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Introduction: How Electoral Systems Matter – for Politics and for the Scientific Study Thereof

Who governs? Electoral systems matter in democracies because they affect the answer to this question Robert Dahl (1961) posed in a different context. In democracies, the answer might be "those who win elections." However, it is rarely so simple. We might rephrase the question as "who wins elections?" One might immediately respond with, of course, those who win the most votes. Yet again, it is not always so straightforward. In the US presidential election of 2016, Hilary Clinton obtained over 65.8 million votes, which exceeded those of Donald Trump by almost 2.9 million (and 2.1 percentage points of the national total). Yet it was Trump, not Clinton, who became President, due to the way the electoral system takes "who got votes" and turns it into "who governs."

The US in 2016 is one recent and notable example. A reversal of which candidate won the nationwide votes and which one became president also happened in the US in 2000.[1] Yet maybe these US cases are simply aberrations. Maybe in other democracies it is always simple to say that "who governs is whoever wins the most votes." Actually it is not so simple; it is often the case that the way the electoral system works makes a difference in how the votes get turned into the important positions of power that determine who governs. A couple of other examples will demonstrate the point.

New Zealand had two consecutive elections (1978 and 1981) in which the Labour Party won the most votes nationwide, yet the rival National Party formed the government. Why? Because the Nationals won more *seats* in the national parliament. This, of course, invites the question, why did the Nationals win more seats – a majority[2], in fact – when Labour won more votes? The answer lies in the way the *electoral system* worked. There were no controversies in either of these elections over whether the outcome was correctly or "legitimately" decided. Yet these elections helped begin a process

[1] The significance of the US election controversy of 2000 for understanding electoral systems is discussed further in Chapter 3.

[2] We use the term, majority, strictly in the American sense as "at least one more than half." If we mean the largest share, whether or not more than half, we will say "plurality."

that, by 1996, would see the country implement a completely different electoral system.

We could also think of the case of Denmark in 2015. In this election, the Social Democrats won the most votes *and* seats. Yet when a government was formed after the election, the Social Democrats were in the opposition. The party with the second most votes and seats, the Danish People's Party, also was not in the government. Instead, the third largest party, the Venstre, provided the country's prime minister, Lars Løkke Rasmussen. His government obtained the parliamentary backing of some other parties, including the Danish People's Party, but not the Social Democrats. This example illustrates that sometimes many parties obtain representation – the three parties just mentioned combined for only slightly more than two-thirds of the votes and a similar share of seats. Six other parties obtained representation. Thus "who governs" depended on bargaining between various parties, because the electoral system made it possible for many parties to receive seats as well as votes.

Each of these examples shows that it is not enough to say there are elections. We need to know something about how votes get converted into governing power. It is the electoral system that is a key element in this conversion process. If the country has a "parliamentary" form of government, like New Zealand and Denmark, the electoral system only turns votes into seats for parties in the parliament. If one party has a majority – as in the 1978 and 1981 New Zealand examples – it forms the government (regardless of whether the party also had earned the most votes). If there is a "multiparty" system, as in the Danish example, then determining who governs involves another step – coalition bargaining. This is a step we will not consider at length in this book; many other works cover it as a topic in its own right. Instead, this book focuses on how votes become seats, and how this process varies from country to country, depending on the *electoral system*.

By electoral *system* we mean the set of rules that specify how voters can express their preferences (ballot structure) and how the votes are translated into seats. The system must specify at least the number of areas where this translation takes place (*electoral districts*), the number of seats allocated in each of these areas (*district magnitude*), and the seat allocation formula. All this will be discussed in more detail later.

This book deals only with elections that offer some choice. It bypasses fake elections where a single candidate for a given post is given total or overwhelming governmental support, while other candidates are openly blocked or covertly undermined. It also largely overlooks pathologies of electoral practices such as malapportionment and gerrymander, except for pointing out which electoral systems are more conducive to such manipulation.

The physical conditions of elections matter, such as ease of registration of voters and candidates, location and opening times of polling stations, and the

timing of elections. It is presumed in this book that such conditions are satisfactory. Our only concern is to explain, in what are considered fair elections, how electoral systems affect the translation of votes into seats, how the results also affect the distribution of the votes in the next elections, and what it means for party systems. Moreover, the book largely limits itself to first or sole chambers of legislatures, although Chapters 11 and 12 will include analysis of presidential elections, and we will offer an occasional example from an elected second chamber (upper house).

This scope may look narrow, but translation of votes into seats by different electoral systems can lead to drastically different outcomes, both within a country (one election to another, or one elected body versus another) and across countries. For example, Green parties committed to more environmentally sound policies have emerged in many established democracies. The Green Party of Canada even received 6.8 percent of the votes in the national election for the House of Commons in 2008. Yet it won exactly zero seats. The Green Party of Germany in 1998 had obtained almost the same national vote share for the Bundestag, 6.7 percent, and not only won seats in parliament (forty-seven of the 669, or 7.0 percent) but also obtained seats in the cabinet including the Minister of Foreign Affairs. The difference in the outcomes, despite similar vote shares, is due to the electoral systems these countries use.

Thus, electoral systems affect party strengths in the representative assembly[3] and, if the political system is parliamentary, the resulting composition of the governing cabinet. They can encourage the rise of new parties, bringing in new blood but possibly leading to excessive fractionalization, or they can squeeze out all but two parties, bringing clarity of choice but possibly leading to eventual staleness. It is well worth discovering in quantitative detail how electoral systems and related institutions affect the translation of votes into seats. We now offer one more detailed example that introduces several themes of the book.

The Polish Election of 2015 and How the Rules Mattered

Poland has been a stable democracy since the 1989–1990 transition to democracy as the Soviet Communist bloc collapsed. Since that time and through 2015, Poland has had eight elections for Sejm and Senate, the two chambers of the national parliament, and six for its politically powerful presidency. Nonetheless, the Sejm election of 2015 stands out and led to

[3] Throughout this book, we will generally prefer the term, *assembly*, rather than legislature, parliament, congress, or other terms. We thus avoid any implicit commentary on the institution's precise role in a given democratic system and call attention instead to its essential feature as a plural body in which elected representatives assemble for their various tasks.

significant international concern. For the first time in the post-Communist era, a single party won a majority of seats in the Sejm, the first chamber (and the more powerful one). This party, the Law and Justice Party (known by its Polish initials, PiS), already held the presidency and thus was able to set the nation's policy agenda essentially unilaterally. This agenda was controversial, particularly a law passed near the end of 2015 that changed the procedures for the Polish Constitutional Court. This change drew an official rebuke from the European Commission as a "systemic risk to the rule of law in Poland."[4]

It is useful to situate the Polish events that troubled its neighbors into the context of political institutions, including the electoral system, which made PiS's Sejm majority possible. Poland uses one of the many examples of an electoral system that is typically called "proportional representation" (PR). Usually, under PR, no party wins a majority in the assembly, because the system is designed to make it feasible for many parties to win seats. It tends to support bargaining among parties after the election (as in the Danish case mentioned earlier). Indeed, this had been the case in Poland since the 1990s. So what changed in 2015 to allow a single-party majority?

First of all, the *timing* of the election was critical. Poland had just elected a new president in May 2015. It was a close contest. Like many countries that elect a politically powerful presidency by direct vote, Poland votes in "two rounds": in the event that no candidate has a majority in the first round, there is a runoff between the top two candidates two weeks[5] later. The winner, Andrzej Duda of PiS, won 51.6 percent to 48.5 percent, over a candidate backed by the then-governing party, Civic Platform (PO). Six months later, when the Sejm election came up, it was within the "honeymoon" of the newly elected PiS president. Presumably aided by this honeymoon period, PiS won 37.6% of the vote, which was more than Duda himself had received in the first round of his election (34.8%) and also was a 7.7 percentage-point increase in the party's vote over the previous (2011) Sejm election.

Ordinarily, the timing of assembly elections relative to presidential elections is not considered part of the "electoral system"; however, as we show in Chapter 12, such timing does indeed have systematic effects on the performance of parties. The Polish pattern in 2015, whereby the newly elected president's party enjoyed a surge in votes, is a common pattern (Shugart 1995). So, the timing of elections – an institutional feature of Polish democracy – may have helped PiS gain the most votes. How did the electoral system for Sejm turn those into a majority of seats?

[4] "Commission adopts Rule of Law Opinion on the situation in Poland," European Commission press release, June 1, 2016 (http://europa.eu/rapid/press-release_IP-16-2015_en.htm, accessed July 13th 2016).

[5] The time between rounds varies across countries; in Poland the rounds were May 10 and 24. We discuss some implications of two-round elections in Chapter 3.

TABLE 1.1 *Polish Sejm election result, October, 2015 (national figures)*

Party (and name or abbreviation in Polish)	Votes	Votes (%)	Seats	Seats (%)
Law and Justice (PiS)	5,711,687	37.58	235	51.09
Civic Platform (PO)	3,661,474	24.09	138	30.00
Kukiz'15 (K'15)	1,339,094	8.81	42	9.13
Modern (Nowoczesna)	1,155,370	7.6	28	6.09
United Left (ZL)	1,147,102	7.55	0	0.00
Polish People's Party (PSL)	779,875	5.13	16	3.48
KORWiN	722,999	4.76	0	0.00
Together (Razem)	550,349	3.62	0	0.00
German minority (MN)	27,530	0.18	1	0.22
others	105,191	0.69	0	0.00
Total	15,200,671		460	

The row for "others" includes no single party with more than 0.28 percent of the vote.

Table 1.1 shows the detailed results of the 2015 Sejm election. The first puzzle is the one already mentioned – the fact that the PiS won more than half the seats on only 37.6 percent of the vote. How could that be? Poland, after all, uses "proportional representation." Yet 51 percent of the seats on under 38 percent of the votes is not very "proportional." As is further shown in Table 1.1, part of the answer lies in the *thresholds*.[6] Two parties have over 3.5 percent of the votes apiece, yet no seats. This is because the electoral law required 5 percent of the nationwide votes to win seats, unless the party represents a national minority. The latter provision explains why a party for the German Minority has a seat on only 0.18 percent of the vote.[7] However, the parties called KORWiN and Together are not ethnic-minority parties. Thus the threshold excluded them from representation.

It is further visible from the table the United Left had 7.55 percent of the votes – easily clearing the 5 percent party threshold – yet no seats. How can that be? It is due to yet a further feature of Polish electoral law: if two or more parties jointly contest the election, the threshold is 8 percent, rather than 5 percent, for them. The provision is presumably intended to prevent parties from making "marriages of convenience" just to pass the threshold jointly. Yet in this case, the parties in question are a set of ideologically proximate parties that came close, but not close enough, to clearing the threshold.

[6] For details on Polish election laws, see Hardman (n.d.)
[7] Separate provisions for ethnic minorities will not be a theme of this book. See the excellent and detailed treatment by Lublin (2014).

We will discuss these features of the system in subsequent chapters, as we discuss electoral alliances in Chapters 6, 7, and 14 (and in passing in other chapters); we discuss thresholds in Chapter 15.

After the exclusion of parties that fell below the thresholds, PiS had around 45 percent of the total vote cast for parties that were eligible to win seats. That means its assembly majority still gives it a degree of over-representation. This is due in part to the electoral formula used – something called the D'Hondt divisor method, which will be explained in Chapter 2. A different "proportional" formula might have netted PiS less than half the seats, just as a lower threshold, or no separate threshold for alliances, might have meant more seats for smaller parties and hence fewer for PiS. An election not in the president's honeymoon, or a different outcome of the close presidential race itself, might have meant fewer votes for PiS in the first place.

While it may seem right now as if we are just making a "laundry list" of obscure provisions and Polish political idiosyncrasies, in fact, *all of these electoral rules mattered to the outcome*. With a different set of rules, then, there might not have been a PiS majority government, and the resulting international controversy that the government became embroiled in may never have occurred. In other words, electoral systems have consequences for how a country is governed, and by whom.

In Table 1.1 we saw the national outcome of Poland's 2015 Sejm election. However, Poland actually has forty-one electoral districts. With an assembly size of 460, that means each district elects *on average* just over eleven seats. As we explain further in Chapter 2, this means we can speak of Poland having an average *district magnitude* of eleven. Thus the electoral system is not really national in scope; indeed, few are. The results in Table 1.1 show the nationwide aggregation of votes and seats, but there are in fact forty-one different contests playing out, each one electing anywhere from seven to twenty members of the Sejm. Unlike many other books on electoral systems, this one will analyze not only nationwide aggregate patterns, but also district-level dynamics. In fact, Chapter 10 is devoted entirely to developing models of patterns in data disaggregated to the district level. We even go one step farther than this; in Chapters 13 and 14, we look at the *intraparty dimension* of representation, whereby individual candidates compete for votes against others of their party under certain electoral systems. Poland has one of these systems of intraparty competition, as we explain briefly here.

In **Table 1.2**, we see partial results from one of Poland's forty-one electoral districts in the 2015 election. The district is Konin, and it has a district magnitude of nine. In Poland, as in many other (but by no means all) electoral systems, the voter casts her ballot by placing a mark by the name of a single candidate. The table shows only the votes of the top fifteen candidates, including the nine winners. How is it possible that *the winners were not simply the top nine in votes*? More specifically, why

TABLE 1.2 *Votes for the leading candidates for election for members of Polish Sejm from the district of Konin, October 2015*

Number elected: 9 Candidate	Party	Votes	Votes	Elected?
Wojciech Witold Czarnecki	Law and Justice (PiS)	26399	9.52%	Yes
Zbigniew Dolata	Law and Justice (PiS)	18060	6.51%	Yes
Paul Anthony Arndt	Civic Platform (PO)	17925	6.46%	Yes
Tadeusz Tomaszewski	United Left	15350	5.53%	No
Tomasz Piotr Nowak	Civic Platform (PO)	11820	4.26%	Yes
Jan Krzysztof Ostrowski	Law and Justice (PiS)	9443	3.40%	Yes
Bartosz Jozwiak	Kukiz'15	8747	3.15%	Yes
Ryszard Bartosik	Law and Justice (PiS)	8163	2.94%	Yes
Leszek Richard Galemba	Law and Justice (PiS)	7708	2.78%	Yes
Agnieszka Mirecka-Katulska	Law and Justice (PiS)	7520	2.71%	No
Paulina Hennig-Klóska	Modern	7306	2.63%	Yes
Zofia Mariola Itman	Law and Justice (PiS)	6913	2.49%	No
Eugene Thomas Grzeszczak	Polish People's Party (PSL)	6609	2.38%	No
Kazimierz Czeslaw Broadsword	United Left	5174	1.87%	No
Maria Bychawska	Civic Platform (PO)	5053	1.82%	No

All candidates who obtained at least 5000 votes (about 1.75 percent) are shown; there were 120 additional candidates who are not shown.
Source: Authors' compilation from http://parlament2015.pkw.gov.pl/349_Wyniki_Sejm/0/0/37/3062.

did Tadeusz Tomaszewski and Agnieszka Mirecka-Katulska not win seats even when they had more votes than did other candidates who were elected?

The answer lies in an important detail that is typical of many proportional representation electoral systems, and which we explain in detail in Chapters 2, 5, and 6: the system uses "party lists." Parties, or alliances of parties, present lists of candidates. The country's system first allocates the seats to these lists.[8] Only then do the candidate votes come into play, with the top vote-earners in each list getting the seats that each list has obtained. Thus, not shown in the table, the PiS ran nine candidates, whose combined votes amounted to 37.4 percent of the district's total (quite close to the party's nationwide percentage, as Table 1.1 showed). This entitled them to five of the nine seats (55.6 percent); its winners are the five *on the PiS list* with the highest

[8] A vote for any candidate is also counted as a vote for the list on which the candidate is running for office.

vote totals. Similarly, the PO was collectively entitled to two seats – its top two candidates winning them – and K'15 and Modern to one each.

Tomaszewski and Mirecka-Katulska did not win a seat despite vote totals that were in the top nine because their *lists* did not have enough votes for them to win. In the case of Tomaszewski, this was due to the list of the United Left falling short of the *nationwide threshold*, as we saw in Table 1.1. Without the threshold, this list would have had sufficient votes to win a seat in the district, but in this case a rule that is applied on nationwide votes interfered. In the case of Mirecka-Katulska, she did not win even though her own votes ranked her ninth in the district overall, once Tomaszewski was excluded. Critically, however, she ranked only *sixth in her list*, which was entitled to five seats. Under a list system of proportional representation, the votes for the list of candidates are the first criterion in allocating seats. Various list systems are the most common of all electoral systems, and not just an unusual feature of Poland.[9]

Thus from Table 1.2 we see that at the district level, and even at the level of individual candidates, the electoral system affects who wins representation. This book is about all of these various ways that electoral systems matter.

How Electoral Systems Constrain and How Science Walks on Two Legs

Politics takes place in time and space – both the immutable physical space and the institutional space that politics can alter, but with much inertia. Institutions place constraints on politics. For instance, in a five-seat electoral district, at least one party and at most five parties can win seats. Within these bounds, politics is not predetermined, but the limiting frame still restricts the political game. It is rare for one party to win all seats in a five-seat district, while such an outcome is inevitable in a single-seat district. This observation may look obvious and hence pointless, but it leads to far-reaching consequences.

A key method followed in this book is the building of *logical quantitative models*. Much of contemporary social science is quantitative, in the sense of working with numbers, running and reporting statistical regressions, and so on. However, too little social science work builds its quantitative edifice on a foundation of *logic*. In this book, we will report many a regression result, but most of these are reported as tests of logical models that we derived before going to the statistical program and asking what the coefficients and standard errors (etc.) are.

In building logical models, we first ask, *what do we expect* the relationship to be between A and B? This means *thinking* about how A shapes B (and maybe vice versa). It means thinking about the shape of the relationship. Do not just

[9] Open lists, where candidates' votes determine the winners from the list, are less common. They are by no means rare, as we shall see in later chapters.

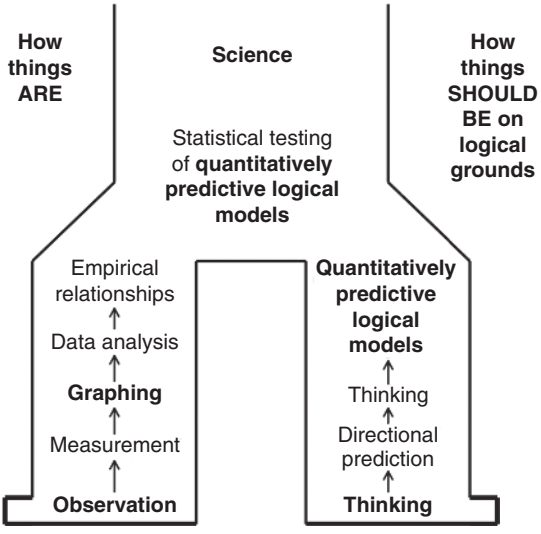

FIGURE 1.1 Science walks on two legs: observation and thinking
Source: Modified from Taagepera (2015).

run to the computer program and find out what a basic linear regression result is, because what if the relationship is not linear? We will display a lot of data graphs in the book, because it is important to see the scatterplot. This will tell us if our logic is on the right track, and whether our data need to be transformed – for instance, taking logarithms – before we enter them into regression equations.

The most important reason for thinking before you regress is that science walks on two legs, as shown schematically in **Figure 1.1**. As with any walk, the process involves *taking alternating steps on each leg*. However, the two legs of science represent different aspects of what science is. The walker can't reach the destination without using both legs. Hopping on one leg is highly inefficient!

One leg (the left in the schematic) deals with determining how things *are*. This involves careful observation, measurement, graphing of data, and statistical summaries of patterns in the data. The other leg deals with asking how things *should be*, on logical grounds? That question guides the first one. If it does not – if we jump to running statistical regressions first – we run the risk of seeing what we want to see. Or, worse, running numerous slightly different specifications of the regression equation, or different regression commands, until we see what we want to see. It is in thinking about "How things *should be*" that we come to understand *what* to look for before we use statistics. The two legs come together when expectations produced by logical modeling are tested with data, mostly using statistics. We will explain our use of statistics

later, but first – because it should be first – we discuss how we start with logical model building.

Let's take the Polish district of Konin, shown previously in Table 1.2. We saw that four parties won seats in this district in the 2015 election. There were a total of nine seats available. Is four parties a lot or few? To know, we might look at other districts in Poland in 2015, and also at districts in other countries. We might see that in the UK, every district elects only one party. Again, that's obvious – there is only one seat! Yet starting with the obvious is exactly how we start to build a logical model. If there is one seat, there can be only one winning party. If there are more seats, like the nine in Konin, we expect there to be more winning parties. We can look further, perhaps at Israel and find out that ten parties won seats, in a district that has 120 seats available (see Chapter 5 for details). So, here we are dealing with *observation*: Election districts with many seats available tend to have many parties win seats in them. The second step is *thinking* about this observation. This leads to a *directional prediction*: If there are more seats in the district, the number of winning parties increases. *Measurement* of the number of seats – what we call district magnitude – and the number of parties confirms this prediction.

But a merely *directional* prediction is of limited value. Any Toscana peasant could have told Galileo in which direction things fall. They fall down! What else do you need to know? Galileo also wanted to know how fast they fall, and why. If we want to be taken seriously as scientists with results of value to offer the world of practitioners, we must ask similar questions about the number of parties, and about every other directional relationship. Yet, far too many works published in political science journals neglect to venture beyond the directional hypothesis. We should not be like the Toscana peasant who might have said, "I see which way things fall, and that is all I need to know."[10] Whenever researchers can go beyond the merely directional, they should. What is the meaning of this abstract advice? A specific example follows.

An essential step is to *graph the data*. Then really *look* at this graph and *ponder* what it wishes to tell us. In Figure 1.2, we use district-level data, from many elections around the world. We see two panels, both of which plot on the x-axis the number of seats in a district (or its magnitude, designated M) and on the y-axis the number of parties (of any size) that win in the district (designated by the strange looking label, N'_{S0}, for reasons that will become clear in later chapters). The difference in the two panels is the way the scales are drawn.

[10] We will accept that there are applications in which the directional hypothesis is the best a social scientist can do, and even where confirming such a hypothesis adds considerable value. However, in many applications – especially those that are the substantive topics of this book – we really must strive to be more specific in our expectations.