

From Research Question to Theory to Hypothesis

I remember an incident from my own undergraduate years that caused me some confusion both when it occurred and for some time thereafter. I took a class with a professor I admired, a well-spoken older man who seemingly knew everything. I don't remember what we were discussing, but one day, a particular guy with a less than stellar reputation (in my mind at least) raised his hand in the middle of class and asked, "Professor, where do theories come from?" The professor froze. I was sitting to the side of the room, and I could see his face clearly. It had the deer-in-the-headlights look of panic for a moment, and then it was gone. The professor turned to the questioner and said firmly, "Books. Theories come from books." And then he led the class discussion back onto the topic.

Now, random questions from this particular guy—and professorial efforts to lead the discussion elsewhere after such questions—were not at all uncommon. What was uncommon, though, was the professor's reaction. I had never seen this professor hesitate, not even for the heartbeat that this had lasted. In fact, this was the faculty member who encouraged me to ask the most questions and who always had the answer, and if you haven't guessed, I was one of those students who always had a ton of questions. How could such a simple question throw him for a loop like that? He regularly handled all my off-the-wall inquiries with aplomb; to think that he didn't know the answer was just mind-boggling. I think I eventually attributed the professor's response to being tired that day or something like that, but it nagged me for quite a while.

What I understand now, from the other side of the lectern, is that my classmate's question is the intellectual equivalent of that parentally dreaded question, "Daddy, where do babies come from?" We faculty know what theories are and where they come from, and we have them in our own research, and we can identify them when we see them, and we can deride others for not having them in their research . . . but most of us can't really articulate well what a theory actually is or how we get them. Many methods textbooks fumble awkwardly around the topic, flailing for a few brief pages before abandoning the attempt. Others skip discussing theory altogether except for noting its necessity; they deem it the purview of "substantive" classes, not a methods course such as theirs.

This lack of theory is a serious problem for a methods textbook, because theory motivates the entire research project. Trying to teach research methods without the role of theory is like trying to teach someone to drive in a car with no brakes: By definition, the entire enterprise will rapidly get out of control. A novice driver with no brakes will either go nowhere fast, or will go fast until he or she comes to a fiery crashing end. A novice researcher who lacks a theory, or lacks an understanding of theory, will have many research decisions to make and no basis for making them. With no theory, many students freeze up and find that their research goes practically nowhere; students who make decisions without theory usually crash and burn. This chapter is dedicated to theories: what they are, how to get them, and what to do with them once you have them. By taking the time to develop a well-articulated theory, you will position yourself for research success by giving yourself a basis for making your future research design decisions. Even though it's theory, theory is, in this case, entirely practical.

Chapter 1 introduced different types of research and research questions in political science, and you practiced evaluating and developing research questions of your own. In Chapter 2, we take the next logical step: helping you to formulate answers to those questions, which is to say, we enter the world of theory. We begin by discussing what theory is and where it comes from. The second section helps you to develop your own theory and introduces tools to help you with this. The third section builds the bridge between theories and hypotheses, and it gives you opportunities to begin moving from your theory to your hypotheses.

WHAT IS A THEORY?

A classic text on research design defines a social scientific **theory** as “a reasoned and precise speculation about the answer to a research question, including a statement about why the proposed answer is correct” (King, Keohane, and Verba 1994, 19). In other words, it proposes an answer to the research question and tells why that answer is expected by specifying a mechanism, some chain of events or reactions or changes, that connects the independent (cause) variable(s) with the dependent (outcome) variable.

Theories are simplifications of reality. The purpose of a theory is not to give a complete detailed retelling of an event or phenomenon, or even a “complete” explanation. Theories direct our attention to specific elements of a causal story. They isolate one particular outcome or part of the outcome, and then they explain that outcome by highlighting some parts of the story that the author feels are important while downplaying other details that are less important to the author's story. Understanding this is important: No theory is trying to explain every single detail and every facet of an event or phenomenon. Each theory bites off a small bit of the larger story—isolated from among other events and related phenomena by scope conditions—and uses assumptions to simplify the set of moving parts down to something manageable. From this

more manageable set of parts, the author makes a prediction about how the moving parts cause the outcome. We'll begin this chapter by considering all these parts of a theory and then discuss where theories come from, at least in a general sense.

The Parts of a Theory

A typical theory has four parts: the expectation or prediction, the causal mechanism, the assumptions, and scope conditions. The first part of a theory is the expectation or prediction. This is the part of the theory statement that says what the author expects to happen. The prediction is the short form of the answer to the research question, the outcome of the interaction. This is the easiest part of the theory, the one you most immediately think of when you try to explain some event.

The second part of a theory is, to many social science practitioners, the most important: the **causal mechanism**. It provides a specific chain of steps, series of links, or other specific accounting of how changes in the cause variable affect the outcome variable. Without a causal mechanism, a theory is nothing more than a statement of expectations, a vague prediction. Some scholars believe that the causal mechanism itself is the heart of the theory. The causal mechanism tells why something happened, which allows us to go from predicting or expecting an outcome to explaining it. Since explanation is the goal of social science research, this *why* factor assumes a crucial position in our research. The specific steps of the causal mechanism allow us to differentiate between theories that predict the same outcome, as we discuss below.

The third component of a theory is its assumptions. All theories make assumptions. **Assumptions** are claims or beliefs, typically implicit ones, about how the world operates. Some common assumptions in political science are, for example, that elected officials seek to stay in office, that individuals are equally motivated to vote, or that similarly situated firms benefit identically from policies. Other seemingly simple assumptions are actually more complex, such as the widespread assumption that individuals are rational actors who maximize their personal utility. This is really three assumptions in one: The actors are individuals, the individuals are rational, and their objective is utility maximization. But many more assumptions are quite insidious, such as the assumption that gravity operates. After all, theories about which side will win a war rely on armies firing projectiles that will injure or kill the other side, and that's four instances of the necessity of gravity right there: armies, firing things that will hit the other side and will have enough force to injure or kill.

One of the hardest steps in theorizing is articulating the set of assumptions you have about your event, outcome, or phenomenon of interest that actually matter for your theory. The assumption about gravity, for example, is a necessary assumption for most theories of war, but natural science gives us reason to believe that gravity holds in all places on Earth. Since I don't know of any current research on extraplanetary political science, the assumption of continued

and constant gravity seems safe to make without stating it explicitly. One of the reasons scholars do not explicitly articulate all of their assumptions is that some, such as the persistence-of-gravity claim, are true for all hypotheses and sets of claims; stating them for every hypothesis or even every research question would be painfully redundant. Other times, scholars make several assumptions at once through a single statement. Invoking some terms or concepts from rational choice theory, for example, tends to imply that the author is accepting all of the assumptions of rational choice theory in her paper. Many of these statements and their corresponding assumptions are rather abstruse; they emerge from extended debates in the scholarly literature about various *-isms*.¹ As a beginning researcher, you're not expected to be familiar with all of these, but you should consider a variety of assumptions and determine which, if any, are relevant to your project. The specific set of assumptions you are making varies widely across subfields and between research questions; we'll consider some options below.

The fourth and final component of a theory is the theory's scope conditions. **Scope conditions** identify the theory's **domain**—the set of cases over which the theory is expected to operate. This term is somewhat less familiar to many scholars of American politics, for whom the domain is usually implicit: all (American) voters, all Congresses (and Congress members), all bureaucratic decisions, etc. By constraining their analysis to American politics, and/or theorizing about behaviors that are fairly unique to the US context (e.g., Supreme Court decisions, impeachment, US policy processes and laws), scholars have already defined the domain. The same is true for studies of politics or unique political processes within other countries or units as well. Adopting resolutions at the UN General Assembly, for example, provides both a temporal scope (time frame) and a substantive scope, as do studies of French legislative behavior.

¹One set of assumptions that we all make relates to *ontology*, or beliefs about how the world works. Researchers working in the positivist empirical tradition (the one described in this book) generally believe that the social world is composed of systematic and predictable components, and unsystematic and unpredictable (random or *stochastic*) components. The social world also exists as a distinct entity that we can study, independent and outside of ourselves. The entire methodology of positive empirical research revolves around these often unstated assumptions. Other scholars outside of the positivist empirical tradition hold different beliefs, which are often associated with *-isms* in the same way that positivism has its own assumptions. These alternate assumptions include beliefs that all human institutions are mutually constituted by the observers rather than existing outside the observer, and/or that the act of observing a phenomenon changes it. These scholars have different norms and desired characteristics for research. *Empirical Research and Writing (ERW)* assumes that you are working in the positivist empirical tradition, at least for the purpose of this particular assignment and/or course. If you have strong intellectual ties to a non-positivist tradition—usually indicated by knowing what the word *ontology* means and/or knowing what you assume about the world—then you should plan to communicate regularly with your instructor during the research design process to ensure that you are working within a framework that your instructor can or will evaluate.

For scholars of cross-national comparative politics and international politics, on the other hand, domains are often not so clear-cut. Does a theory of revolution apply to all revolutions? Revolutions in countries with no history of democracy? With colonial history? As explanations for anticolonial revolutions (wars of national independence)? In richer countries? In countries with no significant social or ethnic cleavages? Does it explain massive social revolutions as well as more mundane civil revolutions? Does it explain bloodless ones as well as bloody ones? Do coups count as revolutions? This is when we return to the question from Chapter 1, “What is this a case of?” and turn it on its head. This is a case of revolution, yes, but what kind of revolution? Good scope conditions identify a set of general conditions that could exist in multiple times and places, rather than identifying a specific time and place (Mahoney and Goertz 2004, 660). Ideally, one should think of scope as having a temporal dimension—a time frame or range—and a spatial dimension that defines the units of analysis. When you can identify the period and the cases within that period, you’re on track to have developed solid scope conditions.



Insider Insight

Don’t worry if you can’t articulate all of your assumptions or scope conditions right now. Many will surface as you begin discussing your theory, research design, and evidence with classmates and colleagues. Just keep track of them in your research notebook as they surface so you have them for later.

To summarize, a complete theory of an event or phenomenon requires all four components: a prediction or expectation, a causal mechanism, clearly articulated assumptions, and scope conditions. In other words, we must know what set of events we are explaining (scope), what we expect to happen (prediction), under what conditions (assumptions), and why (mechanism).

Where Theories Come From

So where do theories come from? I’ll give you a hint: The answer is not “books,” no matter what my professor said. Or at least, it’s not only books. We generate theories—potential answers to our research questions, our hunches about what the relationship looks like—from a wide range of sources and through a range of different methods. These methods generally take one of two forms: inductive theorizing, or deductive theorizing. In **inductive theorizing**, the potential explanation emerges from a study of specific cases, and then it is generalized outward from there. We might develop a theory of Supreme Court

behavior, for example, by studying a handful of Court decisions and drawing conclusions from the set of data we examined. Likewise, we might theorize about the outbreak of major war based on an examination of events around World War I and World War II, or about the role of ethnic cleavages in developmental politics by studying Indonesia and South Africa. In all these cases, we use the specific cases to help develop general explanations.

In **deductive theorizing**, on the other hand, potential explanations emerge from abstract analysis outside of the context of any specific case. We step back from the data and think, in general, about ways in which something could occur or what could cause a certain outcome. Essentially, we try to tell a story about how or why an outcome happened without using any proper nouns. Thinking about the role of gatekeepers in a legislature leads to general predictions that we can test against the role of, say, committee chairmen in Congress or party leadership in most European parliaments. Considering the process by which US presidents incorporate public opinion into decision making likewise produces testable hypotheses about when public opinion is most likely to influence policy. Deductive theorizing produces broad, generalized hypotheses that apply to large numbers of cases or contexts.

In short, while deductive and inductive theorizing conduct the same tasks in the research process, they do them in a very different order. The order in which we do these tasks matters a lot to the type of research output we produce. Social scientists follow natural scientists in believing that the ideal research design is the experiment, in which one devises a treatment or intervention based on some theory, applies the treatment to the case, collects data on the result, and sees if the data patterns match the hypothesis. The idea and expectations come before the data. Crucially, this implies that the theory is independent of the data—that the theory wasn't crafted to “explain” data we already had. Think of it this way: If we use the event sequence $A \rightarrow B \rightarrow C$ to form predictions that A leads to B and B leads to C, and then we “test” our theory on the same data, we will inevitably find that the theory is supported. This is bad science. Good science establishes a theory and expectations before conducting the research and then does the research according to well-established procedures and



Why Theorizing
by Induction Is
Problematic

TABLE 2.1 **Inductive and Deductive Theorizing**

Research Process With Inductive Theorizing	Research Process With Deductive Theorizing
1. Get data	1. Develop theory
2. Poke around in it, looking for patterns	2. Project theory to cases (hypothesize)
3. Develop theory	3. Get data
4. Project theory to (additional) cases	4. Poke around in it, looking for patterns

accepted norms of practice (and publishes this information). Only then do we obtain data to analyze—again using well-accepted and publicly shared techniques—and draw conclusions.

Theorizing is not a hard task in and of itself.² In fact, you theorize every day, as part of your ordinary daily behavior. You do it without even thinking about the fact that you're doing it. For instance, consider your route across campus to your noon class. Your research question is something like, "what is the fastest way to get to class from here?" One potential answer is, "by cutting straight through the student union, since that's the shortest route." Another potential answer is, "by going around the student union rather than through it, because that will avoid fighting against the crowd headed into the cafeteria for lunch." Congratulations! You just constructed two theories about getting around on campus. You provided an answer to the question and a rationale—a causal mechanism—for it. If you formed these expectations on the first day of class based on your general knowledge of campus and its traffic patterns, you engaged in deductive theorizing. If you spent the first month or so trying different routes and comparing the timing, then you engaged in inductive theorizing. In either case, you would want to test your theory by gathering new data—from yourself and possibly others—and comparing your predictions to your expectations. To finish the theory, let's consider the two remaining components: assumptions and scope conditions. In this particular theory, your assumptions included that your schedule would remain the same and your starting and ending locations would not change during the semester. If either of those changed, your theory would no longer apply. Likewise, this theory's scope conditions mean that it is relevant only to your schedule this semester at your particular institution.

The "hunches" or ideas that underlie much deductive theorizing come from a multitude of sources or approaches. We often draw heavily on background knowledge of one or a few cases to identify a mechanism, and then we see if that mechanism generalizes across cases. Sometimes, related literatures are a help, even if they're only tangentially related.³ Mechanisms can also come

²In this book, I assume that you are taking a deductive approach to your research puzzle, whether by your own choice or inclination or because your instructor has asked you to. The rest of the guidance in this chapter and beyond leads you through the practicalities of developing a deductive theory and hypotheses, designing a research project to test your hypotheses, collecting and analyzing the data, and discussing the results. If you feel your project is more of an inductive one, you should plan to consult with your instructor as soon as possible to determine whether you can pursue your current line of inquiry in the context of your course's assignment requirements, or whether you should reshape it into one that can be more easily pursued through a deductive approach.

³I once used theories of cognitive dissonance (political psychology, but familiar to me from studies of US foreign policy), explanations of interest group mobilization (from comparative and American politics), and Benedict Anderson's (1983) concept of "imagined communities" to explain the timing of the French revolution. Seriously. In a PhD-level French history course. It was one of the coolest (and funnest) papers I ever wrote. The result? The chair of the History Department tried to get me to switch PhD programs. Lesson? Intriguing ideas can come from the most unexpected sources.

from common concepts in the social sciences, such as collective action problems, positive and negative incentives, principal-agent problems, transaction costs, and path dependency. Researchers working in international relations can also draw on Grand Theory—realism, neoliberalism, Marxism, constructivism, insert-your-own-ism—as a source for potential answers. Many researchers employ tools such as formal theory and its most popular variant, game theory, to develop deductive theories of events.⁴ We can also use our own common sense or a suggestion from another scholar as a source for theory.

At its heart, a theory is nothing more than a potential answer to your research question: a statement of the relationship you expect to find and a “because” clause to give the basic reasoning. It does not need to be something novel or something that you personally dreamed up or discovered. All theory is based on other research, so don’t be afraid to look around you for theory inspirations. Often, anything you can phrase as an answer to a *why* or *how* question can form the basis of a theory.



Quips and Quotes

“Brilliant insights can contribute to understanding by yielding interesting new hypotheses, but brilliance is not a method of empirical research.”

—King, Keohane, and Verba 1994, 16

To be clear, theorizing is not about having brilliant insights. Theories don’t have to be earth-shattering or make seminal contributions to the field. They simply have to explain some phenomenon, and often the most obvious or commonsense explanation is the correct one. Don’t worry about trying to do something new that no one has done before. To be honest, most theory in political science is of the “well, yeah,” or “no, duh” level of brilliance: It’s an obvious, common-sense answer to a question. But all theories, even commonsense ones, need to be stated and tested before we can accept them. Take a question that interests you, think about an answer, and go from there.

FROM QUESTION TO THEORY

A proposed answer to a research question is a theory, or at least the bones of one. But as we discussed in Chapter 1, good research questions often have more than one possible answer. The process of developing a theory for your question is one of identifying numerous potential explanations and then sifting through

⁴For a good introduction to formal theory, see Kellstedt and Whitten (2009, 31–38), or Shepsle and Bonchek (1997).

Preview 2.1 Good Question, Bad Answer

The examples below show good research questions with weak theories—that is, poor attempts at potential answers that are unlikely to yield good empirical research papers.¹ Our goal is to craft better, more satisfying answers that can form the basis of a theory.

A. Q: Why do states start wars? A: Because they wanted to fight.

This is a good research question, as we discussed in Chapter 1. The answer, though, is somewhat lacking. The response most people would have to that potential answer is, “Why did they want to fight?” Better answers might be, “because they felt threatened by their adversary,” “because they wanted something their adversary had,” “because they believed they could win,” etc. These are all straightforward, no-duh kinds of answers, but all are testable and go beyond the superficial.

B. Q: Why do some countries have parliamentary systems of government, while others have presidential systems? A: Because that’s what their Constitution says they should have.

Again, why do their Constitutions say different things? Some potential answers might be found in differing patterns of social cleavages (countries with multiple social cleavages may have wanted a system that allowed for multiparty systems, which tend to work best with parliamentary systems), historical evolution/path dependency (countries that formerly were monarchies may have evolved into constitutional monarchies), or historical experience (countries that had bad experiences with presidents-turned-dictators may want to avoid concentrating power in one person again).

Practice 2.1 More Good Questions

For each otherwise-good research question below, create at least two better answers.

A. Q: Why do some incumbents lose elections? A: Because they got fewer votes than another candidate.

¹If these sound a little like the bad joke, “Why did the chicken cross the road? To get to the other side,” you’re not far off. The point is that these answers, while technically accurate, fail to get at the underlying issues in a satisfying manner.

(Continued)

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B. Q: Why do countries create new international organizations?
A: Because they want to.

C. Q: Why do some marginal political groups turn to violence (terrorism) and others don't? A: Because they think violence is the answer.

Progress 2.1 Theorizing Your Own Research

Now it's your turn to begin theorizing about your own research questions. Return to your work from Progress 1.1 or other potential research questions you've generated since then. Write each research question at the top of a sheet of paper. Underneath it, write a ridiculous answer to the question along the lines of the samples in Preview 2.1 and Practice 2.1. Then, ask yourself *why* about your ridiculous answer, like we did above. Try to craft three or four possible explanations—just a brief sentence each—for your question. Do this for at least three draft research questions.

them to find the one that you feel is the most likely or strongest explanation of the phenomenon.⁵ Making this determination usually requires you to rely on background reading or prior knowledge. In many cases, your proposed answer(s) will shift as you read the academic literature about your question—that is, as you do your literature review. And remember, it's okay if you guess “wrong” and the theory you investigate doesn't find support in your data. The potential answers you generate or find will differ in the direction of predicted effect, and in the mechanism that links cause to effect. Good research then compares the various theories to see whether the one you argued for is indeed the strongest or most complete explanation, or whether it does poorly in explaining the phenomenon.⁶

At this point in the research process, your goal is simply to identify several competing theories (explanations) for your phenomenon of interest, and to

⁵Notice that I did not say “best” or “only” explanation of the phenomenon/class of events under consideration. That's not our goal.

⁶In the social sciences, alas, even our strongest theories seldom do a phenomenal or complete job of explaining the outcome of interest, so we're looking for relative improvement here. Good research aims for a parsimonious, fertile theory that explains more than existing theories.

begin to home in on a particular theory that you think is worthy of testing. It could be one of your own devising or it could be one you identified in the literature. Regardless of its source, you need to be able to identify the dependent and independent variables and the causal mechanism that makes changes in the independent or cause variable lead to changes in the dependent or outcome variable. In the first part of this section, we'll look at tools for developing your own theory. The second part presents a tool for specifying causal mechanisms, and the third part provides some guidance on specifying assumptions and scope conditions.

Tools for Developing Your Theory

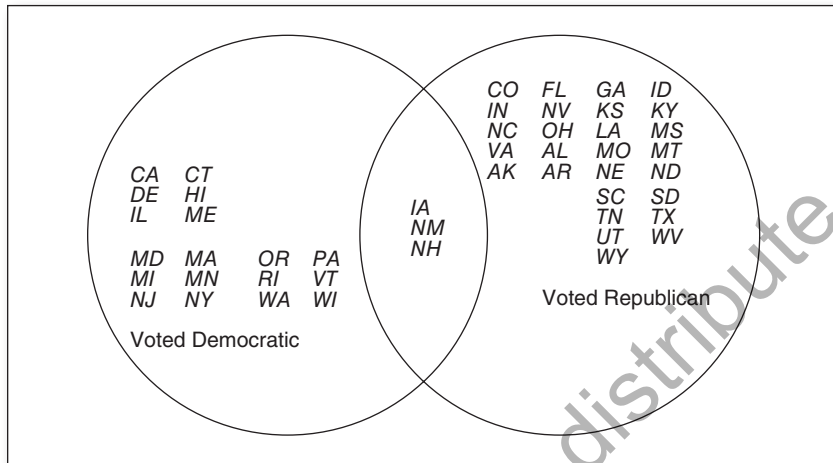
Developing a good theory begins with developing a clear research question. Many different tools can help you in your quest for an explanation, by helping you clarify your question, by helping you articulate linkages and patterns, or both. Some of my favorite are arrow diagrams, Venn diagrams, and two-by-two tables. Arrow diagrams are great for diagramming causal mechanisms. Since most of empirical political science is concerned with these types of causal chains, you should ultimately want to end up with an arrow diagram of your theory. We'll spend more time on those below, but before that, let's discuss the uses of other tools.

Venn diagrams, two-by-two tables, and other similar graphic organizers are fantastic tools for theorizing early on in the research process. They can be especially helpful with focusing from a broad research question to a narrower, more focused dependent variable with explainable variation, and for most novice researchers, this is one of the biggest hurdles in the early research process. Venn diagrams are overlapping circles (or squares or triangles or whatever) that allow you to group cases by their values on some characteristic(s) of interest (i.e., some variable[s]). Areas of overlap between the shapes then show where cases have characteristics in common. Sometimes, simply sorting your cases by values like this can illuminate interesting patterns that you might not have spotted otherwise, and exploring those patterns can help to suggest explanations. Interesting research questions and theories can emerge from simply observing that no cases fall in the overlapping region, or that the distribution of cases in the two circles is very lopsided.

Consider, for example, a research question asking about causes of swing voting, in which we want to explain why some states do not consistently vote for the same political party in US presidential elections. The Venn diagram in Figure 2.1 shows data about state vote consistency from the 2000 and 2004 US presidential elections using the standard two-letter US Postal Service state abbreviations.⁷ States that voted Democratic in both elections are on the left,

⁷The 2000 election pitted then-vice president Al Gore (Democrat) against then-governor George W. Bush (Texas); Bush won. The 2004 election pitted incumbent George W. Bush against then-senator John Kerry (Massachusetts); Bush won. A state's allocation of votes in the Electoral College is equal to the number of senators and representatives that it has in Congress, ranging from 3 to 55.

FIGURE 2.1 US States by Voting Consistency, 2000–2004



SOURCE: US Federal Election Commission.

and states voting Republican in both elections are on the right. The area of overlap shows states that did not vote consistently between these two elections—that is, the state went to one party in 2000 and the other party in 2004. This region is very sparsely populated; it suggests that our best predictor for which way a state would go in 2004 was which way it went in 2000.

For all the fuss that commentators made about swing states, very few states actually swung. In fact, only a grand total of three states—accounting for a measly 16 Electoral College votes—actually changed hands between parties. This represents only 3% of the total votes of the Electoral College, and had they gone the other way, they would not have affected the outcome of the election.

So from a general research question about swing states, we've now got a couple more specific forms of the question to choose from, and each would have its own set of answers. First, if so many states are at risk of swinging, why do so few actually swing? This asks about the proportion of states that might swing during any particular election. Another more specific version of the research question might ask about why some particular states become swingers and others only remain at risk. This is a story about explaining the behavior of particular states during a single election instead of a story about explaining the proportion of states (or Electoral College votes) swinging in each election.⁸ If

Despite its lack of Congressional votes, Washington, DC, has received three votes in the Electoral College since the 1964 presidential election.

⁸You might have noticed that these questions are about different dependent variables, proportions of states versus individual states. Our theories would thus be about predicting different things; we can't just simply use one question's theories to answer the other question. These questions thus have different units of analysis. We'll revisit the concept of unit of analysis in Chapters 5 and 7 for

we hadn't sat down and sorted the cases, though, we are unlikely to have noticed either of these patterns, and without noticing these specific patterns, we don't have a beginning point for theorizing. While we used a specific set of cases here for the purpose of example, this theorizing process is largely deductive. Our research questions are not about explaining the specific states that swung, nor did we use the specific cases that swung as the basis for generating theory; our research questions are about explaining swing behavior in general.

Venn diagrams are great tools, but my favorite one of all is the simple two-by-two matrix. The two-by-two matrix allows us to develop a more refined categorization (typology) of cases than the Venn diagram typically does. At the theorizing stage, we have two possible ways to use such a matrix. The first, which is less common for novice researchers, is to work in the abstract. We begin by identifying two concepts or variables and imagining hypothetical high and low values for them (or present/absent, or whatever is appropriate). Then we hypothesize in the abstract about what the likely outcomes are, enter those in the box, and test those predictions against data. The hard part of this is identifying the concepts or variables that go on the axes. Doing this without explicit reference to cases can be difficult in the absence of extensive background knowledge, which most novice researchers lack, but it's often worth a try if you feel you've got a good grip on your variable(s) and theory.

The second approach, which is more common for novice researchers, is to identify two variables as the axes, sort cases into the boxes made by crossing the variables, and then try to make sense of the patterns that emerge. The data themselves will help to suggest potential theories to explain the variation in outcomes. For an example, let's continue with the US presidential elections data we used above in the Venn diagrams. Figure 2.1 shows US states grouped by electoral outcome in the 2000 and 2004 presidential elections. In each election, a state could cast its electoral votes for the Democratic candidate, or for the Republican candidate.⁹ Those two options label my rows and columns. Sorting states by outcome in both elections reveals another puzzling pattern. As in the Venn diagram, we see that only three states swung between these elections. Intriguingly, though, those three states did not swing in the same direction. Iowa and New Mexico swung from Democratic to Republican, while New Hampshire swung from Republican to Democratic.

This observation clarifies our research question further: What explains divergent swings? We'd begin by trying to figure out what factors Iowa and New Mexico had in common with New Hampshire, to trigger their swinging

qualitative and quantitative research, respectively.

⁹Maine (ME) and Nebraska (NE) are unusual cases. These states spread their electoral votes across their Congressional (House) districts. The Electoral College members vote independently, in accordance with the district's results. In 2008, two of Nebraska's district votes went to John McCain and the third went to Barack Obama. McCain thus got both of Nebraska's statewide Electoral College votes and two of the district Electoral College voters, while Obama got the remaining district voter. In the 2000 and 2004 elections, all five of Nebraska's Electoral College votes went to the same party. Despite the possibility, Maine has never split its votes.

TABLE 2.2 US States by Presidential Vote, 2000–2004

2004 2000	Democratic			Republican		
Democratic	CA CT DE DC HI IL ME	MD MA MI MN NJ NY OR	PA RI VT WA WI	IA NM		
Republican		NH		CO FL IN NV NC OH VA AL AK AZ	AR GA ID KS KY LA MS MO MT NE	ND OK SC SD TN TX UT WV WY

SOURCE: US Federal Election Commission

at all. But then in our second stage, however, we'd also look for characteristics that Iowa and New Mexico share—but that New Hampshire does not have—to explain why two swung one way and the third swung the other way.¹⁰ We would want to be careful, though, to phrase the theory in terms of general phenomena or characteristics so that the theory is portable to other elections, where other states are of interest. Ultimately, we must test the theory outside the data we used to create it to ascertain the theory's generality.

Ok, we've successfully narrowed down our research question into a specific puzzle. Now what do we do? For this example, take the question of predicting which states are most likely to change hands in a particular election, and let's think through theorizing about it together. Scopewise, we can

¹⁰A little additional probing of the data shows that Iowa and New Mexico were the only states to swing between the 2004 and 2008 elections, with both states switching their support away from the Republican party and casting their votes for Democratic candidate Barack Obama. That observation raises even more puzzles about swing state behavior.

reasonably restrict our analysis to post–World War II presidential elections.¹¹ By this point, the outlines of modern campaign infrastructure existed, with parties, polling, television, electoral law, and salient left/right cleavages all similar to those we have now. While the details of each of these change over time, their existence themselves is constant, and that makes all of these elections comparable in ways that the wartime and Depression era elections would not be.

Because we know that which specific states swing changes from election to election, we want to focus on characteristics—variables—that are not specific to this particular set of states. Overly specific variables would be, for example, the role of Howard Dean, the Vermont governor whose unorthodox campaign (and behavior) significantly influenced the 2004 Democratic primary results, or the role of a specific public figure's endorsement. Both are too particular to the 2004 election. So we need to think of things that can vary over time and space that might explain why some—few—states swing but others do not. Essentially, we're looking for anything that might cause the share of voters for any particular candidate to change. Off the top of my head, I can think of a few things: time candidate spends in the state, state demographic shifts (age, race, income, etc.), changes in voter laws, state economic conditions, candidate or vice-presidential ties to the state, endorsement of state party or governor, media buying in that state, and overall candidate spending. All of these things could, in some way, affect which way a state goes.

Looking at that list, I'm starting to see a pattern. Some of the variables I identified are about individuals, some are about states, and some are about candidates. Let's re-sort the variables into those groups and see if this suggests any other variables that we missed on the first pass.

Table 2.3 shows one individual-level variable and three variables for state and candidate levels. While we don't have to have the same number of variables in each category, the table does prompt me to think a bit more closely about whether any additional factors affecting individual voters' propensity to turn out might be in play here. Hmm . . . Oh—one more possible idea, voter mobilization drives like get-out-the-vote initiatives. That might play a role; it's worth adding to the table, so go ahead and do that. Add anything else you can think of, too—we left you some room in all of the columns.

For our next step, we need to shift gears from brainstorming to evaluating. Before I can choose one theory that I think will work best, I need to go through them and figure out how each would work. In other words, I need to sketch a causal mechanism for each potential independent variable. So let's take a look at tools for doing that.

¹¹We could even make a case for restricting the study to only those elections after Hawaii and Alaska joined the Union in 1959, or after the District of Columbia received electoral votes in 1964, but for simplicity and to increase the number of elections available to test the theory on, I'm going with the earliest reasonable date. (If you make a decision like this in your own research, you will need to justify it in a similar manner to this.)

TABLE 2.3 Potential Explanations of Swinging States

Individual	State	Candidate
Voter laws	Demographic changes	Time spent in state
	Endorsement by state party leadership	Ties to state
	Economic conditions	Media buying
		Overall candidate spending

Parsing a Theory: The Causal Mechanism

As we've discussed, any research question can have multiple theories about its answer. Those theories can differ in three primary ways: the independent (causal) variable, the direction of the relationship they expect, and the mechanism producing the expected effect. The arrow diagram is a great way to break a theory into its component parts, and this process helps to generate hypotheses about outcomes that we can test.

Different Variables, Different Theories

The most straightforward way that theories can differ is in their independent variable. Our example above about predicting which states will swing is fundamentally a story of considering many different independent variables until we find a theory that we are willing to test more broadly. Each of the independent variables we identified above has a mechanism that connects it to the dependent variable (DV), and before we choose a theory to test against the broader dataset, we should at least think through the causal mechanisms and see what we've got.

At the individual level, voter laws influence Electoral College outcomes indirectly, by affecting who can vote. Voter laws that either inhibit and/or facilitate participation by a party's supporters could affect the total tally of the popular vote and so affect the state outcome. We've got a bit of a problem there, though. Voter laws are usually the same from election to election, so that would be hard to use to predict changes in state outcomes across elections. But that suggests that what we're interested in here is not just the laws themselves, but changes in voter laws that would affect turnout. So perhaps my theory here is that changes in voter laws affect turnout, which affects state outcomes. That certainly sounds plausible.

Demographic changes are a little easier to work with—possibly because we've already expressed them in terms of changes. (Hmm . . . that's probably something I should keep thinking about). Changes in the composition of the state's residents could shift the share of the population who are inclined to prefer each candidate, which could influence the outcome of the election at the state level. The collapse of the steel industry in the 1970s and 1980s made jobs hard to get in what we now call the Rust Belt, including my home state of Pennsylvania. The result was fewer union members as the steel mills shed jobs (so less organized support for Democratic candidates) and a mass exodus of younger people (also a hit to the traditional Democratic partisan base) to regions with more jobs.¹² I definitely think this sounds like it could work.

But what about total candidate spending? When I originally suggested that variable, I thought that maybe increased candidate spending overall would increase the chance of states swinging toward them because the more money a candidate spends, the more reasons the press has to discuss them, which generates additional media time alongside all the media time and mail ads and anything else the candidate spent money on. The more I think about it, though, I'm not sure that total candidate spending is a good predictor variable for whether a specific state swings in a particular election. It's definitely a candidate-level variable, but it's a characteristic of the candidate at the national level, and our research question is about a phenomenon—Electoral College voting—that happens at the state level of analysis. The variable Total Candidate Spending would have the same value for a particular candidate for all states in the same election. It might be a better predictor for overall vote share—a dependent variable measured at the national level of analysis—than it is for state vote direction. That's something important to consider.

Still, our dataset contains multiple elections, so even though candidate spending is a constant within an election, it will vary across elections. That should be enough variation for us to analyze the data if we really wanted to. In my opinion, though, this is a pretty weak causal mechanism; I had to work to come up with a story for this variable, though it definitely seemed plausible when I initially wrote it on the list. I'd probably want to include Total Candidate Spending as a control variable (see Chapters 5 and 7) in my study, especially if I were using quantitative analysis, but for right now, I'm pretty sure this would not be the theory I focused on in my paper.¹³

¹²Ever wonder why there are so many Pittsburgh Steelers fans outside of the Pittsburgh area? Baby boomers grew up watching the team be successful and win Super Bowls, but the collapse of the regional economy as they entered the labor market drove them to move elsewhere. They took their loyalty with them, as is common for fans of winning teams. (This explains, for example, the lack of widespread fans of the Cleveland Browns—an equally steel-dependent city with a vastly less successful football team.) The result is a national following for what is, essentially, a relatively small-market team. Kind of neat, huh?

¹³In the interests of space, I'm only going to do a couple of these here. I strongly encourage you, though, to at least think through the causal mechanisms behind the individual level variable that you proposed, as well as one or two of the others.

Same Variables, Different Theories

We can also have multiple theories with the same independent and dependent variables. These theories differ in their mechanisms and predicted outcomes. As an example of differing mechanisms, let's consider the democratic peace, which claims that democracies never engage in military conflict with one another but are just as likely to fight other types of regimes—in other words, that democracy causes interstate peace. One reason why democracies might be more likely to experience peace between themselves is because they had domestic norms of peaceful conflict resolution and project them to each other. A second mechanism would be that leaders have to keep their publics happy, and publics don't like to be involved in expensive, usually deadly, and losing wars. Both predict the same observable outcome, absence of fighting between a pair of democracies, but for very different reasons.¹⁴

Other times, two theories with the same independent variable (IV) and DV may predict entirely opposite effects. Let's consider the research question "How does economic development affect the environment?" One possible answer is that economic development spurs resource overuse and results in declining environmental quality. We might write this theory as

Environment (decline) ← Resource overuse ← Economic development

The causal story here reads from right to left, thanks to a quirky convention imported from quantitative analysis: Economic development leads to resource overuse, which leads to a decline in the quality of the natural environment. This is a fairly straightforward theory, one that appears in a variety of guises across a wide range of literatures.

This isn't the only possible answer, though. An equally plausible argument might be this:

Environment (improvement) ← Environmental issues in politics (increase) ← Citizen interest in nonmaterial issues (rise) ← Economic (material) security (rise) ← Economic development (increase)

In this story, as a country reaches higher levels of development, its citizens experience higher levels of material security. Since they no longer need to worry about their daily needs of food and shelter, they begin to have time and energy to care about other nonmaterial matters, such as the environment and human rights. Since these issues interest citizens, they become attractive to

¹⁴To test these particular arguments, then, we would need to identify other observable implications that would be true for one of the theories but not for the other, and test those hypotheses as well. We return to this example in more detail in Preview 2.1.

policy makers, and ultimately, the politicians' need to obtain votes causes them to adopt environmentally friendly policy that restores past damage and limits further abuse.¹⁵ This second theory predicts a relationship opposite to the first one: Here, we expect development to appear along with better environmental quality, and in the first, we expected economic development to appear with poor environmental quality. Both are equally valid as theories. The second is more complex, with intervening steps and a more detailed causal mechanism, but both theories are equally valid and generate testable hypotheses.

In most arrow diagrams, the theory itself often generates hypotheses directly. The predictions we made at each step of the causal chain are testable hypotheses. That's why we often indicate the (increase) or (decrease) below the variable/step in the chain. Other ways to indicate these proto-hypotheses include + or – signs before the variable name, and up or down arrows in front of the variable name. Good theories are carefully articulated and account for all decisions or stages between the independent and dependent variables; they give us a great head start on hypothesizing.



Talking Tip

Be careful with your terminology; these terms are not direct opposites of one other in their conversational sense. *Positive* and *negative* are correct ways to refer to opposite effects, but the antonym for *direct* is *inverse*, not *indirect*. Inverse and indirect are not substitutes. An inverse relationship is negative; the DV goes down as the IV goes up. An indirect relationship, on the other hand, means that some other variable intervenes between the IV and the DV: The IV affects some third variable, Z, which then affects our outcome.

Preview 2.2 Theorizing the Democratic Peace

A phenomenally large number of scholars have proposed an incredibly diverse range of theories to account for the *democratic peace*: the empirical fact that democracies never fight each other, even though they are equally

(Continued)

¹⁵This “postmaterialist” argument is most closely associated with the work of Ronald Inglehart and his colleagues (Inglehart and Norris 2003, 2004; Inglehart and Welzel 2005). He and his colleagues direct the World Values Survey (WVS), a cross-national survey repeated at 5-year intervals in a range of countries, which allows them to test their hypotheses about postmaterial values in politics. Links to the WVS data, as well as to all of the other publicly available datasets mentioned in this book, are on the ERW website, <http://study.sagepub.com/powner1e>.

(Continued)

likely to fight wars with other types of states (nondemocracies and mixed regimes). I present several of these below.¹⁶ Remember to read the arguments from right to left.

Peace ← Democracy

A. Domestic norms of peaceful conflict resolution

One of the key domestic norms associated with democracy is the peaceful resolution of conflicts by legal or other negotiated means; seizure of one's goals or objectives or desires by force is not socially acceptable in democracies. Democracies recognize this predilection in other democracies and so are willing to negotiate with others like themselves, who they know also consider the use of force to be generally unacceptable.

B. Selective use of threats ← Incentives for opposition signaling

Leaders in democracies face an institutionalized domestic political opposition, and the opposition has incentives to capitalize on the leader's "bad" policy decisions. This includes making threats (like starting a war) that the leader has no intent to carry out. As a result, democratic leaders are very selective in making threats of war because the opposition's behavior will credibly signal the leader's intentions to the potential adversary. When both sides are democracies, threats of war will be very rare, but when they are made, they will be very credible; parties thus have incentives to settle their conflicts by means short of war.

C. Avoid losing wars ← Leader incentives for "good" foreign policy ← Leaders face reelection

Leaders of democracies face regular reelection, and reelection creates incentives for them to pursue "good" public policy, including foreign policy. This leads them to avoid situations where they could become involved in costly wars that they might lose, and so they're very picky about what wars they join or start. This leads democracies to be less likely to initiate wars against other democracies.

Practice 2.2 What's Missing

The items below represent common theories, or at least common phenomena, in political science. Your task is to theorize about what connects the

¹⁶These three theories are associated with the work of Doyle (1986), Schultz (1998), and Bueno de Mesquita et al. (2004), respectively.

independent—causal—variable and the dependent—outcome—variable. Write this in the space provided. Some causal chains may take more than one step; just add arrows in the middle as appropriate. Feel free to use other paper.

- | | | | | |
|----|--|---|---|--|
| A. | Amount of aid sent to country (US\$) | ← | ← | Natural disaster in a poor country |
| B. | Financial or banking crisis | ← | ← | Government corruption |
| C. | Probability of war | ← | ← | Unequal distribution of power between two states |
| D. | Economic development | ← | ← | Female educational empowerment |
| E. | Success of a third-party Congressional candidate | ← | ← | Economic inequality in a district |

Progress 2.2 Fill In the Blank

Return to some of the research questions you generated in Practice 1.2 or in class during the Research Question Game (if your class played it). Choose three of those, and write them in the form of Practice 2.1 above. Then, formulate a theory for each of those research questions. What do you think is the answer to the research question, and why do you think that's the case? Just a sentence or two will do. Please use the format of Practice 2.2.

Specifying Assumptions and Scope Conditions

Once you have a research question, a theory about its answer, some ideas about hypotheses, and a rough draft of a causal mechanism, you'll be ready to begin thinking about the assumptions and scope conditions that go along with your theory. To be clear: I do not expect that you have all of those things right now, at this point in the term, on your first read-through of this chapter. You will, however, need to have all of them eventually, and preferably relatively soon. You should continue to read through the rest of this chapter, even if you don't have all those parts in place yet, so that you will know what to do next. Then you can work through this section once you are ready. You may even find that reading through this helps you articulate your main theoretical claims by helping you identify the boundaries of your idea.

Assumptions are things we take for granted about how the world operates. Avoiding assumptions is impossible in the social sciences (or anywhere else) because we as humans need to interpret the things we see to make sense of them. We make a lot of assumptions in everyday life, and we make even more when we start to theorize abstractly about the social world. To give one example, consider voting. We commonly assume that since a person voted for candidate A, candidate A is that voter's most preferred candidate. On the surface, this is a reasonable assumption—but it is definitely an assumption. In technical terms, this is an assumption of sincere voting, that a person votes for the candidate she prefers the most regardless of anything else, like the candidate's chances of winning. A competing assumption is that voters cast ballots strategically—that is, they cast their vote in such a manner that their most preferred credible candidate wins.¹⁷ Both assumptions have empirical support; each has incredibly different implications for theory. If we are trying to theorize about how people form preferences for candidates, we may not be able to use revealed preferences—votes—as evidence of preferences if we assume that voters behave strategically.

Assumptions come in many flavors. The most common in the social sciences are about actors, their motivations, and the choices available to them at any given point. Economics, for example, assumes that firms are the primary actors and that they seek profit; that the behaviors of consumers and producers are interdependent and a function of price; and that governments are able to manipulate the economy through taxing and spending policies. Because the actors in political science are more diverse than those whose behavior economic theory traditionally considers, we can't make such a simple list of assumptions. But when you're working on your own project, you might consider some of the following kinds of questions. They may not all be appropriate for your particular research project, but they're good places to start.

Who or what are the actors or decision makers in your theory? Focus on just the relevant parts. You might believe that corporate interest groups matter a lot in politics, but if you're studying voter response to emotional appeals, corporations may not be worth mentioning. Scholars of international relations may need to decide whether the state is a billiard ball (in Waltz's [1979] terms) that simply responds to external forces acting on it, or whether some actor in the state—a leader or other figure—purposely makes a decision to pursue international conflict. Not all theories have actors or decision makers; again, whether this is a relevant question to ask about your assumptions depends entirely on your research question and your theory.

¹⁷In the 2000 presidential election, some left-leaning voters cast ballots for independent candidate (and sometime Green Party candidate) Ralph Nader over Democratic Party nominee Vice President Al Gore. By voting sincerely here—casting their votes for Nader even though he had no realistic chance to win—these individuals split the left vote across two candidates. The Republican nominee, Texas governor George W. Bush, had a plurality (the largest share) of votes, even though more people in crucial jurisdictions preferred the left-leaning candidates. Similar dynamics occurred in 1992, when Texas businessman H. Ross Perot ran as an independent conservative candidate and split the Republican vote between then-vice president George H. W. Bush and the Democratic nominee, Arkansas governor Bill Clinton. Clinton was elected to the first of two terms as a result.

What motivates actors or their decisions? Once you know the actors (if any), you can begin to consider why they make the choices they do. Are they motivated by personal gain? By policy preferences? By staying in office? By social or societal benefit? All of these are possible answers to what motivates politicians, judges, activists, bureaucrats, and others. Do actors know all the possible options and their outcomes, or are they uncertain about some of those things? If your theory is not about actors—if it's about conditions or contexts that facilitate or inhibit something, for example—then you may need to think about whether how those conditions came about matters.

What underlying conditions are necessary for events predicted by your theory to occur? Does your theory require a particular constellation of interests, capabilities (power), or rules? Veto authority and decision-making procedures can greatly affect outcomes. A researcher studying comparative policy making in parliamentary systems might find that the role of party discipline or the number of parties matters a lot, both of which are products of the country's electoral and party systems. An entire branch of Grand Theory in international relations, structural realism, focuses on the effects of power distribution among the members of the international system by studying relationships between the number and relative size of "great powers" in the system and various outcomes such as war occurrence. Again, though, focus on the major ones: Skip the gravity, water, air, and similar assumptions and focus on the ones that are necessary for your theory to operate.

Does the outcome or phenomenon of interest limit the population or set of relevant cases? If so, why and how? If you're studying wars or parliaments, for example, by definition, those can only occur between (wars) or within (parliaments) states, and referring to states means you're focusing on the world after roughly the Peace of Westphalia in 1648. Similarly, studying European Union legislation, television campaign advertising, or nuclear proliferation restricts the appropriate pool of comparison cases to the period in which these things exist.¹⁸ These particular examples sit at the boundary where assumptions bleed into scope conditions.

Scope conditions are boundaries for your theory. They differ from assumptions in that they delimit the range of cases in which your theory could be expected to operate; they do not directly explain why the theory operates in the manner it does. Theories do not apply in all places and at all times, usually because some theoretically necessary characteristic or some assumption is not met in cases outside of the theory's scope. Most studies of US Congressional behavior, for example, typically do not try to explain behavior before the Watergate era, when the current system of committees, seniority, and such was installed. These features of the contemporary Congress are necessary to any explanation of its behavior, so including cases that lack these criteria doesn't make any sense.

Again, most scholars don't know all of their assumptions by this early a stage in their research. Your goal at this point is to begin thinking about the why's and how's behind your theory: the assumptions and scope conditions

¹⁸This particular shade of assumption would typically appear in your paper where you describe the empirical research design rather than as an explicit assumption.

that make your argument work. You'll want to revisit this section (of the book and of your paper) repeatedly as you work your way through your research process and keep thinking about these things.

FROM THEORY TO HYPOTHESIS

As we discussed in Chapter 1, good research questions are usually about how to explain variation in outcomes. The research question asks about the relationship between concepts, and the theory provides an argument about the relationship between the concepts. The next step is to derive testable hypotheses from the theory. Testable hypotheses rely on identifying observable implications of the theory that would occur within the scope and under the assumptions you've specified in your theory. Observable implications are exactly what they sound like: They are patterns or trends that you would expect to see if your hypothesis was correct. An observable implication is phrased in terms of **indicators**, not concepts—the characteristics of the cases that you will be able to observe and measure to test your argument.¹⁹



Peer Pointer

"I had plenty of ideas for topics that I wanted to study, but it took me a long time to decide what causal relationship I actually wanted to test. The sooner you can learn to think in terms of [independent and dependent] variables, the easier your research process will be."

—Michael C., College of Wooster

The Parts of a Hypothesis

More specifically, a **hypothesis** is a statement of the relationship that you expect to find between your **dependent (or outcome) variable** and your **independent (or cause) variable**. A hypothesis contains three important pieces of information: It identifies the dependent variable, the independent variable, and the direction of the expected relationship. By convention, a hypothesis is usually written as

$$\pm DV \leftarrow + IV^{20}$$

¹⁹We'll revisit indicators and measurement in the last section of this chapter.

²⁰An "official" working hypothesis, as opposed to this generic form, can only contain a plus or a minus in front of the DV; it cannot contain both. If increases in the same IV predicted both increases in the DV and decreases in the same DV, then we would not be able to falsify the hypothesis. No matter what we observed, it would always support the hypothesis. As we discussed in Chapter 1, falsifiability is a desirable characteristic so that we can reject incorrect theories.

Placing the DV on the left seems a bit odd, but this is how statistical software understands these things. We use statistical tools in quantitative research approaches, so this has become convention for researchers of both qualitative and quantitative orientations as well. The + in front of the IV indicates that we're making predictions about what happens as the value of the independent variable increases. This could be increasing on a "regular" counting kind of scale (from 1,035 dead in battle to 2,436 dead), or from no to yes (0 to 1 in math notation), or from *some* to *a lot* (2 to 3 using numbers as shorthand). By convention (again one imported from the logic of statistical analysis), we usually make predictions about increasing values of the IV.

The key part of the hypothesis is the sign in front of the DV. This can be + if you think the two variables are directly or positively related, that is to say, if you think that increases in the value of the IV cause increases in the value of the DV. Two variables that have a positive relationship, for example, are age and income: Older people tend to make more money than younger ones, on average. We'd write that as

$$+ \text{ Income} \leftarrow + \text{ Age}$$

The sign in front of the DV can also be - if you think that the two variables are inversely or negatively related, that is to say, that increases in the value of the IV cause decreases in the value of the DV. Two variables that are inversely related are amount of free time and number of classes you're taking: People who are taking more classes have, on average, less free time than those taking fewer classes. We'd write that as

$$- \text{ Free time} \leftarrow + \text{ Classes}$$

A hypothesis does not, however, contain a "because" clause. The sentence with the "because" clause is your theory: It relates concepts to one another and provides an explanation or justification for the expected relationship. A theory for our free time and classes relationship, for example, might be, "Busy people relax less." The hypothesis, on the other hand, makes a prediction about the relationship between observable indicators of your concepts.



Talking Tip

Weak discussions of causal mechanisms will say things like "After . . ." and simply string events along. A stronger presentation would be, "Faced with a choice between policies A and B, leaders who are interested in reelection will choose B because it satisfies the interests of their core partisan supporters." This latter presentation is better because it integrates justifications for the proposed mechanism based on your assumptions and/or scope conditions.

Hypotheses and Evidence

The next step is to think about evidence for your hypotheses, and in particular, to identify two very important types of evidence, observable implications and falsifiers. **Observable implications** are empirical patterns that you'd expect to see if your hypothesis is correct. In the case of the hypothesis above about age and income, we'd expect to see that older people had higher salaries than younger ones. An important thing to note here is the "on average" part of the verbal hypothesis. Just because we find one example that doesn't fit the hypothesis doesn't mean that we're wrong. An important characteristic of the social world is that it is not deterministic: We do not always observe the same outcome from the same value of an independent variable. Much of the physical world is (largely) deterministic. In chemistry, if you mix a specific quantity of chemical A and a specific quantity of chemical B together, you will always get a reaction that produces a specific quantity of some compounds C and D.²¹ In the social world, situations when a particular value of an independent variable always results in a particular value of the dependent variable are incredibly rare in the social sciences. Just because two states have highly unequal levels of capabilities does not mean that the stronger one will attack the weaker one, as balance of power theory would suggest—balance of power theory says only that war is more likely under these circumstances than others.

A single theory may also have multiple observable implications, and so it may have multiple hypotheses associated with it. This is great—in fact, it's ideal. This situation allows us to subject the theory to repeated attempts at falsification. If it withstands multiple tests, we can be more confident that it's right. For example, consider the graduate school admission process. Most graduate programs start with a theory that a student is qualified for graduate admission. If this theory is true, we should expect to see a range of different types of supporting evidence. A student who is qualified for graduate study would have, for example, high scores on the GRE and strong writing skills. The student would also have a high GPA and a rigorous undergraduate course load. The student would have faculty members who both know the student and his or her work well, and who are willing to write about it on the student's behalf. All of these are observable implications of a theory that claims a student is qualified for graduate study. If we see all of them, we know that the student is qualified; seeing all but one is also strong support for the theory, though not as strong as seeing all of them. A case (a student) where the theory is not well supported across the different observable implications is probably one where the theory does not hold—where the student is not qualified for graduate study. Thus, graduate programs ask you to provide a range of types of evidence

²¹As a chemist friend takes great pains to remind me, this is subject, of course, to some limits on the degree of precision with which we can measure the inputs and outputs. We discuss some measurement issues below, and again in Chapter 6 (for qualitative techniques) and Chapter 7 (for quantitative techniques).

in your admissions packet: GRE scores, and transcripts, and letters of recommendation, and a writing sample.

Falsifiers, on the other hand, are pieces of evidence that you would expect to find if your hypothesis is incorrect. Because you expect your hypothesis to be right on average, across a large number of cases, small numbers of exceptions are possible. Let's consider the hypothesis expressed above that income increases with age. The cases of a younger Bill Gates and Michael Phelps (the Olympic swimmer who had a gazillion dollars in endorsement deals before he was even 18), for example, clearly do not support our hypothesis. But across the larger population, this relationship generally holds. For example, senior professors make more money than junior ones, who make more money than graduate students, who make more money than undergraduate students, who make more money than (most) high school students, who make more money than junior high students, etc.

In the case of this particular hypothesis, falsifying evidence would be finding that, on average and across a large number of cases, younger people make more than older ones. Our argument is a generalized, probabilistic one—that generally, on average, income will increase with age. Our hypothesis does not claim that this will always be true in all cases. Another piece of partially falsifying evidence might be that the relationship only holds up to a certain point: Perhaps increasing age explains increasing income up to a certain point, but after that point—say, after retirement—age continues to increase but income begins to decrease again. In this case, our hypothesis would be partially right, but also partially wrong.²² Just to be clear, falsifiers are types of evidence (or pieces of potential evidence) that would indicate that the hypothesis is incorrect. They are not counterexplanations (hypotheses that would explain adverse findings), or counterexamples (single or rare cases that do not fit the hypothesis—the Michael Phelps of the social world).

A Caveat about Hypotheses

One main caveat about hypotheses deserves discussion here. We cannot explain a constant (something whose value is the same across observations or cases) with a variable (something whose value changes across cases or observations). The converse is also true: We cannot explain a variable with a constant. To make this more concrete, imagine the following scenario. It's the end of term, and you have two final exams today, back to back, for classes in your major. You didn't sleep well last night, and you didn't eat breakfast this morning, but you had a Red Bull immediately before each exam. You fail one exam,



Probabilistic
Theorizing,
Falsifiers, and
Counter-Examples

²²Such a finding might cause us to propose a revised theory in our conclusions and to test that new theory in a follow-on paper. We would not simply alter our theory for this paper so that our evidence supports it. As we discussed in Chapter 1, we go into an empirical research project with a question and a proposed answer and a set of tests; we do not go in knowing that our answer is correct. Finding that your theory is wrong is quite common, and it's often just as important as finding that your theory is supported.

but pass the other. What caused this variation in outcomes? We can't really tell from the information given. All three potential causes—poor sleep, the lack of breakfast, and the effects of Red Bull—are the same (constant) across both cases, but the outcomes are different. Something other than one of these three things had to cause the variation in outcomes.

Likewise, making an argument that colonialism or colonization explains democratic outcomes in Latin America is quite difficult. All Latin American states were colonized around the same time, almost all were colonized by Spain, and they all achieved independence around the same time and in the same manner. Their current levels of democracy and their histories of democratic experiences vary widely from country to country. Costa Rica has had a fairly stable democratic government for most of the post-World War II period. Venezuela, Peru, Argentina, and Chile have oscillated back and forth between democracy and nondemocracy, with Argentina becoming pretty democratic during the 1990s and Peru becoming significantly less so during this period while Fujimora was in office. Since colonial history is the same—or pretty close to it—across all of these cases, we cannot use it to explain variation in democracy outcomes.

Not all instances of this problem are quite so obvious or explicit. All sorts of situations can lead to research that lacks variation—or lacks the full range of variation—on key variables. We'll revisit some of the more common forms of these problems in our discussions of selection effects and selection bias (in Chapters 5 and 7 for qualitative and quantitative designs respectively), but you should be aware of the problem now. It's a very common trap for novice researchers, and one you would do well to avoid.

Concepts, Indicators, and Validity

We've briefly touched on the idea that we need to find observable indicators of our (usually unobservable) concepts. Our theories are about concepts; our hypotheses are about observable relationships between indicators of those concepts. This section introduces one of the major ideas in measurement: matching indicators with concepts, that is, **validity**.²³ Creating workable hypotheses goes hand-in-hand with identifying viable indicators for each of the concepts. At this stage in your research project, identifying specific indicators isn't entirely necessary, but you should be thinking about ways to measure the concepts in your theory so that you can construct testable hypotheses.²⁴

The most fundamental issue in measurement is one of validity: Does our indicator actually capture the concept we're interested in, and nothing else? If we haven't actually captured the concept, then the mechanics of how we

²³Chapters 6 and 7 will revisit validity and introduce the other major issue in measurement, reliability, in the context of qualitative- and quantitative-specific applications.

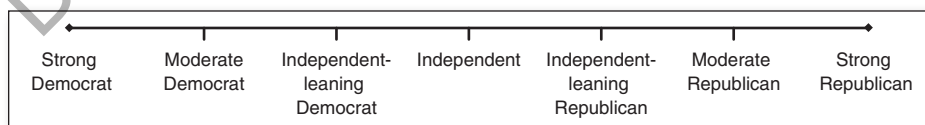
²⁴The next step in your research project, conducting a review of the literature, will provide you with more information about specific indicators and data sources used by scholars working in your area of interest. We'll discuss literature reviews in Chapter 3.

measured it are irrelevant. We may have a highly reliable, highly accurate, and highly precise indicator—but if it doesn't actually reflect the concept we want, it's really not useful at all. If our measures don't capture our concepts, we have no idea what our test is actually telling us. It might show a relationship between our indicators, but if those indicators don't capture their underlying concepts well, then we can't draw any conclusions about our theory—which is, after all, about concepts as represented by indicators.

Operationalization is the process of identifying a valid observable indicator for your unobservable concept. For some concepts, operationalization is generally straightforward. We can usually measure sex or gender by asking survey respondents whether they are male or female.²⁵ Some concepts are not so simple to measure. Racial identity in the United States provides a good example. Survey researchers (and the US Census) used to treat race as dichotomous—you were white or you were Black, which was to say, not-white. The category of not-white, though, actually captures several groups who are not Black, such as those of Asian or American Indian descent. We've since expanded our conception of race to include a variety of categories, including Asian-, African-, and Native American. In addition, many survey organizations, including the US Census, also allow for respondents to indicate “two or more races” as an option.

For other concepts, political scientists have developed standard indicators that we can deploy in surveys or other data collection efforts. We normally examine the intensity of an international or domestic conflict, for example, by counting battle deaths. Partisanship in American politics is often measured on a 7-point scale (see Figure 2.2). This scale was first developed by researchers working on the American National Elections Studies (ANES), the longest-running survey series in US politics. Before its adoption for these purposes, though, ANES investigators did pretests to be sure that the measure was valid—that asking respondents to summarize all of their political preferences in one single label actually captured the concept the researchers wanted. They did this by asking the individuals to state their policy preferences on a series of policy issues that had clear left-right implications, and then later in the same

FIGURE 2.2 Typical Partisanship Scale for US Politics



²⁵Even this is usually a bit more complex than these two choices. Offering “male” and “female” as the only two choices is still generally the practice in most survey organizations. Depending on the survey's purpose and needs, however, you may see a choice of “no answer” and/or “other” to accommodate individuals who are transsexual, whose gender expression and biological sex may differ, or who otherwise do not wish to disclose this information.

survey, asked the individual to choose one value from the choices shown in the figure. They then used several statistical tools to ensure that the values individuals chose on the single consolidated scale were consistent with the policy preferences the respondents had identified—that, for example, individuals who wanted extensive government support for the poor and substantial state intervention in the economy were more likely to identify themselves as some form of Democrat, rather than “Strong Republican.” The scale would be invalid if they had found many instances of Strong Republicans wanting state intervention and a large welfare state, or worse, if they had found no relationship at all between partisan policy preferences and their potential measure of ideology.

This kind of pretesting for validity is an important feature of most high-quality large-scale datasets in political science. Because the creators of this scale carefully tested it, we can be sure that it actually captures partisanship, and not something different such as ideology, which is a different concept altogether. For example, a Tea Party conservative in the United States might identify ideologically as being strongly conservative, but would not identify strongly with the mainstream Republican Party; a similar story could exist for an American who identifies with the Green Party but ideologically shares many preferences with the Democratic Party. The key thing is that we need to choose a valid indicator that captures the concept we want, and only that concept, and to be able to do that, we need to be very clear on what that concept is.

Researchers in both the qualitative and quantitative traditions face substantial challenges in creating valid measures of concepts. We’ll address those specific challenges in Chapters 6 and 7, but in a more general sense, those problems are part of a larger issue of confusion between concepts and indicators. You—and a lot of other researchers, including some faculty members and article authors—can avoid a lot of trouble with measurement later by thinking carefully and intensively now about what your concepts are. Identifying those underlying concepts now, at the beginning of the research, and framing your research question and your theory entirely around those concepts, helps you avoid reaching the end of the project with results that you can’t link to your theory. When you have a theory about one thing and an indicator measuring something else, you end up trying to put a square peg (evidence) into a round hole (theory). You might be able to force those two together, but they won’t fit well; gaps will always exist around the edges. That slippage—the gap between concept and indicator—can ruin even otherwise well-designed research.

Your best bet for avoiding slippage is to be very, very clear on your underlying concepts, and that often entails refining your research question. Try to frame your research question and theory in terms of concepts as much as possible. For example, suppose you begin this chapter with the research question “How does trade influence wars?” You think—you theorize—that trade makes wars less likely because it integrates nations’ economies and makes them dependent on one another. That, on the surface, sounds like a pretty good start

of a theory . . . until you step back and realize that trade itself isn't really the cause. Trade is an indicator of the real cause of decreased war: integration. So your question really is, "How does (economic) integration influence wars?" Trade is just one indicator of economic integration. Increased financial flows, similar business cycles, and many other indicators exist, all of which should also be associated with decreased conflict.

WRITING YOUR THEORY SECTION

The theory section is typically written toward the end of the research process, while data collection and analysis are in progress. In terms of the structure of the paper, it usually falls between the literature review (which we discuss in Chapter 3) and the research design section (the subject of Chapters 4–8). Like almost all other sections of empirical papers, the shape of a theory section depends heavily on the specific theory it's presenting, and some of that information may not be available to you right now, this early in the research process.²⁶ What I can share with you instead are things to think about when writing your theory section and questions that may help you to clarify the things you need to discuss in it. Because of that, you should read all the way through this now, and you should write a rough draft of the section. As the previous chapter made clear, successful papers require much writing prior to the actual final draft, and there's no time like the present to get started. Make a dry run now, then revisit it regularly as you continue to work.

The point of the theory section is to present your story—your theory, the causal mechanism behind your hypotheses—to the reader. Without a clear understanding of why you think various things should happen in particular ways or under particular circumstances—that is, without a good understanding of the theory—readers have a very difficult time understanding the empirical analysis, let alone evaluating it. Because the theory is so important to the



Talking Tip

Theory sections tend to link closely to hypotheses and research design sections, particularly if you bring out observable implications in your discussion. Statements like "If this argument is true, we should observe this thing and another thing" are entirely appropriate for this section. Potential falsifiers for both your theory and extant alternate theories are also good to discuss, too.

²⁶The abstract, introduction, and conclusion are relatively formulaic and do not depend on the content of the paper or its arguments. All other sections are at least partially dependent.

paper, from both the authorial and reader perspectives, it deserves more attention from the author than it usually gets in novice researchers' work.

Successful theory sections typically build a bridge between the gaps identified in the literature and the author's own hypothesis. You'll identify those gaps in your literature review process, so for now, focus on the latter stages of explaining what you think happens and why. Typically, you'll want to begin by establishing the sequence of events or changes that lead from the IV to the DV, that is, explicating the causal mechanism. Good expositions here not only say *what* happens but *why*—they start to build some of the assumptions that underlie the mechanism.

Resist the temptation to restructure your theory to account for your results. Remember that you designed all of this research to test a particular theory and its associated hypotheses. If you go changing things after the fact, you will now have a theory whose research design demands will probably be different from the design you executed. Findings of nonsupport are useful, and they are just as valid as examples of research as findings of support.

Early on in the project, the most important thing is that you can clearly articulate exactly what you think is going on in that causal mechanism. This may take several iterations of trying to explain things. When you hit a wall and feel stuck, that's a sign that you need to try a different tactic to explain it. I usually just jump right out of whatever document I was working in and try again from the beginning; "CTRL+N" or COMMAND-N produces a new blank document quickly and allows me to keep going without pause. It sounds a little ridiculous, but never doubt the psychological power of starting over with a clean slate.²⁷ At this stage, I also usually try to talk about my ideas with anyone who will listen. The act of talking about it to someone, just like the act of writing, forces me to choose words and articulate my thoughts rather than just letting them flounder around as ill-defined ideas.

When I go to write the actual draft of the theory section that I intend to submit, I usually start immediately, without looking back at my previous drafts, unless I've written a good draft of it very recently (within the last week or so). I don't often use or even consult the old drafts at this point because they represent how I was thinking about my theory at the time that I wrote them, and I know from experience that my theory—and my ability to articulate it—evolve over time. The best rendition of the theory that I can produce is almost always the one I produce at the end of the research process. I wouldn't be able to produce that without all the prior drafts, because I learned to write about my theory by writing about it, but the prior drafts themselves are usually vastly inferior in quality.

The prior drafts are useful, though, when discussing assumptions. The most important assumptions of my theory are usually explained in the causal mechanism discussion, but some of the secondary ones are also quite important.

²⁷When I'm done for the day, I'll review all the other bits and pieces and dump anything that feels even vaguely useful into the Leftovers file. Err on the side of caution; you can throw things out later, but if you never save them, you can't ever recover them.

Because they're not quite so crucial, they're easy to forget, which is why I usually go back and reference the older drafts at this point. In general, you should always articulate any nonobvious assumptions and any assumptions that drive your result, and note these in your paper. Try to avoid a string of statements all beginning with "I assume" or "It is important to assume" or the like. Presenting a bunch of assumptions in a way where they each don't include a form of the word *assume* is a skill, but it's worth developing.²⁸ The assumptions are in the paper because they matter to your argument, so try to embed them in the argument.

Dealing with scope conditions is a bit trickier. Sometimes they'll go here with the rest of the assumptions. Other times, you'll find that you can discuss them more smoothly within the methods section. When you discuss the set of cases on which you plan to test your hypotheses, you can also discuss why or if this differs from the larger population to which the theory applies.

Most theory sections can benefit from some form of graphic, even just a simple arrow diagram or flow chart, that shows the order of events or which variables affect one another. This is particularly true for multistep process hypotheses and conditional hypotheses. Learning to build diagrams in your word processing program now is a good use of time; this way the skills will be available later when you're under time pressure.

In general, though, theory sections follow a much less rigid structure than other parts of the paper. You will want to remain open to alternative orders of presentation, especially as you develop expertise and confidence in your research skills. Use published papers as models. They're your best source for ideas about how to put the pieces together. You may find you need to try several different arrangements before you find one that you really like or that works for your particular set of claims and needs.

SUMMARY

The transition from research question to theory to hypothesis is a crucial part of producing a good empirical research paper. A good theory explains patterns in data with a well-articulated "because" clause that specifies a causal mechanism linking the independent variable to the dependent variable. A good theory also identifies the scope conditions and assumptions under which it operates. Good hypotheses then identify observable implications of the theory—things we would observe if the theory were correct—and make predictions about relationships between measurable indicators of the theory's concepts. Developing your theory and fully explicating its causal mechanism are key components of this process, as is using valid indicators of concepts. This is part of why the theory is such an important part of empirical research: Without a carefully thought-out theory, empirical research doesn't make much sense.

²⁸Again, though, when doing an early draft, go ahead and write "I assume" at the start of every sentence if you need to; the important part is just to get the ideas out of your head and onto the paper.

KEY TERMS

- Theory
- Causal mechanism
- Assumption
- Scope conditions
- Domain
- Inductive theorizing
- Deductive theorizing
- Hypothesis
- Dependent (or outcome) variable
- Independent (or cause) variable
- Observable implications
- Falsifiers
- Validity
- Operationalization

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