abstract construct, such as a location on the liberal-conservative ideological scale. The utility curve describes how much pleasure the voter receives from policies, as a function of how far the policy is located from the voter's ideal point.

Therefore, the utility curve is sometimes called the *utility function*. While the ideal point might or might not be a tangible location, the utility function describes a purely abstract concept of utility, measured in the purely abstract unit of *utils*. By definition, the utility curve is at its maximum at the voter's ideal point.

Fig. I-5 Figure I-5 illustrates two simple utility curves that are consistent with the committee voting example explored above. To help motivate the example, assume that the policy being considered is the size of the minimum wage. Member *C* most prefers for the minimum wage to be set at 5.50/hr., and thus this is his ideal point. In both panels, the utility curves fall off as policy deviates from \$5.50.

We can use the utility curves to describe how C would evaluate various minimum wage proposals. Consider how C would evaluate minimum wages of \$4, 6, and \$7. Using the graphs, we can characterize the utility that C receives from each alternative. The notation $U_C(\$4)$ indicates the utility member C receives from \$4; $U_C(\$6)$ indicates the utility member C receives from \$6; etc. Because $U_C(\$6) > U_C(\$4)$ (that is, the utility C receives from a \$6 minimum wage is greater than the utility C receives from \$4), member C prefers \$4 over \$6. Because $U_C(\$4) = U_C(\$7)$, we say that C is *indifferent* between minimum wages of \$4 and \$7.

Both utility curves in Figure I-5 are *symmetrical*. That is, the amount of utility lost in moving to the right from C's ideal point is identical to the utility lost if one moves the same distance to the left of C's ideal point. This is easily demonstrated when we analyze C's perspective on the proposals for \$4 and \$7, precisely \$1.50 less and more than his ideal point. Dashed lines rise vertically from \$4 and \$7 to intersect with the utility curves. They then proceed to the axis that measures utility, indicating that $U_C(\$4) = U_C(\$7)$ in both cases.

Both of the utility curves are of a particular type, that is, they each follow a particular functional form. The top utility curve is *linear*, while the bottom curve is *quadratic*. With a linear utility curve, utility is simply a function of the absolute value between an ideal point and the proposal being considered. If we want to describe the utility that member i receives from a proposal, x , and if member i 's ideal point is written x_i , a linear utility function can be written as follows:

$$U_i(x) = \alpha - \beta |x_i - x|$$

The greek letters α and β are usually arbitrary constants (since any units that are associated with utilities are arbitrary). For simplicity, therefore, α is often set to 0 and β is set to 1, so that the linear utility function can usually be written as:

$$U_i(x) = -|x_i - x|$$

The second utility function is quadratic (sometimes called a *quadratic loss function*), which can be written as follows:

$$U_i(x) = \alpha - \beta(x_i - x)^2$$

As with the linear utility function, the values assigned Greek letters are arbitrary, so the quadratic loss function can usually be written as

$$U_i(x) = -(x_i - x)^2$$

An infinite number of symmetrical utility functions is available, though the linear and quadratic functions are the most frequently used. Ninety percent of the time, it doesn't matter which symmetrical function is chosen, as Figure I-5 illustrates, since we are usually more interested in knowing how people rank-order alternatives than in knowing the arbitrary "utility score" they assign to each alternative. When it does matter, it is usually because some type of mathematical operation is going to be performed on the utility function. In those cases, the quadratic loss function is most often used.

Fig. I-6 When the utility function is symmetrical, voting reduces to a simple rule: vote for whichever proposal is closer to you. This rule does not hold if the utility function is asymmetrical. An example of an asymmetrical utility curve is drawn in Figure I-6. It has a gradual slope to the left of the ideal point and then a steep drop-off to the right. This is the type of utility curve we might easily associate with the consumption of our favorite food. Consuming, say, a small amount of chocolate makes me happy — much happier than being deprived entirely of chocolate. Consuming a little more makes me happier still. As I eat more and more chocolate at a sitting, there comes a point where I've had the perfect amount of chocolate. Let us say the optimal amount is a 6-ounce candy bar. Now, if I eat any more, I run the risk of getting a tummy-ache. I find stomach aches to be so unpleasant that I would prefer to go relatively chocolate-deprived at 5 ounces than to stuff myself with 7 ounces of chocolate. And, I would *certainly* prefer to forego chocolate altogether rather than be force-fed 12 ounces.

In this case, I eventually become *sated*, meaning that if I consume anything more than what I regard as optimal, I very rapidly become unhappy. Models of satiation involve utility curves that are fundamentally asymmetrical, like Figure I-6. However, for the most important insights into spatial voting theory, it doesn't matter whether utility curves are symmetrical or asymmetrical. In particular, the median voter result, which is the most important insight that comes from unidimensional spatial voting models, is unchanged in the face of asymmetries in utility functions.

Fig. I-7 What is much more important to worry about is whether the utility curve has a single peak. Figure I-7 shows two utility functions that more than one peak. The first is U-shaped and, in a sense, describes someone with two ideal points. You can think about this person as someone

who believes in an "all or nothing" way of doing business. The second is bent a bit, but still describes a person with a single ideal point. It would take us far afield to explore the problems that emerge when people have non-single-peaked utility curves or when they can't be described as having a single ideal point. For this chapter, therefore, I will just note that non-single-peaked preferences are rare in the types of decisionmaking contexts most members of Congress find themselves in, and therefore it is simply sufficient for us to acknowledge the theoretical possibility of non-single-peaked preferences and then to move on.

Alternatives

In spatial voting theory, alternatives can be expressed in the same coordinate system as preferences. If committee members have preferences over the ideal minimum wage, then the alternatives will also be different levels of the minimum wage. A more important feature of alternatives arises because of the special nature of legislative decisionmaking. In every case, there is some state of affairs that exists right now, or will exist in the immediate future if action is not taken. For example, if an appropriations bill is not passed, then formally nothing can be spent on the items in that bill. If tax law isn't changed, the rates stay the same. If Bob, Carl, and Ted don't agree to a car price, no car is bought. If a bill isn't passed to change in minimum wage, it stays put. These states of affairs are termed the *status quo*, and sometimes the *reversion point*.

The notion of the status quo is very important in spatial voting theory because it helps to provide the frame of reference for the comparison among alternatives. Members of Congress never simply vote for a policy alternative in a vacuum. Rather, they are aware that something will happen if they fail to act. In certain cases, the status quo isn't so obvious — such as when the

Senate votes on the confirmation of a Supreme Court nominee. Whenever analyzing congressional voting, it is important to understand the status quo in order to understand the ensuing behavior.

The rules

There are two major features of the rules that must be specified when using spatial voting theory, (1) the majority requirement and (2) the agenda-setting process. Most people are acquainted with *Robert's Rules of Order*, which specifies how many votes are needed to pass certain motions. Most regular motions and amendments require a simple majority to pass; a few special motions require more than a simple majority, such as $2/3$ or $3/4$ of the votes. A requirement for greater than a simple majority is called a *supermajority*.

Both Houses of Congress have rules similar to those contained in *Robert's Rules of Order*, though they are not identical. They certainly are more complex. As we will learn later in this book, the majority requirements for particular motions are very important in determining the policy that finally passes in Congress. Not surprisingly, it is important to specify the majority requirements necessary in our theoretical treatments of voting, too.

The agenda-setting process is also important to characterize, both theoretically and practically. *Which* alternatives are allowed to be considered and voted on can be the most important factors in understanding the laws that Congress finally passes. Similarly, in order to take full advantage of spatial voting theory, we need to specify how motions are made — that is, who gets to make motions, under what circumstances, and when do motions stop.

In Chapter 7 we will develop a full typology of theoretically-interesting and empirically-relevant agenda-setting features. For now, we will confine ourselves to the most basic of parliamentary rules — *pure majority rule*. Under pure majority rule, anyone can make a motion. (Alternately, everyone has an equal chance of being called on to make a motion at every stage of the legislative process.) After a motion is made, a vote is taken between the motion and the last motion that passed (i.e., the status quo). If the motion passes, it becomes the new status quo. Then, anyone can make a motion to change the status quo or to stop taking motions. Etc. Motions and voting continue until either (1) a majority votes to stop or (2) no motion can be found to beat the status quo.

Fig. I-8 Figure I-8 reworks the single-dimension minimum wage example to show how pure majority rule might work. The committee is arrayed according to members' ideal points. In this example, the initial status quo, labeled with the Greek letter ϕ , is at \$3. Dillard is called on to make a motion, and moves to change the status quo to \$7. The \$7 motion passes on a 3-2 vote. Calder is now called on to make a motion, and moves to change policy to perfectly equal Calder's ideal point, \$5.50. This motion beats \$7, 3-2. Eckerd then moves a minimum wage of \$10, which loses 1-4. No other motion will beat \$5.50, so voting ends.

The median voter result, generally

Having now introduced some basic vocabulary, we are in a position to state more generally what was illustrated at the beginning of this section: If the number of voters is odd, if voters have single-peaked preferences in a one-dimensional space, and if they vote under pure majority rule, then the median voter's ideal point will ultimately prevail.

Fig. I-9 Figure I-9 helps to illustrate why the median voter result is true. Assume that we have lined up all the voters in the order of their ideal points and arrayed them evenly along the line in Figure I-9. M marks the position of the median voter. If the total number of voters is N and N is odd, then the number of voters to the left and to the right of M is $(N-1)/2$. Recall that for a motion to prevail, it must receive $(N-1)/2 + 1$ votes.

If the status quo is located to the left of M and M 's ideal point is offered as a motion, we know that M will vote for it (because it is M 's ideal point) and that everyone to M 's right will vote for it (because M is located between them and the status quo). Therefore, the number of people voting for M 's ideal point will be *at least* $(N-1)/2+1$. The same would be true if the status quo were located to the right of M and M 's ideal point were offered as a motion. Similarly, if M 's ideal point were the status quo and any motion to M 's left were offered as an alternative, we know that M would vote to retain the status quo, as will everyone to the right of M . Thus, again, M 's ideal point will always receive at least $(N-1)/2+1$ votes against any alternative motion.

In the vocabulary of spatial voting theory, the median voter is the *Condorcet winner* of this voting exercise. The term *Condorcet winner* is named after the 18th-century French intellectual, the Marquis de Condorcet, who was very interested in understanding how voting systems operated. One of Condorcet's quests was to find voting systems that would automatically arrive at a result that could be beaten by no other motion, should such a result be possible to achieve at all. So, the median voter's ideal point is a Condorcet winner in the sense that if it is moved, it always wins. Once achieved, it can never be upset via a majority vote.

There is a corollary of the median voter theorem that is nearly as important as the theorem itself. *Under the same conditions that produce the median voter result, if the committee*

or electorate is given a choice between two alternatives, the one closer to the median voter will prevail. Hence, when we analyze voting in the unidimensional case, all we really need to know about an electorate or a committee is the location of the median. If the median prefers X over Y, then a majority of the electorate will also prefer X over Y.

This insight has both practical and theoretical implications. Practically, it means that we can often summarize the preferences of a group voting in one dimension by the location of one person, its median. The preferences of all the other members are irrelevant. Theoretically, the median voter result and its corollary are important because they help to explain why there may be so much stability in group decisionmaking even with a lot of membership turnover. Under pure majority rule in a single dimension, outcomes will change only if the identity of the median changes, either if the median himself changes his mind, or if membership replacement shifts the rank-ordering of the group such that the old median is not the new median.

* * *

While it is a very simple model, the unidimensional spatial voter model is very powerful. It is so powerful that dozens of interest groups rely on it each year to derive *interest group ratings*. The power of the model is such that most interest groups don't realize they are using it. All they know is that they pick out a handful of "key" roll call votes each year that the group cares about, count up the number of times each member of Congress votes the "right" way (i.e., the way the group wants them to), divides each member's correct votes by the total number of votes, producing "support scores" that range from 0% to 100%.

This is how the unidimensional model lies at the root of interest group ratings:⁷ Interest groups tend to care about politics along one dimension, whether it be the broad liberal-conservative ideological dimension (American for Democratic Action, American Conservative Union, etc.) or narrower interest-based dimensions (Christian Voice, National Farmers Union, United Mine Workers, etc.) Research by political scientists Keith Poole and Howard Rosenthal confirms that virtually all interest groups act like they have "extreme" ideal points when they construct their group ratings, so we can treat the groups as if they all have ideal points at the very ends (either left or right) of the single policy dimension.

Fig. I-10 Therefore, when interest groups construct their ratings, the world looks much like the example in Figure I-10. In this example, I have placed the group at the extreme left, in addition to ideal points for three hypothetical senators named Kennedy, Hatfield, and Helms. The figure shows three hypothetical votes along the dimension, placing three different status quos (ϕ_1 , ϕ_2 , and ϕ_3) sequentially against three different motions (M_1 , M_2 , and M_3). For each of the three votes taken, the interest group always favors the left-most alternative. In the first vote, all three senators prefer the motion over the status quo, so all three vote "wrong." In the second vote, both Kennedy and Hatfield favor the more left-leaning alternative, so they both are credited with a "right" vote, Helms being credited with a "wrong" vote. Finally, in the third vote, only Kennedy favors the leftist alternative, and so only he is credited with a "right" vote.

⁷For an extensive analysis of interest group ratings in the context of spatial voting models, see Keith T. Poole and Howard Rosenthal, *Congress: A Political-Economic History of Roll Call Voting*, New York, Oxford University Press, 1997. A very useful article that serves as a corrective to the use of interest group ratings is by James M. Snyder, Jr., "Artificial Extremism in Interest Group Ratings," *Legislative Studies Quarterly*, 1992 (17): 319-45.

Overall, Kennedy has voted the right way, according to the group, two out of three times, so his interest group support score is 67%. Helms, who never voted with the group, has a support score of 0%, with Hatfield getting a score of 33% to reflect the one time he sided with the group.

Interestingly enough, Poole and Rosenthal show that virtually all interest group ratings are highly correlated with one another, even when they are ostensibly monitoring different policy dimensions. What gives rise to this empirical regularity is open to controversy. One practical implication of the regularity is that, with just a few exceptions, interest group ratings do a robust job of rank-ordering members of Congress according to how liberal and conservative they are. The research of political scientist James Snyder shows that interest groups tend to select "key votes" that have close vote margins. The most significant consequence of this is that interest group ratings tend to make members of Congress appear more extreme than they really are. At the very least, while interest group ratings may accurately discover the ideological *ordering* of members of Congress, they provide no evidence about whether one member is only a little or a lot more conservative than another. Thus, if we discover that Hatfield has a support score of 33% and Helms has a support score of 67%, we are on firm ground in claiming that Helms is more conservative than Hatfield. There is no way in the world we could say that Helms is "twice as conservative" as Hatfield, however.

I will stop here with the unidimensional case, picking it up again in later chapters. Let us now move to the multidimensional case, where just a little complexity will change the dynamics of the system considerably.

II. The Politics of Flatland

Some important insights into political behavior and institutions can be gained by assuming that politics is contested along a single dimension. Still, most interesting policy decisions involve the bundling together of different features of a proposed action. A campaign finance reform bill might contain features to publicly finance elections *and* restrict the activities of political action committees. A welfare reform bill might address how much to spend on different public assistance programs, such as food stamps, housing vouchers, and medical assistance. The minimum wage bill we examined at the beginning of this chapter eventually combined together an increase in the minimum wage and a tax cut. A budget allocates spending into thousands of different types of accounts. While a single dimension is helpful in discussing certain types of policymaking, staying with a single dimension will not be satisfactory for long.

In the prior section we examined the unidimensional spatial model, reaching its most important finding, the median voter theorem. This theorem is reassuring, since it tells us that if a committee can vote long enough or candidates jostle for support long enough, majority rule should eventually reach a stable outcome, or the Condorcet winner. In the politics of Lineland, there is an *equilibrium of tastes*. This equilibrium has an intuitively desirable property, too, of being moderate.

Once we move to more than one dimension, such assurances vanish. In a political world with many dimensions on which to judge proposals, there is generally no "natural" stable voting outcome and no "natural" process that will moderate outcomes. There is no equilibrium of taste and no Condorcet winners.

To explore the multidimensional spatial voting model, consider the situation where a legislature votes on how much to spend on two types of policy goods — national defense ("guns") and social welfare ("butter"). As with the single-dimensional voting model, we assume all the legislators have an ideal point and a utility curve associated with deviations from the ideal point. Because we are now in two dimensions, however, we need to describe the ideal point in terms of two goods, guns and butter, and we also need to draw a utility curve that describes how each legislator evaluates mixes of guns and butter that don't correspond with his ideal point.

Fig. I-11 Figure I-11 illustrates one simple guns-butter example with three members of the legislature. Member A prefers little spending on defense and lots of spending on social welfare items. Member C prefers just the opposite, while member B likes a fair amount of spending on both guns and butter.

What does the utility curve look like? For simplicity's sake, let's assume that all of the utility curves are quadratic. So, if we label Member C's ideal national defense spending as $Guns_C$ and C's ideal social welfare spending as $Butter_C$, then Member C's utility curve is defined as follows:

$$U_C(Guns, Butter) = \alpha - \beta(Guns_C - Guns)^2 - \gamma(Butter_C - Butter)^2$$

This is virtually identical to the one-dimensional utility curve we discussed earlier, with the addition of a term to account for the second dimension of the model. The Greek letter γ (Gamma) is a coefficient that measures how rapidly utility is lost as the amount of butter deviates from C's ideal amount of butter. Likewise, the Greek letter β is a coefficient that measures how rapidly utility is lost as the amount of money spent on guns deviates from C's ideal amount of military spending. If β and γ are equal, then Member C is equally unhappy cutting military

spending by \$1 as cutting social spending by \$1. If β is larger than γ , then Member C is made more unhappy by cutting military spending by \$1 than by cutting social spending by \$1. Finally, if γ is larger than β , Member C is more unhappy by cutting social welfare spending \$1 than by cutting military spending \$1. To aid in simplicity, let us assume for the moment that β and γ are equal. We can return later to explore what happens when they aren't.

Fig. I-12 Figure I-12 sketches out what Member C's utility curve looks like. The two policy dimensions, guns and butter, lie in the horizontal plane in the figure, while the axis measuring utility is vertical. Note that the utility curve is actually three-dimensional, so that it looks like half a football sticking up out of a table. We can slice horizontally into this football-shaped figure. Each of these slices produces a circle that represents all the combinations of guns and butter spending that give Member C an equal amount of utility.

Fig. I-13 It is more convenient to represent this slicing into the "football" back onto the two dimensional guns-butter coordinate system. I have done this in Figure I-13. Here, I have drawn Member C's ideal point along with two circles that result when we horizontally slice into the utility curve in two places. The inner circle slices into the utility curve up high, and therefore it is relatively small. Every point along this circle represents a small *and identical* decrease in utility for Member C, compared to her ideal point. Point x_1 represents spending C's ideal amount on guns, but a little too much on butter. Point x_2 also represents spending C's ideal amount on guns, but now a little too little on butter. Note that x_1 and x_2 are on the same circle, and therefore Member C would derive the same amount of utility from either combination of guns and butter. Member C is *indifferent* between x_1 and x_2 .

Point y_1 is even further away from Member C's ideal point than either x_1 or x_2 . Note that it lies on a circle that is larger than the inner circle. Therefore, any alternative that lies on this circle is valued less than any alternative that lies on the inner circle. Hence, while Member C is indifferent between x_1 and x_2 and indifferent between y_1 and y_2 , we know that Member C would prefer *either* x_1 or x_2 over y_1 or y_2 .

These circles have names. Because they represent alternatives that Member C is indifferent toward, they are called *indifference curves*. Because the indifference curves are circular, the voting rule is similar to the unidimensional case when we had symmetrical utility curves: Vote for whichever alternative is the closer.

Fig. I-14

In Figure I-14 I have redrawn Figure I-11, this time adding an arbitrary status quo, labelled ϕ , and then three indifference curves, one associated with each of the three members of the legislature. I have indicated the indifference curve of Member C that the status quo lies on, labelling it $I_C(\phi)$. Because every point inside this circle is preferred by Member C over any point on or outside the circle, we call the region inside the circle Member C's *preferred-to set* against the status quo, labelling it $P_C(\phi)$.

Under majority rule, a motion needs a majority of votes in favor of it before it can defeat the status quo. Thus, any motion that is going to defeat ϕ must lie in the intersection of at least two preferred-to sets. I have shaded the three regions where preferred-to sets overlap. The shaded region as a whole resembles a flower and is called the *win set* against the status quo, since this is where a motion could be offered against the status quo and win. (The notation for the win set is $W(\phi)$.) The vertical petal is the intersection of Member A and Member C's preferred-to sets, and thus represents the set of all points where, if a motion was made, Members A and C

would vote in favor of the motion, but B would not. An example of such a motion is point x , which lies within the vertical petal of the win set. Thus, each petal describes regions in which two-person coalitions would form to defeat the status quo. In this example, there is no region where all three members would vote together to overturn the status quo. Thus, every successful motion against the status quo will be resolved via a 2-1 vote.

If this hypothetical three-person legislature were to vote on the allocation of guns and butter, using pure majority rule, what decision would they reach? It is tempting to reason-by-analogy with the one-dimensional case and say "the median would eventually prevail." If you examine Figure I-14 closely, you see that Member B has median preferences on both the guns and butter dimensions. What if Member B is called on to make a motion and he moves that spending be equal to his ideal point?. We know that the motion will prevail, because Member B's ideal point is in the win set of Figure I-14. The most important question, though, is this: Once the legislature has agreed to set spending at B's ideal point, could yet another motion prevail to change spending further? In other words, is B's ideal point, which is the median on both the guns and butter dimensions, the Condorcet winner?

Fig. I-15 Figure I-15 illustrates the answer to these questions: Yes, there is a win set against Member B's ideal point. No, B's ideal point is not the Condorcet winner. The win set against B's ideal point is a lens-shaped region to the "southwest" of B's ideal point in which Members A and C would vote together to move policy away from B. (B, of course, will vote no because any deviation from his ideal point makes him worse off.)

Fig. I-16 Now, suppose a motion were made that was inside $W(B)$. The policy location labeled x in Figure I-15 is such a motion. Is there a win set against x ? Figure I-16 illustrates that the answer

to this question is also "yes." In this case, the win set is pretty large, occupying almost one-third of the policy space.

Most interesting, however, is the fact that the win set against x now contains the original status quo, ϕ . Think about this: We have seen that point B is preferred to ϕ by a majority vote and that x is preferred by a majority vote to B. By standard rules of logic, we tend to assume if someone prefers Y over X and prefers Z over Y, that person should also prefer Z over X. This is called the principle of *transitivity*.⁸ Note that the example I have created in Figures I-15 to I-17 violate this principle, since B is preferred to ϕ , x is preferred to B, but x is *not* preferred to ϕ .⁹

The violation of transitivity in this example is not a fluke or a contrivance. Rather, it is a fundamental characteristic of majority rule voting when the issues involved can be described along more than one dimension. Even if all the individuals have clearly defined, transitive preferences (as Members A, B, and C do in the example), there is generally *not* a transitive preference ordering for the group. This is called the *chaos result* of public choice theory, and is probably one of the most important insights of social science.

This insight is associated most clearly with the political scientist Richard McKelvey. Informally, the *McKelvey Chaos Theorem* may be stated as follows:

⁸This is identical to the mathematical principal of transitivity which can be written as follows:

$$\text{If } Y > X \text{ and } Z > Y, \text{ then } Z > X.$$

⁹In keeping with the notation in the previous footnote, we have seen that

$$B > \phi \text{ and } x > B \text{ does not imply } x > \phi$$

in a majority rule voting setting.

If there are more than two decisionmakers making decisions on a policy that can be characterized using more than one dimension, there is generally not a motion that can be made that cannot be beat, via majority rule, by some other motion. In other words, there is generally no Condorcet winner in multidimensional voting setting. Furthermore, you can manipulate the agenda (i.e., the order of motions) in such settings such that *any* point in the policy space can be reached, at some point, through majority rule voting.¹⁰

Fig. I-17 The last sentence in the McKelvey Chaos Theorem is sometimes called the "anything can happen result." To illustrate this point, consider Figure I-17. Figure I-17 takes the previous example, with the ideal points of Members A, B, and C, along with the status quo ϕ , and labels a series of motions that move from ϕ to x_4 .¹¹ So, we can start with a point that is "in the middle" of the preferences of the three legislators, lay out a voting agenda of proposals that win majority of support of the legislature, and very quickly move to an outcome that lies far away from anyone's ideal point.

To recap the multidimensional case very briefly, we have seen that the multidimensional case is quite different from the unidimensional. There is no "equilibrium of tastes," as there is when there is one dimension of choice. Majority rule decisions are inherently unstable. Any result that eventually emerges through majority rule is, in some sense, arbitrary.

The McKelvey Chaos Theorem probably seems counterintuitive to you, since it doesn't describe most decisionmaking bodies we typically encounter in everyday life. Congress *does* pass

¹⁰The formal statement of this finding is in Richard McKelvey, "Intransitivities in Multidimensional Voting Models," *Journal of Economic Theory* 12 (1976): 472-482.

¹¹Using a compass and a ruler you can confirm that Members A and C prefer x_1 to ϕ , Members A and B prefer x_2 to x_1 , Members B and C prefer x_3 to x_2 , and Members A and C prefer x_4 to x_3 .

legislation, school boards *do* pass budgets, and we are able to agree among our friends on where we will go to dinner and a movie on Friday night.

Therefore, the McKelvey Chaos Theorem is only the beginning of our analysis of legislative decisionmaking. Political scientists and economists have killed a lot of trees trying to understand theoretically why real-life legislatures eventually come to cloture in their decisionmaking, even on complex items. In other words, they have spent a great deal of time dealing with the question, "Why so much observed stability in legislatures when theory predicts massive instability?"

Fig. I-18 The answer to this question started out with trying to see if there might be configurations of preferences that would be naturally stable. There *are* such configurations of preferences, and a couple deserved to be remarked about. Figure I-19a shows one such configuration. Here, I have situated three legislators perfectly along a single line. Using a compass and ruler, you can convince yourself that *y*'s ideal point is a Condorcet winner. If *y* is the status quo, any motion to move along the line in *z*'s direction will draw the disapproval of *x* and *y*; any motion to move along the line in *x*'s direction will draw the disapproval of *y* and *z*. Any motion off the line will likewise draw the disapproval of at least two members (*y* and one other), and might even draw unanimous disapproval.

Geometrically, Figure I-18a should be recognized as simply taking the unidimensional case and tilting it down 45 degrees. If multidimensional politics collapses down to a single dimension, then there is a meaningful median, regardless of the angle at which the dimension is tilted.

Politically, this example can be thought of as a stylized version of political ideology. Political scientists have classically understood political ideology as being the principle of attitude

constraint.¹² In Figure I-18a, ideal points in the horizontal dimension are constrained, by the linear relationship, to lie in the particular place on the vertical dimension. Figure I-18b shows a more clearly two-dimensional example. Here, members A, B, D, and E reside at the corners of a box, with C being right in the middle of the box. Applying a similar type of analysis of Figure I-18b that we applied to I-18a would reveal that member C's ideal point is a Condorcet winner, since any motion to move away from C's ideal point will always elicit the opposition of at least three members (C and two others).

The primary reason why attempts to discover how an equilibrium of tastes might come about in multidimensional voting models have never gotten very far is illustrated in Figures I-18c and I-18d. In each of these panels, I have moved only a tiny bit the ideal points that were identified as the Condorcet winners in Figures I-18a and I-18b. Having done so, I can now draw a win set against that the previous Condorcet winner. Having drawn one win set, I can now re-enter the land of chaos and "anything can happen" that we were trying to escape.

The general problem with trying to find useful equilibria of tastes in voting models is that they all have the quality of being *knife-edged*. It just takes one person moving a microscopic amount and the equilibrium has vanished. Consequently, scholars have spent their time trying to find how decisionmaking equilibria might emerge independent of the preferences of the decisionmakers. In the end, there is so much actual stability in real-life legislatures because of how institutions are designed and work. That is, while we can contrive situations in which there *is* a natural equilibrium of tastes, the most useful place to look in explaining why congressional

¹²See Philip E. Converse, "The Nature of Belief Systems in Mass Publics," in David E. Apter, ed., *Ideology and Discontent*, New York, Free Press, 1964.

decisions are so stable is to look at institutions, such as committees and parties, not to mention the larger institution of bicameralism in which Congress is situated.

Politicians often take advantage of the fundamental chaos of politics in order to win political battles. A classic example of this phenomenon occurred in 1956, when Congress was considering whether to begin a program of federal assistance to local school districts. Several studies have addressed the episode I'm about to tell you about.¹³ Here is the essence of the situation.

Fig. I-19 Before the 1950s, the federal government had never aided local school districts, except in a few limited cases. A majority of the Democratic party wished to begin local school aid, and had been working hard to achieve this result for many years. In 1956, the House Education and Labor Committee reported a bill to the House floor to achieve this goal. Figure I-19a lays out the spatial logic of the situation. The status quo was far to the right of the issue space, the committee proposed a bill that was much closer to the median of the House than the status quo.

Because the committee bill was much closer to what a majority of the House wanted to achieve, we would expect for federal aid-to-education to have passed the House in 1956. And yet, the House voted to reject aid to local school districts. What happened?

Adam Clayton Powell happened. Powell was the MC who represented Harlem in the House, and as a consequence was probably the most prominent African-American politician in the country in the 1950s. He was an ardent opponent of the system of segregation that existed in the

¹³James Enelow, "Saving Amendments, Killer Amendments, and an Expected Utility Theory of Sophisticated Voting," *Journal of Politics*, 43 (1981): 1062-89; William H. Riker, *Liberalism against Populism* (San Francisco: Freeman, 1982); Riker, *The Art of Political Manipulation*; and Keith T. Poole and Howard Rosenthal, *Congress: A Political-Economic History of Roll Call Voting*, New York, Oxford University Press, 1997, pp. 157-59.

South. His constituents expected him to fight hard to end segregation. So, when the aid-to-education bill was reported to the House floor, Powell proposed an amendment that would have barred money in the bill from going to school districts that ignored recent Supreme Court rulings mandating the desegregation of public schools. In practical terms, this meant that virtually none of the money in the bill could have gone to southern school districts.

Powell's motion introduced a second dimension to the policy at hand, racial segregation. By so doing, the situation moved from being like that sketched in Figure I-19a to that in Figure I-19b. Although Democrats from the northern and southern wings of the party mostly agreed on the wisdom of increasing federal aid to education, they disagreed sharply on segregation. Southerners represented a region of the country where segregation was the core social institution, and thus they all were supporters of retaining the racial status quo. Northern Democrats were a mixed lot, but they mostly favored ending segregation in the south (though some cynics would say they weren't so keen on ending segregation in the north). Republicans were also a mixed lot on racial matters, but they mostly continued to adhere to their party's historical preference for racial equality, while taking conservative positions on most other matters.

This is the world sketched out in Figure I-19b. Now in two dimensions, we see that the original bill simply moved policy directly to the left, leaving racial equality unchanged. The Powell amendment proposed leaving educational policy the same as the committee bill, only now moving racial policy in a strong desegregationist direction. Notice what this amendment did. Without the amendment, it is clear that the Democrats would have stayed together to support the committee bill. The amendment, though, asked them to make this comparison: educational aid with segregation or with desegregation. One bloc chose one way, the other bloc, the other.

With the bill amended, the comparison with the status quo had now changed, leaving only a minority of the House happy with changes on *both* policy dimensions. The amendment succeeded in peeling southern Democrats away from the pro-education aid coalition, leaving policy unchanged in the end.

The Powell amendment episode is a complicated one that we will revisit in later pages. What is important to know for the moment is that Republicans seized upon the Powell amendment as an opportunity to kill federal aid to education. The Powell Amendment was a *killer amendment*, because it took an otherwise acceptable bill and made it unacceptable to a majority. (The opposite of a killer amendment is a *saving amendment*, which takes a bill that is unacceptable to a majority and saves it by introducing a second dimension for consideration.) Because of the "chaos theorem" and "anything can happen result" that we discussed earlier, we know that killer amendments are frequently possible in any legislative setting. Whether they are offered and how they fare is a result of how a number of other factors come together, such as the rules under which the bill was considered and the overall constellation of preferences in the chamber at the time. But, the *possibility* that a crafty opponent might successfully introduce an irrelevant policy dimension and derail a legislative vehicle is always something that legislators have to watch out for.

III. Two Unresolved Issues: Salience and Sophistication

In working through the material in the first part of this chapter, I have had to defer a couple of discussions for the sake of expositional clarity. Now is the time to discuss them. In particular, I need to address two issues: (1) what happens in multidimensional voting models when one issue

is "more important" than the other? and (2) what happens when legislators try to misrepresent their true preferences and manipulate the voting situation?

Saliency: The unequal importance of issues

Let us suppose that the government spends its money on just two goods: the administration of justice (courts, prosecutors, police officers, etc.) and national defense (ships, airplanes, soldiers, sailors, etc.). Let us further suppose that doing an optimal job of defending the nation's borders from attack is much more expensive than doing an optimal job of keeping the domestic court system going. Therefore, the ideal point for Legislator X for defense and justice spending is at \$1 trillion for defense and \$250 billion for justice. Suppose at Year 1 the government has fixed spending precisely at Legislator X's ideal point, so that the total budget is equal \$1.25 trillion. The budget is balanced, meaning tax revenues are also \$1.25 trillion. Finally, suppose that in Year 2 something dramatic happens to the ability to raise revenues, resulting in a drop in taxes to exactly \$1 trillion dollars. The government has a balanced budget rule, so a total of \$250 billion needs to be cut from either defense, justice, or both. Given the fact that total spending now may not exceed \$1 trillion, what mix of spending on defense and justice would Legislator X most prefer?

When indifference curves are circular, as they were in the previous section, the answer to this question is straightforward. If Legislator X has a circular indifference curve around his ideal point, then he equally dislikes cutting \$1 from either defense or justice. Therefore, if forced to cut total spending by \$250 billion, Legislator X would choose to take half from defense and half from

justice, resulting in an *induced ideal point* of \$875 billion for defense and \$125 billion for justice.¹⁴

Think about this: Faced with a requirement to reduce total spending by 20%, Legislator X chooses to cut defense just a bit (12.5%) and to cut justice spending by a lot (50%). Does this seem realistic? Perhaps it does. But, perhaps it doesn't.

If it doesn't make sense, then that's likely because you suppose that \$1 buys a certain amount of defense, in Legislator X's mind, and another amount of justice. It might be the case, for instance, that Legislator X believes that \$1 buys as much justice as \$5 buys of defense. In other words, he views the trade-off between defense and justice as weighing the purchase of goods that have different relative prices. Therefore, faced with the requirement of cutting overall spending by \$250 billion dollars, he might choose some other allocation that takes into account the relative "unit price" of justice and defense. One such allocation may involve taking \$200 billion from defense and \$50 from justice, making the resulting budget consist of \$800 billion for defense and \$200 billion for justice.

Fig. I-20 If Legislator X makes the trade-off this way, we know that he values incremental changes in the defense and justice budgets differently, giving greater weight to a change in the justice budget than in the defense budget. This implies that the indifference curve around his ideal point is not circular, but elliptical, like that drawn in Figure I-20. In that figure I have indicated two bundles of defense/justice spending, labelled b_1 and b_2 . Point b_1 represents spending for justice that's at X's ideal level, but a cut of \$100 billion in defense; point b_2 represents spending for

¹⁴This mix of spending for defense and justice is called an *induced* ideal point because it represents an ideal mix that is induced by an external constraint — the balanced budget constraint in this case.

defense that's at X's ideal level, with a cut of \$100 billion for justice. Notice how b_2 is on an indifference curve that's further away from X's ideal point than b_1 , even though each is equally far away from X's ideal point.

Recall from the previous section that X's utility function in this case can be written generally as

$$U_x(\text{Defense}, \text{Justice}) = \alpha - \beta(\text{Defense} - \text{Defense}_i)^2 - \gamma(\text{Justice} - \text{Justice}_i)^2$$

When $\beta = \gamma$, the indifference curves are circular. In this example, however, $\beta < \gamma$, accounting for the fact that a cut in Justice is regarded more negatively than an equal cut in defense.

The term that is used to describe the state of affairs when $\beta \neq \gamma$ is *salience*. In this example, justice spending is more salient than defense spending because cuts in it are regarded more harshly than cuts in defense.

Elliptical indifference curves are a much more realistic way to describe how legislators evaluate the trade-offs between programs. There is no question, for instance, that a senator from Iowa regards a \$10 billion cut in corn price supports to be more damaging than a \$10 billion cut in urban mass transit subsidies. More commonly, we would say that price supports are more salient to farm-state senators than subsidies to subways.

Salience comes into play even when we aren't talking about money. For instance, in recent years many Republicans have entered Congress with the support of the Christian Coalition, which is a strong opponent of abortion. For such members, abortion is more salient than other issues, such as the antitrust status of baseball. Likewise, a large number of new House members were elected in 1810 on a platform of making England pay for its supposed abuses of America's international shipping rights. (These were the "War Hawks" who supported the young Speaker of

the House, Henry Clay.) To them, war with England was a more salient issue than other matters, like building roads in the western frontier.

In most cases, when a member of Congress has an intense interest in a particular project or program, that is because the member both wants the government to spend a lot on the program *and* because the program is more salient to that member than other programs. Formally, these two characteristics imply that (1) the member has a higher ideal point on this dimension than other members of Congress (Iowa senators prefer a higher level of corn price supports than Rhode Island senators) and (2) the coefficient that measures the loss in utility due to deviations from the ideal point in that dimension is greater than the coefficient measuring utility loss in the other dimension.

The prevalence of elliptical indifference curves has an important, but subtle, effect on the nature of bargaining in Congress. The core of legislative bargaining is coalition-building. The core of coalition-building is groups of legislators agreeing to support eachothers' proposals when normally they wouldn't. In bargaining, each group gives up something that's not of value to them in order to get something that *is* valuable. If I'm an Iowa senator, farm programs are valuable to me and urban mass transit subsidies aren't. If you're a New York senator, the exact opposite is true. We can serve eachother's political and policy goals by making a trade: I'll support urban mass transit if you'll support farm programs.

To understand the deal that you and I will strike, it's important to know not only that we support high levels of spending for our pet programs, but also what we're willing to give up in order to get higher spending for our programs. If my indifference curve is circular, then I'll be willing to accept spending \$1 for your urban mass transit subsidies for each \$1 of farm price

supports you're willing to support. If you also have circular indifference curves, your calculations are the same, so that we reach a bargain that's some compromise in our two positions, with total spending equal to the average of our ideal points for our pet program.

Fig. I-21 This is illustrated in Figure I-21a, where I have drawn ideal points for the Iowa and New York senators, along with a proposed compromise between the two. Finally, I've drawn the indifference curves that go through that compromise to indicate that the win set is empty. The bargain will stick between the two senators.

If our indifference curves are elliptical (or even if just one is), then the nature of the bargain we strike will be quite different. If farm price supports are more salient to me than urban mass transit, then I am willing to accept more than \$1 of extra spending for subways in order to purchase support for another \$1 of extra spending for price supports. If you feel just the opposite, then we are both willing to accept even higher spending for the other's programs in order to win support for even higher spending for our own programs.

Figure I-21b illustrates this formally. I have indicated the spending agreement from Figure I-21a and labelled it B_1 . I have drawn the elliptical indifference curves for the two senators that go through B_1 , shading-in the resulting win set. Note that the win set is oriented to the "northeast" of B_1 , indicating that any new agreement will require spending on both programs to go up. The new agreement that is reached will be something like the point labelled B_2 . I have drawn the new indifference curves that go through B_2 to show that this deal will stick and will be in equilibrium between the two senators.

Political scientists and economists who study budgeting and public finance have used this type of analysis to help explain why it is so difficult to balance the federal budget.¹⁵ When a member of Congress cares intensely about one program, she is willing to accept high spending on other programs, if as a result she can win the support of others to support her own programs. If this sort of behavior is common, and there is no credible mechanism to keep overall spending in check, then overall government spending will tend to balloon.

Sophisticated misrepresentation of preferences

Up to this point, I have been assuming that whenever legislators vote, they simply evaluate the utility they receive from the two proposals under consideration. Yet, we can think of cases where acting this way would strain credulity. Take the case of the Powell amendment again. (Refer back to Figure I-19b.)

Fig. I-22

One feature of this voting situation that I didn't make clear at the time was that all members of the House knew that after the Powell amendment was disposed of, either way, a vote would be taken on whether to pass the aid-to-education bill, with or without the Powell amendment. The sequence of votes is summarized in Figure I-22. Therefore, when they voted, members of each bloc of representatives — Northern Democrats, Southern Democrats, and Republicans — needed to know how they rank-ordered just three policy proposals — the status quo, aid-to-education with the Powell amendment, and aid-to-education without the Powell

¹⁵See Mathew D. McCubbins, "Party Governance and U.S. Budget Deficits: Divided Government and Fiscal Stalemate," in Alberto Alesina and Geoffrey Carliner, *Politics and Economics in the Eighties*, Chicago, University of Chicago Press, 1991 and Charles H. Stewart III, "Lessons from the Post-Civil War Era," in Gary W. Cox and Samuel Kernell, *The Politics of Divided Government*, Boulder, Westview Press, 1991.

amendment. We can use Figure I-19 to calculate how each bloc ranked these proposals. For your convenience, I have recorded their rankings on Figure I-22.

The puzzle in the Powell amendment case is the behavior of the Northern Democrats. As the table in Figure I-22 makes clear, the least-favorite outcome for this bloc was the status quo. Yet, by voting to support the Powell amendment, they guaranteed that the status quo would prevail. Had the Northern Democrats been willing to misrepresent their "true" preferences on the amendment vote, they would have set the stage for a final vote between aid to education and the status quo. They would have won *that* vote, at least achieving their second-best result.

Had the Northern Democrats been willing to oppose the Powell amendment, we would have said that they were engaging in *sophisticated voting*. In general, sophisticated voting involves taking into account the actions of others and all subsequent voting situations when voting on any particular measure. Sophisticated voting contrasts with *sincere voting*, which is voting based on one's preferences, ignoring the actions of others or the sequences of the votes to be taken.

One of the things that makes the Powell amendment episode so interesting is that Democratic leaders tried to make the advantages of sophisticated voting known to the liberal Northern Democrats. The House Democratic leadership enlisted the aid of former-President Harry Truman, whose credentials in opposition to southern segregation were secure, to appeal to Northern Democrats to oppose the Powell amendment. In the end, some liberal Northern Democrats *did* vote against the Powell amendment, in all likelihood because the appeals to sophisticated voting worked. (There is also evidence that some very conservative Republicans, who were in fact pro-segregation, voted *for* the Powell amendment, in order to kill the overall bill.) That more did not vote in a sophisticated manner represents practical problems with

sophisticated voting. In particular, for a liberal Northern Democrat, who had taken a strong stance against segregation, to oppose the Powell amendment would have required that Northern Democrat to explain his actions to his constituents. Not all constituents understand the intricacies of legislative strategy, and so the willingness to engage in strategic voting varies among members of Congress, often based on how electorally secure they are.¹⁶

Suppose someone wanted to vote in a sophisticated fashion. How easy is it to decide whether it is useful to do so? On the one hand, figuring out how to vote in a sophisticated fashion is difficult, because it helps to know, *with certainty*, not only the preferences of everyone else, but also the willingness of everyone else to vote in a sophisticated fashion. If we are willing to assume that everyone is willing to vote in a sophisticated fashion, that everyone is a utility-maximizer, that everyone knows everyone else's preferences, and that everyone knows the sequence of votes that's going to occur, it is not difficult to calculate what the proper sophisticated strategy is in any situation.

The method we will use is called *backward induction*. The method relies on this simple insight: On the last vote, everyone should vote sincerely, since there are no future votes to take into account. To see how it works, return to the Powell amendment voting tree in Figure I-22.

There are two possible final votes: The status quo could be paired with either the unamended bill (the left comparison) or the amended bill (the right comparison). We know, from the rankings of the three blocs, that the status quo beats the unamended bill, but loses to the amended bill. Now, go up a level, to the first vote. If the Powell amendment prevails, everyone

¹⁶Arthur Denzau, William Riker, and Kenneth Shepsle suggest that the schizophrenia among liberal Democrats was electorally-based."Farquharson and Fenno: Sophisticated Voting and Home Style," *American Political Science Review*, 79 (1985): 1117-35.

knows that the status quo will be the ultimate outcome. If the Powell amendment loses, everyone knows that the unamended bill will be the ultimate outcome. Therefore, the vote on the amendment is *actually* a vote between the status quo and the unamended bill.

We call a vote in favor of the Powell amendment at this stage the *sophisticated equivalent* of the status quo, because voting for the Powell amendment has the same ultimate effect as voting for the status quo. Because the Northern Democrats favor the unamended bill over the status quo, they oppose the Powell amendment, disregarding how they feel about it intrinsically. For both the Southern Democrats and the Republicans, the sophisticated action is the same as the sincere action, hence they both have the luxury of appearing to vote sincerely at each stage of the process.

The Powell amendment example is an easy way to show how backwards induction works, since there are just two levels of voting. Yet, the default rules of the House allow for voting trees to have five levels. Every bill that makes it to the floor may have an amendment and the amendment may have an amendment. In addition, you can move to substitute a whole new bill for the bill being considered, and the substitute can have an amendment. If this ever were to happen, voting would occur in this order:

- (1) the amendment to the substitute vs. the unamended substitute
- (2) the amendment to the amendment vs. the unamended amendment
- (3) the winner of step (2) against the winner of step (1)
- (4) the winner of step (3) against the unamended bill
- (5) the winner of step (4) against the status quo

Fig. I-23 This voting order gives rise to the voting tree in Figure I-23. Even though this is a messy voting tree, the logic of backwards induction is easy (if tedious) to implement: Figure out what the winner is at each of the end-points of the voting tree, see how this affects the sophisticated

equivalents of voting in the previous stage, and keep on doing this until you get to the top of the tree.

In Figure I-23 I have identified five hypothetical blocs of representatives and their rank-orderings of all the proposals that might come before them. If all the bloc members vote sincerely, the following are the winners at each step:

- (1) substitute (Blocs 1, 2, 5 vs. Blocs 3, 4)
- (2) amendment (1, 2, 3, 5 vs. 4)
- (3) substitute (2, 4, 5 vs. 1, 3)
- (4) substitute (2, 4, 5 vs. 1, 3)
- (5) status quo (1, 2, 3, 4 vs. 5)

So, the sequence of voting sincerely leads to a final face-off between the status quo and the (unamended) substitute, with the status quo prevailing.

Fig. I-24

In Figure I-24 I have worked through the backwards induction. To see how it works, notice that in the last two branches in the voting tree, the status quo is pitted against either the amendment to the amendment or the original bill. The amended amendment beats the status quo, but the status quo beats the original bill. Therefore, at the previous branch, where the amended amendment competes against the original bill, if the original bill win, this is only setting up the final vote where the original bill loses to the status quo. Therefore, if the penultimate vote is over whether to add the amended amendment to the original bill then a vote to keep the bill unchanged is the sophisticated equivalent of voting for the status quo. Anyone who favors the amendment to the amendment over the status quo should favor adding the amendment to the bill, regardless of how they feel about the bill-status quo comparison. To indicate this, I have crossed-out the "B" in this part of the figure and substituted in the ϕ symbol. I have done this throughout the figure wherever the sophisticated equivalent of any vote is not obvious, given what the formal motion is.

If you look at the top of the voting tree, you see how sophisticated voting differs from sincere voting in this example. The first vote formally pits the amendment to the substitute against the original substitute. We can see, though, that a vote for the amendment to the substitute starts us down a series of votes that leads ultimately to the (unadorned) amendment being added to the bill and then the amended bill passing. A vote against the amendment to the substitute starts us down a path that ultimately leads to a situation in which the amendment to the amendment is added to the bill, and it is *that* bill that is finally passed. Because a majority of the House prefers the simple amendment over the amended amendment, a majority votes against the amendment to the substitute, even though only a minority of legislators sincerely prefer this course.

IV. Spatial Voting Theory and the Study of Congress

The remainder of this book will be influenced heavily by the techniques and theoretical insights introduced in this chapter. Rational choice theory generally, and spatial voting theory in particular, provides an important set of building blocks for helping to better understand congressional behavior. The puzzles uncovered by spatial voting theory, particularly those concerning the inherent instability of democratic decisionmaking, will be a constant topic of discussion as we try to understand how important institutional features of Congress operate, including the rules, the committee system, and the leadership system.

By-and-large, the inherent instability of democratic decisionmaking is dampened in Congress because of how institutions operate. Many of the institutions and rules we will study in later chapters — particularly the committee system and rules of order — impose an artificial

stability on decisionmaking that would not exist without those rules and institutions. Because it emphasizes the essential role of institutions in inducing stability, public choice theory is often called the *new institutionalism* when it is applied to Congress and other governing institutions.

The term *new institutionalism* is more than just a re-labelling of public choice theory. The term stands in contrast to *behavioralism*, which was the prevailing approach to Congress and most other American political institutions from the 1960s to just a few years ago. Instead of focusing on how rules and institutions induce stability in democratic institutions, behaviorist research into congressional politics focused on the attitudes and beliefs of MCs in order to understand their behavior.

As I hope to make clear throughout this book, there is nothing inherently wrong with understanding the values, attitudes, and beliefs of members of Congress if you want to understand their behavior. What the new institutionalism tells us, however, is that if you only understand what politicians believe and don't give special attention to the arena in which they make their policy choices, you will wildly over-estimate how easy it is for them to reach conclusions on issues and you will never understand why one policy alternative, rather than another, was chosen in the end.

The rest of this book adopts a new institutionalist approach to the study of Congress. We now know enough about the general approach and the specific vocabulary in order to get to work. As we proceed, we will build on the ideas first introduced in this chapter, in addition to the more traditional insights of political science history, to create a comprehensive view of how members of Congress make their policy choices.

Figure I-1. “Completely Unofficial Senate Ideological Spectrum.”

Figure I-2. Competition for customers among two shop owners.

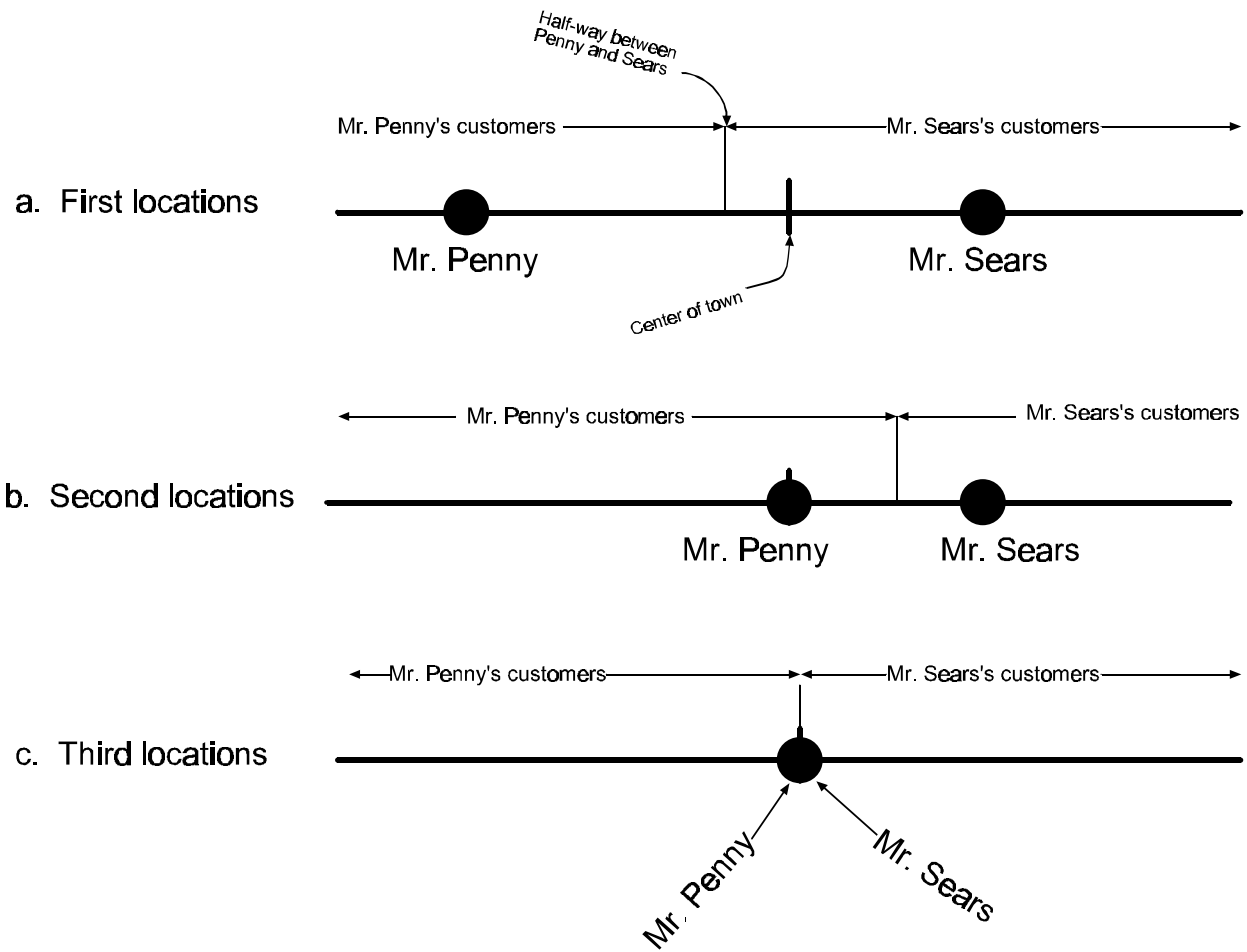


Figure II-3. Competition between two candidates for votes.

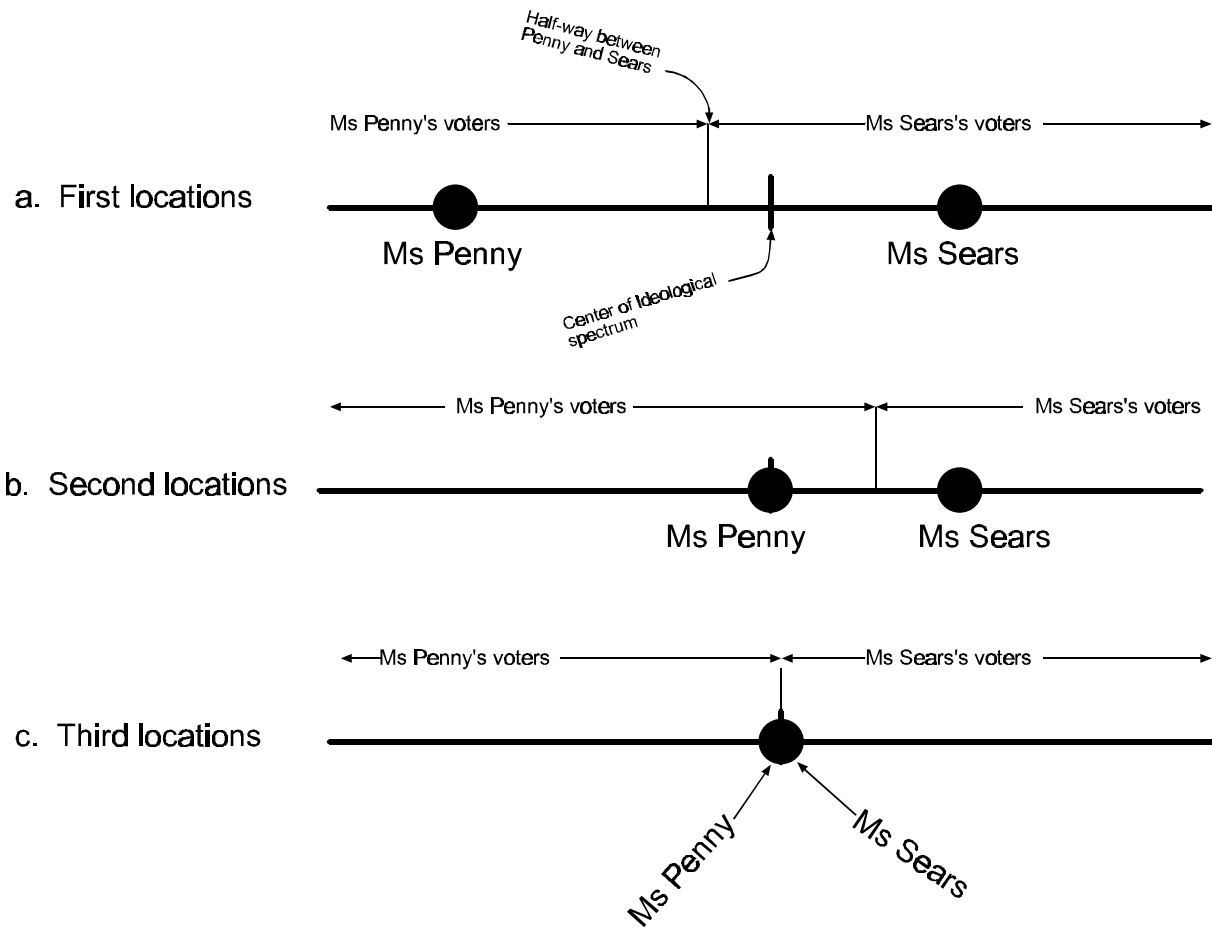


Figure II-4. Voting in a committee over two proposals, X and Y.

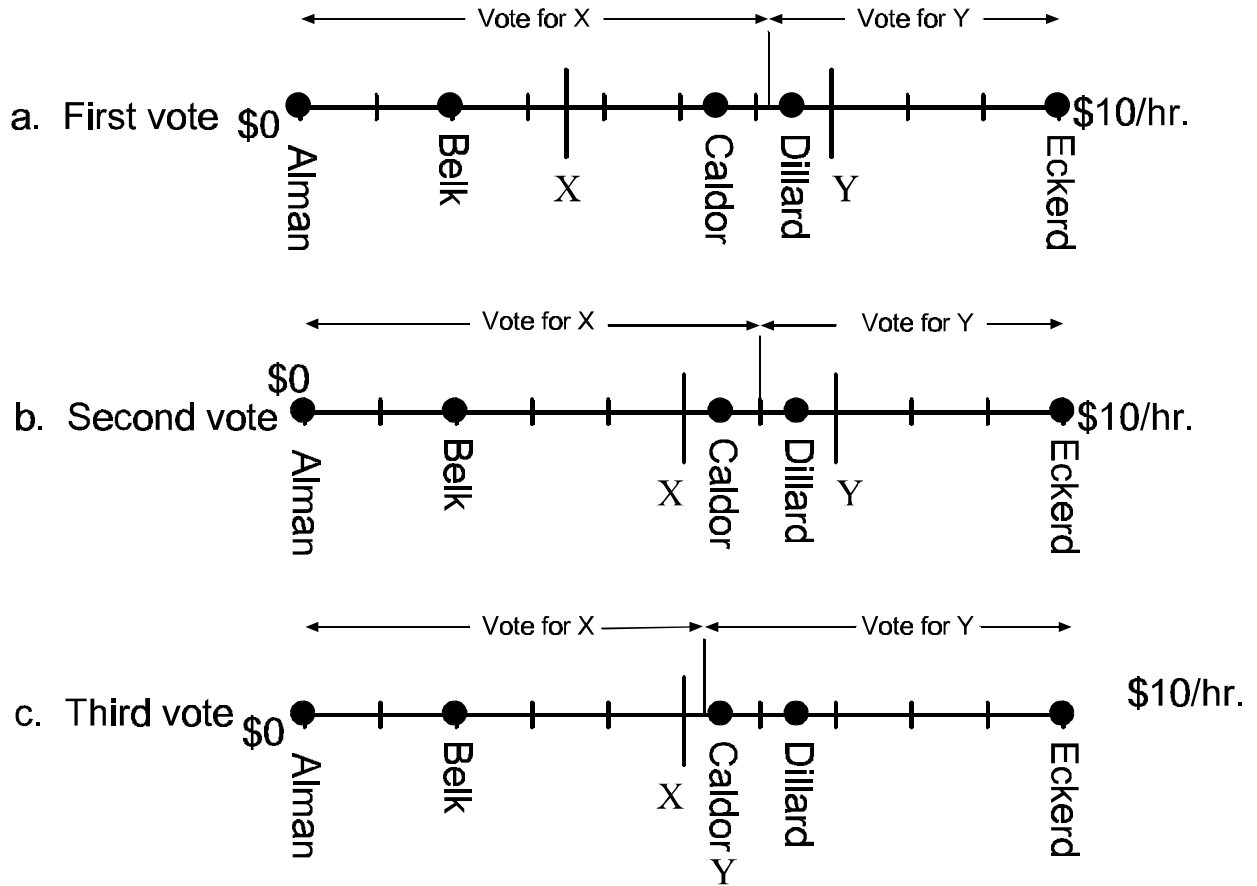


Figure I-5. Symmetrical utility curves

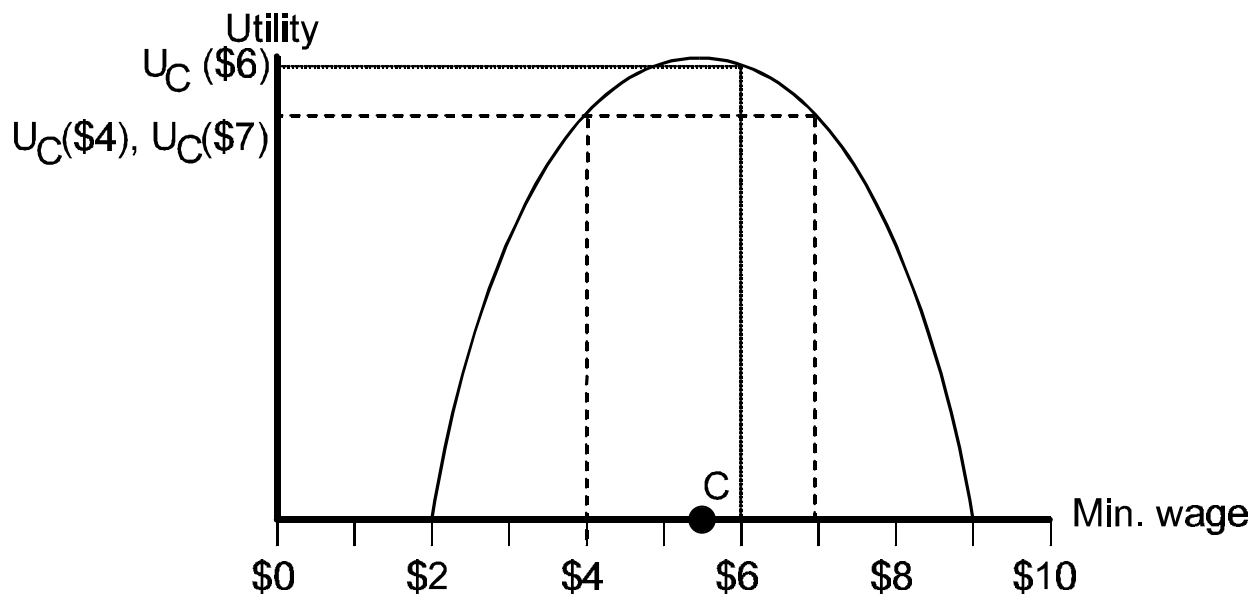
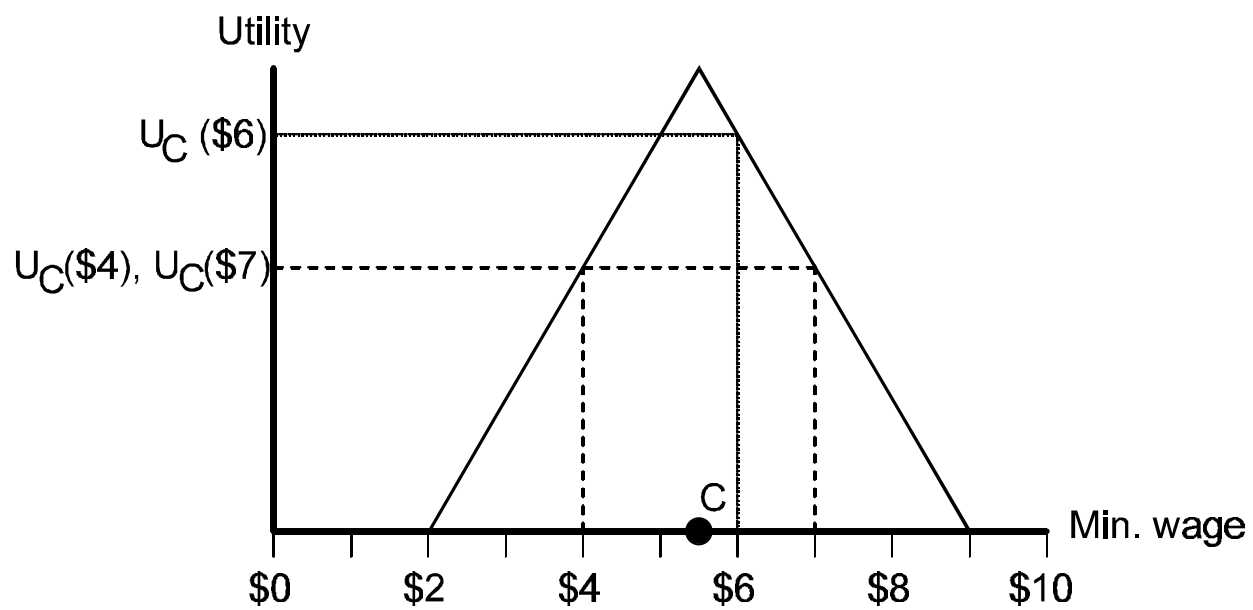


Figure I-6. Asymmetrical ideal point.

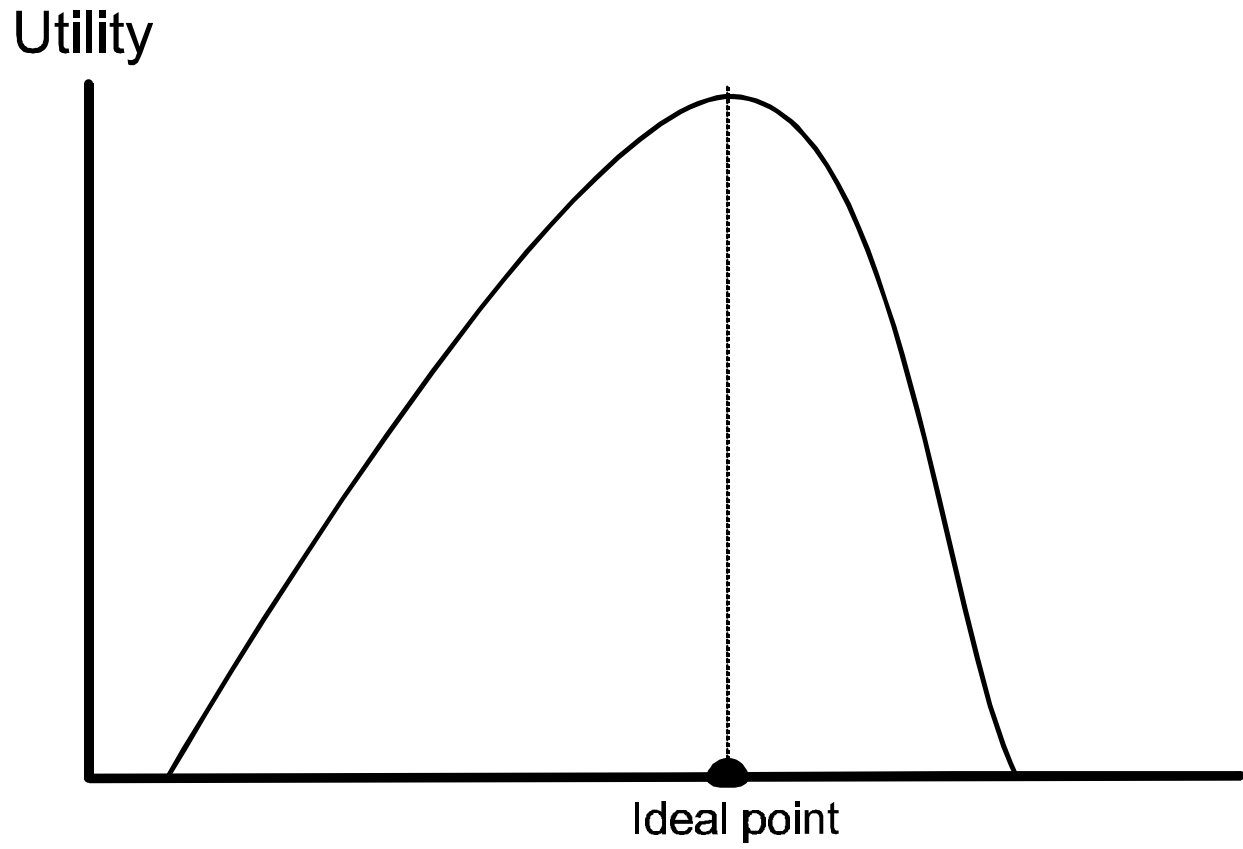


Figure I-7. Two non-single-peaked utility curves.

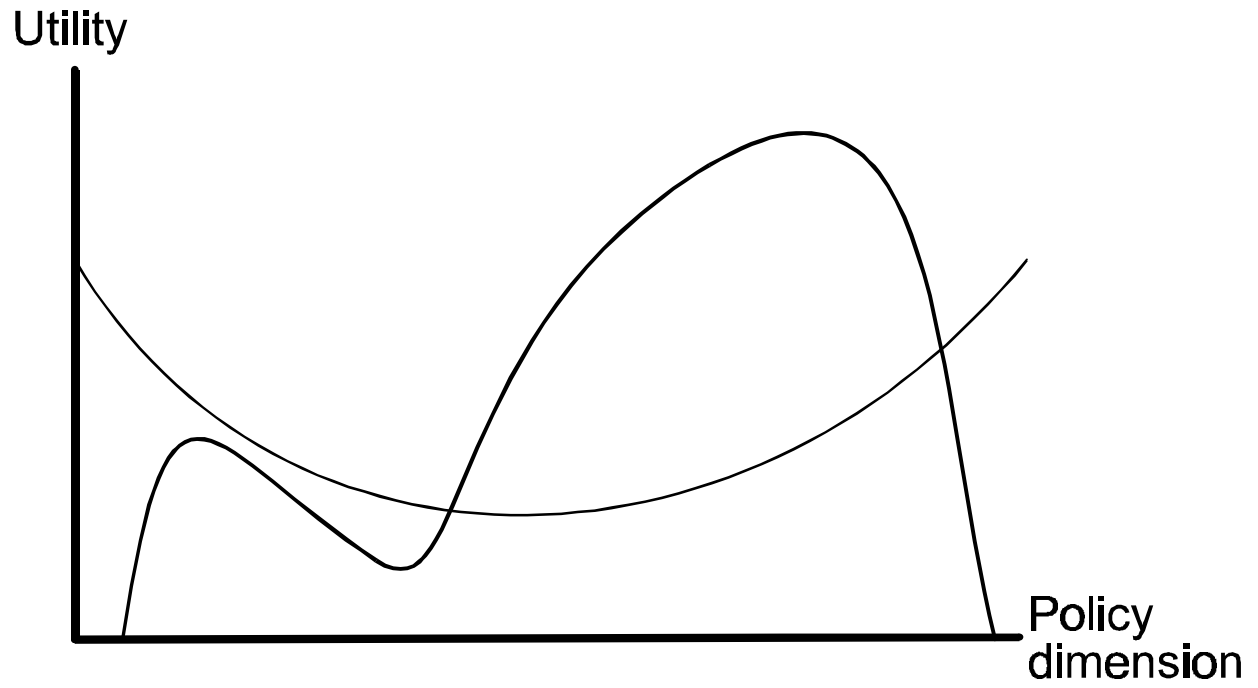
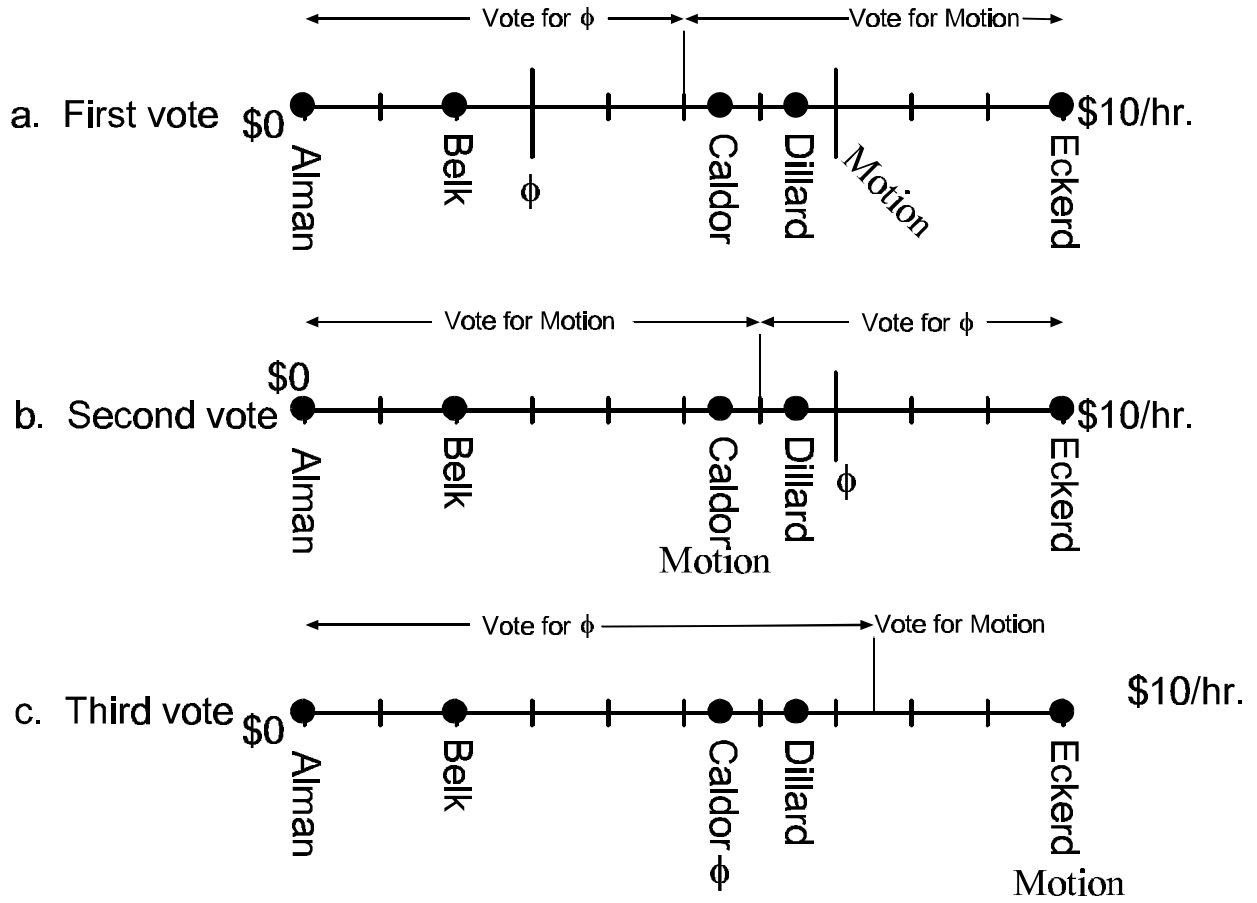


Figure I-8. Median voter result example.



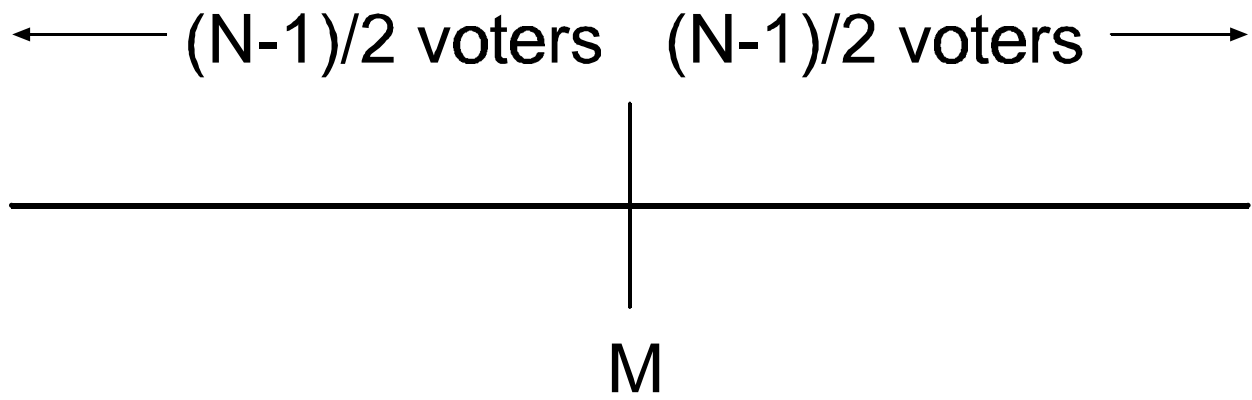
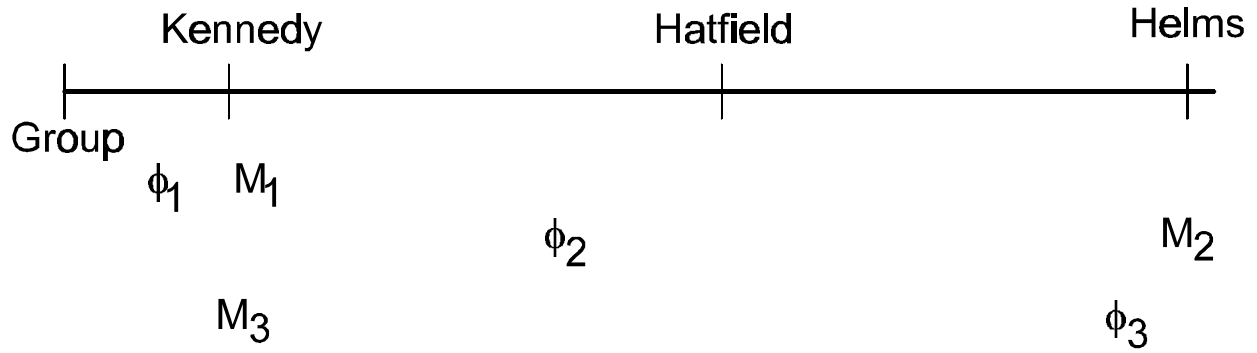


Figure I-9. Illustration of median voter proof.

Figure I-10. Interest group example.



Group position	Vote			% right
	ϕ_1 vs. M_1	ϕ_2 vs. M_2	ϕ_3 vs. M_3	
	ϕ_1	ϕ_2	M_3	
Kennedy	Wrong	Right	Right	67
Hatfield	Wrong	Right	Wrong	33
Helms	Wrong	Wrong	Wrong	0

Figure I-11. Ideal points in two dimensions.

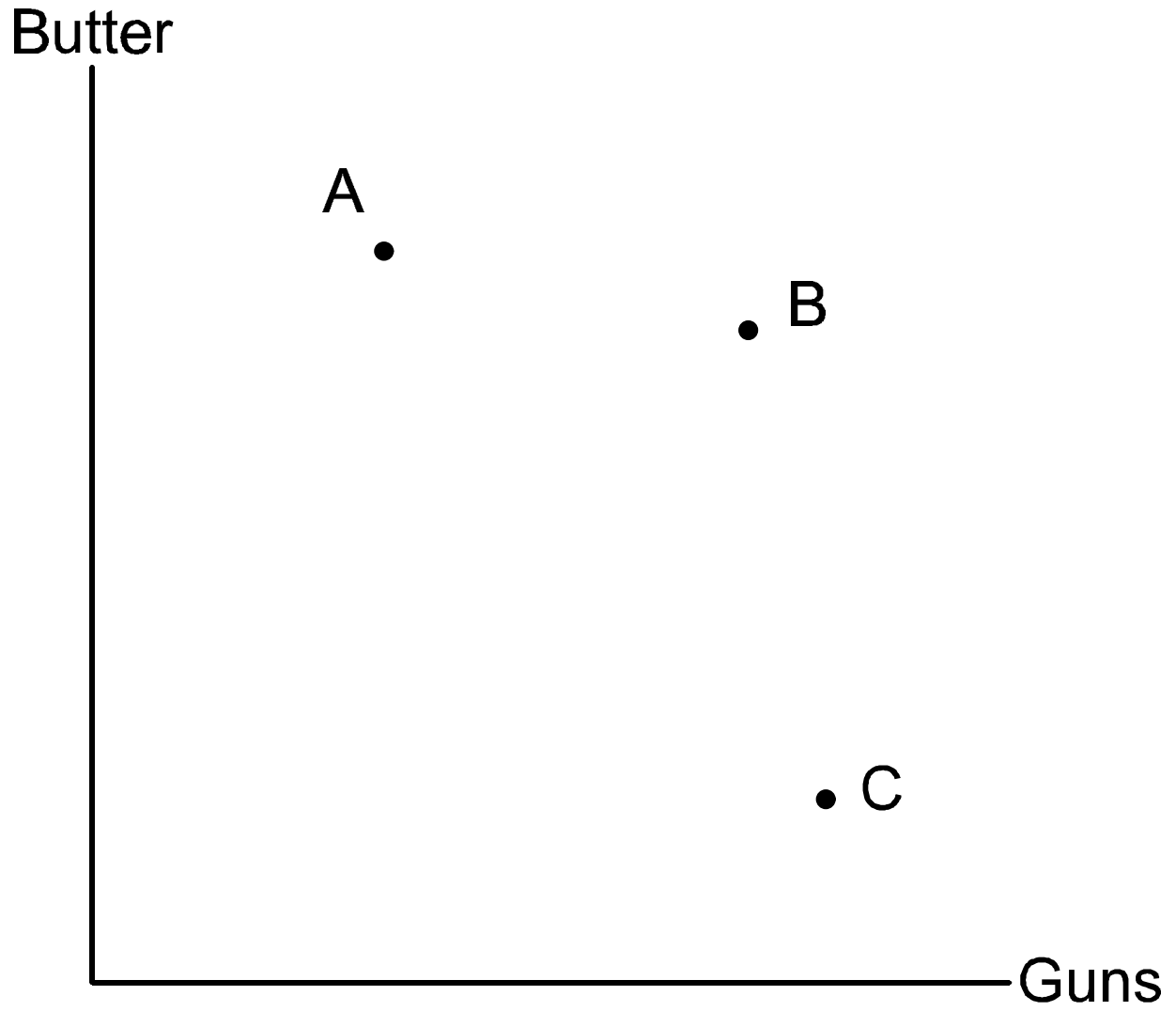


Figure I-12. Member C's utility curve

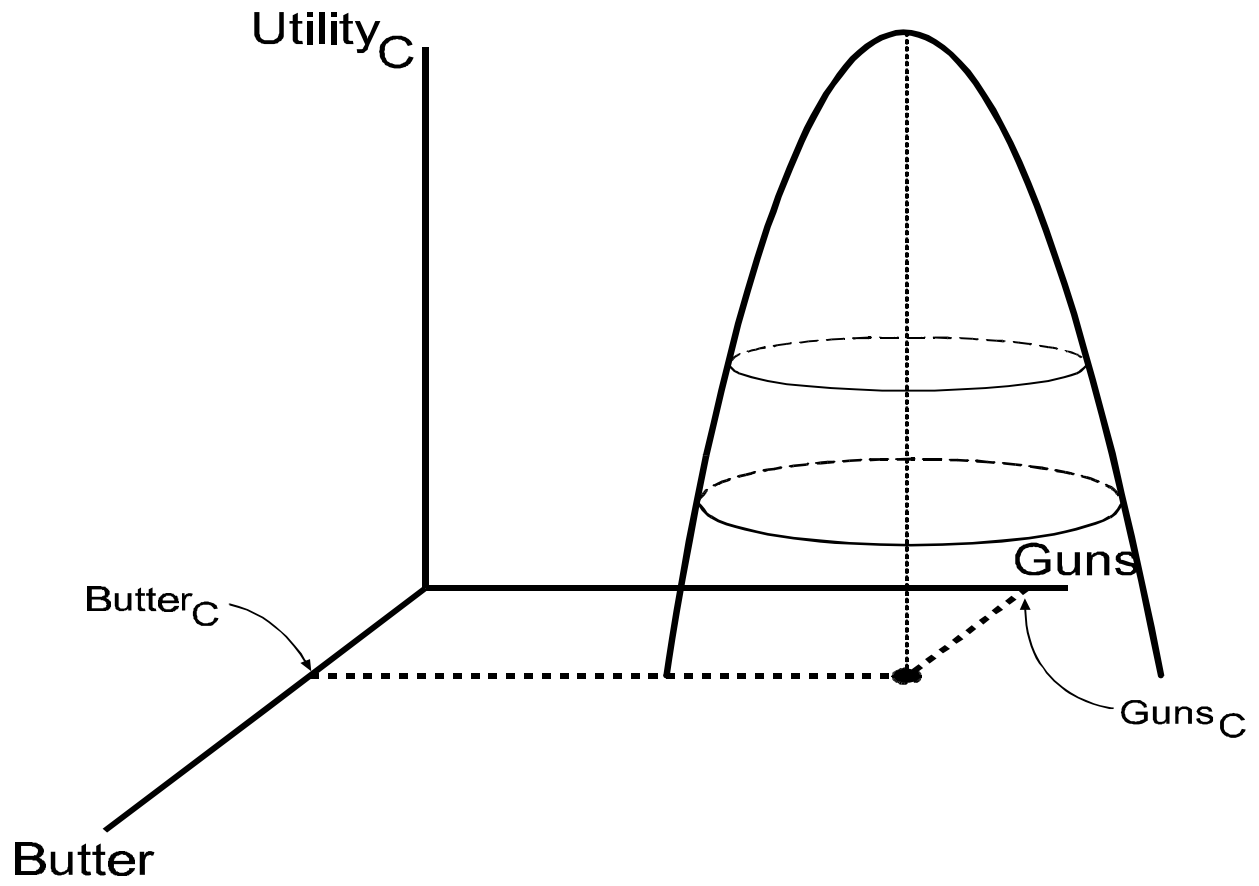


Figure I-13. Examples of indifference curves.

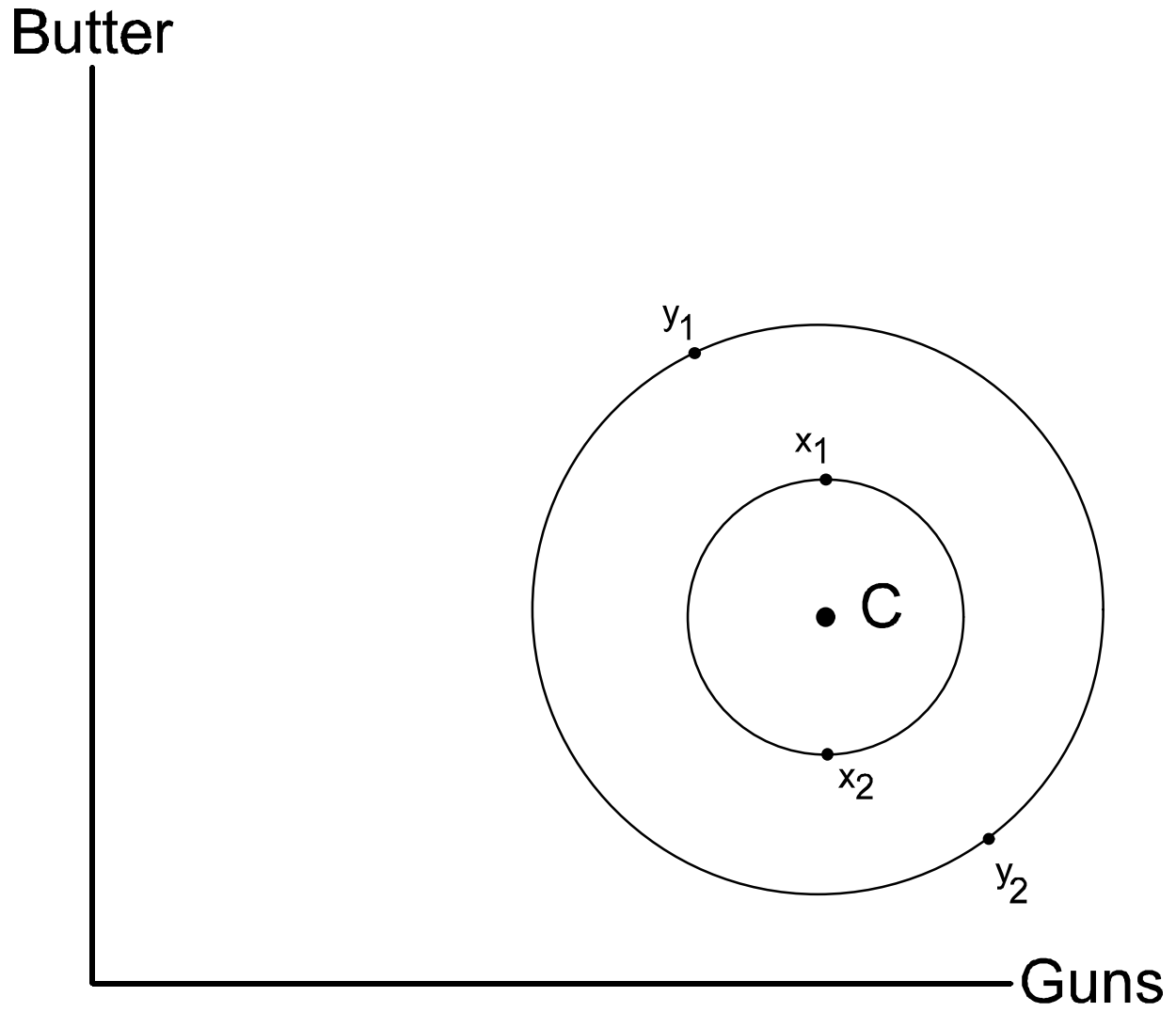
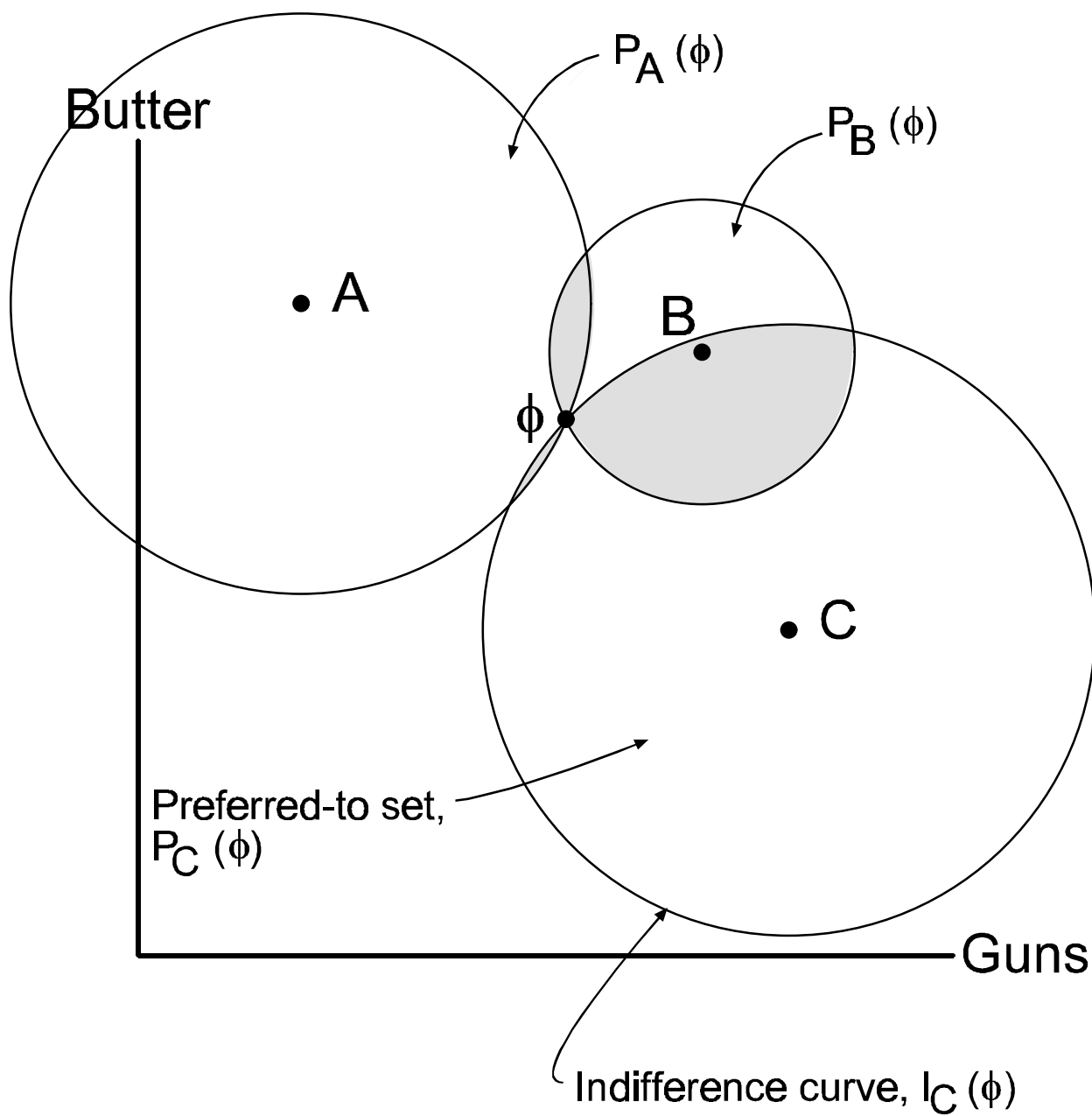


Figure I-14. Simple Euclidean system.



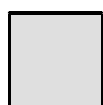
 = Win set, $W(\phi)$

Figure I-15. Win set against B's ideal point.

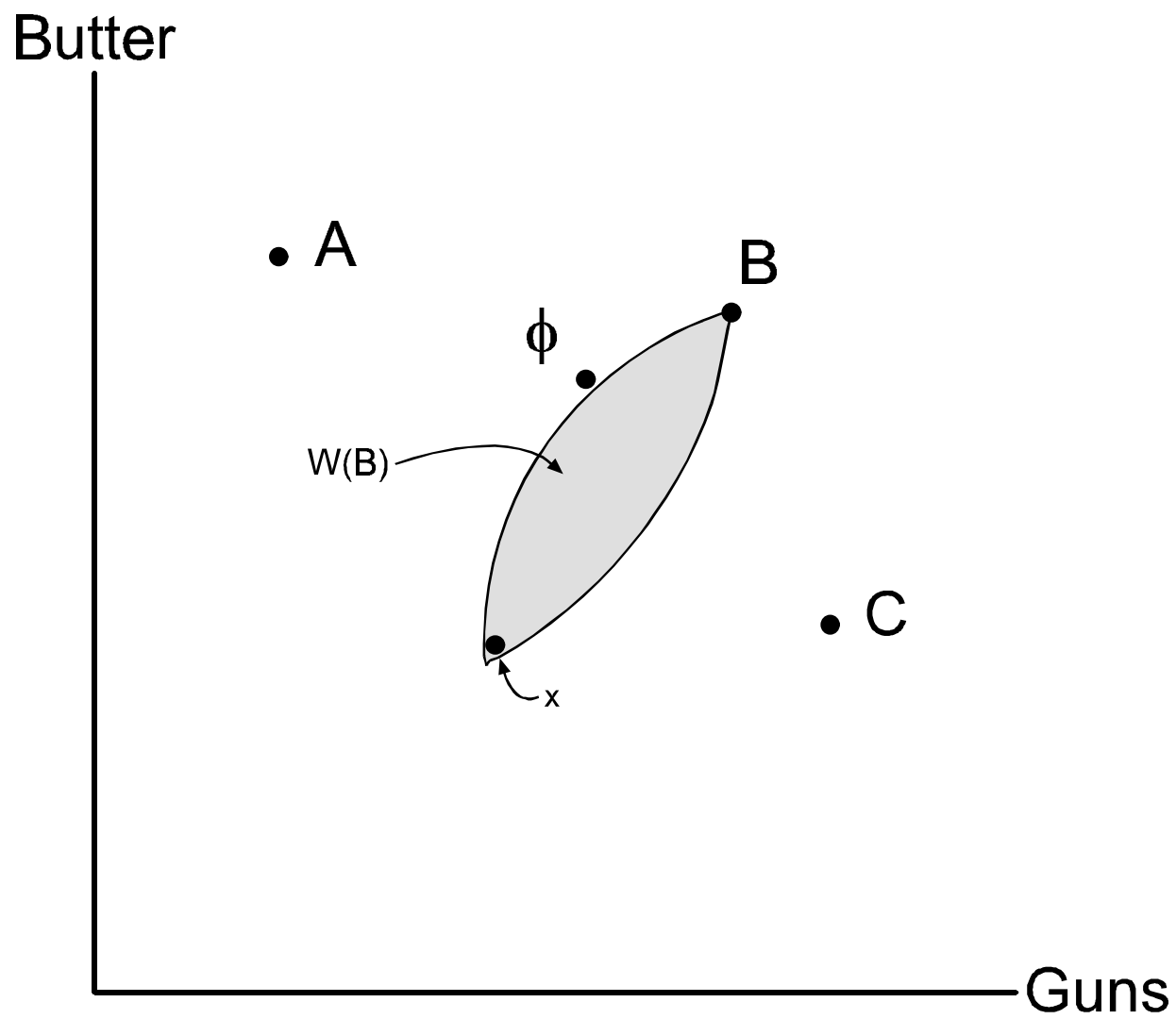
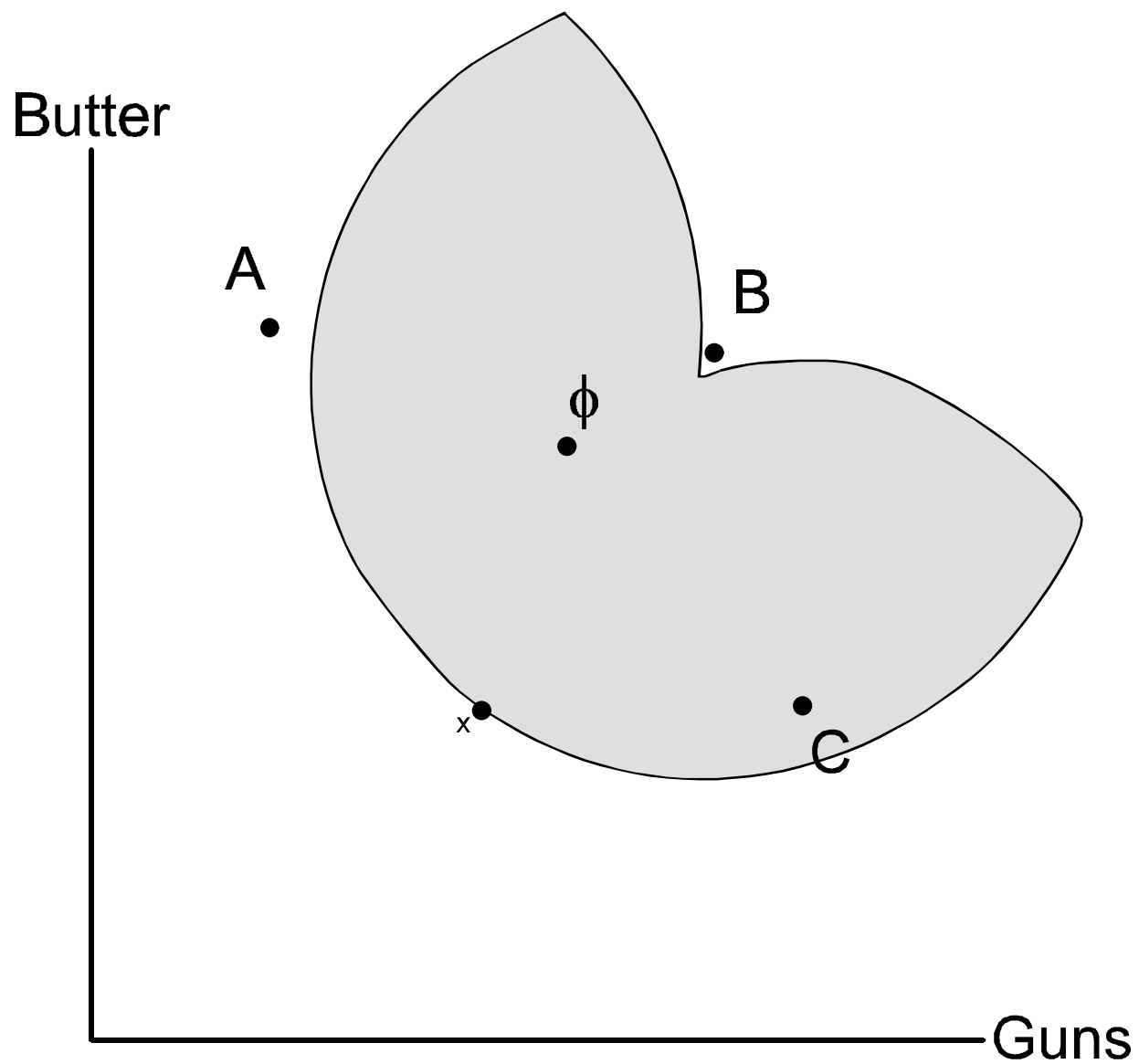


Figure I-16. Win set against x.



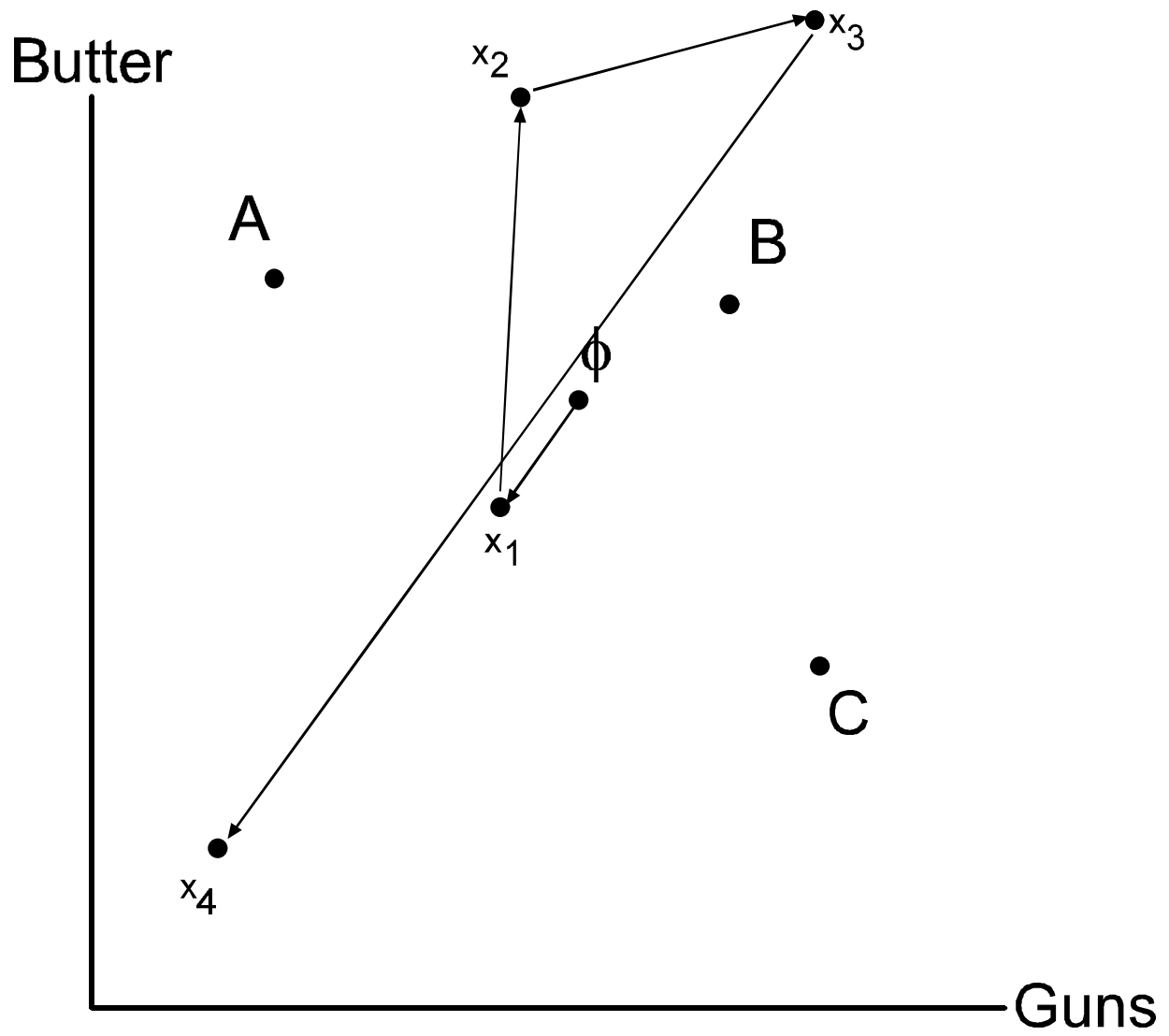


Figure I-17. Far-ranging agenda from ϕ to x_4

Figure I-18. Highly symmetric configurations of ideal points create an equilibrium of tastes.

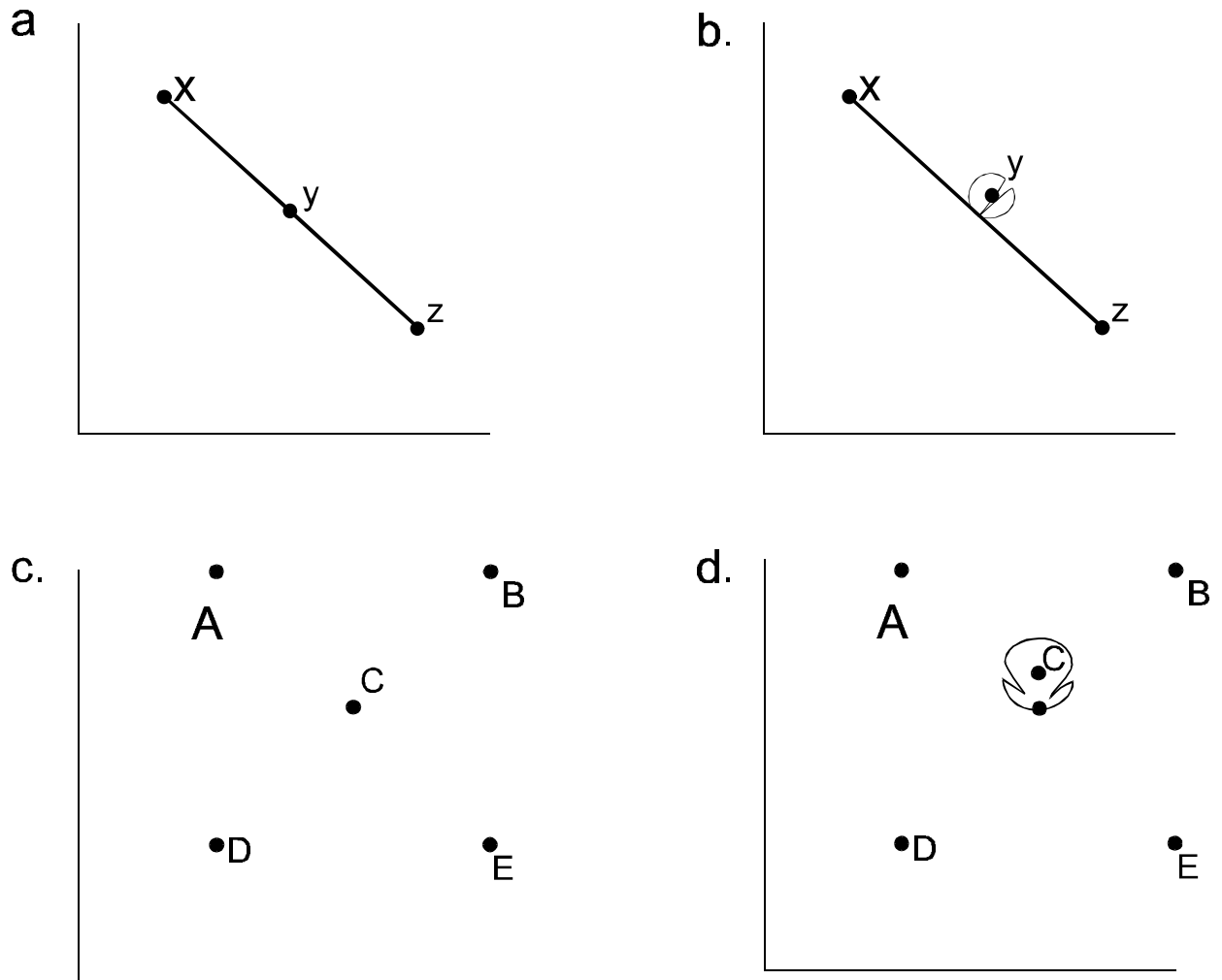
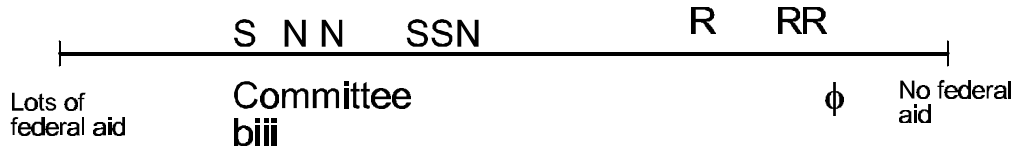


Figure I-19. The Powell amendment in one and two dimensions.

a. One-dimensional representation



b. Two-dimensional representation

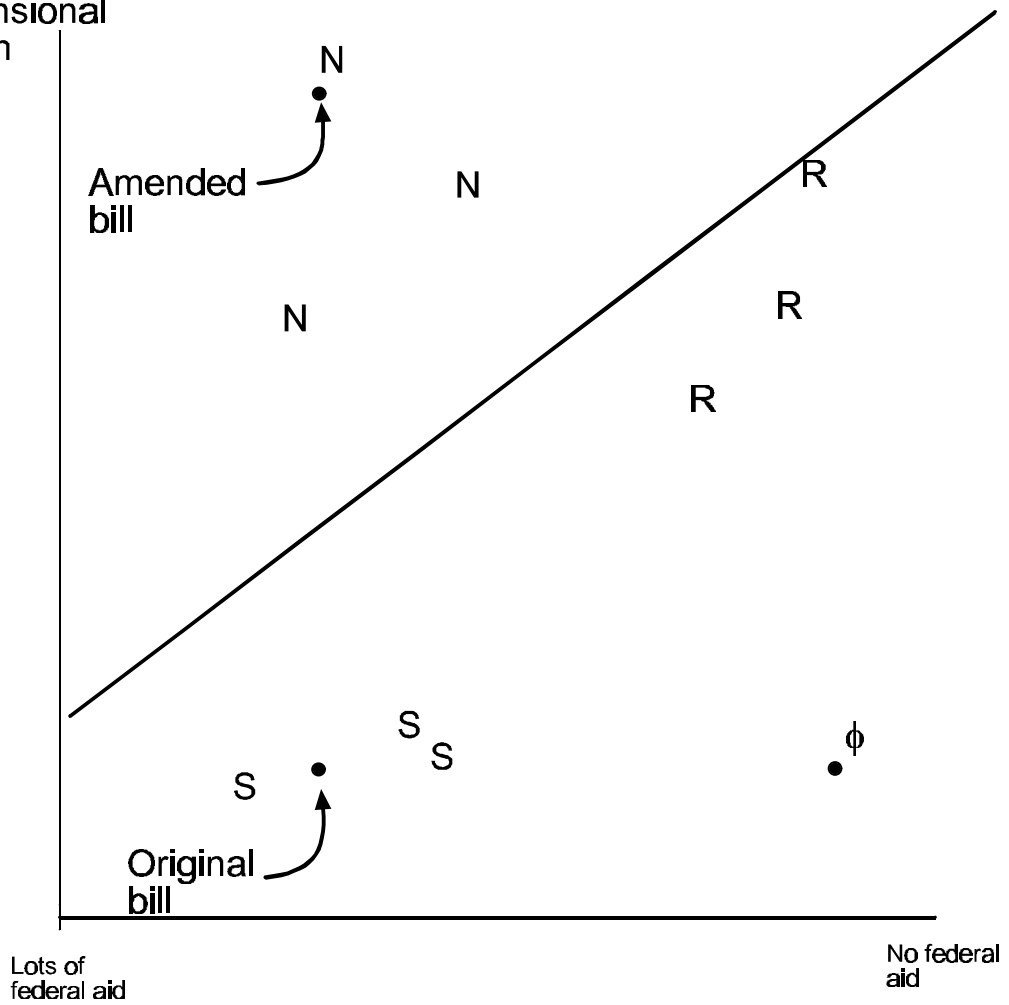


Figure I-20. Different salience weights along two spending dimensions.

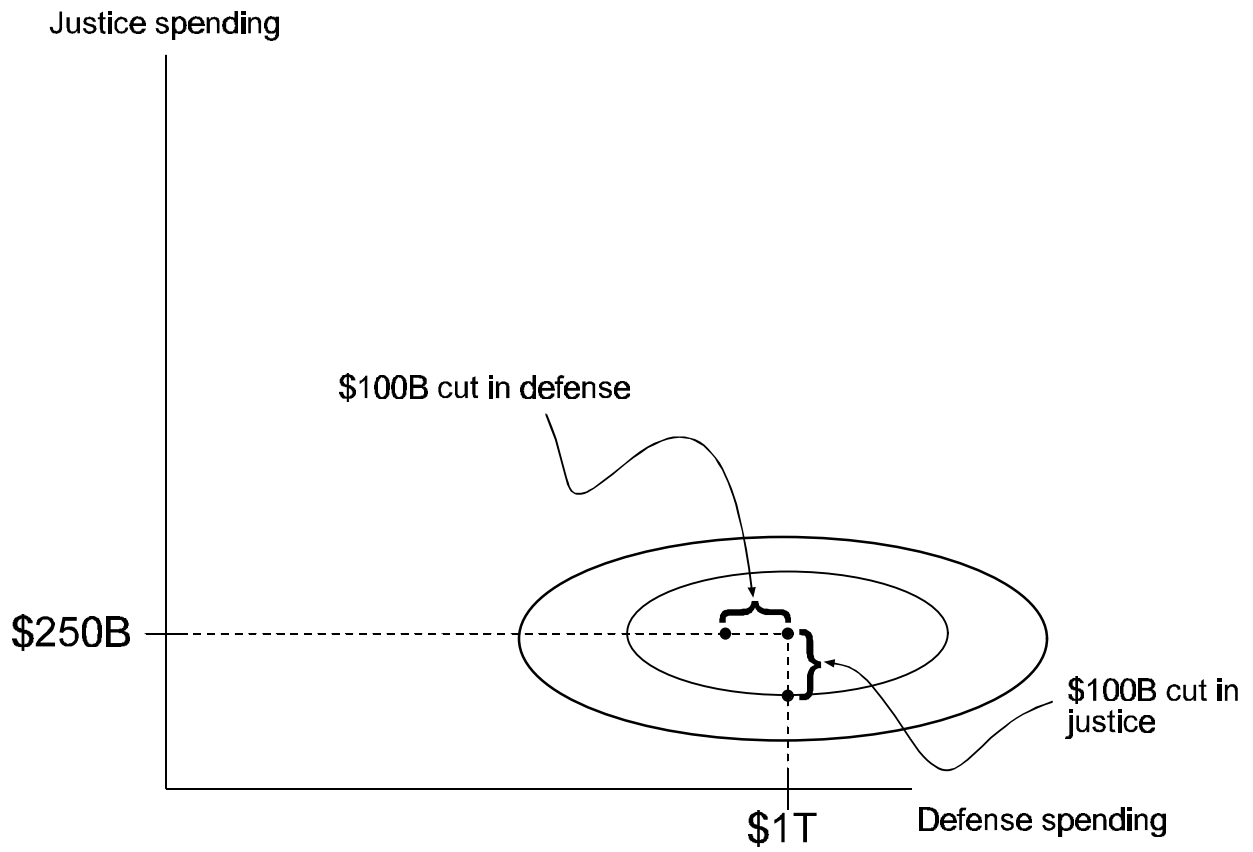
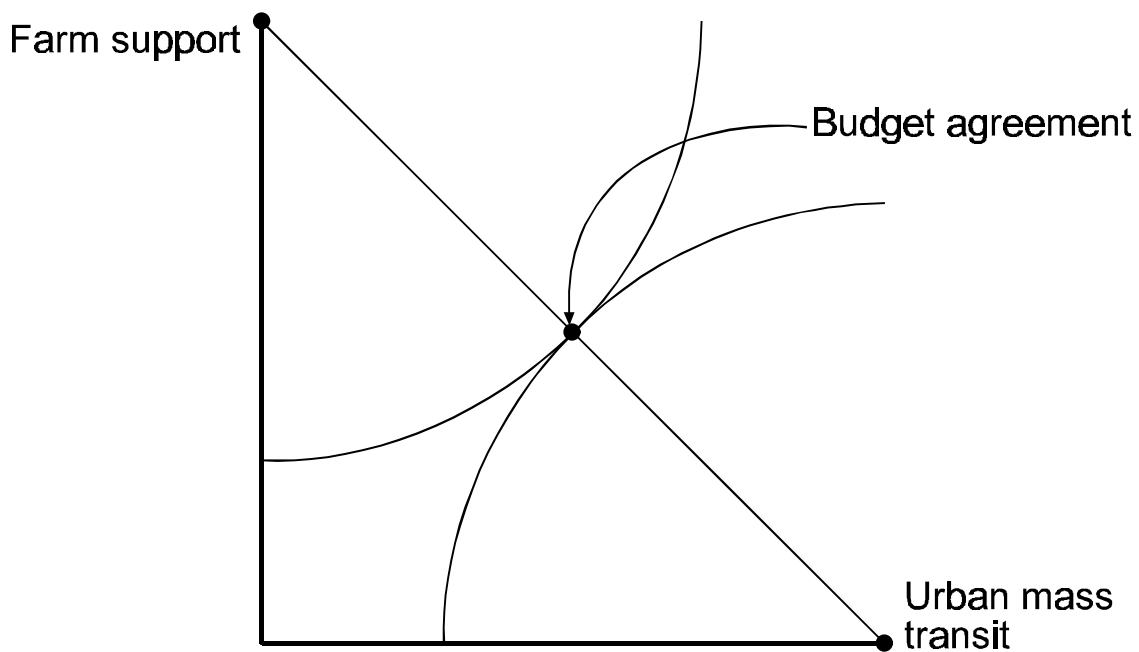


Figure I-21. How elliptical indifference curves can encourage “too much” spending.

a. Circular indifference curves



b. Elliptical indifference curves

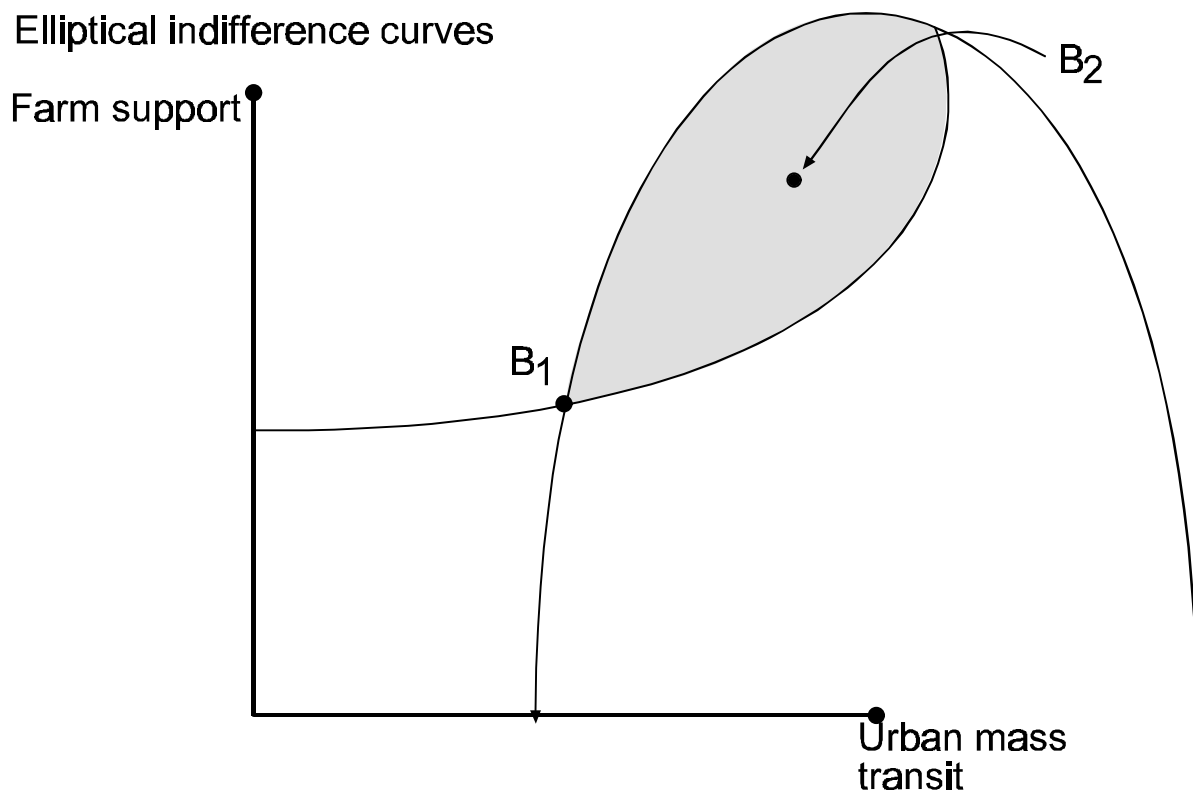
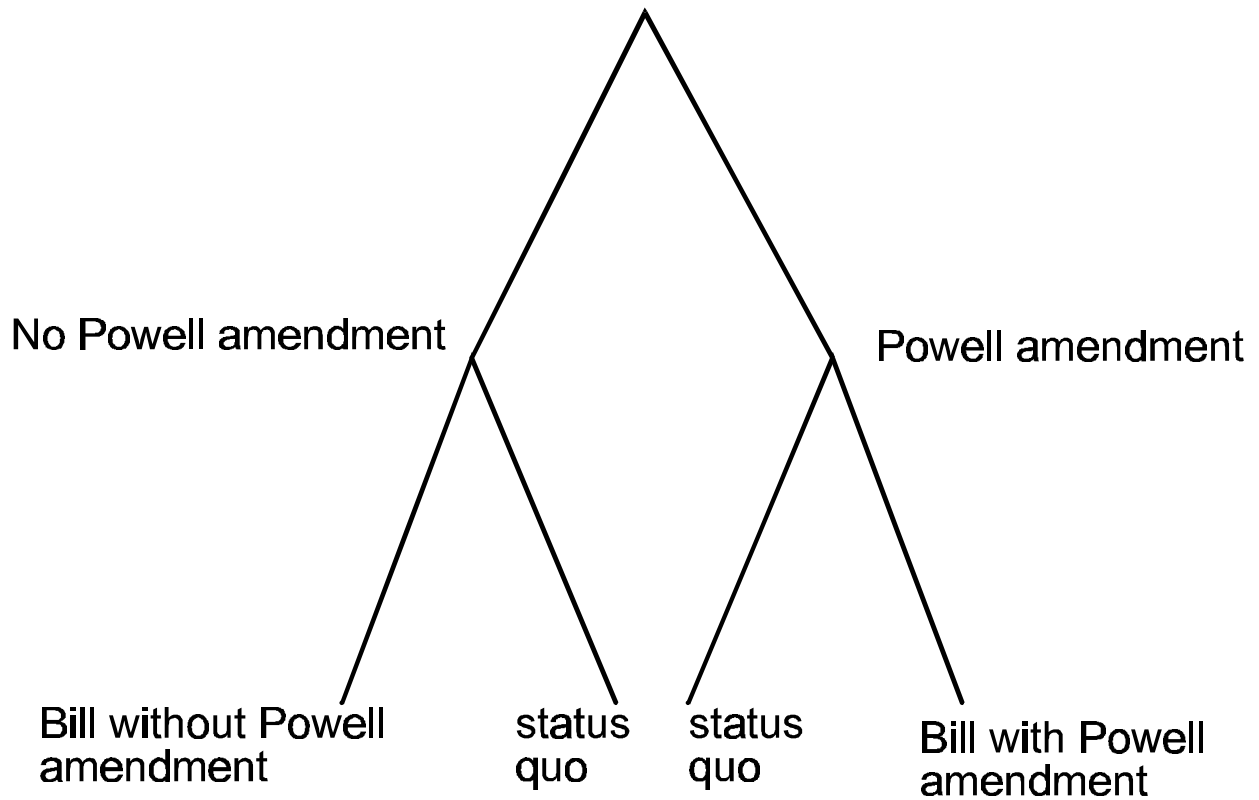


Figure I-22. Voting tree for Powell amendment.



Rank-ordered preferences for three possible outcomes

Northern Democrats (N)	Southern Democrats (S)	Republicans (R)
Amended bill, with Powell amendment	Original bill, without Powell amendment	Status quo

Original bill, without Powell

amendment

Status quo

Status quo

Amended bill, with Powell

amendment

Amended bill, with Powell

amendment

Original bill, without Powell

amendment

Figure I-23. Full voting tree.

