

# Principles of Constitutional Design

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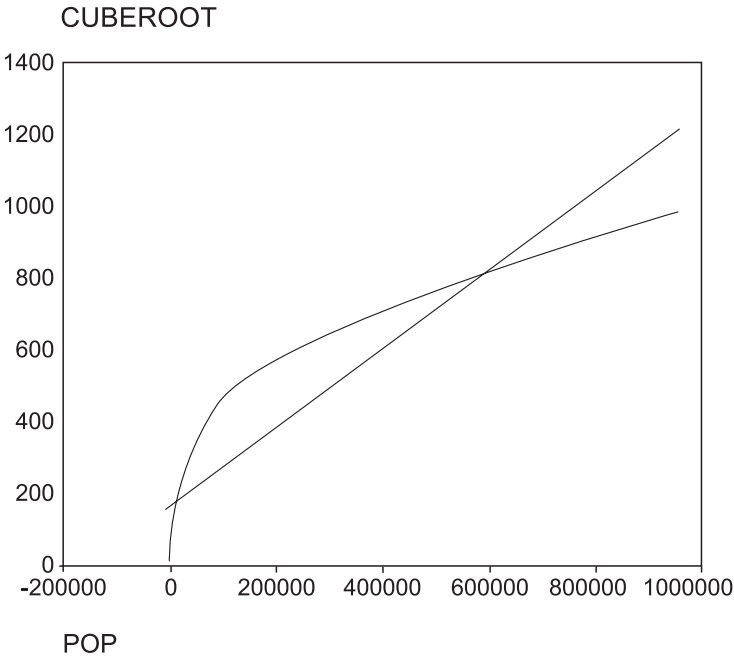


FIGURE 8.1. Cube root curve versus linear curve.

this more than once as well. The rational actor, as it turns out, is a highly useful but mythical creature that tells us about institutional tendencies given the rules that define them, but that cannot tell us which set of institutional rules to choose. The unwillingness to use rational-choice analysis in constitutional design is an error. Failure to use anything but rational-choice analysis in constitutional design is a contrary error. Neither type of disciplinary ideology is a formula for living in a world inhabited by humans.

### The Cube Root Curve

The cube root rule – the size of a unicameral legislature, as well as the size of the lower house in a bicameral legislature, tends to approximate the cube root of the country’s population – has been known for some time, but little has been made of it. Figure 8.1 shows the shape of the curve generated by taking the cube root of a nation’s population compared with a linear curve that represents what we would find if the size of the legislative body increased according to some rule of

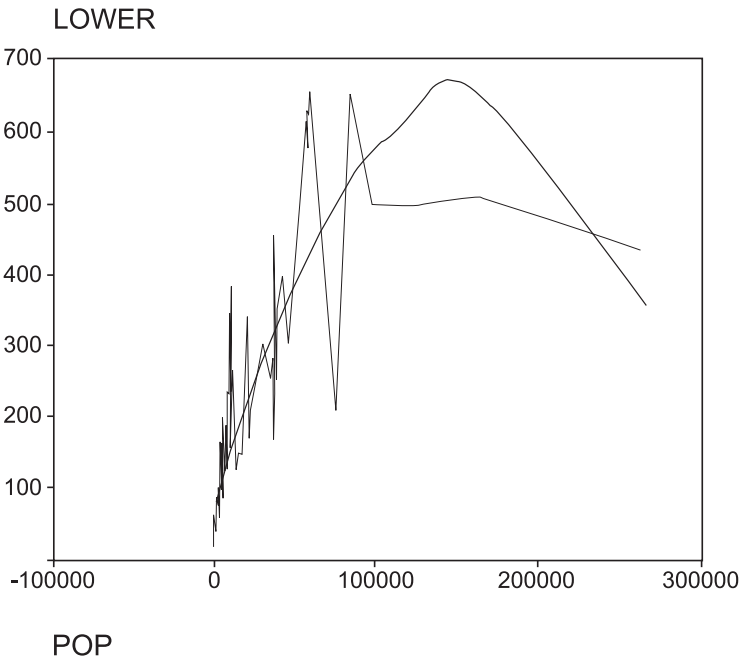
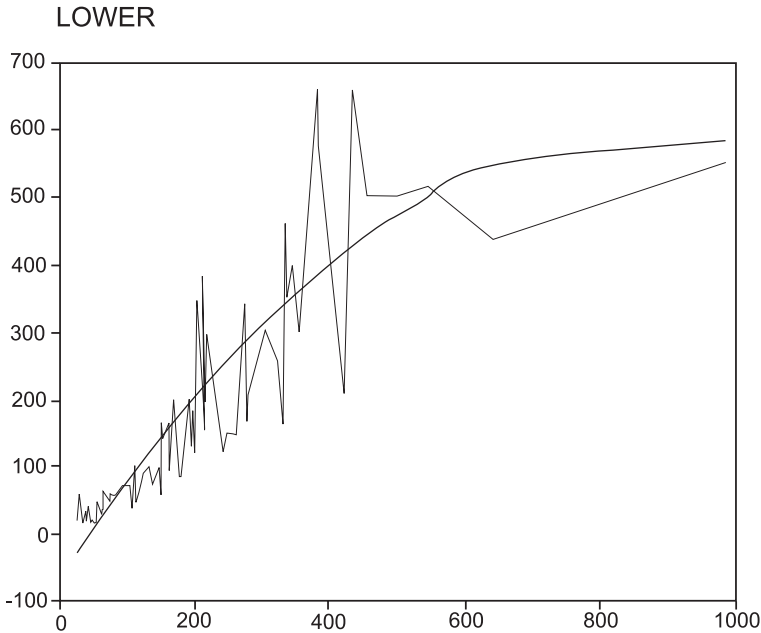


FIGURE 8.2. Size of primary legislative body and population size (excluding India). LOWER QUA:  $r^2 = .732$ ; d.f. = 71;  $F = 96.78$ ; significance = .000;  $b_0 = 76.1634$ ;  $b_1 = .0074$ ;  $b_2 = -2.E-08$ .

proportionality. The cube root curve initially rises more rapidly than does a linear curve but then almost immediately begins to fall off at an increasing rate until it is rising at a much less rapid rate than the linear curve. Consider now Figure 8.2, which shows the curve of best fit when regressing legislative size against the actual population.<sup>1</sup> The curve of best fit between the primary legislative house and population does indeed seem to approximate the cube root curve, with an  $r$  square of .732 that is significant at the .001 level. We can directly test for the degree of fit by regressing the size of the primary legislative house directly against the cube root curve as shown in Figure 8.3. If the fit with the cube root curve were perfect, we would find a perfect linear

<sup>1</sup> India is excluded from the calculations for Figure 8.1 because in order to accommodate 1 billion people on the  $x$ -axis, the shape of the curve cannot be seen. India's lower house has 545 members, so including it would simply confirm the leveling off in the curve. Including India produces an even higher correlation (.770) because India's lower house fits the overall pattern so well.



CUBEROOT

FIGURE 8.3. Size of primary legislative body and the cube root of the population. LOWER QUA:  $r^2 = .756$ ; d.f. = 72;  $F = 111.52$ ; significance = .000;  $b_0 = -64.576$ ;  $b_1 = 1.4980$ ;  $b_2 = -.0009$ .

relationship. Instead, we find a declining curve that resembles the cube root itself until a legislative size around 650 is reached and then the curve flattens out. Although the r square is .756 with a significance at the .001 level, legislative size does not quite track the cube root curve, because designers of constitutions increase legislative size at an increasingly slower rate than the cube root rule would predict and, at a certain point, stop legislative growth altogether. In short, the size of the primary legislative body tracks the cube root curve only within a restricted range of legislative size. The difference between the cube root curve and the actual size of legislatures probably results from a growing reluctance to increase legislative size.

Consider again Figure 8.2. The theoretical reason for this curve is that while framers of constitutions generally wish to keep the size of each representative’s constituency as small as possible in order to minimize the “distance” between a representative and those represented,

there is also the wish to prevent the legislature from becoming too large to conduct business at all. At the moment, no constitutional republic, regardless of the size of its population, seems willing to utilize a lower house or unicameral legislature larger than about 650 representatives. Although we can account theoretically for the actual curve of legislative size, it is difficult to account for the curve tending to approximate the cube root curve within the restricted range. There is no reason to think that framers know about the cube root curve or, if they do, why they would choose to approximate it per se.

For example, we can just as easily conceive of constitutional framers engaging in a rational-actor analysis of the ideal size for a legislature, given the factors of internal decision making, and settling upon some ideal size for a legislature. In this case the curve would be a horizontal line at the ideal size on the ordinal scale. Or we could conceive of framers using some consistent ratio that added one representative for every set number of citizens, which would produce a rising straight line. Instead, the logic of constitutional design in this instance, as in many others, is based on weighing more than one factor and the effects of more than one institution.

We can pursue legislative size further. In Figure 8.2 we see that at a certain population, around 150 million people, the size of the lower house levels off and declines somewhat. No country with more than 100 million people currently has a unicameral legislature, so we can say for certain that this effect is limited to bicameral legislatures.<sup>2</sup> Thus, at a population of around 150 million people, framers seem to stop worrying entirely about the growing size of the average constituency and focus instead on the size of the lower house. There is no such concern for restricting legislative size in small countries with unicameral legislatures. The curve of best fit for the thirty-five unicameral legislatures in countries with a population less than 10 million is almost linear, with an  $r$  square of .832.

Table 8.1 shows that unicameral legislatures are almost entirely associated with smaller constitutional republics. For example, 78 percent of countries with populations less than 100,000 have unicameral

<sup>2</sup> The United Kingdom is technically bicameral, although because the upper house is not elected and has no set size, the United Kingdom is treated here as effectively unicameral. It is thus the only country with more than 50 million people treated here as unicameral.

TABLE 8.1. *Unicameral and Bicameral Legislative Size Compared to Population Size*

Size of Population	Number of Nations	Percentage of Size Category	Average Size of Total Legislature	Average Size of Lower House	Average Size of Upper House
Unicameral legislatures (38)					
0 to .1 million	7	78	31		
.1 to .5 million	6	60	43		
.5 to 5 million	13	72	95		
5 to 10 million	8	67	204		
10 to 50 million	3	18	254		
More than 50 million	1	10	659		
Bicameral legislatures (37)					
0 to .1 million	2	22	33	17	16
.1 to .5 million	4	40	33	29	14
.5 to 5 million	5	28	120	83	37
5 to 10 million	4	33	199	158	41
10 to 50 million	13	82	340	249	91
More than 50 million	9	90	646	507	139

legislatures and 22 percent are bicameral; 72 percent of countries with populations between 500,000 and 5 million are unicameral and 18 percent are bicameral. In countries with a population more than 10 million the two size categories combined show that only 15 percent are unicameral and 85 percent are bicameral. There is a tipping point at about 10 million people where unicameralism is largely replaced by bicameralism, just as there is a tipping point at about 150 million people (as shown in Figure 8.2) where the average lower house stops growing and begins to decline in size. Overall, as populations grow, there is a strong tendency to move toward bicameralism; and as the size of the lower house grows, although at a declining rate, the upper house also grows. Can it be the case that framers of constitutions tend to use increasingly larger upper houses to compensate for the declining rate of growth in the size of lower houses?

The middle column in Table 8.1 under “Bicameral Legislatures” combines the average size of both houses in each size category, but this format does not allow us to test the hypothesis. What happens if we combine the two houses for each of our thirty-seven bicameral legislatures and regress the resulting totals against the size of the population? Figure 8.4 shows that we get the same curve we did in Figure 8.2 where we used the primary legislative body from all seventy-five countries, with the high point at the same approximate population of 150 million people. The curves in Figures 8.2 and 8.4 both have the same shape, the same tipping point, and the same level of significance. Most important for the current analysis, both approximate the cube root rule over the same limited size range. How can we account for these consistent patterns?

Is this the work of a rational actor? Can the approximation with the cube root curve be the work of a rational actor if no one knows about the cube root curve? Is the cube root curve in any technical sense rational? What is the difference, if any, between a consciously rational actor who is attempting to achieve some end, and an actor who turns out to be rational even though she or he is not trying to be rational? Furthermore, what if the “rational actor” is an entire set of constitutional conventions or an entire set of legislatures engaged in writing a constitution? Equally interesting, what if the individuals in that framing body are attempting to act rationally on the basis of different individual goals, and the entire convention ends up acting

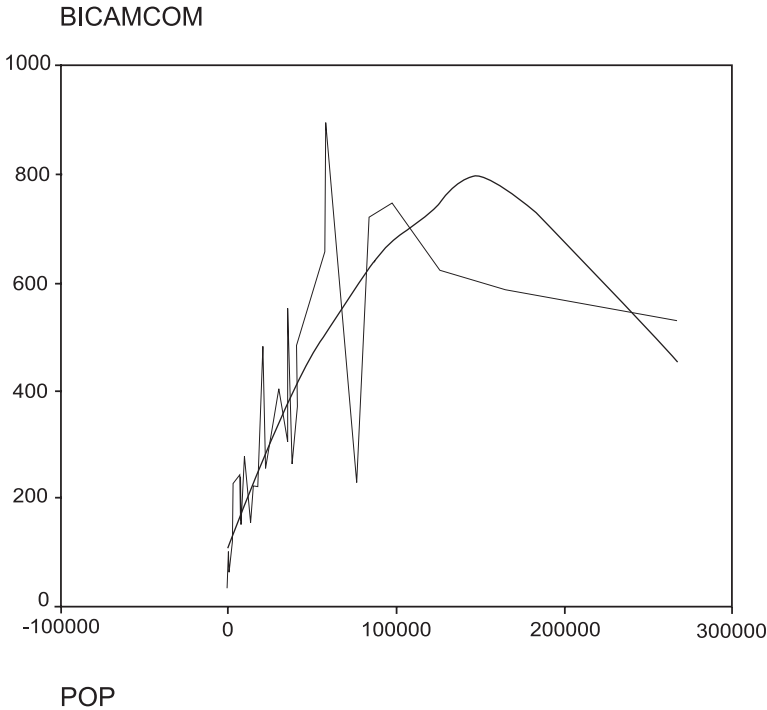


FIGURE 8.4. The combined houses of bicameral legislatures and population size (excluding India). BICAMCOM QUA:  $r^2 = .714$ ; d.f. = 33;  $F = 41.29$ ; significance = .000;  $b_0 = 108.116$ ;  $b_1 = .0085$ ;  $b_2 = -3.E-08$ .

in a rational fashion? What do we call this – metarationality? One is reminded of the proposition about individually irrational voters acting together to produce a rational electorate.

There is no inherent rationality to following the cube root rule. However, there is an underlying rationality in balancing the conflicting goals of (A) maintaining reasonable constituency size while at the same time (B) maintaining a reasonable size for the legislature. That the underlying rationality ends up approximating the cube root curve is probably an accident and is therefore only an interesting curiosity. The rational actors here are groups of individual men and women in different cultures who at different times frame constitutions that they hope will be accepted and then be successful. They are balancing the demands of conflicting design goals in the context of their respective individual goals and preferences as well as in the context of their



respective country's unique circumstances. Out of the debates among many people in many conventions in different countries with different cultures, we observe a number of predictable results. One of these is that the size of the primary legislative body tracks the cube root curve up to a point. Another is that framers of political systems with fewer than 10 million people basically use a unicameral legislature, and then at around 10 million people framers suddenly start using bicameral legislatures. At around 150 million people the approximation with the cube root rule ends, and legislatures stop growing altogether. It is also at this point that federalism becomes very prominent, perhaps again, in an attempt to minimize the distance between citizen and legislator.

These patterns together reflect an underlying constitutional logic that seems to be shared across cultures and over time. Whether this logic is in accord with rational actor theory will be left for others to determine. What we can say here is that framers of constitutional republics often act in broadly predictable ways when designing basic institutions despite the impressive array of specific institutional combinations they have come up with historically. There seems to be an impressively consistent logic-in-use that may or may not accord with rational-actor analysis, and further study of this underlying logic-in-use may yield important insights into the connection between seemingly unconnected individual political calculations and the creation of commonly accepted solutions that may reflect some widely shared, cross-cultural utility calculus or perhaps some sense of a common good that is shared both within the community and across communities. The general patterns in legislative design uncovered as a result of reflecting on the cube root curve make even more sense if we consider them in the context of the separation of powers.

We saw in Chapter 4 that framers of constitutional republics tend to increase the level of separation of powers as they increase the level of popular control. This principle of constitutional design seems to emerge from some logic inherent in the design process rather than from designers following explicit, articulated normative rules. It was suggested in Chapter 2 that the basic logic of constitutional design results from humans, on the one hand, seeking to create a supreme power that allows an expanded pursuit of self-preservation, liberty, sociability, and beneficial innovation and, on the other hand, seeking

to prevent that supreme power from itself threatening these pursued values. Putting it in terms of political economy, humans wish to minimize the opportunity costs and externalities that go with a prepolitical condition, but at the same time humans wish to minimize the external costs and decision costs that result from political organization. It seems to follow as a secondary principle that framers of constitutions, under conditions of popular control, tend to balance the consequences of constituency size with the consequences of legislative size and to minimize external costs.

Let us pursue the logic of this secondary principle. Under conditions of popular control, the elective legislatures that are the core of a constitutional republic should have constituencies that as are as small as possible in order to minimize externalities by keeping those in power close to public opinion; but also, under conditions of popular control, the legislatures should not be so large as to either fall under the control of legislative elites with the resulting externalities or to become ineffective because of the decision costs involved in passing legislation. An increasing population requires an increase in constituency size, in legislative size, or in both. Because continued popular control seems empirically to privilege neither small constituencies nor small legislatures, framers of constitutions allow both to increase in size in an attempt to minimize the overall danger from external costs (although as legislatures become larger, the problem of decision costs is added to external costs in such a fashion as to produce a preference for gradually slowing the growth in legislative size regardless of the consequences for constituency size). At some point, the legislature grows to a size where decision costs simply overwhelm concern for externalities resulting from too-large constituencies, and legislative growth simply halts. This has been termed the “tipping point” and reveals itself empirically as around 650 legislators, a number that in turn occurs empirically at around 150 million people.

Long before the tipping point is reached, however, the population of a constitutional republic reaches a size where there is an attempt to achieve a balance with respect to the possible externalities of both constituency size and legislative size. This point is apparently reached at about 10 million people, for it is here that bicameralism suddenly enters the picture and the rate of growth for the lower house which had hitherto been linear begins to fall off. Minimizing externalities becomes

problematic as a population grows for at least one of two reasons, and probably both. First, growing legislative size implies an increasing need for internal legislative organization that favors dominance by an elite, at the same time that growing constituency size implies probable future degradation in the ability of the people to control that emerging elite. Second, any growing population necessarily implies declining homogeneity within that population. Heterogeneity may increase from the more complex economy needed to sustain that population size, the addition of immigrants of a different demographic description of some sort, the addition of new territories that have people with strong local attachments, or some combination of factors. Regardless of why diversity increases, larger populations imply greater diversity such that simple concern for constituency size is supplemented by concern for the nature of the constituencies as well. External costs increasingly include concern for constituency demands that differ in kind. A point is thereby reached where a second house is generally added to the legislature. Empirically the bicameral point occurs at about 10 million people.

Bicameralism is a fundamental step in the separation of powers, and the preceding logic demonstrates one way in which popular control and an increasing separation of powers is linked in an underlying constitutional logic. As constituency size increases with population growth, elections come to be supplemented by any number of a possible array of popular control institutions, such as referenda or popular initiatives. As legislatures also grow in size, separation of powers increases to help prevent government that is increasingly subject to elite control from moving beyond popular control. As separation of powers increases to help control governmental tyranny, it simultaneously helps to control the effects of public opinion that is increasingly mass-based and subject to temporary passions unchecked by the familiarity and identity with each other that citizens have in small constituencies. The tendency for second branches of the legislature to emerge as population size increases in constitutional republics thus also results from the logic inherent in constitutional design where popular control and the separation of powers interact in pursuit of the benefits that are the reason for establishing a supreme power.

The accidental similarity between legislative size and the cube root curve thus has led us to think about an underlying constitutional logic, but that logic has nothing to do with the cube root curve. Instead,

the underlying constitutional logic suggested by rational-actor analysis leads us to the curve linking the Separation of Powers Index with the Index of Popular Control. It is to that curve that we now turn.

### **The Curve Linking the Separation of Powers with the Index of Popular Control**

Consider once again the empirical curve uncovered in Chapter 4. The regression curve in Figure 4.1 shows a strong positive relationship between the Index of Popular Control and the Separation of Powers Index. Each index is calculated using a large number of possible institutions that together constitute most of the institutions in any possible constitution, regardless of where it might be placed on the parliamentary-presidential continuum. The Index of Popular Control results from scores assigned to the combination of institutions a people may use to control its government. Presented as Table 3.1, the index reflects eleven constitutional factors: what entity frames the constitution, adopts it, proposes revisions, approves proposed revisions, and has de jure sovereignty; the proportion of directly elected offices, election frequency, electoral decision rule, office holding requirements; whether there is provision for initiative, recall, or referenda; and how closely the legislative size is to what the cube root would predict. We can now see that the last element in the index is a surrogate measure of the attempt to maintain popular control in the face of increasing constituency and legislature size as the population increases.

The Separation of Powers Index, presented in Table 4.1, is similarly based on a large number of institutional factors: constitutional limits on legislative power, the presence and strength of bicameralism, and the complexity of legislative procedures when involved in amending the constitution; the relative independence of the executive in terms of selection and in terms of appointing ministers, plus the nature of the veto power if there is one; the relative independence of the judiciary in terms of selection and tenure, and the level of judicial review; and a host of miscellaneous institutions that illustrate the impressive inventiveness that humans can bring to the separation of powers.

These indexes are far more complex than the three- or four-element indexes usually generated by social scientists, and the relative weights assigned to each element are themselves composites of between three