SECTION I

Basics

The basic model of analytical politics addresses both normative and positive questions about human political action. Formal theories help social scientists explore "what if?" questions by deducing the implications of a set of premises. This approach has several advantages over other forms of theorizing, as we shall see. An important advantage of analytical theory is the ability to evaluate different forms of democratic choice.

The middle, or the center of the distribution of enfranchised citizens, is where political power is believed to reside. For at least 2,500 years, philosophers have argued about whether the policies resulting from different forms of democratic choice are just. The contribution of analytical theory is to make precise the consequences of different forms of choice and different sets of desires by citizens.

To make this idea of the "middle" precise, we first consider the idea of the median voter, under the assumption that there is but one policy government must choose. This definition of the middle is then extended to account for the fact that government must make many choices all at once. It turns out that the "middle" may not exist, or that there are many middles, if policy choices inherently involve several issues at once.

Further, this problem of indeterminacy of majority rule is not confined to any one institution or way of choosing. *All* institutions of aggregating arbitrarily chosen preferences exhibit an inability to make a unique choice among three or more alternatives. The only exception is dictatorship, which "solves" the problem of disagreement in democracy by giving only one person a voice in choosing.

The topics covered in this section include:

- The basis of spatial reasoning, including "middle," "left," and "right," as terms to help us understand politics
- The Downsian model and the median voter theorem
- Multiple policies and the median in all directions
- Arrow's impossibility result
- Alternative voting rules

CHAPTER 1

The analysis of politics

Politics is not an exact science.
(Otto von Bismarck, Speech
to the Herrenhaus, 1863)

Politics may be the most complex of all social phenomena and the most difficult to theorize about. There is no lack of theory, of course. Instead, there are many theories, with competing claims, to explain or guide political choices. To make things even harder, theories about politics range from the *normative* (what should be) to the *positive* (what is). Since politics is complex and political theories have both positive and normative elements, newcomers can't tell where to begin or what to believe.

The political theory in this book is "analytical," from the Greek *analysis:* dissolving, or loosening, a complex whole into parts. Analysis helps us understand relations of the parts, as well as the nature of the whole. Without an analytical approach, "politics" is very hard to comprehend, especially if we want to know more than "What will happen tomorrow?" It may be easy to forecast an election from opinion data taken a day before the election, but forecasting issues or elections six months off is difficult. A year before an election, anything could happen.

One might say that theories of politics are not very good if their predictions are so uncertain. One might be right! Still, it is more fair to focus on the distinct nature of the problem: Political phenomena are demandingly, delightfully complex. The *analysis* of politics "loosens" this complexity into more manageable (but still very interesting) components. Analysis helps us understand politics by applying "models" to these components to see how they work. *Models* are internally consistent bodies of theory that describe human behavior or physical phenomena. This process of abstraction helps simulate a reality simpler than (or much different from) the real world of politics.

Why use models at all?

Mathematical models are primarily focused on logical consistency, or the internal validity of arguments. Given a set of premises, we can characterize a conclusion in one of three ways:

- *Conclusion is true.*
- *Conclusion is false.*
- *Conclusion is conditionally true,* depending on other variables not accounted for in the model.

The advantage of formal analytic reasoning in clearly distinguishing true, false, and conditionally true arguments may not be obvious. A common reproach is that the simplifying assumptions in formal models are too abstract or unrealistic.

But *simplifying assumptions* makes analysis manageable and helps us focus on the key components of a phenomenon. The reason mathematical models are criticized for their assumptions is simple: *The reader can tell exactly what the assumptions are!* The discipline imposed by this approach means that mathematical models can be falsified, refined, and corrected.

Theories *must be* abstractions, or simplifications from an unmanageably complex reality, whether those theories are stated mathematically, verbally, or in terms of statistical measurements. The basis of any theory is a logical construction, following from premises or assumptions, that can be used to forecast events in the future. These forecasts are based on those data that the theory highlights as important. To put it more simply, theory gives us a way of asking "what if?" in our minds and then deducing implications.

The particular "what if" implications derived from abstract theory may have little to do with the world of directly observable phenomena. The applicability of the argument is irrelevant to the truth or falsity of the propositions *within the logic of the model.* Mathematical statements are either true, false, or conditionally true. A trained person can definitively recognize a set of statements as belonging to one or more of these three categories, without reference to any information outside the model itself. To put it another way, the epistemological basis of mathematical models is pure *deduction.*

Do not be confused: The use of arcane symbols and formidable jargon is different from "science." Using mathematics for discovering simple unifying principles that explain and predict observable phenomena is hard. Good theory is hard even in simple settings such as the behavior of a body moving in a vacuum. Social scientists study human beings, who deal with each other in complicated ways. If symbols make these relations even harder to understand, formal theories would be worse than useless.

We claimed above that a strength of mathematical models is the clarity of the statement of the assumptions. Yet clarity is only a strength if the assumptions themselves are *plausible.* One cannot tell if an argument works outside its own stylized context by looking only at the argument itself. Consequently, the external application, or "testing," of formal theory is by *analogy:* The theory is tested by measuring relationships among observable phenomena, in hopes that the observable phenomena are "like" the relationships the model focuses on.

Without careful empirical tests, models would just be amusing mathematical exercises. Analytical political theory has been subjected to extensive and rigorous empirical testing. Partly because some portions of the theory (such as the classical spatial model of mass voting) *failed* empirical tests, the theory itself has evolved and been improved.

We will review some assumptions and logical forms of several mathematical models in later chapters. In particular, we will consider the "spatial" model at some length. First, though, we ask why politics and governance are important from a *normative* perspective. The brief reason is that these models are more than positive claims about the way the world works. Analytical politics evaluates different ways of choosing and compares ways things *should* be done.

Spatial competition is a simple and intuitively plausible model of political choice. The basic spatial model was originally adapted from economics, but the modern spatial theory of voting is an analytical model of politics. The primary assumption is that policy positions of candidates or parties can be usefully conceived as points in a "space." Policy space can encompass one issue or several. Each issue is associated with a dimension in the space, where "dimension" is an ordered set of alternatives.

We will use spatial models heavily in this text, and it is important

for the reader to understand how spatial models represent political phenomena. The spatial model breaks up the analysis of politics into three separate components:

- *Voter choice:* Each voter chooses the candidate or policy "closest" to the voter's ideal conception of what the government should do. In so doing, voters maximize their utility or satisfaction.
- *Party platform selection:* Political parties know how voters choose and make proposals (or choose candidates) that attract the most votes.
- *Quality of outcomes:* In some circumstances, the parties (in a two-party system) or the governing coalitions (in a multiparty or parliamentary system) converge toward the center of the distribution of voters. If the "center" corresponds with ethically defensible notions of democracy and the good society, this outcome is desirable. Alternatively, bias away from the center toward one of the extremes may be observed. In either case, spatial theory presents a detailed set of causal connections for effecting reforms.

Spatial theory has been criticized for the particular conception of voters, platforms, and outcomes it uses. Many of these criticisms are important, as we shall see. For now, let's emphasize why people find spatial models useful: Spatial theory is the only theory that provides an integrated model of voter choice, party platforms, and the quality of outcomes. For a complete model, formal spatial theory is the only game in town.

How should a group choose how to choose?

How should a group of people choose the right action to take? Does the choice of how to choose affect the quality of the choice itself? These are hard questions, but they are important questions in political theory. To make the questions more concrete, consider the Hun–Gats, a tribe of hunter–gatherers living on a long north–south peninsula. The Hun–Gats have to make a collective choice among three mutually exclusive alternatives:

- Stay in their thatched huts beside Muddy River, where they have hunted (and gathered) most of the available food.

- Go north, where there is more food and water, but where the fierce Raouli tribe kills trespassers on sight.
- Go south, where the land is arid and barren, and little is known about the presence of other tribes, game, or water.

If everyone wants to go north or go south, they all go. If all want to stay, they stay. But what if different people want different things? Disagreement tests collective choice mechanisms; conflict strains the ties that gather a group of individuals into a society. What is the best way to tackle this problem of choosing one course of action from several possibilities if people disagree?

At best, the answer to the "What if there is disagreement?" question depends on many factors. These include the nature of the disagreement, how peoples' desires or judgments are aggregated, and the complexity of the set of alternatives over which the group of people is trying to choose. Almost any answer to the "What if there is disagreement?" question is only conditionally true. That means that the assumptions on which an argument rests must be clearly stated. Otherwise, the Hun–Gats can't decide how to decide with any confidence. Worse, their confidence that one form of decision is the "best" way to decide might be misplaced. They may not recognize that (for example) majority rule is "best" only under particular conditions. To illustrate the problem of recognizing conditionally true statements in normative theory, consider the following passage from Rousseau:

> As long as several men in assembly regard themselves as a single body, they have only a single will which is concerned with their common preservation and general well-being. . . .
>
> A State so governed needs very few laws; and, as it becomes necessary to issue new ones, the necessity is universally seen. The first man to propose them merely says what all have already felt. . . .
>
> There is but one law which, from its nature, needs unanimous consent. This is the social compact. . . . Apart from this primitive contract, the vote of the majority always binds all the rest. This follows from the contract itself. But it is asked how a man can be both free and forced to conform to wills that are not his own.
>
> I retort the question is wrongly put. . . . When in the popular assembly a law is proposed, what the people is asked is not exactly whether it approves or rejects the proposal, but whether it is in conformity with the general will, which is their will. Each man, in giving his vote, states his opinion on that point; and the general will is found by counting votes. When therefore the opinion that is contrary to my own prevails, this proves neither more nor less than that I was

mistaken, and that what I thought to be the general will was not so. (Rousseau, 1973, §§ 315–29)

As Grofman and Feld (1988, p. 568) note, "This passage in Rousseau is often misunderstood." The reason is that in other parts of the *Social Contract,* Rousseau offers a number of qualifications and disclaimers: Even Rousseau thought that the majority will and the general will might sometimes differ. But these qualifications seem like asides and are not identified as what they are: assumptions.

Suppose the Hun–Gats were to read Rousseau. Should they conclude that a majority in favor of either option "binds" all the rest to follow? If they read Rousseau *carefully,* they would end up arguing over what was meant in different (apparently contradictory) text passages. For example, Rousseau notes that "[the argument for the majority] presupposes, indeed, that all the qualities of the general will still reside in the majority: when they cease to do so, whatever side a man may take, liberty is no longer possible" (Rousseau, 1973, IV 2).

Our hunter–gatherers, sitting in cold failing sunlight around a dying fire and reading aloud from tattered old books, are frustrated. They want to know whether they should use a majority vote on whether they should stay or go. But they have no way to find out if Rousseau's claims for the value of majorities in discovering the "general will" are true, false, or conditionally true. They can't tell what his assumptions, or premises for argument, really are. To make matters worse, suppose some Hun–Gat now come across the following text, in another old book: "The tree of liberty must be refreshed from time to time with the blood of patriots and tyrants. It is its natural manure" (Thomas Jefferson, letter to William Stevens Smith, November 13, 1787).

The Hun–Gats face hard questions. Should they accept the will of the majority as just and general, as Rousseau argued? Or should they follow Jefferson in believing that revolution by a minority can be just? Since neither of these extreme positions is *always* true, on what assumptions or premises is the "truth" conditional?

To put it differently, does the "general will" (the just course for a society) always exist, sometimes exist, or never exist? If there is no general will, can we still call majorities "sacred," or are minorities morally justified in rising against the tyranny of the majority to give the tree of liberty the benefits of their blood? No less important, even if the general will does exist in this case, how can the Hun–Gats discover it?

To learn the answers, we must use a form of argument that identifies premises, or assumptions. This approach abstracts from reality, to be sure, but it allows us to focus on the conditional nature of many important truths about politics. The basis of this approach is the spatial model of politics.

The basis of the spatial model of politics

The spatial model is not just an "as if" form of reasoning about politics. People really think this way and routinely use the words "left," "right," and "center" as if those words mean something. This belief that the listener will attach a predictable meaning to a candidate's spatial position is very important. People use the metaphor of spatial position because it helps them understand politics. Communication requires that some part of the meaning of these terms be shared. We will begin with the simplest possible set of assumptions about information and behavior, in Chapters 2 and 3, before moving to more realistic but more complicated models in later chapters.

The first clear use of the left–center–right spatial metaphor was just after the French Revolution of 1789. It is remarkable, given the extensive treatment historians have accorded this period, that so little attention has been paid to the contribution of the Revolution to our everyday language of politics. The extreme differences in the French political system and the novelty of democracy itself evoked important conceptual changes. One of the most durable linguistic innovations was the use of the spatial metaphor as a shorthand for both physical position and political and ideological beliefs.

"Left" and "right" were first used simply to describe the physical positions of political groups in the National Assemblies, and later in the National Convention. Groups that disliked each other sat as far apart as they could. Radical allies of Robespierre sat in the "Mountain," the high benches against the top wall. From the perspective of someone entering the hall, these radical deputies were on the far left. The independent deputies (the "Marsh," or the "Plain") occupied the debating floor in the lower center of the hall. The Girondin deputies held most of the ministries that ran the government, and consequently controlled most of the practical power in the Assembly. They gathered in the far "right" corner of the hall.[1] Over time, it became clear that

those on the left (Jacobins) wanted radical change. Those on the right (Girondins) defended the status quo because they ran the government.

These meanings have changed only slightly in being transformed into the modern language of politics: "Left" still generally means those who want change, with the extreme left seeking revolutionary change. The right is conservative, defending either the current policies or the ideas the current policies replaced.

The constancy of meaning of left and right may seem surprising, but it is no accident. The spatial metaphor is not just useful; it is *fundamental* to the way we all decipher democracy. Consider the way disagreements were described before the twin revolutions in the United States and France. Factions in European politics were conceived as struggles among "classes." In France, for example, there were three castes, or "estates." The clergy made up the First Estate; the nobility, the Second. Senior clergy came from noble families, so the first two estates were mutually supporting, protecting institutions and prerogatives that ensured their privileged status. The vast Third Estate, ostensibly representing the rest of France, was in practical terms limited to skilled artisans, lawyers, bankers, and professionals.

The implicit assumption was that the hierarchy in society was natural and just. This hierarchy found its highest realization in the figure of the monarch, who was above all estates (Beik, 1985, pp. 6–31).[2] This conception of politics was descriptively accurate: Social class and political division were identical in prerevolutionary French society. The reason for this is that each person's station in the feudal world was static and categorical. "Position" was defined by birth and political property rights, rather than merit or stands on political issues.

The two dimensions of conflict, social class and politics, were separated by the Revolution. Social class is inherently a set of *vertical* divisions. Politics in a democracy is a *horizontal* division of opinions among putative equals. It is hardly surprising, then, that both Tocqueville and Guizot (1974) use the same word – "leveling" – to describe the major effect of the Revolution. Both men believed that democracies must conceive of citizens abstractly and separate from their stations in life. There are obvious antecedents for such a conception in the religious view of every individual as a soul to be saved. The Revolution, in this conception,