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Handbook of Electoral System Choice

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1

The Strategy and History of Electoral System Choice

Josep M. Colomer

It is on account of the importance of the consequences of the electoral system, especially on the number of political parties and the political composition of assemblies and governments, that the choice of system matters. However, electoral systems – as are other prominent political institutions – are also a consequence of already existing political parties in assemblies and governments, each of which tends to prefer those institutional formulas and procedures that can consolidate, reinforce or increase their relative strength. As will be argued and discussed in the following pages, political configurations in which there is a single dominant party or two rather balanced parties tend to produce choices in favour of rather restrictive or exclusionary electoral systems, such as those based on the majority principle, while pluralistic settings with multiple parties tend to support choices in favour of more inclusive electoral formulas, such as those using rules of proportional representation.

More generally, the choice of electoral system seems to follow what could be called the ‘Micro-mega rule’, by which *the large prefer the small and the small prefer the large*: a few large parties tend to prefer small assemblies, small district magnitudes and rules based on small quotas of votes for allocating seats, while multiple small parties tend to prefer large assemblies, large district magnitudes, and large quotas. In a nutshell, large parties prefer small institutions in order to exclude others from competition, while small parties prefer large institutions able to include them within.

This may be seen as Duverger’s laws upside down. As the French political scientist brilliantly sketched in the mid-twentieth century and several generations of scholars have further developed and re-elaborated, electoral rules and procedures have indeed paramount influence on relevant aspects of public life, including the number of candidacies or political parties that are created by would-be leaders and the number of them that prove durable, the number of individuals and different groups in the electorate that attain representation in councils and assemblies, their relations with elected representatives, the political party composition of the legislative and the executive, and the degree of social acceptance or rejection of the polity and its constitutional structure. But we should take into consideration that electoral systems – and formal political institutions and rules more generally – are not absolutely independent variables, but also subjects of political choices by

already existing political actors, which tend to make decisions in their own interest. Thus it can be expected that electoral systems will usually crystallize, consolidate or reinforce previously existing political party configurations – and the other political features that can be associated with them – rather than generate new party systems or political outcomes by themselves. It is exogenous changes in the parties' relative strengths or expectations, whether by the emergence of new parties or, in general, by coordination failures of the existing parties – in spite of or against the incentives provided by the existing electoral system – that can induce further electoral system changes. These statements do not deny, but, on the contrary, assume Duverger's laws as granted, that is that electoral systems have clear consequences on the number of parties, but it inserts this relationship within a more encompassing analytical framework including the choice of electoral system by already existing political parties.¹

It seems reasonable to assume that, under restrictive formulas such as majority rule, political actors facing the effects of their own failure at coordinating themselves into a small number of candidacies and the emergence of new issues and new contenders for seats and offices may shift their preference to electoral institutions able to reduce the risks of competing by giving all participants greater opportunities to obtain or share power. When there are only a few parties, they can be satisfied with majoritarian electoral systems, but when the number and the size of new parties increase, the incumbent parties may begin to fear the risk of becoming absolute losers and try to shift to more inclusive electoral formulas. As will be shown in the following pages, electoral system changes indeed tend to move overwhelmingly *in favour of increasingly inclusive, less risky formulas: from indirect to direct elections, from unanimity to majority rule, and from the latter to mixed systems and to proportional representation* (in other words, towards *large assemblies, districts and quota rules*).

Three basic variables emerge for consideration at the time of choosing a specific electoral system: the performance of the existing rules and the changing actors' expectations of electoral results under them; the availability or invention of alternative electoral rules and formulas with different expected effects; the actors' relative capabilities for institutional decision-making. The performance of the existing electoral rules will likely be evaluated by political actors for the type of winners and losers they tend to produce, that is for the opportunities they create for the survival of different political parties, the attainment of seats and offices within the institutional structure, the possibility of implementing their preferred policies, the likelihood of being re-elected, and the fairness of the overall distribution of power positions. It can be postulated that the more restrictive and exclusionary the existing electoral system – such as those based on majority rule – and the higher the number of parties with popular support or reasonable expectations of getting it, the stronger the pressures for electoral system change in favour of more permissive and inclusive formulas will be. In the analysis which follows, we will use the 'effective number' of parties in votes (that is, the number of parties weighed by their size in votes) as a proxy for the potential parties suffering from under-representation under the existing rules and able to expect benefits from such a change.

Two caveats can be taken into consideration. First, of course, the type of change will also depend on the knowledge of alternative formulas and, in absolute terms, on the stock of mathematical and legal inventions available at the moment. But it is 'bad' – that is, unfavourable or unpalatable – performances that can be more likely to induce political actors to experiment with alternative formulas or suggest that scholars and experts should invent new rules and procedures able to produce different outcomes than those already enforced. Intellectual creativity can then feed new expectations and reshape actors' institutional preferences and political strategies accordingly.

Second, it could be expected that electoral institutions – as with any other enforceable rules of the game in social interactions and exchanges – may have some capability of imposing costs on those not complying, fostering learning processes by which even the losers in the game can obtain relative net benefits from playing (in comparison with the costs of undertaking changes and playing under a new electoral system), and attracting actors' adaptation to the constraints and incentives provided. Thus the longer the duration of an existing system, the higher could be the probability that adapted actors will give the system endogenous support while institutionally-induced losers will be eventually absorbed or excluded and decreasingly able to challenge the rules. In other words, the relative capability of institutional decision-making may decrease over time for those actors which are victims of the existing institutional rules.

In a first, very simple approach, it can thus be hypothesized that:

1. electoral system changes will move mostly *in favour of more inclusive formulas* permitting representation of a relatively high number of parties;
2. they should be more probable *the higher the effective number of existing parties;* and
3. the *shorter the duration of the previous electoral system* had been.

From this perspective, this introductory chapter presents three different approaches – logical, historical and empirical – to the problem of electoral system choice. First, it presents a 'strategic' model of how electoral systems are chosen by decisive political actors. Second, it displays a very long-term historical panorama of the invention and adoption of different electoral rules and formulas which is organized around four basic principles: unanimity, lottery, majority and proportionality. Finally, several worldwide tests of the choice of electoral systems on 154 occasions in 94 countries since the nineteenth century strongly support the hypotheses just sketched above.

A model of electoral system choice

Let us, first, present a 'strategic' model of how electoral systems are chosen by relevant political actors, whether in situations of general change of institutional regime or within more stable frameworks. A few assumptions can be stated in a preliminary way in order to develop a deductive reasoning which will be further tested and discussed.

First of all, let us assume that *voters and leaders are motivated to participate in elections and voting decisions in order to win*, that is to see their preferred candidates elected or their values or policies adopted as collective, enforceable decisions, or at least to achieve a situation in which the winning alternatives are as close as possible to their most preferred ones. Self-interested individuals thus will prefer and, if given the opportunity, choose or contribute to choosing the electoral rules and voting procedures from which they can expect a higher likelihood of winning or achieving satisfactory outcomes. Other criteria may, doubtless, appear in the public debate and the corresponding exchanges and negotiations, if any. But external references such as electoral systems that had been used in some past experience of the community, imitation of neighbours or other communities, institutional import, as well as inventing and creative engineering, are likely to be dependent on internal, existing criteria and choices.

Let us now consider several hypothetical situations faced by those self-interested political actors just identified. If the distribution of power in a community is such that *one single group is institutionally dominant and expects to be the secure winner with the existing electoral rules and voting procedures*, these will not likely be changed – *institutional stability can be expected*. More specifically, if the existing winners are sufficiently powerful to impose or maintain their preferred rules, and at the same time they are optimistic about their future electoral chances, they will likely choose in favour of rather restrictive rules based on the majority principle and on single, categorical ballots giving each voter a single choice. Since this type of electoral rules tends to produce a single absolute winner, they can provide the dominant group with more opportunities to remain the winner and retain control.

There can be, in contrast, other situations more prone to *institutional change*, resulting either from uncertainty or threat. One of these situations may exist when no single group of voters and leaders, including in particular the incumbent rulers in a well-organized political community, is sufficiently sure about its support and the corresponding electoral prospects in future contests – in other words, when there is *high uncertainty regarding the different groups' relative strengths*. Uncertainty can be the result of partial or confusing information regarding the different groups' relative support and their subsequent inability to refine their electoral prospects. Also, uncertainty may result from the enforcement of rules and procedures producing unpredictable, rather arbitrary winners and collective decisions, thus making every actor, even those with more reliable voter support, insecure about the likelihood of winning.

Another situation prone to make electoral system change enter the agenda of relevant political actors may appear when, with reasonable certainty, the incumbent winners feel that *new groups are emerging, gaining increasing support among voters*, challenging their domination and threatening to replace them with an alternative set of candidates, values or policies as a result of elections with the existing rules and procedures. Political parties' failure at coordinating their candidacies, especially their inability to concentrate support under the constrictions of majority rules, may transform winners into losers and vice versa, even if social support of the interests and opinions represented by the different candidacies has not changed a great deal.

Let us adopt now the standard assumption that most actors are risk-averse when they make their choices, including, for our problem, choices with regard to electoral rules and procedures. A logical implication not difficult to make from the assumptions just presented is that, under conditions of uncertainty or threat, self-interested, risk-averse actors will prefer and tend to *choose electoral rules and voting procedures creating less opportunities for them to become absolute losers*. More specifically, if the existing winners cannot impose their preferred rules because increasing demands and pressures from opposition groups force them to cede or negotiate or, even if retaining sufficient institutional power to impose their preferences, they are pessimistic about their electoral prospects, they will try to assure some partially winning positions for themselves through appropriate, that is more inclusive, electoral rules involving multiple ballots or a system approaching proportional representation.

Certainly, existing electoral systems, even the most restrictive ones, may have powerful *self-reinforcing mechanisms*. On the one hand – as suggested above – not only usual winners but also permanent losers may adapt to play within the existing rules of the game as a consequence of the high expected costs and uncertain benefits of a hypothetical institutional replacement. An electoral system can be considered to be relatively stable if, given the opportunities it provides for actors to gain or share institutional and political power, none of them would find it worthwhile to undertake new initiatives to change the rules of the game.

However, for anticipated losers or threatened winners, *institutional change can be a rational strategy if the expected advantages of alternative formulas surpass those of playing by the existing rules*. Change can thus be facilitated by several processes, such as: accumulative learning from the consequences that can be reasonably expected from different electoral formulas, thanks to both political experience and scholarly analysis; imitation of or contagion from changes in other communities where alternative formulas have produced desirable effects; and reduction of risks by parallel agreements and guarantees among the relevant actors regarding some basic statutes or rights.

Under different conditions of information, two types of electoral system choice can be distinguished, which can be called, respectively, *propositive* and *reactive*. The former type should better correspond to situations in which *actors' preferences over different rules and procedures are clearly defined*. These may lead to straightforward decisions when certain actors have a well-profiled role of political initiative and sufficient decision power to introduce institutional reforms. Cases fitting this type, and to be analysed in this book, include, for instance: Sweden in 1907 with the sudden, simultaneous introduction of universal suffrage and proportional representation by a Conservative government under threat from the rise of the Socialists; the replacement of simple plurality rule with a majority-preferential system in Australia in 1918 as a result of pressure from farmers to open up space for a third, agrarian party; or the establishment of proportional representation in Switzerland in 1918 or in South Africa in 1994, among many other countries, as a result of a previously existing, solid multi-partism (as explained, respectively, by Leif Lewin, Marian Sawer, Georg Lutz and Andrew Reynolds in the corresponding chapters).

But when none of the actors is sufficiently strong to impose its own alternative, well-informed and well-defined preferences may also lead to formal negotiations between opposite political sides producing intermediate compromises. These can be, for instance, a mixed majority-proportional system as in Hungary in 1989, or a qualified plurality rule midway between simple plurality and absolute majority as in Argentina in 1994 (as explained, respectively, by John W. Schiemann and Gabriel Negretto in the corresponding chapters).

'Propositive' choices can, thus, reflect quite directly pressures from excluded actors, negotiations between the government and the opposition, or anticipation of risks by incumbent rulers, but they produce, in general, changes in favour of less risky, more inclusive electoral systems, such as those involving multiple ballots, the combination of different principles of representation and higher degrees of proportionality.

In contrast, the *reactive* type of electoral system choice may occur in situations in which actors face *more deficient information regarding possible institutional alternatives*, more uncertain expectations regarding each actor's future voting support, stronger constitutional restrictions on more drastic reforms, or confusing and entangled decision processes. Political actors can then 'react' against the negative features of the actual electoral system, for instance because it may produce hazardous or inconsistent results (such as giving more seats to the least voted party or candidate, as in parliamentary or in presidential college elections by plurality rule), or for being too rigid to transform new citizens' demands or political initiatives into institutional representation. Under conditions where there is significant ignorance, actors typically fall back on 'learning' from their own experience, perhaps embellished as (local) 'historical lessons' (rather than learning from others' instructive experiences or from scholarly work producing accumulative knowledge). 'Reactive' choices tend to adopt formulas 'opposite' to those in existence the consequences of which have been shown to be undesirable, thus replacing, for instance, single-member districts with multi-member districts, majority rule with proportional representation or closed lists of candidates with open lists, and vice versa, etc. Political parties with different interests and prospects may coincide in favouring changes of this type if they share rejection of the existing rules, but they may not necessarily forecast accurately the likely effects of the new combinations of institutional elements on which they can converge.

Thus 'reactive' choices may produce patchwork electoral systems with unanticipated new undesirable consequences. Cases include, for instance, the electoral system adopted in Spain by the new Republic established in 1931 in reaction to the previous 'monarchical' system, which induced high polarization and conflict; the system enforced in Colombia from 1991, which destroyed the internal consistency of its political parties; or the Italian mixed system introduced in 1993, which did not reduce the number of parties but replaced centripetal competition around moderate positions with high polarization (as explained by the author Diego Gambetta in the corresponding chapter). Certainly, political leaders and organizations can also learn from their own experience of tentative, failed or mistaken decisions and progressively refine their later choices – as clearly

happened, for instance, in Poland in the post-Communist period (as explained by Marek Kaminski in his chapter).

Reactive choices, however, can also forge fortunate new inventions able to produce widely satisfactory results which become reinforced through use or which may even be imported from elsewhere. This has happened, for instance, with qualified-plurality rules for presidential elections, as introduced in Costa Rica in 1936 and further imitated by other Latin American countries (according to Fabrice Lehoucq), or with the personalized proportional representation system negotiated in Germany after the Second World War, which, thanks to its ability to reunite both proportionality and closeness between citizens and representatives, was also adopted, among others, by apparently somewhat myopic political leaders in New Zealand in 1993 (as explained by Marcus Kreuzer and Jack Nagel in their respective chapters). 'Reactive' choices may thus imply changes in the direction of either more inclusive or more exclusive formulas, mistakes in calculations and a higher than usual number of unintended consequences. However, since majority rules and exclusionary formulas are more likely to create dissatisfaction among actors than the corresponding alternatives, changes in this direction are also more likely to be cancelled and revised.

The 'strategic' approach proposed here can thus enlighten not only *the formation of different actors' preferences regarding electoral systems*, but also their *preference changes* as a consequence of miscalculations under rapidly evolving relations between forces, mistaken expectations, myopic reactions to undesired features of the previous electoral system or unanticipated electoral results which are observed in retrospect. If, for instance, initially optimistic rulers maintaining some restrictive electoral system based on majority rules turn out to be defeated in the corresponding election, they may feel induced to shift their preferences in favour of more inclusive formulas. Conversely, unexpected winners may be tempted to project their present strength into the future and bet for risky electoral rules producing a single absolute winner. Usually there may be asymmetric information among different groups' leaders regarding the likely effects of electoral rules. Certain institutional reformers may even prefer difficult-to-understand electoral systems constraining the reactions or strategic behaviour of rival leaders and voters. General ignorance of electoral system experience and literature or objective difficulties in identifying factors of advantage or disadvantage for certain parties or groups can also lead to myopic or blind bets for certain institutions and strategies.

But, in general, it should be expected that, in the long term, *more inclusive electoral rules will develop stronger endogenous support than restrictive systems and thus will tend to endure more and create more solid institutional equilibria*. In other words, the very leaders, groups and political parties whose political and institutional power has been made possible by the existing electoral system will support it and will resist the introduction of adverse changes. The actors' electoral participation and their play within the existing rules of the game tend to reinforce the rules themselves. Thus electoral rules which favour multiple winners and, for this effect, are able to promote actors' strategies complying with them can become relatively more stable, self-enforcing sets of rules.

This reasoning can be applied to both foundational institutional choices, such as those made at the time of creating a new state or political community, at some crucial moment in a process of democratization or within a general process of political regime change, as well as to partial or 'incremental' institutional reforms that can be promoted and implemented within more stable institutional frameworks. Generally speaking, we should expect that *constitutional choices in favour of relatively inclusive and less hazardous electoral rules and procedures, and in particular in favour of proportional representation, would likely be confirmed in further periods*. This tendency to *institutional self-reproduction* can be derived from actors' self-interest since, once electoral systems producing multiple winners exist, it would be highly risky for the latter to bet on alternative rules favouring the production of a single absolute winner and many losers. Thus the same reasoning can be applied to founding or extremely innovative institutional decisions and to further stages. Restrictive rules can survive under conditions of low uncertainty among the electoral winners regarding their future capability of obtaining relatively favourable electoral results. In contrast, under alternative conditions of higher uncertainty about their future electoral strength in successive elections, they may prefer to introduce additional institutional changes likely to produce wider distribution of spoils.

The reality of this model does not always require the open revelation of all actors' preferences or even of explicit exchanges and agreements. Certain electoral reforms can be promoted by threatened incumbent rulers for self-interested motives even if they only anticipate their future troubles and are not forced to negotiate with a challenging opposition. But even if institutional choices are made 'from above' by rulers in control of the decision process, the new rules can increase the institutional strength of the opposition and favour the emergence of new challenging groups, which can lead the risk-averse incumbents to accept further innovative formulas producing wider distributions of power. In contrast, attempts to make the existing electoral system more restrictive are likely to find resistance from those groups whose formation, activity and institutional power respond to the incentives provided by the existing rules.

From single-winner to multiple-winner rules

Roughly speaking, and according to the classification and analysis that will be extensively developed below, electoral systems based on the majority principle, which tend to produce a single, absolute winner and subsequent absolute losers, must be considered a more risky choice than those based, say, on proportional representation, a principle forged to create multiple partial winners and much fewer losers than majority rule. Within each of these two principles, different formulas and voting procedures may also make a difference with regard to risk. For elections under the majority principle, voting procedures giving each voter the opportunity to vote for only a single candidacy or multiple candidates in *bloc*² are a more risky choice for self-interested political actors than those permitting multiple votes, whether categorical, cumulative or ordinal, for different candidates or alternatives. Likewise, for elections based on the principle of proportional representation, certain formulas may be considered more risky because they tend to favour relatively

large groups to a greater extent than others, while voting procedures requiring from voters a single vote for a party's closed list of candidates may also increase the probability of creating absolute losers than others permitting voters to choose both among parties and among individual candidates.

A testable implication of this reasoning is that certain electoral systems producing a single absolute winner may remain stable for relatively long periods of time to the extent that a single dominant group or party can expect to repeat victories in the future, as well as in situations in which two rather balanced groups or parties expect to alternate as winners with high and somewhat regular frequency. Another implication is, however, that choosing, establishing or maintaining this type of electoral system can be a mistaken or highly risky decision for all those groups not expecting to be secure winners in the future, whether because they are minority groups in opposition or because they are threatened rulers with uncertain prospects. In the short term, thus, we should expect electoral system stability in many cases in which political parties are few, well organized and solidly entrenched among voters' preferences. But in the mid or long term, electoral system change is likely to emerge.

The corresponding results to be found in a long-term historical perspective should thus be *increasing numbers and proportions of electoral system choices in favour of those formulas and procedures producing multiple winners, as well as a relative reduction of existing electoral systems producing a single absolute winner*. Naturally, specific decisions will be constrained by the set of available electoral formulas at the time – although, as mentioned, new inventions are also fostered by the pressures of choice. Thus, within the period in which the unanimity principle was considered to be superior – to be examined and illustrated below – different procedures were gradually invented and adopted to make unanimous decisions feasible. These included, in particular, the acceptance of qualified majorities, such as those formed by wiser, older or more zealous people or by two-thirds or three-quarters of voters, as sufficiently compelling to make reluctant or small minorities withdraw their objections and acquiesce to a unanimous decision. Eventually, these artifacts were simplified into the rule that a simple numerical preponderance would in itself suffice to declare a winner or make an enforceable decision.

Likewise, under the further dominion of the majority principle – also to be examined in the following pages – voting procedures producing absolute victories for a single group, such as the *bloc* ballot in multi-member districts by plurality rule, were progressively replaced with others permitting certain minorities to share power with the winners, such as the *limited* ballot in multi-member districts or single-member districts. Later on, some of these procedures became encouraging platforms for designing new, even less risky formulas able to produce proportional representation for different groups. Also under the principle of proportional representation, certain formulas and procedures – which will be analysed in detail below – were increasingly preferred and chosen over others for their higher ability to satisfy large majorities of voters and leaders and thus reduce the risks of losing.

As mentioned, intermediate, mixed settings for less straightforward institutional choices can also exist. If, for instance, the existing winners have to concede to

disturbing opposition pressures but are still optimistic about their electoral prospects in a more open competition, they will try to persuade the opposition leaders to participate in the election with minimal institutional changes, and in any case with appropriate rules still giving the incumbents significant opportunities to win. To the extent that they can be rather pessimistic regarding their own electoral strength, they can propose or negotiate more open and innovative electoral rules and procedures, but in such a way that they can find themselves among the winners created by these more complex arrangements. Institutional combinations can include, for instance, 'mixed' electoral systems in which the likely winner shapes a high number of single-member districts by plurality rule while giving the opposition chance to compete for a portion of seats by proportional representation.

Actually, many electoral system choices and reforms are *embedded in larger sets of institutional choices*, especially regarding the enlargement of voting rights to new population groups, the apportionment of seats with regard to population, the gerrymandering of electoral districts, the establishment of electoral authorities and tribunals oriented to reduce electoral fraud and other elements usually included in electoral laws, such as rules for candidate eligibility, restrictions on campaigning, party finance regulations, opposition access to public media and procedures for ensuring fair voting counts. In particular, the introduction of universal suffrage and processes of democratization have been, even since the late nineteenth century and in further waves, paramount occasions for incumbent rulers and challenging opposition groups to decrease the global costs of changing political institutions and, specifically, deal with innovative electoral rules and formulas.

For this reason, the variables mentioned above as favourable to electoral system change – the restrictions of the existing system and a high number of effective parties – do not have a deterministic effect. Under favourable conditions, electoral system change will be more likely if a general political opportunity for institutional change exists, as when suffrage rights are broadened, democratization is fostered or a constituent assembly is called.

In these situations, risk-averse actors may also try to enlarge the opportunities to compete for positions of power by creating multiple institutional levels to be submitted to elections, such as the separation of the presidency from the assembly, the embodiment of regional governments or decentralization into local units. This strategy may enlarge the scope of electoral system choices, but it can also reduce innovativeness at the national level. For instance, the degree of multipartism in the assembly can be constrained by the introduction of simultaneous direct presidential elections, which are always submitted to some majority rule and thus foster polarization – as happened, for instance, in France after the constitutional changes introduced during the period 1958–62. As another example, federalism or territorial representation in large countries with diverse populations may work as a substitute for proportional representation by giving different ethnic, regionally-based groups opportunities to enter institutions thus preventing a major electoral reform – which may explain the persistence of plurality rule elections in multi-party systems such as in Canada and India since independence or in Lebanon and Papua New Guinea in more recent times.

Specific analyses of electoral system choices, such as those that are presented in the region and country chapters of this book, need thus to place the question in the context of the global relationship of forces among the relevant political actors in parallel settings for multiple institutional choices. The general test presented at the end will also select all those opportunities for enlargement of voting rights or general regime change that can be considered favourable for a new electoral system choice.

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The invention of electoral rules and procedures

Human history has witnessed continuous inventions and reinventions of electoral formulas. A somewhat evolutionary view tracing the historical panorama of the

invention and choice of electoral rule and procedure in disparate parts of the world in the course of several centuries will be presented below. The presentation will be ordered around four basic principles: *unanimity*, *lottery*, *majority* and *proportionality* – although in reality, of course, there also exist many intermediate formulas or ‘mixed’ systems combining two or more of these principles. Each of them can be associated with different virtues and vices, has been prevalent in different periods and has proved more adapted to some specific type of collective decision.

But, in fact, the adoption of each of the principles, as well as the invention of the huge variety of rules and procedures with which they can be applied in the practice of voting and electing, have been broadly encouraged by actual opportunities and challenges of choice. For example, the disadvantages of unanimity rule in making effective decisions or electing a ruler – say, a pope in the high Middle Ages, for instance – moved those embroiled in such kinds of decisions and elections, like priests, monks and theologians, to explore, study, imitate and experiment with different variants of majority rule. Likewise, the drawbacks of majority rule in new mass elections during the nineteenth century – say, in parliamentary elections in countries with highly divisive social or ethnic issues – led politicians, mathematicians, lawyers and other scholars to rediscover or invent new procedures of voting, as well as formulas able to allocate seats and offices to different groups and parties instead of admitting only one absolute single winner.

As will be mentioned in the following historical presentation, many voting procedures and formulas have been reinvented, even after several centuries of previous discoveries, under the pressure of finding new, better solutions to practical electoral problems. Intellectual creativity, which is usually fostered by necessity and convenience, has been, on the matter of electoral systems, typically the work of actual or prospective losers with strong motivation to win.

Unanimity

Approval of proposals and election of delegates by unanimity are almost instinctive procedures in relatively simple, rather homogeneous and not highly populated gatherings and assemblies. Families, groups of friends, urban gangs, neighbourhood meetings, corporation partners and club members tend to make collective decisions under conditions of general agreement. A variety of historical evidence also suggests that at a more general level Ancient Mesopotamian, Assyrian and Sumerian assemblies, Athenian and Spartan agoras, early Christian communities, Germanic tribes and communes, pre-Columbus Amerindian peoples, English and American small town-hall assemblies and other comparable units usually made collective enforceable decisions and reached agreements by virtual unanimity. Also, consuls were elected by traders, bishops by priests and believers, magistrates by citizens, etc., on the basis of large consensus. Decision procedures in these disparate communities included silent acquiescence, clashing spears against shields, shouts of commendation or acclamation, murmurs in favour or cries against the proposer, rising to one’s feet and other ‘viva voce’ expressions rather than formal voting sessions.

The invention of the unanimity principle

More formally, regulation of decisions by unanimity may be found in the Justinian code of Rome, which established the principle that 'What concerns similarly all ought to be approved by all'. Also the Christian Church adopted in the fifth century the principle that 'He who governs all should be elected by all'. These principles, however, entailed some *confusion between participation and decision*, since general suffrage was associated with unanimous consent. As they would correspond, in modern times, to families, business companies or other corporations of private law, it was assumed that the members of those old communities had a clear common interest – to the fulfilment of which each of them contributed not on an egalitarian basis but according to their resources – and that a single decision in favour of the common good should thus be easily identified. Of course, organized factions or parties were not even conceivable. Individuals' disagreements would lead to their *exit*, since they would reveal that the presumed common interest no longer existed. Lack of unanimity could thus produce secession, split, schism or divorce and the formation of new units with sufficiently small size and homogeneous composition to be able to reach unanimous agreements.

In practice, however, several procedures were implemented to make decisions which could be accepted by all participants even in communities that were not highly homogeneous. These include the following: explicit *acquiescence* of the dissidents to the collective decision; *preliminary voting* followed by formal, public expression of the decision by all the community members; acceptance of decisions made by a *qualified part* of the voters to whom the others submitted (in accordance to members' unequal contributions or different rank); and others. This eventually led to the replacement of the requirement for unanimity with qualified- or simple-majority rules.

Regarding the need for acquiescence, minorities may consider the expression of their own position too costly if it requires, for instance, resisting the roar of acclamation, standing up in the middle of the assembly or leaving the room. Actually, many moral, legal or coercive devices can be implemented to force the minority to obey and make the collective decision binding. In certain ancient Middle East assemblies, those having revealed their dissident opinion during deliberation were required to kneel down in front of the assembly as a form of assent. In the medieval German communes, after the masters of households in the commune voted, usually an oath of membership and obedience was taken. In Nordic law, the dissident minority was threatened with punishment by means of a fine, as in Denmark, or exile, as in Iceland. In Russian law, even physical constraints were implemented.

On a more sombre note, monarchist philosopher Gottfried W. F. Leibniz, as far back as the early eighteenth century, accepted citizens' political participation in public affairs only as a way to make 'the people themselves agree to what is good for them', while preventing the arbitrariness that was found in assemblies 'when cabals and animosities prevail over reason'. He praised practices, such as those in the United Provinces (Dutch) parliament, by which unanimity was reached through the force of persuasion and 'friendly coming to terms' (or

'composition amiable'), but he also supported other 'practical and quite efficacious' means to deal with 'stubborn and malevolent people' resisting the common will (Leibniz, 1701). As in modern private communities, these different ways of forcing explicit acquiescence of the dissidents were means to assure that they would obey the collective decision, respect the elected or contribute with their corresponding effort or duties, in spite of their previous disagreements.

Church, empire and assemblies

Unanimous decisions were particularly hard to reach within the Christian Church, especially because the principle of unanimity was invested with a mystical and theological notion of the Church's unity. Whereas voters' unanimity was believed to be the way to discover God's will, any failure to obtain such a total consensus was seen as the instigation of the devil. Dissent and disagreement were dominated by passionate condemnations under the assumption that 'vox populi, vox Dei' (taken from the Bible: 'the voice of the people... is the voice of the Lord', Isaiah 66: 6; also I Samuel 8: 7).

In the first centuries of the Christian era it had been customary for bishops and other clerical bosses to appoint their successors, although a few choices by unanimous agreement under the direct inspiration of the Holy Spirit are recorded during the second and third centuries – including the descent of a dove to land upon the head of the selected candidate. Since the fifth century bishops, abbots and abbesses, and priests began to be elected, respectively, by the bishops and the clergy of the province, the monks and nuns of the monastery and the convent and the faithful of the corresponding diocese, parish or other jurisdiction – 'the Christian people' – typically by acclamation. Even the pope – actually the bishop of Rome – had to be elected by unanimity of the 16 bishops of the province for a long time (Eusebius Pamphilus 324, book 3, ch. 11; book 6, chs 29, 39).

The requirement of unanimity, however, produced frequent violent conflicts, schisms and simultaneous elections of two (or more) different popes and anti-popes, even by the mid-third century. During schismatic periods, some monasteries had two abbots and two priors, some parishes two priests, and so on. An early attempt to replace such an ineffective electoral rule was introduced by Pope Simaccus in 500 who decreed that an elected pope should have the unanimous support of the clergy or, in case of division, the support of the majority, but this provision was hardly used. In fact, most of the popes from the fourth to the twelfth centuries were appointed or confirmed by the Emperor, who had to act as arbiter in many electoral disputes.

More successful was the qualification of decisions though the dignity of the voters who had supported them. From the eleventh century the college of cardinals of the Roman church was given the decisive role in papal elections. In order to attain a unanimous decision, priority was given to cardinal-bishops who were entrusted with gaining the assent of the cardinal-priests and the cardinal-deacons, as well as the approval of the other members of the clergy and the people. The principle of *the sounder and greater part* ('sanior et maior pars') – vaguely inspired by Saint Benedict's rule for electing abbots – more solemnly gave qualified weight

to the preferences of those voters higher up the hierarchy with stronger zeal and greater seniority (including age and length of time in official capacity).

Most canonists gave the interpretation that elections were valid if the 'greater part' included the 'sounder part'. But the two parts often did not coincide, an occurrence which gradually moved decision-makers to lean to the side of qualifying voting results not by the dignity of voters but by numbers. It was Pope Alexander III who formally replaced the unanimity principle with the rule of **two-thirds qualified majority** for electing popes and bishops after 1179 (the election of bishops by the clergy was not officially abandoned until 1917). Monastic orders, including Benedicts, adopted the same rule. Alexander III probably took inspiration from previous experiences with less-than-unanimity rules for elections of abbots, as well as from Venice's sophisticated voting procedure to elect the city's Duke (Baldwin, 1968).

For papal elections, the requirement of two-thirds majority was initially aimed at obtaining the support of at least two of the three orders of cardinals but it soon became just a numerical criterion. As formulated by Pope Gregory X, 'Not zeal to zeal, nor merit to merit, but solely numbers to numbers are to be compared' (VI *Decretalium*, book I, tit. VI, chap. 9, in Alberigo, 1991). Note that once a candidate is elected by two-thirds qualified majority, the losers would have to persuade a *majority* of the winner's original supporters to change their mind. Faced with this requirement, the losing coalition could hardly have been expected to continue the fight. Divine inspiration of the corresponding choices was still claimed, as in Pope Pius II's words about his own election in the mid-fifteenth century: 'What is done by two thirds of the sacred college [of cardinals], that is surely of the Holy Ghost, which may not be resisted' (Gragg and Gabel, 1959). But further canonists expeditiously identified the 'sounder part' with just 'the greater part' (Colomer and McLean, 1998).

Similar problems emerged from the eleventh century on the occasion of elections of Frankish, Carolingian as well as Bohemian, Hungarian and Polish kings. These princes were elected by their peers, usually gathered at *colleges of electors* formed by dukes, marquises and counts, archbishops, bishops and abbots, at which unanimity was expected. Higher elections of the Holy Roman-German emperor followed the same model. But they ended with a split among the electors on three occasions between the end of the twelfth century and early fourteenth century, thus producing pairs of kings and anti-kings that undertook violent expeditions to affirm their respective rights. On the three occasions, the corresponding popes were called as arbiters – mirroring the role of the Emperor acting as arbiter in several divisive papal elections, as mentioned above. Two of the popes leaned to the side of the candidate they considered more qualified for the job having been supported by the 'sounder', although minority, part of electors. Thus here quality prevailed over quantity, a principle that would be defended theoretically by Marsilius of Padua who identified the 'valentior pars' of the princes' college as representative of all (*Defensor pacis*, 1324).

The defeated candidate for emperor in 1257, Alphonse X the Wise, king of Castile and Leon, who had received a majority of votes, remarked that the emperor

would have authority only 'after being chosen by all those with choice power or by the major part' (Alfonso X, *Siete partidas*, *Especulo* II, 1, 2). But the winner by both majority and soundness in 1314, Ludwig of Bavaria, insisted on the unanimity thesis that the elected by majority should be considered elected 'in concord, not in discord'.

According to successive regulations, the grand electors of the German emperor had to commit themselves to accept a majority decision as a unanimous one. But it was the Golden Bull introduced by Charles X of Luxembourg in 1356 which minutely regulated the election procedure, including the seclusion of the college electors in a locked chamber along the lines of previous experiences by the Dominican monastic order, several Italian cities and the papal conclave. The Golden Bull explicitly required the grand electors' unanimity, the election being valid only if the minority conformed with the majority. The formal, public and sophisticated ceremony of investiture of the elected was actually the moment at which unanimity was constructed when even those having voted for losing candidates participated in a newly created common will (Ruffini, 1925).

Comparable evolutions can be identified in late medieval towns, assemblies and parliaments called by kings and emperors, especially in Central and Southern Europe. From the eleventh century on, many civil assembly regulations established that decisions should be made by 'consensus and acclamation', 'approval and consent', 'unanimity', with 'no discrepancy', with 'no contradiction', by 'free veto', and so on. In assemblies of municipalities, as well as in their leagues, such as the German Hanse and the Swiss confederation, since a valid decision could not usually be reached if the minority persisted in its opposition, the subsequent rhetorical device was that 'the minority must follow the majority'. The meaning was that the minority should withdraw its objection and agree with the majority in order that a unanimous common will could be formed.

As mentioned, North Italian towns also made collective decisions by very broad agreements. In Florence, Genoa, Pavia, Pisa, Siena and Venice, the general assembly of all citizens approved the appointment of the Consulate, usually by acclamation. But the requirement of unanimous consent did not always produce quick, agreeable decisions in increasingly complex, urban settings, in contrast to easier general coincidences in simpler, more homogeneous, rural environments. Several mechanisms were thus invented to produce acquiescence where a single unanimous preference did not exist. Certain Italian communes had already adopted less-than-unanimity rules, such as those requiring two-thirds, four-sevenths or other qualified majorities, together with indirect elections in several stages and other devices. But 'a major source of political frustration' – as noted by a reputed historian – resulted from 'a belief that unity was essential, and of an etiquette that frowned upon the exposure of irreconcilable viewpoints' (Brucker, 1963).

The Aragonese and the Catalan parliaments or 'Cortes' since the thirteenth century, as well the Polish Diet since the sixteenth century, were outstanding examples of enduring representative assemblies working by the unanimity rule. However, unanimous decisions also turned out to be difficult to make, especially when differentiation of social interest increased among the different corporative bodies

represented. Analogous procedures to those previously mentioned for other institutions developed. For instance, public and ordered voting rounds, starting with the higher or 'sounder' part, could be organized in the expectation of attracting voters from the other branches to jump on their bandwagon and forget their differences. The Parliament of Catalonia formally asked the king to replace the unanimity rule with that of the 'major e de la pus sana part'. Several qualified majority rules were also introduced, such as those requiring the agreement of two of the estates, for instance the nobles and the citizens, to make decisions valid even in the face of disagreement or abstention by the clerical representatives. In general, however, majority decisions were considered a means of arriving at the necessary unanimity by imposing the duty of assent upon the minority (Coroleu and Pella, 1876; Konopczynski, 1930; González Antón, 1978; Ferro, 1987).

Even the English parliament maintained the fiction of unanimity until very late on. Regarding the election of representatives, by the mid-sixteenth century a judge sentenced that 'the election might be made by voices or by hands, or such other way, wherein it is easy to tell who has the majority, and yet very difficult to know the certain number of them', so discarding the count of numbers and inducing the acceptance of the elected by a potential but not acknowledged opposition. Within the House of Commons, even as late as the early nineteenth century, it was commonly assumed that majority voting meant unanimity, most decisions being made by acclamation, that is by loudly shouting 'yea' or 'nay' (as was still observed, for instance, by Jeremy Bentham in his parliamentary tracts: Bentham, 1834). Only the formation of modern, well-organized political parties led to the adoption of more formal voting procedures requiring numerical precision.

In modern times, the aim of achieving unanimous agreement has been transferred to the more ethereal world of *international relations*, where each of the sovereign parties has veto rights. Some of the other defining features of the earlier settings analysed above can also be found in international organizations: corporate (now state) suffrage; the search for consensus; burdens distributed in proportion to contributions or resources; offices held by turns or lots; decision-making limited to those issues in which a general common interest can be presumed (such as peace, monetary stability, environmental protection). Increasing complexity and the salience of more divisive issues, however, have also led to the adoption of less-than-unanimity decision rules.

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Lottery

The choosing of public officers by drawing lots is an old tradition that can be found in ancient and medieval local democracies, modern private settings and some international organizations – as has just been mentioned in the previous section. In all these cases, lotteries are a device to preserve the central role of the assembly of members to make decisions on the most relevant issues, typically by acclamation, assent or other forms of unanimity, on the assumption that the identification of a common interest should not be too difficult a task.

The most relevant historical experience of selection of delegates, representatives or public officers by lots was developed in Athens during the democratic period from the mid-fifth century to the end of the fourth century BC. On the basis of this experience, the philosopher Aristotle built his concept of democracy, which included the possibility of 'ruling and being ruled by turns'. Aristotle introduced a sharp distinction by which 'the appointment of magistrates by lot is thought to be democratic, and the election of them oligarchic' (Aristotle, 325 BC, book 4, *passim*). By 'democratic' he meant self-governed by the people, while 'aristocratic' pointed to the idea of government by the best – which could also lead to a perverse form of oligarchy. This classical criterion was retaken, many centuries later, by the French provincial Charles-Louis de Secondat, baron de la Brède et de Montesquieu, for whom 'the suffrage by lot is natural to democracy'. According to Montesquieu, the advantages of making choices by lot are, first, that it 'is unfair to nobody, and [second, that] it leaves each citizen a reasonable hope of serving his country' (Montesquieu, 1748, book 2, ch. 2). Likewise, Genevan philosopher Jean-Jacques Rousseau, also in the eighteenth century, highlighted the role of lots in an ideal democracy, in which – according to his Athens-inspired, assembly-based model – public offices should be considered 'a burdensome

charge' and administrative acts be reduced as much as possible (Rousseau, 1762, book 4, ch. 3).

The choosing of public officers by lots may have, thus, two types of advantage. First, by holding frequent choosings and establishing short terms of office, it can produce a high *rotation* of members in administrative or arbitral posts, thus preventing the formation and self-reproduction of a permanent, closed, rather impermeable elite – whether in the form of an economic oligarchy or just a class of professional politicians. By replacing public officials very frequently and opening public jobs to very wide layers of society, no one can be blamed for making or implementing unpleasant decisions – but no one can be praised either. Only the members' assembly remains ultimately responsible for the consequences of collective decisions.

Certainly, the principle of filling public offices by lots is contrary to the ambition to be ruled, in an ideal world, by 'the best'. But in comparison to other actual processes of choosing rulers, the average quality of those chosen by lots may not be so different in fact from that obtained with less unpredictable procedures. Officers chosen by lotteries, especially when there is a large number of candidates, are, as a whole, 'typical' representatives of the citizens or potential candidates, in terms of their characteristics, capabilities and values. Mediocrity, thus, rather than excellence should be expected to prevail. But this is precisely the outcome which is aimed at with such a procedure. Only those offices requiring particularly high levels of professional or technical skill or experience have always been excluded from selection by lots.

From this perspective, lots can be considered a clearly better and less risky procedure for selecting public officials than hereditary succession, cooptation by incumbent office-holders or the buying (or auctioning) of offices, by which the probability that outliers, eccentric or incapable candidates may be appointed is dramatically high. Also, likely winners by lottery may not be so different – in personal characteristics and professional skills – from those selected by certain modern political processes involving convoluted internal interactions of party political organizations, hazardous electoral campaigns and disparate voting procedures. This similarity, however, is usually veiled in the public opinion only by the retrospective attribution of talent or merit to those elected – if for no other reason than the fact that they have been able to get elected.

The second type of advantage to choosing by lots and the subsequent rotation in public offices is that they produce wide *dispersal of political and administrative knowledge* of public affairs among the citizens. The experience of learning and becoming familiar with the problems of satisfying collective common interests can be a good platform for further occasions of participation in voting and elections, such as the assembly's decision-making and the choice of some other public officials. Thus a lottery can be an appropriate procedure to select public officers where there is a clear identification of the common interest of the members of the community, there are relatively low technical requirements to fill the public jobs submitted to the lottery and there are strong instruments by which the community can make other, very important decisions, including control of those appointed by lots.

Athens, communes and international organizations

Public choice by lots has never been an exclusive procedure, as mentioned. The Athenian democracy was based on the central role of the assembly or 'agora', open to all citizens, both to elect certain officers and to vote on war and peace and other important decisions. The frequency of assembly meetings, which were called by the blast of a trumpet and the lighting of a bonfire and were attended by a few thousand citizens, increased over the years from about ten to about forty a year. The scope of public decisions was also broadened until the assembly became the major legislator and decision-maker. Typically, most issues required only yes–no decisions, thus permitting the formation of a clear majority. Thus in different periods voting was possible mostly by acclamation but also by show of hands or pebbles (in Greek 'psephos' – from which is coined the typically British term 'psephologist' for students of and experts in elections). In contrast, elections to fill some highly specialized offices for which several candidates could run required more sophisticated procedures, including the casting of ballots in the form of pieces of tile or potsherd or by written waxed tablets in vessels inside a wooden enclosure.

In order to preserve the central role of the assembly to make decisions by unanimity, the Council in charge of setting the agenda for the assembly, formed of 500 individuals, was appointed, first, by an electoral college elected by the assembly, later by annual elections, and then by turns in order determined by lot. The Council was formed of 50 members selected by lot by each of the ten tribes which had evolved from military into basic administrative units. The permanent committee of the Council and its president were also selected by lots. No citizen could hold any office more than once, so it is estimated that about half of the citizens aged 30 or more became members of the Council at some point in their lives.

About 600 of the other 700 public officers were also selected by lots from among candidates previously presented. These included: the ten members of the archonship, approximately equivalent to the post of the modern attorney-general, as well as the body in charge of organizing religious ceremonies who were appointed by lots from a pool of candidates previously selected by each tribe, also by lots; the tribunal members, chosen by lots from a pool of all adult citizens, who were in charge of passing judgement on the legality of the conduct of public officials; and a number of administrative jobs, encompassing treasurers, those in charge of settling public contracts and collecting public revenues, and those supervising streets or inspecting markets. Only a few offices requiring special technical skills and qualifications, including high military commands and financial administrators, were excluded from lotteries and submitted to direct election. In contrast to those appointed by lots, the elected for these latter posts were, of course, not 'typical' representatives of the citizenry, but they were also subjected to stronger scrutiny and accountability at successive elections.

The procedure of selecting candidates for public offices by lots was based, initially, on candidates drawing white and black beans from a container with an open top, the total number of beans being equal to the number of candidates and

the number of white beans equal to the number of places to be filled. In a further development, Athenians also used allotment machines, usually a tube in which balls could be inserted at random and released at the other end (Headlam-Morley, 1981).

The choice by lots implies the acceptance of average mediocrity as a collective criterion for choosing public officers, as well as some uncertainty regarding specific outcomes and decisions. On some occasions, it was, however, covered by the belief that it would involve some divine sanction, in other words that choosing by lots was the way to make right decisions as directed by the gods. The Greek philosopher Plato, most notably, praised lots as a way to let the gods make their choices, especially for officers of the temples (Plato, 360 BC, book 6). The Old Testament also included a number of instances in which decisions by lot – as did other events that seemed accidental – were meant to reveal God's will (Proverbs 16: 33). The Lord also instructed Moses to divide the land by lot among the different tribes (Numbers 16: 52–56, 33: 54). The first apostles of Jesus also drew lots to select the substitute for the traitor Judas (Acts of the Apostles I: 23–26). Apparently, they were imitated by some early non-orthodox Gnostic Christians, who drew lots at each of their meetings to elect priests, bishops and other officers – only for them to be replaced at the following meeting. This device could also be aimed at preventing a sacerdotal oligarchy from developing (Goodwin, 1992: 44). But the Christian Church condemned such a practice as blasphemy and solemnly forbade the choice of priests, bishops or other prelates by lot (more formally after the thirteenth century).

Lots have also been used for choosing public officers in other settings based on an open assembly making decisions by virtual unanimity, typically by acclamation, with similar precautions to those previously referred to in order to prevent the formation of oligarchies and voter manipulation, and always in combination with other election procedures. The Roman Republic, for instance, had used lots to establish the order of voting by tribes or other political units, but most decisions were made by voting procedures involving majority rules – as will be explained in the next section.

A number of Italian communes – which were identified in the previous section as examples of where decisions were made by assembly acclamation – also used lots after the thirteenth century for choosing magistrates and allocating officers in charge of implementing assembly decisions. This was, in particular, the case in Venice for the indirect election of the Duke (*Doge*) from the thirteenth century – following direct election by the people's assembly from the end of the seventh century. The popularly elected Great Council adopted an increasingly complicated procedure to choose the Duke with up to nine stages of approval ballots and lots, which was conceived with the aim of making manipulative manoeuvres impossible (Lines, 1986). Likewise, the Florentine republics during the fourteenth and fifteenth centuries, and again in the late fifteenth and early sixteenth centuries, elected its main governmental body, the Lordship (*Signoria*), chaired by the standard-bearer of justice (*Gonfaloniere*), by means of a complex system of approval ballots and very frequent lots. Again, the aim was to prevent fraud, manipulation and the commune's domination by a few powerful families.

Also, in Barcelona, the popularly elected Council of 100 chose the Consuls of Sea, that is the judicial body for commercial and maritime affairs, by an indirect procedure involving lots. Certainly in the fifteenth century, and probably earlier, the procedure required a child less than seven years old to distribute beans from a jar full of water and covered by cloth among the candidate-members from each of the estates – the ‘honest’, the merchants, the artists and the artisans – the number of white beans being equal to the number of electors to be selected from each estate. Afterwards, the electors so chosen, together with the city councillors, elected the consuls by casting ballots in an urn (Carrère, 1967).

Finally, lots were still being used, in combination with several stages of indirect elections, in Spain and the Spanish colonies in the Americas in the early nineteenth century. First, elections called by the central Junta formed to organize the resistance against Napoleon’s troops were held in 1809, with municipalities electing candidates for deputies which were finally selected by lot. New elections in 1810 to form an extraordinary assembly (‘Cortes’), which gathered in Cádiz and produced a new constitution, were also held by a combination of indirect elections in three stages and a final selection of one deputy in each district by lots among the two or three candidates previously chosen (Fernández, 1992; Rueda, 1998). After the approval of the so-called constitution of Cádiz in 1812, this type of procedure was not used again in Spain, but it was followed in some further elections in Spanish America.

Specifically, in Buenos Aires, indirect elections of colleges (usually called ‘juntas’) led to the final selection of members of the provincial assembly by lots, according to regulations enforced in 1811, while a mixed procedure of voting, lots and final popular vote by plurality was used for the election of governors in 1815. In Chile a combination of lots and plurality voting was still being used in 1822 (Chiaramonte, 1995). In Mexico, local elections in 1812 still involved some stage of selection of candidates by lots (Emmerich, 1985). Lots remained the usual practice in indigenous communities that were not politically integrated into the new independent state’s political institutions. Ironically, they became part of the supposedly traditional ‘usages and customs’ of the indigenous people to be preserved in the twenty-first century – but were actually the most visible legacy of Spanish colonial rule (Favre, 1986).

In modern times, lots are only used as a method to distribute goods and responsibilities in some private corporations, as well as for allocating temporary jobs, vacation periods or household tasks in other private settings. For public affairs, they are used in certain countries for such tasks as selecting jurors for jury trials, for appointing election administrators, for breaking election ties or for selecting candidates for military service.

At the more overarching political level, certain institutional settings formed by units retaining their sovereign rights, that is *confederal or international organizations* making decisions by near-unanimity rules, use different procedures of *rotation by turns* of high public offices which produce the same effect as lotteries without replacement. A paramount example is the Helvetic Confederation of Switzerland, which is still mainly an instrument for preserving popular self-government of the cantons. Nowadays, it is governed by surplus multi-party coalitions in the Federal

Assembly and the Federal Council, usually encompassing more than 80 per cent of votes. While they make very broad consensual decisions under the threat of revocation by referenda in the cantons, the presidency of the Federal Council – comparable to the republic's president – is filled in rotation among the Council members by turns. Likewise, in the European Union, the European Council, which is formed by the chief executives of the member states, and the Council of Ministers (officially called Council of the European Union), formed by representatives of the member states at ministerial level, have very important agenda- and decision-making powers. While they usually make decisions by unanimity or highly qualified majorities, the Presidency is held by six-month turns among the member states. Finally, the United Nations Organization (UNO) also distributes some high offices by informal rotation and turns among its member states. The Presidency of the General Assembly is filled by 'symmetric rotation' among countries of the five regional groups (Africa, Asia, Latin America and the Caribbean, Western Europe and other developed countries, and Eastern Europe). The Security Council, which works by near-unanimity decisions of the five permanent members (France, Russia, China, the United Kingdom and the United States), is also formed by a number of temporary members rotating in post for periods of two years. They are formally elected by the Assembly, but they must also be distributed fairly from among the different world regions. (In the initial period from 1946, there were two for Latin America, and one for Western Europe, the British Commonwealth, Eastern Europe and the Middle East. After general decolonization and the subsequent enlargement of the UNO membership, ten temporary members have been distributed, since 1963, in the proportions of two for Latin America and the Caribbean, two for Western Europe, one for Eastern Europe and five for Africa and Asia.) Similar proportions are used for filling, by informal turns, the posts in the Economic and Social Council and other committees (Marín-Bosch, 1994).

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Majority

Majority rule had already been used, in combination with other rules and procedures, for collective decisions and the election of public officers in some

ancient and medieval institutions. But the majority principle was rediscovered and more explicitly invested with the power to create authority in more modern times.

During the Roman Republic, that is for about five centuries immediately before our era, many collective decisions were made and most public officials were chosen by procedures involving majority rules. As in other historical processes previously discussed, majority decisions emerged from the truncated traditions of unanimous decisions, typically made by acclamation. Specifically, the 'centurial comitia', organized into 193 units of 100 men each, were transformed from military units in the army into units of vote in a political assembly open to all citizens. The traditional show of allegiance made by the soldiers to their commanders eventually became formal voting sessions to declare war, legislate, elect consuls and censors (in the executive), praetors (in charge of provincial governments) and temporary dictators, as well as to dictate capital judicial sentences. Later on, the 'tribal comitia' by which the people elected its tribunes by acclamation also evolved into 'councils of the plebs', organized in up to 35 large tribes, from which patricians were excluded. They held frequent voting sessions to elect 'ediles', 'quaestors', lower offices and special commissioners promoting specific demands, to approve general legislation and 'plebiscites', and to impose sentences on crimes against the state and on all those punishable by fines.

These early experiences of voting and elections with majority procedures should be analysed as forms of *indirect elections*, having developed the same kind of biases and arbitrary outcomes as when elections in two or more stages were developed again in more modern times. In the Roman experience, first, each 'centuria', tribe or voting unit made an internal decision. Oral voting by acclamation was eventually replaced, especially in the plebeian tribes, with individual oral voting before a questioner and, later, with written ballots cast into a urn made of wicker or stone. When several officers had to be elected at the same time, each unit worked as a multi-member district with individual multiple ballots in which decisions were made by simple plurality or relative majority. Once the units had reached internal decisions, then voters were summoned to the Campus of Mars, Capitol Hill or the Forum and each unit's vote was publicly announced in turn. An alternative or candidate could succeed by winning by a majority or plurality in a majority of units, that is by obtaining, for instance, as little as one-fourth of the total citizens' votes. Usually, proceedings terminated as soon as an alternative obtained sufficient support or a number of candidates equal to the number of places to be filled had been proclaimed, thus ignoring the size of the winner's support and the number of votes cast in favour of other alternatives or candidates. The decisive unit's vote was openly celebrated, usually by acclamation, as a moment of revelation. The winner became the focal point around which to gather general support. For this reason, although in the previous aristocratic 'curial comitia' wealthier groups had enjoyed precedence in the voting and thus in making winners, in centurial and tribal assemblies the voting unit which was called upon to vote first was selected by lot, so ensuring some rotation and fair distribution of decision-making power.

As can be seen, the most relevant features of these procedures were much later replicated in modern formulas for indirect elections, as in the US electoral college to elect the president, as well as in the further processes of primary elections and party conventions to select presidential candidates, always organized under majority rules. Common developments under this kind of framework included victory by majority at later stages with a minority of popular votes, random selection of decisive voters and the building of instant unanimity around the proclaimed winner. But direct connections between ancient and modern practices of voting by majority rules are difficult to establish, since the fall of the Roman Republic and Empire apparently broke the continuity with and even any memory of those earlier institutional procedures.

The reinvention of majority rule

In medieval times, decisions and elections by qualified and simple majorities were again gradually accepted in Germanic law and the Church's canon law as an expedient procedure when unanimous decisions turned out to be impossible, as discussed in the first section of this chapter. Initially, the minority was summoned to acquiesce to the majority will as an expression of unanimous support, as illustrated above in several ways. But the formation of reluctant, repeated, stable, defeated minorities eventually tended to make majority decisions acceptable and presumably enforceable even if the minority did not explicitly assent to share a unanimous common will. Thus majority rule typically emerged as an acceptable decision rule from the experience of two-sided contests – respectively becoming the winners and the losers – rather than the other way around (that is, as if two-party systems were 'created' by majority rules). When the losers were divided among several sides, they would seek the adoption of more inclusive electoral rules, as will be discussed in the following section. Thus the majority principle seems to be intrinsically associated with the *previous* formation of relatively stable factions or parties within the community, logically requiring the respect of minority will.

However, in a similar way to that in which certain medieval theologians had praised unanimity rule for its presumed capability to reveal God's will, early modern naturalist philosophers also associated majority rule with the discovery of the people's will, that is the new presumed truth and good. Hugo Grotius, for instance, explicitly stated in the early seventeenth century that 'the majority would naturally have the right and authority of the whole' (Grotius, 1624: book 2, ch. 5, 17). The Englishman John Locke, by the end of the same century, formally established that, in a civil society formed on the basis of every individual's rights and consent, collective decisions should be made 'only by the will and determination of the majority'. In particular, he postulated that, in representative assemblies, 'the act of the majority passes for the act of the whole and determines, as having by the Law of Nature and Reason, the power of the whole' (Locke, 1689: II, 96). Likewise, the Genevan Jean-Jacques Rousseau believed, in the mid-eighteenth century, that the general will, which was supposed to be 'always right', could be discovered by voting by majority rule, so that 'the vote of the majority always binds the rest' (Rousseau, 1762: book 4, ch. 2). Still, the French revolutionary abbot Emmanuel-Joseph

Sieyès praised majority as an ‘incontestable maxim’, while daringly identifying the majority, that is ‘the third estate’, with ‘all’ (Sieyès, 1789: ch. 6).

In parallel to these honours, recourse to majority rule for simple reasons of expediency was also argued by other theoreticians, such as the Englishman Thomas Hobbes in the mid-seventeenth century. ‘If the representative’, said Hobbes, ‘consists of many men, the voice of the greater number must be considered as the voice of them all. For if the lesser number pronounce, for example, in the affirmative, and the greater in the negative, there will be negatives more than enough to destroy the affirmatives, and thereby the excess of negatives, standing un-contradicted, are the only voice the representative has’ (Hobbes, 1651: ch. 16). Thus the weight of force, rather than the search for truth, was, at least in the English and Scottish utilitarian tradition, another very good reason to adopt majority rule.

Actually, in late medieval and early modern times collective decisions were expeditiously made by majority in local communes, commercial organizations and other assemblies. At some point in time, they would come to be made not by an absolute majority rule, that is by requiring more than half of the voters to coincide on a single alternative, but by adopting the alternative supported by only a *relative majority* or ‘*plurality*’, that is by a higher number of voters than any other alternative but not requiring any particular number, proportion or threshold of votes. In practice, this made it possible for generally binding elections presumably decided by ‘majority’ to actually be won by only a minority of voters. Most notably, a very long-lived statute adopted in England by the mid-fifteenth century for the election in the shires of members of Parliament had established that the sheriff in charge of electoral assemblies, after listening to the shouts of supporters of different candidates or counting by heads, should declare elected those with ‘the greatest number’ of supporters. This was probably intended as a means not to have to count votes, especially those supporting defeated candidates, as mentioned before. But, while the fiction of unanimous decisions was maintained, especially within the parliament, this regulation permitted in practice the popular election to be won by a relative, not absolute, majority.

Other than deciding by simple plurality, there were different proposals to make majority rule enforceable, although many of them were not widely adopted in the practice of voting and elections. Old procedures include the very early proposal of *exhaustive pair-wise voting* presented in the thirteenth century by the Catalan philosopher Ramon Llull. By this procedure, an election was to be made by holding multiple rounds of voting between pairs of candidates and declaring the winner the one having won the greatest number of pair-wise comparisons. In different texts, Llull presented this procedure and some variants in a scholarly, general manner, and also with narrative illustrations, possibly taking inspiration from the elections of abbots and abbesses in monasteries and convents in which such a procedure had been used (Llull, c.1274, 1283, 1299).

A similar, normatively more ambitious, but much less applicable procedure was devised five hundred years later in France, under the pressures of Enlightenment and Revolution, by Jean-Antoine-Nicolas de Caritat, Marquis de Condorcet (1785).

The Condorcet procedure requires a winner, by majority principle to be decided, to be preferred in *all* pair-wise comparisons, that is by majority against every other candidate.

When the candidates are perceived by the voters as ordered along a single linear dimension (such as the left–right axis in modern times), the winner by Condorcet's exhaustive pair-wise voting is always the one preferred by the *median voter*. This is so because, by definition, the median voter is the one having less than half of the voters on one side (such as the left on the ideological axis just mentioned) and less than half on the other side (the right), in a way to be always included in any consistent majority of voters. Thus the Condorcet-winner, when it exists, can be considered to be highly efficient in terms of social utility, since the median voter's position is the one for which the sum of distances from all the voters' preferences is minimum. However, in non-linear ideological or policy spaces, that is those involving multiple dimensions, the Condorcet procedure may fail to produce a winner since no candidate can be capable of winning against every other in pair-wise comparisons. The frequency of failures with the Condorcet procedure depends on the number of issue-dimensions in the policy space and the number of candidates. Assuming that all possible distributions of voters' preferences are equally likely (that is, a high multi-dimensional space), computing calculations have shown that the Condorcet procedure of voting would fail to give a winner in about 9 per cent of times for three candidates, but increasing more than proportionally, reaching, for instance, 32 per cent of times for six candidates (Fishburn, 1973).

Although Condorcet himself had also sketched a simplified, more efficacious version of his procedure close to Lull's (Condorcet, 1787), the procedure usually associated with his name has never been used in mass political elections, especially on account of its ineffectiveness in producing a decision or a winning candidate. However, its hypothetical results can be used as a reference for evaluating results produced by other, more expedient rules and procedures – as will be suggested below. Specifically, we will refer to the likelihood that other simpler and more effective procedures may produce the *Condorcet-winner*, that is the hypothetical winner in pair-wise comparisons against every other alternative, as well as the *Condorcet-loser*, that is the alternative which would be defeated by every other alternative in pair-wise contests and can thus be considered the least socially efficient.

A comparable voting procedure, currently known as *rank-order count*, was also designed in the late Middle Ages by another Catholic thinker, Nicholas of Cusa (Nicolaus Cusanus). He had been motivated by failures in the elections not only of Christian popes but also of Holy Roman-German emperors, as discussed above. According to this author, his procedure would require the voter to mark 'after the name [of each candidate] a clear digit – 1, 2, 3, and so on . . . until he comes to the candidate who is in his judgment the best'. The winner is the candidate having collected the highest sum of points (Nicolaus Cusanus, 1433: book 3, ch. 37).

About 350 years later, the same voting rule was devised by a member of the French Academy of Sciences Jean-Charles de Borda. He also presented his invention with an alternative procedure of voting similar to the one introduced by Condorcet

(who, as permanent secretary of the Academy, was in charge of publishing it). An exhaustive pair-wise comparison of candidates would be developed, but the scores for each candidate against the others would be aggregated – the result being the same as with the rank-order count (Borda, 1781).

As in the other procedures just mentioned, the invention of Nicolaus and Borda thus also required from every voter a complete ordering of preference of all the candidates. But while, as with Lull's procedure and in contrast to Condorcet's, the Nicolaus/Borda procedure of rank-order count always delivers a clear winner, it is highly vulnerable to insincere or 'strategic' voting – in contrast to both the Lull and Condorcet versions of pair-wise comparisons. Those with information regarding other voters' preferences can give lower points than would actually correspond to their sincere preference to rival alternatives with high probabilities of winning thus truncating the expression of voters' preferences. This weakness induced the two inventors of rank-order count to warn potential users with similar notes of caution. While Nicolaus stated that 'no method of election can be conceived which is more holy, just, honest, or free . . . *if* the electors act according to conscience', Borda remarked that his procedure had been conceived 'only for honest men'.

More practical proposals emerged during the French revolutionary Convention in 1793, which although they were not finally incorporated into the subsequent constitution, were somehow reinvented or adopted later for mass political elections in different countries. Condorcet himself proposed two innovative procedures, both conceived as more feasible substitutes in terms of time and the enlightenment required of voters, for his 'rigorous method of majority judgments between the candidates taken two by two . . . [which] is often impracticable'. The first was a form of *limited ballot* by which the election of a number of representatives in a multi-member district would be made by giving each voter a lower number of votes than seats to be filled – specifically, in primary elections for indirect formation of the assembly, each voter would have two votes to elect between 9 and 18 representatives in the district in Condorcet's constitutional project. By declaring elected those with higher numbers of votes, this formula would allow representation from more than one party in each district, thus introducing some degree of pluralism. The second procedure was an apparently slight variant of the first by which the two votes per voter would be distinguished between first and second preferences. Only if no candidate obtained a majority of voters' first preferences would the second votes be counted – that is the procedure currently known as *supplementary vote* (Condorcet, 1793a, 1793b).

In the same setting, and as a reply to the Girondin constitutional project mostly written by Condorcet, the Jacobin constitutional project presented by Antoine-Louis-Leon de Saint-Just proposed voting in multi-member districts with single individual votes. Specifically, he proposed to elect the National Assembly of France in a single national district with 341 seats by giving each voter one vote for only one candidate, and declaring elected all those 341 candidates having obtained the greatest numbers of votes (Saint-Just, 1793: ch. V). This formula, in modern times known as the *single non-transferable vote*, is usually considered capable of approaching

proportionality of representation very closely. But, in the Saint-Just version, it would obviously have produced the highest level of ‘multi-partism’: likely to be only individual representation, with no collective organization of representatives at all.

Multi-member districts

In fact, many of the theoretical inventions just mentioned were not directly or immediately relevant for actual choices of voting systems based on the majority principle in real committees, councils, assemblies and parliaments, which in general tended to adopt the simplest possible devices. One of the most basic, almost spontaneous, oldest and widespread procedures of voting to choose delegates or representatives from a community can be described with the following features. All people with a common interest in the election gather in assembly at their common place; they agree to choose a committee or council to be formed by a few individuals; each voter selects one or more candidates of his or her preference (the number of votes per voter being equal to, lower or higher than the number of posts to be filled); the candidates with the highest numbers of votes are elected.

This is, basically, the type of procedure that is very frequently found in elections at schools, universities, housing condominiums, neighbourhood associations, trade unions, professional organizations, corporations and some local elections in small towns. At the broader level, it is also the type of procedure which has been used since the thirteenth century for elections of officers and deputies in German and Swiss communes and cantons (Lloyd, 1907), in French municipal assemblies, provincial Estates and the Estates-General (Babeau, 1882, 1894; Cadart, 1952), in English counties, cities and boroughs to form the Parliament (Bishop, 1893), and in Virginia and other North American colonies in other periods (Sydnor, 1962; Pole, 1971). This voting procedure was also used for the indirect election of assemblies, parliaments and presidential colleges in most states of Europe, the United States and Latin America during most of the nineteenth century. In some cases, only those candidates receiving an absolute majority of votes were initially elected and new rounds of votes were taken for each of the remaining seats; the latter could be filled by requiring again a majority and, if no candidate attained such support, by holding a *second-round runoff* between the two most voted candidates. Voting in some of these historical institutions was by show of hands, while in others voters expressed orally their choice one by one, but secret vote in written ballots can, of course, also be compatible with this type of rule.

Political science has created a precise jargon which would define this basic procedure as consisting of *multi-member districts*, *open ballot* and *simple plurality* or *absolute majority* rules. It can also include different forms of *approval ballot*, whether permitting a vote for as many candidates as wished or only for as many seats as are to be filled. We know from both logical analysis and empirical evidence that this type of procedure can be highly inclusive and permit somewhat varied representation, since different preference groups encompassing in total broad proportions of voters can see their chosen candidates elected. Spontaneity in defining the rules – which look almost ‘natural’ to the unsophisticated eye – and inclusiveness of actual results can explain the duration over several centuries of this

type of procedure in very different institutions and organizations such as those mentioned, as well as its frequent adoption in non-political, small-scale associations in all periods. The results of these and the following procedures by majority rules are illustrated in stylized manner in Table 1.1. As can be seen in the very simple example of a three-member district with one hundred voters, representation by open ballot, by which each voter can vote for as many candidates as he or she wants up to the number of seats to be filled (in this case from one to three), can fall into the hands of three candidates holding different preferences (in the example in the table the seat allocation is preference x: 1 seat, preference y: 1 seat, and preference z: 1 seat).

Table 1.1 Majority rules and procedures

Candidacies		w_1	w_2	w_3	x_1	x_2	x_3	y_1	y_2	y_3	z_1	z_2	z_3
– Individuals:					X			Y			Z		
– Parties:		W			X			Y			Z		
Total voters:		40			30			20			10/100		
Per area:	A	20			10			0			5		
	B	20			10			0			5		
	C	0			10			20			0		
Rules	Votes		Three-seat allocations										
M=3, Open ballot, Plurality rule	e.g. w_1 : 40, x_1 : 30, y_1 : 20, z_1 : 10		1	1	1	0							
M=3, Block ballot, Plurality rule	W: 40, X: 30, Y: 20, Z: 10		3	0	0	0							
M=3, Block ballot, Majority-runoff rule	1st round: W: 40, X: 30, Y: 20, Z: 10 2nd round, e.g.: W: 40, X: 60		0	3	0	0							
M=3, Limited ballot (V=2), Plurality rule	w_1 : 40, w_2 : 40, x_1 : 30, x_2 : 30, y_1 : 20, y_2 : 20, z_1 : 10, z_2 : 10		2	1	0	0							
M=3, Limited ballot (V=1 single non-transferable), Plurality rule	w_1 : 40, x_1 : 30, y_1 : 20, z_1 : 10		1	1	1	0							
M=3, Cumulative ballot, Plurality rule	w_1 : 40–120, x_1 : 30–90, y_1 : 20–60, z_1 : 10–30		1–3	0–1	0–1	0							
M=1, Single ballot, Plurality rule	A – w_1 : 20, x_1 : 10, y_1 : 0, z_1 : 5 B – w_2 : 20, x_2 : 10, y_2 : 0, z_2 : 5 C – w_3 : 0, x_3 : 10, y_3 : 20, z_3 : 0		2	0	1	0							

The consequences of this simple type of election procedure can change dramatically if well-organized *factions or parties* are formed. With this we are just referring to groups of candidates and voters with a common purpose that coordinate their behaviour in order to win as many possible seats in the election. In the type of multi-member election previously sketched, the emergence of factional candidacies able to attract some voters' support may produce a set of winners corresponding to only one of the preference or interest groups in the community at the expense of all the rest. To attain this result, it is not necessary that most or even many voters follow the advice of faction leaders to vote for all the members of a list of candidates and only for them; it is sufficient that a few people do so, since, even if they are very few in number, they can make a difference in comparison to the previous scenario without organized factions and make all the candidates in the list winners. This is, of course, due to the fact that plurality rule does not require any specific amount of votes to make a winner only one more vote than the other candidates.

In face of an organized faction able to accumulate all the seats in contest, the best corresponding strategy by other candidates and voters is, certainly, the organization of comparable factions able at least to neutralize the advantage obtained by the first faction. This will eventually transform the competition from one among individuals to one among factions. Voters then vote in *bloc* for a list of candidates rather than choose their preferred individuals. In more precise terms, the procedure of voting moves from *open ballot* to *bloc ballot or closed list*. The new distribution of seats in a multi-member district by plurality rule when collective candidacies are organized is also shown, by way of simple illustration, in Table 1.1. In contrast to previous results with *open ballot*, which was able to produce, as in the example, an allocation of 1–1–1 seats to three different preference candidates, now plurality *bloc* or *closed list* ballot produces an allocation in which all the seats are given to the candidates of the largest faction: 3–0–0, even if it has obtained the votes of only a minority of voters (40 out of 100 in the example).

The introduction of absolute majority rule with a second round between the most voted candidates at the previous round may produce similar results if all major candidacies induce voting in bloc for a list of candidates. Majority rule with a second- or third-round runoff was used early on in indirect elections to multi-member districts in France for the election of the Estates General in 1789, and in direct elections to the French Assembly until 1871, as well as in at least six other European countries during the second quarter of the nineteenth century. As illustrated in Table 1.1, these rules and procedures also concentrate all the seats on a single factional candidacy – the winner at the second round, which can be different from the winner by plurality at the first round (in the example in Table 1.1, the corresponding allocation of seats is 0–3–0).

This perspective may shed light on why 'faction' is usually associated in classical political literature with bad intentions to the disadvantage of general or at least broadly collective interests. In contrast, 'party' has enjoyed somewhat better consideration in modern times – at least in academic circles. But actually early political

parties were formed just as electoral factions and they are still so, especially if the electoral system induces or forces voters to vote in bloc for a closed list of candidates, despite having developed different kinds of complex organization. In some early modern times, when elections in relevant large-scale political institutions were of the type presented above, the distinction between ‘faction’ and ‘party’ was difficult, as witnessed, for example, by the Scottish and British David Hume who – reflecting a general mood of the time – initially considered that ‘sects and factions [should] be detested and hated... [because they] subvert government, render law impotent, and beget the fiercest animosities’ (1741). Later on, however, he pondered that ‘to abolish all distinctions of party may not be practicable, perhaps not desirable, in a free government’. Very interestingly, when in a later period Hume had to face the undesirable but perhaps unavoidable existence of political parties, he turned to wish that government were in the hands not of a single party but of multiple-party coalitions in order ‘to prevent all unreasonable insult and triumph of the one party over the other, to encourage moderate opinions, to find the proper medium in all disputes, to persuade each that its antagonist may possibly be sometimes in the right, and to keep a balance in the praise and blame, which we bestow on either side’ (1758).

A similar evolution can be detected in the Virginian and American James Madison – who was actually influenced by reading Hume – who initially also condemned factions but later saw them as unavoidable and even a necessary evil. Madison perceptively noted that, with organized parties, in small communities there would likely be a single dominant party embedded in local prejudices and schemes of injustice – and ‘the smaller the number of individuals composing a majority, and the smaller the compass within which they are placed, the more easily will they concert and execute their plan of oppression’. In contrast, greater political units would provide ‘the greater security afforded by a greater variety of parties, against the event of any one party being able to outnumber and oppress the rest... In an equal degree does the increased variety of parties comprised within the [large] Union increase this security’ (1788, No. 10; see also the discussion in Dahl, 2002: 29–37).

Perhaps it was Jean-Jacques Rousseau who best realized and anticipated the dramatic influence of factions in elections held in multi-member districts by plurality rule – as used in his native Geneva. ‘When factions arise’, he observed in a rather well known but diversely interpreted passage, ‘and partial associations are formed at the expense of the great association, the will of each of these associations becomes general in relation to its members, while it remains particular in relation to the State: it may then be said that there are no longer as many votes as there are men, but only as many as there are associations... Lastly, when one of these associations is so great as to prevail over all the rest, the result is no longer a sum of small differences, but a single difference; in this case there is no longer a general will, and the opinion which prevails is purely particular.’ Most remarkably, Rousseau also pondered that if factions or parties were unavoidable, that is ‘if there are partial societies, it is best to have as many as possible and to prevent them from being unequal’ (1762).

All the authors mentioned – who were, of course, among the most influential on constitution-making and criticism in England, the emerging United States, revolutionary France and many other countries at the time – coincided, thus, on the following observations. First, they realized that the formation of electoral factions or parties produced worse results than previous practices based on individual votes among individual candidates. Second, they eventually acknowledged that in large, complex societies in which the homogeneity of interests and values which had prevailed in small, simple communities during the Middle Ages had visibly decreased, the formation of political factions was unavoidable and even necessary to make possible the political representation of a diversity of groups. Finally, they considered that, once parties had begun to intervene in the electoral process, the existence of multiple parties was better – in the sense of re-establishing to some extent the previous capacity of elections to give representation to different preference groups – than the existence of just a few able to provoke the concentration of power in the hands of a single party. In other words, if parties were unavoidable, multi-partism was better than bi-partism.

Basically two different types of procedure were then devised to make organized faction- or political party-competition somehow compatible with pluralistic, inclusive representation, while majority was still the basic principle of decision. First, several ballot procedures were invented in order to produce more-than-one-party representation in multi-member districts by plurality rule. Second, the alternative of single-member districts, whether by plurality or by majority second-round rules, was diffused, also in the expectation of reducing the high concentration of power in a single party produced by bloc ballot in multi-member districts. Of course, small, disadvantaged but rising groups favoured the adoption of these relatively more inclusive electoral procedures, while large, dominant and well-settled incumbents resisted such innovations in favour of maintaining better opportunities for concentrating all seats.

Limited, cumulative ballots

The two most diffused innovative ballot procedures in multi-member districts have been limited ballot and cumulative ballot. **Limited ballot** – which had been initially proposed by Condorcet in 1793, as mentioned above – was designed precisely to permit at least the second minority in a district to obtain a minority of seats. By this procedure, each voter is allowed to vote for a number of candidates which is less than the total number of seats to be filled in the district, while the candidates with highest numbers of votes are elected. With high proportions of limited votes (for instance, two-thirds of the seats to be filled), this procedure will give as many seats as votes per voter to candidates of the largest party while the remaining minority of seats will be allocated to candidates of the second party in votes. Only if the largest party obtains a very high proportion of votes and is able to coordinate its followers' votes to be distributed efficiently among its different candidates can it expect to receive all the seats in the district.

Different forms of limited ballot with several votes per voter were used tentatively in a minority of districts in Britain from 1867, as well as in Italy, Portugal and Spain

a few years later. More daringly, limited ballot was adopted as the general formula to fill all the seats in the Assembly in Brazil after 1882, as well as in Argentina, Bolivia, Peru, Portugal and Spain at the end of the nineteenth century. With this procedure, as illustrated in Table 1.1, while the most voted party list obtains a majority of seats, a second party can also receive some seats (in the example in the table, the corresponding allocation of seats is 2–1–0).

A particular form of limited ballot is the one giving only one vote per voter – as was proposed by Saint-Just in 1793, as previously mentioned. This formula was innovatively used in Spain from 1865 to 1876. In districts with more than two seats, this form of limited single ballot can distribute the seats among more than two parties, actually producing a really pluralistic and approximately proportional representation, as illustrated in Table 1.1. In modern times, this procedure has been called *single non-transferable* vote and has been used, most notably, in Japan after 1900 and again after the Second World War.

The procedure of *cumulative ballot* – which had been proposed in Britain by member of Parliament James Garth Marshall (1853) – gives each voter as many votes as there are seats to be filled in the district, but permits the accumulation of more than one vote on a single candidate. The results of this procedure depend on voters' information regarding the expected support of the different candidates and their ability to coordinate their accumulations. In general, it can be expected that seats will be allocated to more than one party. But only if the larger party fails to coordinate its supporters' accumulated votes while the smaller parties succeed in doing so can the allocation of seats be as pluralistic as with limited ballot. Cumulative ballot was used in three-member districts for the election of the Illinois state legislature from 1869 to 1980, as well as in Chile, Brazil and Peru during late nineteenth and early twentieth centuries. Table 1.1 also illustrates some hypothetical allocations of seats under this procedure in the simple example of a three-member district. (The incentives for strategic voting and the likely consequences of both limited and cumulative ballots were insightfully analysed by Charles Dodgson, better known as Lewis Carroll, in 1884; see also Black, 1996.)

Single-member districts

As an alternative to these procedures oriented to permit more-than-one-party representation in multi-member districts, the division of large multi-member districts into smaller single-member districts can also produce some pluralistic representation. In order to show how this happens, Table 1.1 illustrates the simple example of a three-member district which becomes three single-member districts. As shown in the table, a single party able to receive all seats in a multi-member district may fail to become the largest party in some of the smaller single-member districts, thus permitting some other party to obtain representation. (In the example in the table, the new allocation of seats, instead of favouring a single party, 3–0–0, as produced in a three-member district, is now 2–0–1; observe that the party with no seats has wider total support than the party with one seat, but the latter is the strongest in one district.)

In fact, single-member districts can be combined with different rules, mainly plurality, majority with a second round by plurality, and majority with a second-round runoff by majority between the two most voted candidates in the first round. If, according to the first of the rules just mentioned, the seats of an assembly are elected in single-member districts by plurality rule, certain global minorities with relatively strong support in small local areas can see their candidates elected, which is a more inclusive result than the one produced by multi-member districts. Single-member districts, however, can work against large minorities with widespread support across the territory if they are not the largest group in any significant area, up to not giving representation to a relatively large preference group.

The adoption of single-member districts in elections by plurality rule apparently occurred, first, in the British colonies in North America and were introduced in England after 1707. They developed in the late eighteenth and early nineteenth centuries for election to House of Commons in Ireland, Scotland and Wales (in contrast to most of England, where two- and three-member districts prevailed), as well as in certain other states and the United States for election to the House of Representatives. They, however, did not become the general formula in Britain until 1885 – at the Conservatives' demand as a protective device in exchange for a new enlargement of the franchise which they felt to be threatening. In the United States single-member districts expanded gradually, but it was not until 1970 that they finally replaced at large and other multi-member districts with bloc voting in a few states. In contrast Denmark for one had been forming its parliament using only this formula since 1848.

As was noted by the English philosopher and politician John Stuart Mill on the occasion of discussing electoral reforms in Britain, a parliamentary election in single-member districts by plurality rule – as an indirect election with factions, as previously discussed – can give victory to 'a majority [of voters] of the majority [of districts], who may be, and often are, but a minority of the whole' (Mill, 1861). Actually, Mill was still short in his insight since, by this procedure as implemented in Britain, a parliamentary majority can be given to a *relative* majority, so to a minority of voters of the majority of districts, which can indeed be a very small minority of the whole number of voters, and even smaller than some other groups.

The election of a single winner by plurality rule was also implemented for the direct election of presidents in regimes with separation of powers between the Presidency and the Assembly. The earliest cases were Colombia in 1853 (replacing the US-inspired electoral college) and Brazil after 1892 (replacing the Portuguese monarchy). Later on, this rule was adopted for direct presidential elections in many countries of Latin America, as well as in the Philippines, South Korea and some African countries under former British control. As can also happen in any parliamentary single-member district, a plurality-winning president may be an extreme candidate receiving a strong rejection from a majority of voters that may have divided their votes between several relatively closer, defeated candidates. In other words, the winner by plurality can be the Condorcet-loser, that is a candidate that would be defeated by any other candidate in pair-wise contests. As has happened, a number of political crises and breakdowns of democratic regimes were produced

in Latin American, Asian and African countries after the election of minority extreme presidents by plurality rule, especially by the mid-twentieth century.

Absolute majority rules

Comparable but relatively less bad results can be obtained in parliamentary single-member districts, as well as in presidential elections, if majority rule with a second round is used. A first variant, requiring an **absolute majority** at the first round and only a **plurality** at the second round, was adopted for the election of the National Assembly of France in 1875 and has been used there most of the time up to the present. This system can only make a difference with simple plurality rule if the candidates coordinate their withdrawals at the second round in favour of those who are relatively closer in their preferences (or more willing to enter into favour exchanges) and have a higher likelihood of winning. In conditions of sub-optimal coordination, however, the winner may be as extreme and in the minority in voters' first preferences and provoke a similar rejection as the winner by simple plurality rule in a single round.

Another variant requires an absolute majority at the first round and reduces the choice to the **two most voted candidates at the second round**. This system was used for parliamentary elections in Germany after 1871. For presidential elections, a precedent of second-round runoff rules can be found in the procedure establishing a first direct election round by majority and a second-round runoff in Congress between the two or three most voted candidates. This formula was adopted in France in 1851, as well as in Bolivia in 1871 where it is still used now and in at least six other Latin American countries in different periods. Direct presidential elections by majority with a second-round runoff between the two most voted candidates has been used in France since 1965, as well as in African countries under former French control, in most countries of Latin America in the most recent democratic period (starting with Ecuador in 1978), and in post-Communist regimes in Central and Eastern Europe since the 1990s.

A further variant of absolute majority rule requiring a single round of voting was initially devised by Harvard college professor William R. Ware in 1871 by simplifying some of Thomas Hare's proposals (to be mentioned below) and imported by mathematician E. J. Nanson in 1882 for elections in Australia, where for election to the House of Representatives it was adopted after 1918. Usually known as **majority-preferential** or **alternative vote**, this procedure requires voters to order their preferences among candidates. Any candidate obtaining a majority of first preferences is elected; otherwise, the candidate with the lowest number of votes is eliminated and his or her supporters' votes are transferred to their next or further preferences for successive rounds of counting until a majority candidate results. The procedure, thus, enables voters to indicate for which candidate they would have voted at a second round if their favourite candidate were eliminated at the first round – for this reason it is usually known as **instant runoff** in the United States.

Majority rule, whether with a second-round runoff or with alternative vote, does not guarantee that the winner is the candidate with the relative widest acceptance and least rejection among voters, since he or she can be eliminated at the first

round of voting or at some preliminary round of counting. Even if the candidates are perceived by most voters as ordered along a single linear dimension, such as the left–right axis, the median voter’s candidate, who is always able to form a majority around him or her against any other candidate, may obtain fewer votes than two other, more extreme candidates and be eliminated. In other words, the winner by majority with any of these procedures may not be the Condorcet-winner, that is the candidate able to win against any other candidate in pair-wise contests, but one that could be defeated by absolute majority by some of the eliminated candidates.

However, at least two caveats can be introduced when comparing the expected outcomes by simple plurality rule with those by absolute majority runoff rule. Assuming a single dimension of voters’ preferences in which the median voter can be clearly identified and the same number of candidates running, if no candidate obtains an absolute majority of votes at the first round, majority runoff creates double the probability of plurality rule that the final winner will be the candidate with the median voter’s support. This is due to the fact that if the median voter’s candidate is present at the second round, he or she must be expected to win by majority against any other rival. Thus the probability for the median voter’s candidate to win is equal to the probability of being one of the two most voted candidates in the first round, which, under the above assumptions, a priori and with whatever number of candidates, is double the probability of being the single most voted candidate in the first round.

The second caveat is linked to the first. While simple plurality rule can give victory to the Condorcet-loser, that is the candidate that would be defeated by every other candidate in pair-wise contests as mentioned above, the winner by absolute majority runoff rule or its variants cannot be the Condorcet-loser since he or she will have been able to win at least one of the pair-wise contests or comparisons, that is the one between the two survivors at the second round of voting or the final round of counting. (This point was made early on by E. J. Nanson in 1882.)

This means that in parliamentary single-member districts, as well as in presidential or other elections producing a single absolute winner, it should be expected that the winner by majority rule with a second-round runoff or alternative vote will be, on average, relatively more accepted and less rejected by the voters than the winner by simple plurality rule. Of course, specific elections can produce winners with characteristics opposite to those just mentioned, but we are just presenting here a general statement regarding the results that can be expected a priori from every electoral rule.

The choice of majority rules

This classification of majoritarian electoral rules and procedures for including a variety of political groups and producing relatively acceptable winners permits the establishment of some basic strategic criteria for institutional choice. The choice of procedures with relatively higher inclusiveness, such as limited or cumulative ballot or single-member districts, or of rules with higher requirements of votes for winning absolutely, such as the majority runoff rule, implies less risk, while the

bet on exclusionary procedures, such as multi-member districts with 'bloc' closed lists, or for rules with no specific vote requirements for winning absolutely, such as simple plurality rule, should be expected to correspond to more risk-prone actors.

In the perspective supplied by the above analysis, it should be expected that *a single dominant party with optimistic expectations* to remain in such a position will tend to prefer electoral formulas like *multi-member districts with 'bloc' closed lists and plurality rule* to other formulas permitting minority representation. In contrast, in situations in which the incumbent rulers are seriously challenged by a rising opposition or by new emerging parties, as well as in situations of relative ignorance or high uncertainty regarding the likely support of different candidacies – for instance, when a new regime with broad voting rights is established – the relatively more inclusive electoral formulas – that is limited or cumulative ballot, single-member rather than multi-member districts, and majority runoff rule rather than simple plurality rule – can be less risky choices for self-interested actors and are capable at the same time of producing more socially acceptable results. A further cross-country, long-term analysis will test these implications on electoral system choice.

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Proportionality

The principle of proportional distribution of shares, burdens and voting rights is usually adopted in private communities and companies on the basis of the number of inhabitants, resources, property or contribution to the provision or finance of collective goods. Remote precedents of proportional representation for distributing seats in more political settings can be found in ancient leagues of cities and tribes. In early modern times, confederal unions and a number of peace plans in Europe also addressed the question of fair representation. More formally, and for domestic political elections, the principle of proportional representation was first formulated in late eighteenth-century France during the holding of the traditional, corporative elections which would trigger the Revolution. The basic mathematical formulas that would make the principle operable were also invented about the same time in the process of setting up the new representative institutions of the United States of America. However, these formulas were not used in the United States for the allocation of institutional seats to political candidacies but only for apportioning seats in the House of Representatives among the differently populated states. Proportional representation formulas were reinvented several times in Europe in the second half of the nineteenth century before they began to be used for the allocation of seats in modern assemblies and parliaments.

The invention of the proportionality principle

In terms of ancient confederal leagues, the most remote precedent of proportional representation can probably be found in the Lycian League in Asia Minor from 168 BC to c.50 AD. It reunited 23 cities (including, for instance, Olympos and Xathros) that were represented in the governing Council with one, two or three votes each, according to their size. They also bore a proportional share of financial responsibility. But the most considerable of the confederacies of antiquity was the Amphictyonic League, which was organized around Delphos for religious and mutual defence affairs, with 12 Hellenic tribes, including Athens and Sparta. The representatives of all units met twice a year to vote on decisions which were executed by the Senate. Although working with equal numbers of votes per unit during most of its existence, during a short period from 31 BC to 14 AD the Amphictyonic League was organized with a more proportional distribution of votes: three cities had six votes, three cities had two votes and six cities or groups of small tribes had one vote each (which was cast by one of its components by turns). Although not precisely distributed according to a mathematical formula, the different numbers of votes roughly corresponded to each city's or group's population (Freeman, 1863).

In their approach to similar problems, a number of confederal plans and attempts to unite different political units for common purposes of defence can be identified

during the late Middle and early Modern Ages. One of the most remarkable was developed in the late seventeenth century by English colonizer William Penn, whose peace plan for Europe included the formation of a Diet (also called Estates or Parliament) at which each sovereign state would be represented in proportion to 'its value' (to be calculated not only in terms of population but also of wealth and military strength). Up to 15 units were devised (from the German Empire, France, Russia, Spain and Turkey to the smallest Swiss cantons and German ducats) with a total of 90 votes distributed in a scale with eight values from 12 to 1 (Penn, 1693). Similar problems were, of course, faced by modern confederations and federal states forming representative assemblies – from the United States in the late eighteenth century to the European Union in the late twentieth century – as well as by all kinds of parliaments and assemblies whose members were to be elected in territorial units of different sizes and populations.

For the purpose of organizing popular elections, an early formulation of the principle of proportional representation of the different groups of voters in political assemblies came from politician and electoral candidate Honoré Gabriel Riqueti, Count De Mirabeau, in the very first weeks of 1789. In his address to the provincial estate of Provence on the occasion to elect the delegates to the Estates-General of France, Mirabeau famously stated that 'The Estates-General are [ought to be] to the nation what a chart is to its physical configuration; in all its parts, and as a whole, the copy should at all times have the same proportions as the original' (Mirabeau, 1789, 1: 7). In a lesser known passage of the same speech, Mirabeau remarked that he did not aim only at obtaining a faithful or fair representation of the different groups of society, but was also concerned with inducing socially efficient outcomes from the corresponding political institutions. In this orientation, representation of all parts should prevent the two dominant estates, the aristocracy and the clergy, from prevailing over the whole nation. He noted: 'The nation is not there if those who call themselves the representatives have not been chosen in free and individual elections, if the representatives of groups of equal importance are not equal numerically and in voting power... In order to know the will of a nation, the votes must be collected in such a way so as to prevent the mistake of taking the will of an estate for one other, or the particular will of certain individuals for the general will' (Mirabeau, 1789, 1: 7–8).

Proportional quotas

About the same time as Mirabeau formulated his principles, some of the leading politicians of the newly created United States of America were inventing for the first time the basic mathematical formulas that would make proportional representation feasible. As suggested, they did not invent them with the intention of promoting fair, pluralistic and socially efficient representation of different groups of voters in the corresponding institutions, but only for the sake of fair territorial representation in the new federation, as mandated by the US Constitution (Article 1, section 2).

For the first US rulers and electoral law-makers, the basic problem was to define a *quota* of state inhabitants worth a seat in the House of Representatives – which is, formally, the same problem as to define a 'quota' of party votes worth a seat in

any council, assembly or parliament, as would be addressed later on. Three types of quota were then and in further periods defined, which can be called, respectively: *exact*, *sufficient* and *fixed* quotas. Table 1.2 shows an example of how different quota formulas can be applied.

The *exact* or *simple quota* was first defined by Alexander Hamilton, one of the main authors and propagandists of the new United States federal constitution, for the first House elections in 1791. The exact proportional quota is the divisor between the total number of inhabitants (or votes) and the total number of seats, that is $1/M$ (where M is the magnitude or number of seats in the district). This formula is quite intuitive from the notion of proportionality, but has the big drawback of not being decisive or complete since the distribution of inhabitants among states, or that of votes among parties, hardly comes in exact multiples of such a quota. Therefore, the remaining seats not able to be allocated on the basis of the exact quota have to be allocated by using some other supplementary formula which may introduce significant distortion. As this formula was initially proposed both by Hamilton and, in the context of parliamentary elections, by English lawyer and politician Thomas Hare about seventy years later, the remaining seats were to be allocated to those states or parties having the 'largest remainders' of inhabitants or votes, respectively (Hare, 1859).

In actual electoral systems, however, the 'exact' or Hamilton-Hare quota has been used together with disparate supplementary formulas for allocating the remaining seats, such as giving preference to the larger parties, or to the smaller parties, or by random, or by applying some other formula of proportional representation to the remaining votes, or – as one of the most distinguished critics of the Hamilton proposal voiced – 'according to any other crotchet which ingenuity may invent,

Table 1.2 Proportional representation formulas

	Parties: Votes:	W 40	X 30	Y 20	Z 10	Total/100
Rules	6 seat allocations					
<i>Hamilton-Hare</i>						
Exact quota: $100/6 = 16.6$	By quotas	2	1	1	0	4
	[Vote remainders	6.6	13.3	3.3	10]	
	By largest remainders		1		1	2
	Total seats	2	2	1	1	6
<i>Jefferson-d'Hondt</i>						
Sufficient quota: $[40/3 =] 13$	By quotas	3	2	1	0	6
<i>Webster-Sainte-Laguë</i>						
Modified quota: $100/6 + 1 = 14$	By quotas	2	2	1	0	5
	By half-quota (7)				1	1
	Total seats	2	2	1	1	6
<i>Gergonne-Gilpin</i>						
Fixed quota, e.g. 15 votes	By quotas	2	2	1	0	5

and the combinations of the day give strength to carry' (Jefferson, 1792). In order to reduce the number of seats to be allocated by a supplementary criterion, London barrister Henry R. Droop proposed a somewhat lower quota, $1/M+1$ (rounded up); with a lower quota value, a higher number of seats can be allocated by quotas, but this formula would still need a supplementary one to allocate at least a few remaining seats (Droop, 1868, 1869).

Logically, the combination of two different formulas for the allocation of the same slot of seats may produce some unexpected and undesirable consequences. Even the standard Hamilton-Hare formula allocating some seats by the exact quota and the rest to the largest vote remainders has been found capable of producing some paradoxical allocations, such as giving fewer seats to a party (or state) which has increased its proportion of votes (or inhabitants) – usually known as the 'Alabama paradox'.

The second formula, which can be called *sufficient quota*, was first conceived by Virginian politician and later US president Thomas Jefferson in 1792 as a response to Hamilton's quota – the latter being finally vetoed by president George Washington at Jefferson's persuasion. Seeking support in the instructions of the US Constitution and in the appeal of simplicity, Jefferson proposed to define a quota able to allocate all the seats by a single criterion. Literally, he stated: 'We must take, as the ratio of distribution, the common divisor which, applied to every state, gives to them such numbers as, added together, come nearest to 120 [the total number of seats in the House of Representatives at the time]'. The idea of a common divisor for all allocations of seats also motivated Belgian civil law professor Victor d'Hondt to reinvent this quota about a hundred years later (d'Hondt, 1878, 1882). Of course, to fulfil its aim of allocating all the seats, the Jefferson-d'Hondt quota must be smaller than the Hamilton-Hare quota.

Although it has been common to confuse the Jefferson-d'Hondt 'sufficient' quota formula with some of the calculation methods to establish its value, the basic meaning of the formula should not be forgotten. In fact, there are several methods to find such a quota and produce the corresponding allocation of seats, including trial and error, as proposed initially by Jefferson; using a series of divisors until obtaining the M -th highest quotient or 'highest average' (M being the number of seats to be allocated), as promulgated by d'Hondt and known as the method of 'divisors series'; or starting tentatively with the quota $1/M+1$ (rounded down) and decreasing it down until fitting, as suggested by Swiss physics professor and local politician Eduard Hagenbach-Bischoff (1888).

Several variants of this type of quota have also been invented. For instance, US Senator Daniel Webster began, in 1832, to modify the quota by increasing its value to the nearest whole number and then, if necessary, giving extra seats to those states or parties having more than half the quota. This formula, which is known as 'major fractions', would be used for seat apportionment in the US in the early twentieth century. It was later reinvented, together with another calculation method based on the divisors series of odd numbers, by French mathematician André Sainte-Laguë (1910) and has been used for parliamentary elections, in modified versions, especially in Scandinavian countries.

Finally, what can be called the *fixed quota* is just an absolute number of votes established a priori as worthy of a seat. This was actually the basic criterion that had been used in a few of the ancient and early modern leagues and confederations previously mentioned, in which the number of each unit's representatives was established on the basis of some fixed amount of inhabitants. For political elections, this formula was first proposed by French mathematician Joseph-Diaz Gergonne in 1820. In his own words: 'At the elections the voters should group themselves freely according to their opinions, their interests, or their desires, and any citizen would become a Deputy from the department in the elective chamber who bore a mandate from two hundred voters [his arbitrarily proposed quota]' (Gergonne, 1820). Similarly, Philadelphia manufacturer and activist Thomas Gilpin proposed a fixed quota in a pamphlet published in 1844. The context of Gilpin's proposal, against which he tried to react, was the system previously discussed of multi-member districts by plurality rule by which each voter had to vote in bloc for a closed list, thus producing a single dominant party. His intention was to prevent further successive self-reproductions of rulers in power and make 'the elected body to be an exact representation of the public interests'. 'Otherwise', he warned, 'is the virtual source of oppression and injury the cause of great discontent, and when not subversive of the administration, it is subversive of the harmony and confidence which ought to be afforded to it'. Gilpin's proposal was a fixed quota and open lists in which voters could express their ordinal preferences regarding individual candidates (Gilpin, 1844). A similar, but more practically usable formula, actually inspired by Gergonne, was further proposed in the United States by J. Francis Fisher (1863). However innovative and well-intentioned these proposals might be, it is remarkable that they were apparently formulated in complete ignorance of the proportional quota formulas that had been and were at the time being used in the same political system for the apportionment of seats.

'Fixed' or Gergonne-Gilpin quotas may have some advantages, such as encouraging turnout and producing uniform distributions of seats among parties independently of district numbers, magnitudes and apportionment. However, they are not able to establish a previously known number of seats in any district or in the total of the assembly. With varying assembly sizes, this type of quota – which was being used in the German *Land* of Baden-Baden – was adopted by the so-called 'Weimar Republic' of Germany in 1919 with a rather demanding quota of 60,000 votes per seat.

Of course, different quotas may produce different allocations of seats in favour of either larger or smaller parties and can be chosen by electoral law-makers according to their expectations. But, as Webster established: 'The divisor may be anything which produces accurate and uniform division'.³

There are thus two crucial elements in proportional representation electoral systems which may produce different results to the advantage of different parties: *the number of seats* and *the quota formula*. With 'number of seats' we refer to the total number of seats or 'assembly size', as well as to the 'magnitude' or number of seats per district. The number of seats can be small if the assembly size is small or, even for a large assembly, if a high number of districts makes their magnitudes small.

The 'quota' as the basic ground for distributing seats among parties can be relatively large, like the Hamilton-Hare 'exact' quota, relatively small, like the Jefferson-d'Hondt 'sufficient' quota, intermediate, like the Webster-Sainte-Laguë 'major fraction' quota, or have any value, like the Gergonne-Gilpin 'fixed' quota. Further modifications can be introduced by the requirement of legal thresholds to enter the process of allocation, whether in the form of a given percentage of votes or as the requirement to obtain one 'exact' quota or a portion of it, actually decreasing the effective quota for the parties above the threshold. Mal-apportionment of seats with regard to the population and, in particular, the allocation of a minimum number of seats to every district, even the smallest ones, can also distort representation based on quotas of votes.

Note, however, that the smallest quota is the one which is applied with plurality rule: literally, the quota can be any value higher than zero, only depending on the number of parties or candidates. Second-round formulas also imply very small quotas since passing into the second round is a contest by plurality rule, at which no specific threshold is required, and, in some of its variants, the final winner may also be just the most voted candidate at the second round.

The consequences of the different electoral formulas just revised can be summarized as follows. First, the smaller the number of seats (both in the total assembly and in every district), the higher the number of votes which can be sufficient for a party to receive a seat – this is the value usually called the **threshold of exclusion**. The smaller the number of seats and the higher the corresponding exclusion threshold, the more disadvantaged are, of course, the small parties and the more advantaged are the larger ones. Second, the smaller the quota, the more advantaged are the larger parties which can obtain higher numbers of quotas rewarded with seats. In particular, plurality rule, whose quota is, as mentioned, whatever value higher than zero, however small, maximizes the representation of the largest party. Among the basic formulas of proportional representation previously discussed, the Jefferson-d'Hondt 'sufficient' quota, which is relatively small, maximizes the representation of those parties larger than the average.

The choice of proportional representation

This analysis may allow us to identify some basic strategic criteria of electoral system choice. It can be expected, in short, that *the large will prefer the small and the small will prefer the large*, specifically that dominant, optimistic or risk-prone and would-be *large parties* will prefer: (1) *small assemblies*; (2) *small district magnitudes*; and (3) *small quotas*. In other words, large parties should be expected to prefer assemblies with a relatively low number of seats, apportionments creating small numbers of seats per district, as well as plurality rule rather than proportional representation formulas and, among the latter, the Jefferson-d'Hondt formula which implies relatively small quotas rather than the Hamilton-Hare formula or other variants. Of course, high numbers of districts and high legal thresholds belong to the same set of preferences. Conversely, seriously challenged, pessimistic or risk-averse and would-be *small parties* should be expected to prefer: (1)

large assemblies; (2) *large districts*; and (3) electoral formulas implying *large quotas*, in particular those of proportional representation rather than majoritarian ones.

These electoral system preferences and choices have been justified using different arguments. First, fairness and social efficiency of the subsequent political decisions can be called in support of proportional representation. The Conservative Thomas Hare, for instance, was said to have devised a system which, in contrast to the concentration of power created by plurality rule, would secure representation of all classes, including minorities. However, he remarked that his project did not aim at simply securing the 'representation of minorities' but to 'end the evils of corruption, violent discontent and restricted power of selection or voter choice' (Hare, 1859). Hare's main propagandist, the liberal John Stuart Mill, also remarked that proportional representation would give all interests or classes 'protection against the class legislation of others without claiming the power to exercise it in their own' (Mill, 1861). French socialist leader Jean Jaurès, on his own, made this didactic presentation of the choice of electoral systems: 'This will kill that. So is the formula of voting in [a single-member] district. These will kill those. So is the formula of voting by list without proportional representation. These and those will have their fair share. So is the formula of voting by list with proportional representation'.

However, in addition to fairness arguments, group self-interest has also sometimes been explicit. For instance, the leader of the German socialist party, Wilhelm Liebknecht, addressed the annual conference of his party in 1890 with these words: 'Our party would derive great advantages from the introduction of this electoral system [proportional representation]... Under the present electoral system the greater part of our votes is lost – whereas under proportional representation our strength in parliament would be doubled or tripled' (in Rustow, 1950: 121).

In fact, majoritarian systems have been supported by successful actors in single dominant or frequently alternating two-party systems – typically formed by conservatives and liberals or, in more recent times, by conservatives and socialists. In contrast, proportional representation is usually favoured in emerging multi-party systems by different types of actors: on the one side by incumbent conservatives or liberals under threat of losing their privileged position, on the other side by minority but growing opposition parties, traditionally including socialists, Christians and ethnic parties. In a summary survey it can be observed that, among the earliest countries to adopt proportional representation in the late nineteenth and early twentieth centuries, 'Belgium had essentially a three-party system before it adopted proportional representation in 1900, Denmark had a four-party system during most of the period in which it employed a British-type of electoral system, Norway had at least three major parties on the eve of the adoption of proportional representation in 1921, Switzerland had four parties in the last elections under the plurality system, and Germany had anywhere between a six- to twelve-party system depending on the criterion used to define it' (Grumm, 1958: 374). A more systematic test is presented in the following section of this chapter, showing that, indeed, multi-party systems already existed in most countries when electoral systems of proportional representation were chosen in modern times.

Mixed systems

Less straightforward calculations than here generically assumed, as well as successive refinements in the invention and design of electoral formulas and procedures, can account not only for specific combinations of proportional representation formulas and district magnitudes, but also for the choice of intermediate or *mixed* electoral systems. Three basic categories of so-called 'mixed' systems can be distinguished, which have been called *coexistence* (involving different rules for different sets of voters and seats), *multiple tier allocation* (involving one vote per voter and two or more rules) and *parallel* systems (involving two votes and two rules) – although loose vocabulary is widespread.

Coexistence means that different rules and procedures are used in different districts to fill different portions of the assembly seats. This has been the case, for instance, in Costa Rica since 1913, Greece in 1956 or Panama since 1983, where some districts are decided by plurality rule and others by proportional representation.

Multiple tier allocation involves a single ballot but two or more rounds of counting the same votes by different rules to allocate different portions of seats in the assembly. A typical combination includes one round of counting by plurality rule and another round by some formula of proportional representation – as in South Korea in 1960 and again since 1987, Mexico since 1986 or Taiwan since 1991. This type of system allows electoral law-makers to make well-tuned calculations and adjustments, since while it establishes complex and sophisticated voting counts, it reduces voters' choice to a single decision not permitting much strategic behaviour.

Finally, *parallel* systems give each voter two votes to select candidates for two different portions of seats which are allocated by two different rules. This type of system may result from intermediate compromises, at either explicit negotiations or underlying calculations, between less-than-secure incumbent rulers which would have preferred to be able to maintain or establish plurality or majority rules, and increasingly emerging but not overwhelming opposition groups preferring proportional representation systems. In contrast to the previous type of multiple-tier allocation, parallel mixed systems allow voters to split their ballot between candidates or lists belonging to different parties, thus permitting a rather subtle revelation of preferences. However, the resulting composition of the assembly can be distorted by the use of different allocation principles and rules. Of course, the advantage of the larger parties and the degree of disproportionality in representation will be higher the higher the portion of seats allocated by plurality or majority rule.

An early case combining plurality rule and proportional representation in 'parallel' mixed systems was Brazil in 1933. A number of 'parallel' systems have also been established in recent processes of democratization in which institutional formulas have been chosen under rather balanced relationships of forces between the incumbent rulers and the opposition, as in Russia and several countries in Central and Eastern Europe in the 1990s. Likewise, parallel mixed systems have been compromised in better-established democratic systems in which a long-term dominant party has entered into clear decline but has not been completely

replaced in voters' support by the opposition, as in Italy under the tension between the governmental christian-democrats whose popularity had worn away, and the communists who were always in contention but never won, and in Japan after some wearing away of the long-term governing liberal-democrats under pressure from the socialists and other minority and divided parties in opposition, in both cases since the mid-1990s.

In contrast to these types of mixed systems, other combinations of rules and procedures are much more easily to be classified as either majoritarian or proportional. The first category may include electoral systems in which an absolute majority rule is used to allocate most seats, and only in the case where no party obtains such a majority is a formula of proportional representation applied. This type of system involves one vote per voter and one rule, with another rule just in reserve (or, as has been suggested, as 'supplementary' or 'conditional'). A few would-be dominant parties betted on this type of system in France in 1919 and 1951, and in Italy in 1923 and 1953 – in most cases without obtaining the majority representation they were expecting.

On the other side, proportional representation systems can also be organized by using different formulas at different tiers, that is at districts including different distributions of voters such as national, regional and local. Cases include Belgium since 1919, Denmark and Germany since 1920, Greece in a number of experiments with three tiers since 1926, the Netherlands since 1933, Italy since 1946, or Ecuador since 1978. Finally, *personalized proportional representation* (also called *mixed-member proportional systems* or *additional member systems*, among other names) distinguishes each vote as valid both for an individual candidate competing in single-member districts by plurality rule and for a party list in a large district by proportional representation. In contrast to mixed systems, however, the allocation of seats is 'compensatory', which means that those seats obtained by a party at single-member district level are discounted from those obtained from the total pool of the assembly seats by proportional representation. This type of system was pioneered in Denmark in 1915. As the system was established in the Federal Republic of Germany in 1953, each voter has two votes. In fact each party receives a number of seats based on its proportion of party list votes; then about half of the total seats in parliament are occupied by those individual candidates with higher numbers of individual votes in single-member districts, while the rest are selected from the party's closed lists. With this combination, a high proportionality between a party's votes and seats and closeness and accountability of some individual candidates to voters can be achieved – a combination that most properly deserves the epithet of 'the best of both worlds'. This type of system was also adopted in Bolivia, New Zealand and, temporarily, in Venezuela in the 1990s, during processes to open or broaden the political system to more pluralistic party configurations.

Open and closed ballots

The complexity of formulas such as those just reviewed suggests that electoral systems can be chosen not only for the inter-party allocations of seats which are

the result, but also for their consequences on intra-party competition between individual candidates. Roughly speaking, while strongly independent individual candidates should be expected to prefer systems permitting voters the opportunity to choose among individuals, compact, disciplined parties will prefer to establish nomination systems of candidates by which the choice of voters will be determined by party labels rather than by their individual characters.

Four types of formula are revised in the following paragraphs along these lines: (1) *primary elections*; (2) *open ballot* or *panachage*, as well as ordinal single transferable vote; (3) *preferential vote* for individual candidates, including limited ballot in majority systems, and double vote and open lists in proportional representation; and (4) *categorical vote*, including single ballot in majority systems and closed lists in proportional representation. The order in which these formulas are discussed presumably corresponds to a gradation from higher to lower opportunities for individual candidates to campaign and attract votes. Regarding the choice of electoral rules and formulas, it can be expected that *the more open the selection of individual candidates, the lower the pressure that can be expected for 'opening' the electoral system*, as will be discussed below.

First, *primary elections*, which began to be used to nominate presidential candidates in the United States in 1912, are presently held in the US, as well as in a number of other countries, to select single-winner individual candidates for single-member offices such as president, governor and congressmen in single-member districts, or top list candidates. Primary elections can include a relatively large number of candidates located at various positions along the policy-ideology spectrum. This is in contrast to the usual restrictions in competitions for single-member offices, which tend to focus on a couple of major candidates. In this sense, a primary election can be compared to the first round in a majority electoral system with two rounds for their role in selecting the very few candidates that will actually compete for office. A high number of candidates can enter the race and find the subsequent results acceptable for the opportunities that have been given to compete.

However, since, in contrast to the first round in an open election, each primary election is reserved to select only one political party's or coalition's candidate, voters' participation tends to be much lower in the latter than in the former. In the United States, for example, participation in presidential primary elections for the two major parties since they were generalized in 1972 has been, on average, about one-third of the participation in the corresponding real presidential election. All students of these experiences have noted that primary voters are non-representative of their parties' voters, and even less of the whole electorate. In general, primary voters tend to favour more extreme or outsider candidates than the electors, so distorting electoral competition in a remarkable way. The probability that none of the candidates in the election corresponds to the median voter's preference, as revealed regarding the candidates running in the primary election, is, thus, much higher than the probability that no median voter's candidate survives at the second round when the first round is open to competition among all parties.

Second, the *single transferable ballot* can also promote high intra-party individual competition among candidates. Actually, this was the first type of ballot invented for proportional representation electoral systems. Early proposals oriented to making voters choose among individual candidates were gradually refined: by English schoolteacher Thomas W. Hill in 1821 calling voters to gather in groups with the same preferences, as was the subject of an experiment in the Southern Australian colony of Adelaide in 1839; by Danish conservative prime minister Carl-Christopher-Georg Andrae for the election of a minority portion of seats for the joint assembly of Denmark and Schleswig in 1855 (not the Danish parliament); and by English lawyer Thomas Hare, first in two books published in 1857 and 1859 with the impractical proposal of establishing a single national district which would require enormous computing effort, and only precisely establishing the procedures to transfer ballots from voters' first to second and further preferences in 1865.

In its more elaborated form, proportional representation with single-transferable ballot requires each voter to rank individual candidates. Seats are allocated to candidates who have obtained a quota of voters' first preferences, while in the remaining ballots votes are transferred to the following candidates in voters' ordinal preferences. Thus for some voters only their first preference is accounted for, while for others favouring less popular candidates and selected at random several preferences are taken into account. Intra-party competition among individual candidates is, with this ballot, at a maximum, and should correspond to weakly organized parties. This is the form of proportional representation that has prevailed in former British colonies, including Ireland since 1922, the Australian Senate since 1949, and a number of cities in the United States, especially from the 1920s to the 1940s.

Third, ballots based on party lists of candidates were proposed by socialist Victor Considerant and began to be used in some Swiss cantons after 1861, as well as for nationwide parliamentary elections in Belgium and Serbia after 1899 and in most of the other countries adopting proportional representation in the years following. *Open lists, preferential ballot* as well as personalized proportional representation and voting for 'lemas' (brands) and 'sublemas' allow the voter to select a party candidacy and one or more individual candidates. Variants include compulsory or optional preferences, the latter permitting a vote for a party list as given. The basic procedure requires all preferential votes for either individual candidates or party lists to be counted as votes for the corresponding party; after each party has been allocated the number of seats corresponding to those votes, they are filled partly with those individual candidates who have received higher numbers of preferences and partly by other candidates provided in the list. Of course, the higher the number of individual preferences that each voter can express, the higher the individual candidates' competition to fill the corresponding seats can be expected to be. Open lists permitting the voter to select a few candidates, usually from one to three, have been used in most countries of Western Europe, presently including Austria, Belgium, Denmark, Finland, Greece and Sweden, as

well as in Latin American countries like Brazil and Peru, while personalized proportional representation is used, with double vote, in Germany, Bolivia and New Zealand, as mentioned, and 'lemas' in Uruguay.

In this perspective, the single-transferable ballot previously discussed, as well as the open ballot or 'panachage' used in Switzerland, could be considered extreme cases, beyond the opportunities supplied by open lists or double vote, since they permit candidates to be selected from different parties and thus promote very high intra-party individual competition. At the other extreme, the system of *closed lists* actually restricts the voters' choice to a party's label, since it does not permit any modification in the order of candidates as given by the party. From the point of view of individual candidates' selection, closed lists, which are presently used, for instance, in Argentina, Portugal, Spain and Venezuela, can be compared to the *single ballot* in single-member districts, as used in Britain and the United States. None of these categorical formulas permits anything other than total acceptance or total rejection of the candidacy as presented by one of the parties in contest.

Regarding the choice of electoral rules, candidate selection procedures and ballot formulas with relative openness, such as primary elections, single-transferable ballot, open lists and double vote, can have a counterweighting effect on demands for replacing the existing electoral system. *The more open the selection of candidates, the lower the pressure that can be expected for 'opening' the electoral system*, since the latter's restrictions may be somehow reduced by the former feature. This relation may help to explain, for instance, the stability of such restrictive electoral rules as single-member congressional districts, single-winner presidential elections, plurality rule and bipartism in the United States, due, at least in part, to the openness of primary elections. It may also be significant that primary elections were generalized to almost all states in the US in response to increasing pressures from new groups and political proposals since the 1960s. The experience of primary elections in Latin America, especially in Venezuela since the late 1960s and in Argentina, Chile and Uruguay since the late 1990s also suggests that this device can be adopted in well-established presidential regimes when they receive new demands for greater inclusion from various political groups against the restrictions inherent in any presidential electoral system which tends to centre competition on a very few potentially winning candidates. Conversely, and by the same kind of argument, we can expect that the more open the electoral system regarding the selection of individual candidates, the lower can be expected to be the pressure for primary elections.

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The electoral system evolution

According to the discussion presented in the previous sections, several general tests of the basic propositions regarding actors' motives and electoral system changes and their observable implications will be here developed. Data are collected in five pairs of summary tables at the end of each of the introductory chapters to the five world regions covered in this book – the Americas, Western Europe, Eastern Europe, Africa and Asia and the Pacific – in each case for the

Assembly (lower or single chamber) and for the Presidency. The relevant information is summarized in Summary Tables 1A and 1B (at the end of this introductory part).

The tables include 289 electoral systems, all those having been used in 2,145 elections (1,601 for assemblies and 544 for presidencies) with minimally acceptable levels of political competition and available data in 94 countries since the early nineteenth century. Countries are selected for having more than one million inhabitants and some democratic experience. The latter criterion is operationalized as having appeared as 'free', or with scores of 3 or lower out of 7, in 30 Freedom House annual reports (1972–2002) for a period encompassing at least two successive elections. For the countries selected, all electoral systems used in minimally competitive elections in any period are included (even in not fully democratic elections with restrictions on voting rights or candidacies). We exclude only dictatorial periods and fake elections with a single candidacy or won by the incumbent with open fraud (which are alternative ways of choosing an 'electoral system'). Roughly speaking, available data are from the early nineteenth century onwards for most countries in Western Europe and the Americas, a few in Central Europe in the 1920s, since independence after the Second World War in a number of countries in Africa, Asia and the Pacific area, and from more recent democratization periods in other countries in these latter regions and in Eastern Europe. Data allow us to count 154 electoral system changes in 56 countries. In order to proceed to checks with complete and more homogeneous data, tests are also conducted for changes only produced during democratic periods and having lasted to the present (end of 2002), including 36 electoral system changes in 29 countries.

Electoral systems are classified separately for assembly and for presidential elections. Consistent with the previous discussion, four basic categories of electoral systems for the assembly are distinguished, with a few subcategories to distinguish between several formulas and procedures. From less to more inclusive, they are:

- *indirect* elections;
- *majority* rule, including three subcategories:
 - majority₁ – multi-member districts with bloc ballot;
 - majority₂ – multi-member districts with limited (including single non-transferable) or cumulative ballots;
 - majority₃ – single-member districts;
- *mixed* systems, including 'coexistence', 'parallel' systems and 'multiple tier' allocations combining plurality or majority rules with proportional representation;
- *proportional* representation, including three subcategories:
 - proportional₁ – average district magnitude lower than nine, any formula and procedure;
 - proportional₂ – average district magnitude higher than eight, with closed lists;
 - proportional₃ – average district magnitude higher than eight, with open lists, open ballot ('panachage') or personalized PR.

Likewise, presidential electoral systems are classified as follows:

- *college* or indirect election;
- *simple plurality* in direct elections (as in the following categories);
- *qualified plurality* (33 per cent, or 40 per cent, or 45 per cent, etc.) with a second round (either by plurality, by majority runoff, or by the Assembly);
- *majority with a second round* (either by plurality, by majority runoff, or by the Assembly);
- *majority with single transferable or supplementary vote*.

The most relevant propositions and observable implications previously presented are submitted to empirical scrutiny in the following paragraphs.

Changes to electoral systems should be expected to be produced in favour of increasingly inclusive formulas rather than against. So we should find a significantly higher number of changes from indirect to direct elections, from unanimity to majority rules, from majority rules to mixed systems, and from mixed systems to proportional representation, or other changes between categories in this direction than the other way around. Summary Tables 1A and 1B summarize data of 154 electoral system changes. We proceed to separate analysis of the 126 assembly and 28 presidential electoral system changes.

For assembly elections, we analyse, first, all cases collected since the nineteenth century and, second, only changes during the present democratic periods. For *total data available since the nineteenth century*, we have counted 82 major electoral system changes for assemblies between the four basic categories indirect, majority, mixed and proportional in 41 countries, as shown in Table 1.3. The countries with the highest numbers of changes are, of course, among those with the longest periods registered, but, within this set, they are, interestingly, concentrated in Mediterranean Europe: Greece with 9 major changes, France with 7, Italy and Portugal with 6 changes each, and Spain with 4 (in the rest of the world, only Brazil with 6 major changes and Denmark with 4 are above three changes). The countries mentioned have experienced high political regime instability, of which electoral system changes

Table 1.3 Major changes of assembly electoral system

Previous system	New system			
	Indirect	Majority	Mixed	Proportional
Indirect	*	12	1	5
Majority	2	*	13	27
Mixed	0	1	*	8
Proportional	0	7	6	*

Note: Changes in the upper-right part are toward more inclusive systems (66 changes), while those in the lower-left part are toward more exclusive ones (16 changes).

are a component, but also some specific inclination to electoral system manipulation since in other countries with comparable degrees of political regime instability, particularly in Latin America, there have been fewer major changes of electoral system and those usually limited to fewer formulas.

In total, *66 changes have been in the expected direction toward more inclusive formulas, while only 16 have implied reverse moves – a proportion of more than 4 to 1.* More specifically, 18 electoral systems based on indirect elections have been replaced with direct elections, while on only 2 occasions have indirect elections been re-established (in both cases also to be replaced with direct elections later on); 40 majority rule systems have been replaced with mixed or proportional rule systems, while on only 2 occasions with indirect elections (as just mentioned); 8 mixed systems have been replaced with proportional representation systems, while only 6 reverse moves can be identified. In total there have been 40 moves to proportional representation (5 from indirect elections, 27 from majority systems and 8 from mixed systems), while reverse moves from proportional systems number only 13 (7 to majority and 6 to mixed systems). Actually the trend may be under-evaluated for lack of information regarding some countries in which indirect elections or plurality rule systems were replaced in remote periods.

It is interesting to note that *most of the new mixed systems have been the result of changes from indirect or majority rule systems*, while only a few have been established from previous proportional representation systems. Specifically, while 1 mixed system was established from indirect elections and 13 mixed systems have been the result of reforms from majority rule systems, only 6 have resulted from previous proportional systems.

These findings are confirmed for all world regions. The balance between 'inclusive' and 'exclusive' moves is positive in the Americas: 19 to 2; Western Europe: 31 to 12; Eastern Europe: 8 to 1; and Asia-Pacific: 8 to 0. In Africa there have been a significant number of changes in the expected direction since the independence movements in the 1960s, but we have only registered 1 reverse change within the present democratic periods.

Taking also into account the *eight subcategories* of electoral system above distinguished, we have counted *126 changes* in 49 countries, as shown in Table 1.4. Again, the countries with higher numbers of changes are France with 12 changes, Spain with 10, Greece and Portugal with 9 each, and Italy with 8. In total, 96 changes have been in the expected direction toward more inclusive formulas, while only 30 have been in the opposite direction – a proportion of 3.2 to 1. The general tendency is confirmed for changes between all pairs of systems. Within majority rule systems, multi-member districts with bloc ballot have been replaced with forms of limited or cumulative ballot on 2 cases and with single-member districts on 12, a total of 14, while opposite direction moves have numbered only 7. Regarding proportional representation systems, in 12 cases systems based on small districts (magnitudes lower than nine) producing low proportionality have been replaced with larger districts, while the opposite move can only be observed on 3 occasions; finally, within proportional systems with large district magnitudes, we have registered 2 changes from closed lists to open lists and 2 in the opposite

Table 1.4 Changes of assembly electoral system

Previous system	New system							
	Indirect	Maj ₁	Maj ₂	Maj ₃	Mixed	Prop ₁	Prop ₂	Prop ₃
Indirect	*	7	1	4	1	3	1	1
Majority ₁	2	*	2	12	3	6	1	0
Majority ₂	0	0	*	2	2	5	1	0
Majority ₃	0	7	2	*	8	5	4	5
Mixed	0	0	1	0	*	3	2	3
Proportional ₁	0	2	0	4	3	*	1	11
Proportional ₂	0	0	0	1	0	0	*	2
Proportional ₃	0	0	0	0	3	3	2	*

Note: Indirect: indirect elections; Maj₁: majority rules in multi-member districts; Maj₂: majority rules with limited or cumulative ballot; Maj₃: single-member districts; Mixed: mixed systems; Prop₁: proportional representation, average district magnitude < 9; Prop₂: proportional representation, average district magnitude > 8, closed lists; Prop₃: proportional representation, average district magnitude > 8, open list or double vote.

Changes in the upper-right part are toward more inclusive systems (96 changes in total), while those in the lower left part are toward more exclusive ones (30 changes in total).

direction. The general trend is also confirmed for all world regions: 27 more inclusive to 4 more exclusive changes in 13 countries of the Americas, 48 to 20 in 15 countries in Western Europe, 10 to 4 in 12 countries in Eastern Europe, and 11 to 2 in 10 countries in Asia-Pacific.

When the set of electoral system changes is limited to those produced *during present democratic periods*, major changes between the four basic categories – indirect, majority, mixed and proportional – are 19, as shown in Table 1.5. Of these, 14 have been in the expected direction toward more inclusive formulas, while only 5 have been in the opposite direction – a proportion close to 3 to 1. The relatively less overwhelming proportion of inclusive changes within present democratic regimes in comparison to all previous periods is, of course, produced by the fact that indirect assembly elections have not been in use longer in present democracies and the proportion of

Table 1.5 Major changes of assembly electoral system in present democratic periods

Previous system	New system		
	Majority	Mixed	Proportional
Majority	*	8	3
Mixed	0	*	3
Proportional	2	3	*

Note: Changes in the upper-right part are toward more inclusive systems (14 changes in total), while those in the lower-left part are toward more exclusive ones (5 changes in total).

majority rule systems has been reduced by previous changes toward more inclusive formulas. In spite of this, however, the number of changes from majority rule systems toward mixed and proportional representation systems is still very significant: 8 and 3, respectively, so 11 in total, as opposed to only 2 in the opposite direction.

More interesting is the tie that can be observed in changes between mixed and proportional systems: 3 in each direction. But these refer to fewer countries: 2 having moved toward proportional systems (Bulgaria and Croatia) and 2 toward mixed systems (Madagascar and Italy, but the latter with a total of 3 changes, back and forth). The total balance does not make mixed systems a focal point of attraction from any other system: again, most of the new mixed systems have been the result of changes either from dictatorships or from majority rule electoral systems, while only a few have been established from previous proportional representation systems. Specifically, while 7 mixed systems have been established in recent processes of democratization from authoritarian regimes (not counted in Tables 1.3 and 1.4), 8 have been the result of reforms from majority rule systems, most of them also in new electoral democracies or semi-democracies moving fast towards more inclusive formulas in the 1990s (Albania, Armenia, Lithuania, Philippines, Russia, Thailand and Ukraine, while Japan is the only case having experienced such a move among older democracies). In contrast, only 2 countries have adopted mixed systems from proportional representation (Italy twice and Madagascar). This suggests that mixed systems are, in most cases, an ersatz for proportional representation in countries recently emerged from authoritarian regimes or restrictive majority rule systems, as well as an intermediate step towards proportional representation systems when democracy endures.

In total, reverse changes from proportional representation to mixed or majority rule systems within present democratic regimes are very few, only 5 moves in 4 countries, while the number of new proportional systems established is still higher: 6. The balance between 'inclusive' and 'exclusive' moves is also positive in Eastern Europe: 6 to 0, and in Asia: 6 to 0. In Western Europe it looks negative, 2 to 4, but again this is due to several changes in just two countries: France moved twice from proportional representation to a majority rule system (in 1958 and 1988) with one inverse move in between (1986), and Italy followed the same trajectory from proportional to mixed twice (1953 and 1993) with proportionality re-established in between (1956).

Taking also into account the eight subcategories of electoral system distinguished above, we have counted 30 changes within presently existing democratic regimes, as presented in Table 1.6. Of these, 22 have been in the expected direction toward more inclusive formulas, while only 8 have been in the opposite direction – a proportion of 2.75 to 1.

For presidential electoral system changes, we have in total 28 cases in 14 countries, as shown in Table 1.7. Of these cases, 19 have been in the expected direction, while only 9 in the opposite – a proportion of 2.1 to 1. Actually 7 countries have experienced more than one change between electoral systems (while three other countries not included in the present count have suppressed direct presidential or prime

Table 1.6 Changes of assembly electoral system in present democratic periods

Previous system	New system						
	Maj ₁	Maj ₂	Maj ₃	Mixed	Prop ₁	Prop ₂	Prop ₃
Majority ₁	*	0	2	1	0	0	0
Majority ₂	0	*	0	1	0	0	0
Majority ₃	1	0	*	6	1	0	2
Mixed	0	0	0	*	0	2	1
Proportional ₁	0	0	2	1	*	0	5
Proportional ₂	0	0	0	0	0	*	1
Proportional ₃	0	0	0	2	1	1	*

Note: Maj₁: majority rules multi-member districts; Maj₂: majority rules, limited or cumulative vote; Maj₃: single-member districts; Mixed: mixed systems; Prop₁: proportional representation, average district magnitude < 9; Prop₂: proportional representation, average district magnitude > 8, closed lists; Prop₃: proportional representation, average district magnitude > 8, open list or double vote.

Changes in the upper-right part are toward more inclusive systems (22 changes in total), while those in the lower-left part are toward more exclusive ones (8 changes in total).

Table 1.7 Changes of presidential electoral system

Previous system	New system				
	College	Plurality	Q.-plurality	Majority	STV
Electoral college	*	6	1	4	0
Simple-plurality rule	2	*	2	5	0
Qualified-plurality rules	0	0	*	1	0
Majority second-round	1	4	2	*	0
Single transferable vote	0	0	0	0	*

Note: Changes in the upper-right part are toward more inclusive systems (19 changes in total), while those in the lower-left part are toward more exclusive ones (9 changes in total).

ministerial elections in recent periods: Germany, Estonia and Israel). All changes but one are in Latin America (the other is the replacement of college with direct elections in Finland).

In summary, 11 electoral colleges have been replaced with direct elections, while 2 reverse moves in Argentina and Colombia have also been replaced with direct elections later on. On 7 occasions, simple-plurality rule has been replaced with more inclusive formulas (2 qualified-plurality rules and 5 absolute-majority rules with second rounds). Of the 4 reverse moves registered towards plurality rule, 3 have also been replaced with majority second-round rules in further periods. Looking at the whole story, 13 countries have experienced changes in different periods and produced a present electoral system different from the one in the most remote period registered. Of these, 10 countries have, in the end, moved in the expected direction toward more inclusive electoral systems, while only 3 have moved in the opposite direction. Again, the trend can be under-evaluated for not

including college or plurality elections in certain countries in some remote periods. With the available information, at least one country, Peru, has passed through all the stages in the expected order of increasing inclusiveness: electoral college in 1828, plurality rule in 1896, qualified-plurality (33 per cent) rule in 1931, and majority rule with a second-round runoff since 1978.

The trend is even stronger during the present democratic period, in which 7 changes are registered, 6 in the expected direction and 1 in the opposite as presented in Table 1.8. Specifically, 2 countries have abandoned electoral colleges for direct elections with a second round (by qualified-plurality in Argentina and by absolute-majority in Finland), and 4 have replaced plurality rule with second-round procedures (by qualified-majorities in Nicaragua and by absolute-majority in Colombia, Dominican Republic and Uruguay). Only Ecuador has moved within second-round rules from absolute-majority to qualified-plurality.⁴

The number and proportion of indirect elections and majority electoral systems should decrease over time, while countries adopting proportional representation should not abandon it in significant numbers. The evolution of electoral systems in the countries selected is, in fact, the result of the processes of choice analysed in the previous paragraphs. Results are summarized in Tables 1.9, 1.10 and 1.11. The dates chosen – 1874, 1922, 1960 and 2002 – correspond to peaks in successive waves of democratization, so that the number of cases in each date is higher than in immediately previous and following years. The number of cases increase over time

Table 1.8 Changes of presidential electoral system in present democratic periods

Previous system	New system				
	College	Plurality	Q.-plurality	Majority	STV
Electoral college	*	0	1	1	0
Simple-plurality rule	0	*	1	3	0
Qualified-plurality rules	0	0	*	0	0
Majority second-round	0	0	1	*	0
Single transferable vote	0	0	0	0	*

Note: Changes in the upper-right part are toward more inclusive systems (6 changes in total), while those in the lower-left part are toward more exclusive ones (1 change in total).

Table 1.9 Number of basic assembly electoral systems over time

Electoral system	1874	1922	1960	2002
Indirect elections	6	2	–	–
Majority rules	14	11	16	20
Mixed systems	–	2	–	18
Proportional representation	–	18	23	51
Total countries:	20	33	39	89

Table 1.10 Number of assembly electoral systems over time

Electoral system	1874	1922	1960	2002
Indirect elections	6	2	–	–
Majority rules ₁	6	2	1	2
Majority rules ₂	3	2	1	–
Majority rules ₃	5	7	14	18
Mixed systems	–	2	–	18
Proportional rep ₁	–	10	12	19
Proportional rep ₂	–	2	3	12
Proportional rep ₃	–	6	8	20
Total countries:	20	33	39	89

Note: Maj₁: majority rules multi-member districts; Maj₂: majority rules, limited or cumulative vote; Maj₃: single-member districts; Prop₁: proportional representation, average district magnitude < 9; Prop₂: proportional representation, average district magnitude > 8, closed lists; Prop₃: proportional representation, average district magnitude > 8, open list or double vote.

Table 1.11 Number of presidential electoral systems over time

Electoral system	1874	1922	1960	2002
Electoral college	6	4	3	1
Simple-plurality rule	–	4	9	10
Qualified-plurality rules	–	–	1	5
Majority second-round	–	6	3	33
Single transferable vote	–	–	1	2
Total countries:	6	14	17	51

until covering all 89 countries with more than one million inhabitants that can be considered democratic in 2002. (Four of the countries included in the analysis of past periods have no present democratic regimes – Belarus, Cuba, Nigeria, Pakistan – and one no longer exists – Czechoslovakia.)

The data collected strongly confirm the hypothesis that exclusive electoral systems are more easily replaced. Indirect assembly elections decreased and virtually disappeared in the early twentieth century. Majority rule, which was the basic formula for broadening suffrage rights, opening political competition and democratizing in the late nineteenth and early twentieth centuries, was replaced in its appeal by proportional representation, especially after the First World War; this trend has intensified in recent processes of democratization. Mixed systems have also spread widely in the most recent periods, although – as mentioned – this has been more a result of changes from majority rule systems than from proportional representation ones. In total, for assembly elections, *much more than half of the present democracies in countries with more than one million inhabitants use proportional representation (57 per cent), while less than one-fourth use majority rule systems (23 per cent) and one-fifth use mixed systems (20 per cent).*

The evolution can also be observed within subcategories. Within majority rule systems, multi-member districts, which were still 43 per cent of cases in the late nineteenth century, have been reduced to 10 per cent; within proportional representation systems, those with small districts (magnitudes lower than nine) were a majority still in the 1920s, but they are now barely a third; within those proportional systems with large district magnitudes, almost two-thirds use open lists and similar procedures rather than closed lists.

For presidential electoral systems, the evolution is also very strongly in the expected direction. The number of cases also increase over time up to 51 countries. Electoral college procedures, which were once popular in the Americas, have been reduced to the single case of the United States. Simple plurality rule, which was a typical formula for new direct presidential elections in the past, is currently used by only one-fifth of the countries. Absolute-majority rule with a second round had already been popular in the early twentieth century, although at the time in all but one of the six cases registered the second round was transferred to Congress. Nowadays, relatively inclusive majority rule and qualified-plurality rules (the latter a recent innovation in a few countries), both with a direct *second-round runoff* between the two most voted candidates, encompass together *three-fourths of the countries with presidential elections*. The single transferable and supplementary votes remain the experience of only two countries in the world.

The change of an electoral system should be more likely the higher the number of effective parties in the initial institutional setting. The focus of our analysis is the immediately previous political situation from which a decision to change the electoral system may be made, including constituent assemblies, electoral support of the incumbent government, and negotiation or threat power of opposition parties.

The formula for the effective number of parties captures the number of parties weighted by their size ($N = 1/\sum p_i^2$, where p_i is the proportion of votes for each party i). It can be presumed that the higher the effective number of parties, the weaker the expectation for any single party to become the sure winner, and thus the more likely its preference for an inclusive electoral system permitting multi-partism to develop. Although the party's support in votes may not be transferred to a corresponding degree of negotiation power within the institutions as a consequence of being distorted by the existing restrictive electoral system, it can be considered a rough proxy for their strength and expectation of support, which is the basis of the corresponding threat or negotiation power. Expectations, however, may also form from recent trends marked by the emergence of new, still small, but already rising parties or pessimistic forecasts regarding its own support.

Data on the effective numbers of parties in votes have been calculated for elections immediately prior to 49 major electoral system changes in favour of more inclusive electoral formulas, that is from indirect or majority rule systems to mixed or proportional representation systems for the assembly and from college or plurality rule systems to second-round formulas for the presidency, as well as

for some pre-eminent occasions for such changes, such as constituent assemblies, that have not produced a major change to already existing inclusive electoral systems. The only cases excluded are those in which a new electoral system has been preceded by a significantly long authoritarian period without elections, thus making the former party system irrelevant for the new electoral system choice, or those during the nineteenth century with unavailable data. The average number of effective parties immediately before 49 electoral system changes in favour of more inclusive formulas in 36 countries is 3.8, thus making it clear that *multi-party systems are a fact prior and not only subsequent to the adoption of assembly rules with proportional representation or presidential rules with a second round*. The observations collected here suggest that when the number of effective parties is not much higher than three, one or two larger parties can expect to become absolute winners under the existing majoritarian rules and, consequently, they will tend to maintain them, while when the effective number of parties increases, in contrast, any party can risk becoming an absolute loser under majority rules, so they may prefer to move to mixed or proportional representation systems securing them a fair portion of seats.⁵

A sample of changes in specific regions, time periods and type of electoral systems is presented in Table 1.12. First, data for nine early, innovative changes of electoral system in Western European countries from majority rule systems to proportional representation in the early twentieth century show that the average number of effective parties in the previous assembly elections was 4.0. This means that, just before the introduction of proportional representation, multi-party systems already existed, certainly not as a consequence of the existing majority rule electoral system but in spite of it and as a factor for its change. As a contrast, the same index has been calculated for a few failed reforms of the electoral system. The introduction of proportional representation or a mixed system in the United Kingdom failed in both 1918 and 1998 in the environment of a low degree of multi-partism, which can be estimated at 2.4 and 3.1 effective parties in votes, respectively (and, of course, much more reduced in seats). In particular, on the latest occasion, the Labour Party programme for introducing proportional rules could have been encouraged by the relatively high degrees of multi-partism in votes in the two previous elections, in 1987 and 1993, as a consequence of the higher dispersion of votes between Conservatives, Labour and the Liberal/Social Democratic alliance. The Labour victory in 1997, however, somehow dismissed this trend and re-established a single-party domination.

Reverse changes from proportional representation to majority rule or mixed systems have also been attempted on a few interesting occasions in countries of Western Europe. In Germany it was formally promoted in 1967 by the would-be dominant Christian-Democrats, who could find encouragement in the relatively reduced and decreasing numbers of effective parties in the two previous elections –3.5 in 1961 and 3.1 in 1965. But the degree of pluralism was still sufficiently high to provoke the rejection of a move towards a more exclusive electoral system not only from the smaller parties but also from the second-in-size but

Table 1.12 Effective number of parties and electoral system change

Country	Year	Previous election		
		Year	Type	ENP
<i>Assembly: Changes from majority rule to proportional representation</i>				
Belgium	1899	1898	As.	3.7
Sweden	1909	1908	As.	2.6
Denmark	1915	1913	As.	3.9
Germany	1918	1912	As.	5.9
Netherlands	1918	1913	As.	6.6
Switzerland	1918	1917	As.	3.4
Italy	1919	1913	As.	2.7
Norway	1919	1918	As.	3.6
Greece	1932	1928	As.	3.4
		Average		4.0
Costa Rica	1913	1913	Pdt.	2.9
Chile	1925	1921	As.	5.6
Colombia	1931	1930	Pdt.	2.0
Cuba	1940	1940	Ct.As.	7.5
Brazil	1945	1945	As.	3.7
Bolivia	1952	1951	Pdt.	3.3
Argentina	1963	1962	As.	6.7
Ecuador	1978	1978	Pdt.	4.8
Peru	1979	1978	Ct.As.	4.8
Guatemala	1985	1984	Ct.As.	7.7
		Average		4.9
<i>Failed changes:</i>				
UK	1918	1910	As.	2.4
	1998	1997	As.	3.1
<i>Assembly: Changes from proportional representation to majority rule or mixed systems</i>				
France	1958	1956	As.	6.1
	1988	1986	As.	4.7
Italy	1953	1948	As.	2.9
	1993	1992	As.	6.6
<i>Failed changes:</i>				
Germany	1967	1965	As.	3.1
Netherlands	1977	1972	As.	6.9
<i>Presidential elections: Changes from college or plurality rule to qualified-plurality or absolute-majority with second round</i>				
Costa Rica	1936	1932	Pdt.	2.8
Argentina	1972	1965	As.	4.9
	1994	1994	Ct.As.	3.0
Ecuador	1978	1978	Pdt.	4.8
Peru	1979	1978	Ct.As.	4.8
Guatemala	1985	1984	Ct.As.	7.7
Brazil	1986	1982	As.	2.7
Colombia	1991	1990	Ct.As.	2.2

Dominican R.	1995	1994	As.	2.8
Uruguay	1996	1994	As.	3.3
	Average			3.9
<i>Failed changes:</i>				
United States	1956	1954	As.	2.0
	1969	1968	As.	2.0
Honduras	1981	1980	Ct.As.	2.1
Venezuela	1999	1998	Ct.As.	6.3
		1998	Pdt.	2.1

Note: ENP: Effective number of parties = $1/\sum p_i^2$, where p_i is the proportion of votes for party i . Previous elections: As. – Assembly; Pdt. – Presidency; Ct.As. – Constituent Assembly. Internal factionalization of parties has not been taken into account, although it was high, for instance, in Brazil and Colombia.

wary Social-Democrats. In the Netherlands the Social-Democrats promoted a similar change in 1977, but, in the face of a very high level of multi-partism – measurable by the 6.9 effective parties in the previous election – they blatantly failed in their purpose.

In two other Western European countries moves from proportional representation to majority or mixed systems have been more successful, as previously mentioned. In France, as is well known, the moves in 1958 and 1988 were completed in spite of having systems with 6.1 and 4.7 effective parties in the respective previous elections. Major institutional regime changes, initially implemented through a *coup d'état*, helped success on the first occasion, while on the second it implied the re-establishment of the previously existing electoral system after a single election with the new one. In Italy, as also mentioned, the first change from a proportional to a mixed system was attempted in 1953, when the governing Christian-Democrats were encouraged by a dramatic reduction in the degree of multi-partism in the previous two elections, from 5.6 effective parties in 1946 to 2.9 in 1948. They, however, failed to obtain the 50 per cent of popular votes that they themselves had targeted as the condition for the majority rule component of the new system to be applied and re-established proportional representation. The second reform to a new mixed system was introduced in 1993 in the environment of a high degree of multi-partism, measurable at 6.6 effective parties, but under the illusion among some left circles that the ongoing dissolution of the Christian-Democratic party would open a new period of hegemony of the left. During the first three subsequent elections in which the new system has been used the number of parties has decreased slightly but not dramatically, so making the system still vulnerable to further changes.

Consistent with the general hypothesis here discussed, for ten innovative changes of assembly electoral system from majority rules to proportional representation in countries of Latin America during the twentieth century we also find a high average number of effective parties in the constituent assembly or the immediately previous election, at 4.9, as shown in Table 1.12. Similarly, ten changes of presidential

electoral systems from electoral college or plurality rule formulas to qualified-plurality or absolute-majority formulas with a second round have been introduced, most recently, in nine countries in which the average number of effective parties was 3.9, as also shown in Table 1.12. Likewise, a few formal occasions of changing presidential electoral rules toward more inclusive formulas have failed in the context of pure two-party systems: in the United States in 1956 and 1969 where the corresponding constitutional amendments to replace the electoral college with direct elections passed the House but died in the Senate, and in Honduras in 1981 where the constituent assembly retained plurality rule. In contrast, plurality rule for the election of president was also maintained in the new constitution of Venezuela in 1999, in spite of having been approved by a constituent assembly elected with 6.3 effective parties, together with other restrictive institutional reforms concentrating powers in the presidency. This decision was encouraged by the results of the previous presidential election, won at a single round by a large coalition majority with 56 per cent of votes and only 2.1 effective parties in the system. However, in spite of the very high concentration of power in the presidency, the high degree of legislative multi-partism sustained further pressure for opening up the political system in Venezuela.

Change of an electoral system could be more likely the shorter its duration. If this hypothesis were correct, the duration of the electoral systems that have been changed should be, as a whole, lower than the presently existing systems. Testing this hypothesis, however, is difficult because we do not know whether and when the present electoral systems will be changed in the future; their duration, as measured until the end of 2002, will thus be undervalued. The duration of the four basic types of assembly electoral system in terms of the number of elections at which they have been used is summarized in Table 1.13.

Indirect elections disappeared, as previously observed. For each of all the presently existing basic electoral system types – that is those based on majority rules, mixed systems and proportional representation – the data collected seems to support the hypothesis presented above: electoral systems that were replaced in the past had been, on average, less durable than those presently existing. Also, restrictive electoral systems were replaced even though they had endured a long

Table 1.13 Duration of assembly electoral systems

	Electoral system			
	Indirect	Majority	Mixed	Proportional
<i>Systems replaced in the past</i>				
No. of electoral systems counted	17	40	9	12
Average no. of elections/system	9.4	10.2	2.9	3.9
<i>Current systems (end of 2002)</i>				
No. of electoral systems counted	0	22	18	50
Average no. of elections/system	0	15.7	3.5	11.2

time, while more inclusive systems could only be replaced if they had not had the time to obtain endogenous support. Specifically, systems based on indirect elections or majority rules lasted for about ten elections each on average before they were replaced, while newer and *more inclusive systems, that is mixed and proportional systems, were changed very soon: in most cases after just one election* (and after less than three or four elections on average, respectively) – in other words, before they were entrenched in the organization and action of already existing political parties and electoral candidates.

With regard to the presently existing electoral systems, both majority rule and proportional representation systems have endured some considerable time on average, which would imply that most of them may be difficult to change in the future. The duration of present majority systems, however, relies significantly on the extreme case of the House of Representatives of the United States, which accounts for almost a third of the total number of elections held with presently existing majority systems; if this is dropped from the sample, the average duration of presently existing majority systems is reduced to 11.3, only slightly higher than those that have been replaced in the past. In contrast, most of the presently used mixed systems are still recent, having been used in most cases for only two or three elections, which may suggest that a number of them (that is, the actors playing within the existing systems) may be able to present softer resistance to change than most of the majority and proportional current systems.

The available data on the duration of presidential electoral systems, as shown in Table 1.14, are not able to give support to the hypothesis previously presented regarding the longer duration of existing electoral systems. This may be partly due to the inherent exclusiveness of all presidential electoral systems, which necessarily produce a single absolute winner and may provoke subsequent rejection by all the losers, in contrast to many assembly electoral systems permitting multiple parties to exist and share representation. It can be noted that, in the past, the average duration of presidential electoral systems was even shorter than the average duration of assembly electoral systems that were also based upon plurality or majority rules (shown in Table 1.13). Low numbers of elections for current presidential electoral systems also reflect the fact that most of them exist in recent democracies in Latin America and are thus still necessarily short-living. All the current formulas

Table 1.14 Duration of presidential electoral systems

	Electoral system				
	College	Plurality	Q. plurality	Majority	STV
<i>Systems replaced in the past</i>					
No. of electoral systems counted	11	9	1	7	0
Average no. of elections/system	8.2	7.3	6.0	7.7	0
<i>Current systems (end of 2002)</i>					
No. of electoral systems counted	1	11	5	34	2
Average no. of elections/system	54	6.9	5.4	4.1	6.5

of direct presidential elections have been used, so far and on average, during shorter periods than those that were changed in the past – in most cases, for only two or three elections – which may suggest that they may still be significantly vulnerable to further changes.

Notes

1. To be fair, Maurice Duverger also subtly noted that ‘the first effect of proportionality is to maintain an already existing multiplicity . . . On the whole, proportional representation maintains virtually without change the party system existing at the time of its adoption’, but he did not elaborate (Duverger, 1950: 346). For an early, although also brief, statement more explicitly putting the hypothetical line of causality upside down, see John G. Grumm: ‘the generally-held conclusions regarding the causal relationships between electoral systems and party systems might well be revised. . . it may be more accurate to conclude that P.R. is a result rather than a cause of the party system in a given country’ (Grumm, 1958: 375). More extensively, Leslie Lipson developed some historical analysis from the premise that ‘chronologically, as well as logically, the party system is prior to the electoral system’ (Lipson, 1964: 343); similarly, Bo Särilvick (1982) developed a strategic analysis of the choice of electoral systems in Scandinavian countries; Vernon Bogdanov echoed the hypothesis that electoral systems could be the dependent variable, but he denied any possibility of generalizing (Bogdanov, 1982: 254–61). Other authors could be mentioned that pointed out a relation between social structures rather than political parties and electoral systems, a subject deserving to be dealt with elsewhere. For sources and discussion, see also Gary Cox (1997: 14–19). In more formal literature, Anthony Downs assumed endogeneity of the electoral system (Downs, 1957), while David P. Quintal sketched a formal model of electoral system choice based on benefit-cost analysis (Quintal, 1970).
2. Terms in bold italics throughout the text may be found in the Glossary.
3. Other quotas proposed and used in the United States for apportioning a high number of seats among a relatively smaller number of states, such as those invented by former president John Quincy Adams and by mathematicians Edward V. Huntington and Joseph A. Hill, cannot be used for elections with more candidates than seats; see Balinski and Young (1982), Marshall, Olkin and Pukelsheim (2002).
4. The findings presented here, although based on differently formulated hypotheses and different categories of electoral systems, are consistent with other empirical tests. Specifically, Arend Lijphart analysed electoral system changes in 16 democratic countries from 1945 to 1999, finding that more than two-thirds had been in favour of greater proportionality (Lijphart, 1994: 52–6). André Blais and Louis Massicotte analysed electoral systems existing in 166 democratic and non-democratic countries around 1995, finding, among other correlations, that the more democratic a country the more likely it is to adopt proportional representation and the less likely it is to have a majority system (Blais and Massicotte, 1997).
5. In addition to the 49 cases reported here of electoral system changes in favour of more inclusive formulas or constituent assemblies confirming proportional representation or presidential runoff rules, we also have 7 cases in 3 countries of changes in the opposite direction. In order to increase the number of cases with changes towards more exclusive formulas and to correct some selection bias, a logit regression has been run with all those cases mentioned plus the present (end of 2002) assembly electoral systems in all 89 democratic countries with more than one million inhabitants. The latter addition is based on the assumption, central in the present work, that the number of parties is not only produced or permitted by the electoral system but it also supports its continuity. The result of the logit regression between effective number of parties and electoral systems adopted in the past or supported in the present for 142 cases is in the expected sign and significant, thus supporting our hypothesis.

Logit regression: Dichotomous dependent variable: $\log(X/1-X)$, with $X=1$ for changes in favour of more inclusive systems or present proportional representation, mixed or second-round presidential systems, and $X=0$ for changes in favour of more exclusive systems or present indirect elections, assembly majority rules, or college or plurality presidential systems. Independent variable: the effective number of parties in the election immediately prior to electoral system change or constituent assembly or the latest election with the present systems before 2003. Number of cases: 142. Coefficient: 0.259. Standard error: 0.154. Significance: 0.092. Cases included: from indirect to majority to mixed or to proportional systems – Albania 1992, Argentina 1963, Argentina 1972, Argentina 1994 (presidential (P)), Armenia 1995, Belgium 1899, Bolivia 1952, Brazil 1945, Brazil 1986 (P), Bulgaria 1991, Chile 1925, Colombia 1931, Colombia 1991 (P), Costa Rica 1913, Costa Rica 1936 (P), Croatia 2000, Cuba 1940, Denmark 1915, Dominican Republic 1995 (P), Ecuador 1978, Ecuador 1997, El Salvador 1984, France 1946, France 1986, Germany 1918, Greece 1932, Greece 1936, Greece 1955, Greece 1958, Guatemala 1985, Indonesia 2002, Italy 1919, Italy 1946, Italy 1956, Japan 1994, Moldova 1993, Netherlands 1918, New Zealand 1993, Norway 1919, Peru 1933, Peru 1979, Philippines 1995, Russia 1993, South Africa 1994, Sweden 1909, Switzerland 1918, Thailand 1997, Ukraine 1993, Uruguay 1996 (P); in the opposite direction – France 1958, France 1988, Greece 1928, Greece 1933, Greece 1952, Italy 1953, Italy 1993. Present electoral systems: all 94 countries in Summary Table 1A except Belarus, Czechoslovakia, Cuba, Nigeria and Pakistan.

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Summary Table 1A Assembly electoral systems

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- *Albania*: Maj₃ – 1991 – 1; Mix – 1992 – 3
 - *Argentina*: Maj₁ – 1826 – 1 // 1853 – 9; Maj₂ – 1912 – 10 // Maj₃ – 1946 – 2 // 1957 – 4 // PR₂ – 1963 – 1 // 1973 – 1 // 1983 – 10
 - *Armenia*: Maj₃ – 1990 – 1; Mix – 1995 – 1; 1999 – 1
 - *Australia*: Maj₃ – 1902 – 6; 1918 – 33
 - *Austria*: PR₁ – 1918 – 4 // 1945 – 8; PR₃ – 1970 – 9
 - *Bangladesh*: Maj₃ – 1971 – 1 // 1979 – 1 // 1991 – 3
 - *Belarus*: Maj₃ – 1996 – 2
 - *Belgium*: Maj₁ – 1831 – 17; 1877 – 11; PR₁ – 1899 – 8; PR₃ – 1919 – 7 // 1946 – 18
 - *Benin*: PR₁ – 1991 – 3
 - *Bolivia*: Maj₂ – 1924 – ?; PR₂ – 1952 – 5 // 1966 – 1 // 1980 – 4; PR₃ – 1994 – 2
 - *Bosnia-Herzegovina*: PR₁ – 1996 – 4
 - *Botswana*: Maj₃ – 1965 – 8
 - *Brazil*: Ind – 1824 – 4 // 1860 – 4; 1875 – 1; Maj₃ – 1881 – 2; Maj₁ – 1890 – 1; Maj₂ – 1892 – 4; 1904 – 5 // 1927 – 2; Mix – 1932 – 1 // PR₃ – 1945 – 3; 1950 – 3 // 1982 – 6
 - *Bulgaria*: Mix – 1990 – 1; PR₂ – 1991 – 4
 - *Canada*: Maj₃ – 1867 – 2; 1874 – 25; 1972 – 9
 - *Cape Verde*: PR₁ – 1992 – 2
 - *Central African Rep.*: Maj₃ – 1993 – 2
 - *Chile*: Maj₁ – 1833 – ?; Maj₂ – 1879 – ?; PR₁ – 1925 – 1 // 1932 – 11 // 1980 – 3
 - *Colombia*: Maj₁ – 1857 – ?; Maj₃ – 1886 – ?; Maj₂ – 1910 – 5; PR₁ – 1931 – 10; Mix – 1951 – 2 // PR₁ – 1958 – 6; 1970 – 10
 - *Costa Rica*: Ind – 1893 – 10; Mix – 1913 – 15 // PR₁ – 1953 – 13
 - *Croatia*: Mix – 1995 – 1; PR₂ – 2000 – 1
 - *Cuba*: Ind – 1901 – 10 // PR₂ – 1940 – 6 //
 - *Czechoslovakia*: PR₁ – 1920 – 4 // PR₃ – 1990 – 1
 - *Czech Rep.*: PR₃ – 1992 – 3; 2002 – 1
 - *Denmark*: Ind – 1834 – ?; Maj₃ – 1848 – 22; 1901 – 7; PR₃ – 1915 – 1; PR₁ – 1920 – 11; PR₃ – 1953 – 18
 - *Dominican Rep.*: PR₁ – 1966 – 9; 2002 – 1
 - *Ecuador*: Maj₁ – 1895 – 6 // 1928 – 1 // PR₂ – 1946 – 7 // 1978 – 8
 - *El Salvador*: Maj₁ – 1886 – 1 // PR₁ – 1963 – 8 // 1984 – 6
 - *Estonia*: PR₃ – 1919 – 6 // PR₁ – 1989 – 1; PR₃ – 1992 – 4
 - *Finland*: Ind – 1863 – ?; PR₃ – 1906 – 17 // 1945 – 14
 - *France*: Ind – 1789 – 1; 1791 – 2; 1795 – 4; 1815 – 2; Maj₁ – 1817 – 3; Maj₃ – 1820 – 1; 1824 – 3; Maj₁ – 1848 – 2; 1871 – 2; Maj₃ – 1875 – 3; Maj₁ – 1885 – 1; Maj₃ – 1889 – 7 // PR₁ – 1919 – 2; Maj₃ – 1927 – 3 // PR₁ – 1945 – 3; 1951 – 2; Maj₃ – 1958 – 7; PR₁ – 1986 – 1; Maj₃ – 1988 – 4
 - *Georgia*: Mix – 1995 – 2
 - *Germany*: Maj₃ – 1871 – 13; PR₂ – 1919 – 1; 1920 – 8 // PR₃ – 1949 – 1; 1953 – 1; 1956 – 8; 1985 – 5
 - *Ghana*: Maj₃ – 1956 – 2 // 1969 – 1 // 1979 – 4
 - *Greece*: Ind – 1822 – 3 // 1843 – 1; Maj₁ – 1844 – 8; 1864 – 21 // 1920 – 2; PR₁ – 1926 – 1; Maj₃ – 1928 – 1; PR₁ – 1932 – 1; Maj₁ – 1933 – 1; PR₁ – 1936 – 1 // 1946 – 3; Maj₁ – 1952 – 1; Mix – 1956 – 1; PR₁ – 1958 – 1; 1961 – 2 // 1974 – 4; 1989 – 3; 1990 – 3
 - *Guatemala*: PR₁ – 1944 – 3 // 1984 – 4
 - *Honduras*: Maj₁ – 1879 – 1 // 1954 – 1; PR₁ – 1966 – 6
 - *Hungary*: Mix – 1922 – ?; 1990 – 4
 - *India*: Maj₃ – 1950 – 2; 1961 – 3 // 1977 – 8
 - *Indonesia*: PR₃ – 1953 – 2 // PR₂ – 1999 – 1

- *Ireland*: PR₁ – 1922 – 25
 - *Israel*: PR₂ – 1949 – 1; 1951 – 6; 1973 – 5; 1992 – 3
 - *Italy*: Maj₃ – 1879 – 4; Maj₁ – 1882 – 3; Maj₃ – 1892 – 7; PR₃ – 1919 – 3; Mix – 1923 – 1 // PR₃ – 1946 – 2; Mix – 1953 – 1; PR₃ – 1956 – 9; Mix – 1993 – 3
 - *Jamaica*: Maj₃ – 1962 – 10
 - *Japan*: Maj₂ – 1946 – 1; 1947 – 19; Mix – 1994 – 2
 - *Kenya*: Maj₃ – 1963 – 10
 - *Korea, South*: Maj₃ – 1950 – 1 // Mix – 1962 – 3 // 1987 – 4
 - *Latvia*: PR₃ – 1922 – 4 // 1992 – 4
 - *Lebanon*: Maj₁ – 1943 – 3; 1953 – 6 // 1992 – 3
 - *Lithuania*: Maj₃ – 1920 – 1; PR₂ – 1922 – 3 // Maj₃ – 1990 – 1; Mix – 1992 – 2; 2000 – 1
 - *Macedonia*: Mix – 1998 – 2
 - *Madagascar*: PR₁ – 1992 – 1; Mix – 1998 – 2
 - *Malawi*: Maj₃ – 1994 – 2
 - *Malaysia*: Maj₃ – 1957 – 3 // 1974 – 7
 - *Mali*: Maj₁ – 1992 – 4
 - *Mexico*: Ind – 1824 – 5 // 1843 – 3 // 1857 – 2 // 1867 – 4 // Maj₃ – 1917 – 17; Mix – 1963 – 5; 1977 – 6; 1996 – 3
 - *Moldova*: Maj₃ – 1989 – 1 // PR₂ – 1993 – 3
 - *Mongolia*: Maj₃ – 1989 – 1; Maj₁ – 1992 – 1; Maj₃ – 1996 – 2
 - *Mozambique*: PR₂ – 1993 – 2
 - *Namibia*: PR₂ – 1990 – 2
 - *Nepal*: Maj₃ – 1959 – 1 // 1981 – 5
 - *Netherlands*: Ind – 1815 – ?; Maj₁ – 1848 – ?; Maj₃ – 1887 – 9; PR₃ – 1918 – 5; 1933 – 1 // 1946 – 17
 - *New Zealand*: Maj₃ – 1890 – 6; 1908 – 28; PR₃ – 1993 – 3
 - *Nicaragua*: PR₁ – 1984 – 4
 - *Nigeria*: Maj₃ – 1959 – 2 // 1979 – 2 // 1992 – 1 // 1999 – 1 //
 - *Norway*: Ind – 1815 – 24; 1884 – 7; Maj₃ – 1906 – 5; PR₁ – 1921 – 6 // 1945 – 2; 1953 – 8; PR₃ – 1985 – 5
 - *Pakistan*: Maj₃ – 1970 – 2 // 1988 – 4 // 2002 – 1
 - *Panama*: Ind – 1916 – 2 // PR₁ – 1946 – 8 // Mix – 1983 – 1 // 1989 – 1 // 1994 – 2
 - *Papua New Guinea*: Maj₃ – 1975 – 6
 - *Paraguay*: PR₁ – 1993 – 2 //
 - *Peru*: Ind – 1828 – 1 // Maj₂ – 1861 – 1 // 1868 – 4; PR₁ – 1933 – 2 // 1950 – 3 // 1963 – 1 // 1979 – 3 // PR₃ – 1995 – 1 // 2002 – 2
 - *Philippines*: Maj₁ – 1935 – 2; Maj₃ – 1953 – 5 // 1987 – 3; Mix – 1995 – 2
 - *Poland*: PR₁ – 1918 – 3 // 1928 – 2 // PR₃ – 1991 – 1; 1993 – 2; PR₂ – 2001 – 1
 - *Portugal*: Ind – 1820 – 1; Maj₁ – 1822 – 1; Ind – 1826 – 1 // 1834 – 3; Maj₁ – 1852 – 2; Maj₃ – 1859 – ?; 1878 – 2; 1884 – 2; Maj₁ – 1895 – ?; Mix – 1896 – ?; Maj₂ – 1901 – ?; 1911 – 1; PR₁ – 1915 – ? // PR₂ – 1975 – 11
 - *Romania*: PR₁ – 1990 – 4
 - *Russia*: Ind – 1917 – 1; Maj₃ – 1990 – 1; Mix – 1993 – 3
 - *Senegal*: Mix – 1992 – 2
 - *Slovakia*: PR₃ – 1992 – 4
 - *Slovenia*: PR₃ – 1990 – 4
 - *South Africa*: PR₃ – 1994 – 2
 - *Spain*: Ind – 1810 – 1; 1812 – 1 // 1820 – 3 // 1834 – 1; Maj₁ – 1836 – 1; Ind – 1836 – 1; Maj₁ – 1837 – 6; Maj₃ – 1846 – 4; Maj₁ – 1854 – 1; Maj₃ – 1857 – 4; Maj₂ – 1865 – 2; 1868 – 6; Maj₃ – 1878 – 2 // Maj₂ – 1931 – 3 // PR₁ – 1977 – 8
 - *Sri Lanka*: Maj₃ – 1946 – 7 // 1977 – 1; PR₃ – 1978 – 3
 - *Sweden*: Ind – 1810 – ?; 1866 – 15; PR₁ – 1909 – 13; 1952 – 6; PR₃ – 1970 – 11
 - *Switzerland*: Ind – 1848 – 8; 1872 – 10; 1900 – 6; PR₁ – 1918 – 22
 - *Taiwan*: Mix – 1991 – 4
-

Summary Table 1A (Continued)

-
- *Thailand*: Maj₁ – 1978 – 8; Mix – 1997 – 1
 - *Trinidad-Tobago*: Maj₃ – 1962 – 10
 - *Turkey*: Maj₁ – 1946 – 4 // PR₁ – 1961 – 1; 1965 – 1; 1969 – 1; 1973 – 2 // 1982 – 2; 1991 – 1; 1995 – 3
 - *Ukraine*: Maj₃ – 1990 – 1; Mix – 1994 – 3
 - *United Kingdom*: Maj₁ – 1832 – 9; 1868 – 2; Maj₃ – 1885 – 15; 1949–15
 - *United States*: Maj₁ – 1789 – 26; Maj₃ – 1842 – 63; 1968 – 18
 - *Uruguay*: PR₁ – 1918 – 6 // PR₃ – 1934 – 10 // 1984 – 4
 - *Venezuela*: PR₁ – 1946 – 1 // 1958 – 7; PR₃ – 1989 – 2; PR₁ – 1999 – 1
 - *Yugoslavia*: PR₁ – 1992 – 3
-

Notes

This table summarizes the detailed five world regional tables included at the end of the opening chapters to each of the parts in this book.

- *Information for each country*: type of electoral system – starting year – number of elections.
- *Type of electoral system*: Ind.: indirect elections; Maj₁: multi-member districts, bloc ballot, majority rules; Maj₂: multi-member districts, limited or cumulative ballots, majority rules; Maj₃: single-member districts, majority rules; Mix: mixed system; PR₁: average district magnitude lower than nine, proportional representation; PR₂: average district magnitude higher than eight, closed lists, proportional representation; PR₃: average district magnitude higher than eight, open lists, open ballot or double vote, proportional representation.
- *Key*: The sign // indicates a period without elections or with authoritarian fake elections. Present democratic periods are counted since the latest //.

Source: See Appendix: Notes and Sources for Summary Tables at the end of the book.

Summary Table 1B Presidential electoral systems

-
- *Argentina*: Col – 1853 – 12 // 1931 – 2 // 1946 – 1; Plu – 1949 – 1 // Col – 1955 – 2 // Maj – 1972 – 2 // Col – 1983 – 2; QP – 1994 – 2
 - *Armenia*: Maj – 1991 – 3
 - *Austria*: Maj – 1945 – 10
 - *Bangladesh*: Plu – 1977
 - *Belarus*: Maj – 1996 – 2
 - *Benin*: Maj – 1991 – 2
 - *Bolivia*: Maj – 1899 – 4 // 1921 – 3 // 1940 – 1 // 1947 – 1 // 1951 – 1; Plu – 1956 – 3 // Maj – 1967 – 6
 - *Bosnia-Herzegovina*: Plu – 1998 – 2
 - *Brazil*: Col – 1834 – 2; Maj – 1892 – 12 // Plu – 1945 – 4 // Maj – 1986 – 4
 - *Bulgaria*: Maj – 1991 – 3
 - *Cape Verde*: Maj – 1992 – 2
 - *Central African Rep.*: Maj – 1993 – 2
 - *Chile*: Maj – 1925 – 11 // Maj – 1989 – 3
 - *Colombia*: Col – 1821 – 1 // Col – 1832 – 7; Plu – 1853 – 2 // Col – 1863 – 11 // Col – 1886 – 2 // 1904 – 1; Plu – 1910 – 10 // 1958 – 9; Maj – 1991 – 3
 - *Costa Rica*: Col – 1889 – 4 // 1909 – 1; Maj – 1913 – 2 // 1919 – 4; QP – 1936 – 4 // 1953 – 13
 - *Croatia*: Maj – 1990 – 3
 - *Cuba*: Col – 1901 – 5 // Col – 1940 – 3 //
 - *Dominican Republic*: Plu – 1962 – 1 // 1966 – 8; Maj – 1995 – 2
 - *Ecuador*: Maj – 1895 – 7 // 4 // Maj – 1978 – 5; QP – 1997 – 2
 - *El Salvador*: Maj – 1886 – 8 // Maj – 1963 – 3 // Maj – 1983 – 4
 - *Estonia*: Maj – 1992 – 1
 - *Finland*: Col – 1919 – 10; Maj – 1988 – 3
 - *France*: Maj – 1848 – 1 // Maj – 1962 – 7
 - *Georgia*: Maj – 1995 – 2
 - *Germany*: Maj – 1918 – 2 //
 - *Ghana*: Maj – 1979 – 1 // 1992 – 3
 - *Guatemala*: Maj – 1944 – 2 // Maj – 1984 – 4
 - *Honduras*: Maj – 1879 – 3 // 1954 – 3 // Plu – 1966 – 5
 - *Ireland*: STV – 1937 – 9
 - *Israel*: Maj – 1996 – 3
 - *Kenya*: QP – 1963 – 1 // 1992 – 3
 - *Korea, South*: Plu – 1950 – 3 // 1963 – 3 // 1987 – 4
 - *Lithuania*: Maj – 1992 – 3
 - *Macedonia*: Maj – 1994 – 2
 - *Madagascar*: Maj – 1992 – 3
 - *Malawi*: Plu – 1994 – 2
 - *Mali*: Maj – 1992 – 3
 - *Mexico*: Col – 1824 – 3 // 1847 – 2 // 1857 – 5; Col – 1874 – 10 // Plu – 1917 – 17
 - *Moldova*: Maj – 1991 – 2
 - *Mongolia*: Maj – 1993 – 3
 - *Mozambique*: Maj – 1994 – 2
 - *Namibia*: Maj – 1990 – 2
 - *Nicaragua*: Maj – 1911 – 2 // Plu – 1984 – 2; QP – 1995 – 1; QP – 1999 – 1
 - *Nigeria*: QP – 1979 – 2 // QP – 1993 – 1 // 1999 – 1
 - *Panama*: Plu – 1916 – 4 // 1952 – 5 // 1984 – 1 // 1989 – 1 // 1994 – 2
 - *Peru*: Col – 1828 – 1 // Col – 1861 – 1 // 1866 – 1 // 1868 – 3 // Plu – 1896 – 5 // 1915 – 1 // QP – 1931 – 1; QP – 1933 – 2 // 1956 – 1 // 1962 – 1 // 1963 – 1 // Maj – 1978 – 7
 - *Philippines*: Plu – 1935 – 6 // 1987 – 2
-

Summary Table 1B (Continued)

-
- *Poland*: Maj – 1990 – 3
 - *Portugal*: Maj – 1976 – 6
 - *Romania*: Maj – 1990 – 4
 - *Russia*: Maj – 1993 – 3
 - *Slovenia*: Plu – 1991 – 3
 - *Sri Lanka*: SV – 1978 – 4
 - *Taiwan*: Plu – 1996 – 2
 - *Ukraine*: Maj – 1994 – 2
 - *United States*: Col – 1789 – 54
 - *Uruguay*: Plu – 1899 – 12 // 1942 – 5 // 1984 – 3; Maj – 1996 – 1
 - *Venezuela*: Col – 1830 – 2 // 1847 – 3 // Col – 1874 – 1 // Plu – 1946 – 1 // 1958 – 10
-

Notes

This table summarizes the detailed five world regional tables included at the end of the opening chapters to each of the parts in this book.

- *Information for each country*: type of electoral system – starting year – number of elections.
- *Type of electoral system*: Col: electoral college; Plu: Plurality rule; QP: qualified plurality rules; Maj: majority runoff; STV: single-transferable vote; SV: supplementary vote.
- *Key*: The sign // indicates a period without elections or with authoritarian fake elections. Present democratic periods are counted since the latest //.

Source: See Appendix: Notes and Sources for Summary Tables at the end of the book.

Glossary and Index

Note

K: number of candidates; M: magnitude or number of seats; V: number of votes per voter.

Absolute majority rule. The winner is the alternative with more than half the votes, whether by *simple majority* or by *qualified-majority*.

Additional-member system. See *personalized proportional representation*.

Alternative vote. In a single-member district by majority rule, each voter can order all the candidates as preferred; seats are allocated by majority first preferences, or by elimination of least voted candidates and voters' second and further preferences ($K=V>M=1$). Also called majority-preferential (Australia) or instant-runoff (United States) or optional-preferential voting (Papua New Guinea). See:

Australia 1918–	467, 475
Ireland president 1937–	208

Appartement (French). In proportional representation systems, parties present separate lists of candidates but declare themselves linked (parented) for joint vote counting and seat allocation. See:

France 1951–56	195–7, 209
Italy 1953	200–1, 237

Apportionment. Allocation of seats among districts on the basis of population. Also called redistribution (Britain). See *exact quota*, *sufficient quota*.

Approval ballot or voting. In a single-member district, usually by plurality rule, each voter can vote for as many candidates he or she wishes, whether more, less or in equal number to seats in the district ($K>V\geq M=1$).

At-large. A single multi-member district to elect all the seats in the assembly.

Ballottage (French). See *runoff*.

Bloc ballot. In a multi-member district by plurality rule, each voter can vote for a closed list of candidates ($K\geq M=V>1$). See:

Canada 1874–1968	97
United States 1789–1968	103, 108–9, 155

Categoric ballot. Each voter can vote for only one candidate or party list. See *closed list*, *single ballot*, *single non-transferable vote*.

Choice voting. See *single transferable vote*.

Closed list. In a multi-member district by proportional representation, each voter has to choose a list of candidates as given ($K\geq M=V>1$). Also called *liste pré-ordonnée bloquée* (French), *lista cerrada y bloqueada* (Spanish).

Coexistence. Mixed system in which different rules are used in different districts to allocate different portions of seats in the assembly. See:

Costa Rica 1913–48	98–9, 133
Greece 1956	198–9
Madagascar 1998–	437
Panama 1984–	102
Portugal 1896, 1915	203–4

College. Chamber of electors, usually elected in multi-member districts, who choose the president or some other officer. Early experiences include the elections of the pope and several central European kings since the eleventh century, as well as the German emperor. See for presidential elections:

Argentina 1853–1946		Cuba 1901–48	106
1955–63, 1983–89	105, 110	Mexico 1824–1911	107
Brazil 1834–38 (for the election of Regent)	105, 121	Peru 1828–76	108
Colombia 1821–53, 1863, 1904	106	United States since 1789	108–9, 155, 164
Costa Rica 1889–1909	106, 133	Venezuela 1830–77	109

Compensatory seat allocation. See *personalized proportional representation*.

Constituency. See *district*.

Cumulative ballot or vote. In multi-member districts by plurality rule, each voter can cast more than one vote for a single candidate ($K \geq V \leq M > 1$). See:

Brazil 1904–30	96–7, 121
Chile 1879–1924	97
Peru 1861–1919	102
Switzerland 1918–	206–7, 279
United States: some local and state elections	155, 164

Deviation from proportionality. See *disproportionality*.

D'Hondt formula. Proportional representation formula invented by civil law professor Victor d'Hondt (Ghent, Belgium, 1841–1901). See *sufficient quota*.

Disproportionality. Measure of the aggregate deviation (D) between the proportion of votes obtained and the proportion of seats received by each party. It can be calculated either by deviation: $D = \frac{1}{2} \sum |v_i - s_i|$, or by least squares: $D = \sum (v_i^2 - s_i^2)^{1/2}$, where v_i is the proportion of votes and s_i is the proportion of seats for each party i , or by some other formulas.

District. Area for counting votes and allocating seats. See also *magnitude*, *multi-member district*, *single-member district*. Also called tier, constituency or division (Britain), electorate (Australia and New Zealand), *circonscription* (French), *circunscripción* (Spanish).

Districting. The drawing of district boundaries. Also called redistribution (Britain).

Double-round runoff. See *runoff*.

Double-vote system. See *personalized proportional representation*.

Droop formula. Proportional representation quota invented by lawyer Henry R. Droop (London, UK, 1831–84). Divisor between the total number of votes and the total number of seats plus one in a district, $1/M + 1$ (in order to prevent the allocation of more seats than available, this value is increased by one unit or rounded up to the next integer). It requires a supplementary criterion or tier to allocate the remaining seats: see *largest remainders*, *multiple tiers*. See:

Czechoslovakia 1920–35, 1990	326
Czech Republic 1992–98	326, 347
Ireland 1922–	200
Slovakia 1992–	330
South Africa 1994–	438, 440

Effective number of parties. Measure of the number of parties (N) weighed by their size, whether in votes or in seats. $N = 1/\sum p_i^2$, where p_i is the proportion of votes or seats for each party i .

Exact or simple quota. Divisor between the total number of votes (to allocate seats) or inhabitants (for apportionment) and the total number of seats in a district, $1/M$. It

requires a supplementary criterion or tier to allocate the remaining seats: see *largest remainders*, *multiple tiers*. Also called Hamilton, Hare or Hare-Niemeyer formula. See:

Albania 1992–	325	Greece 1926, 1932, 1936–51,	
Austria 1971–	193	1958–	198–9
Belgium 1919–	193	Guatemala 1944–53	100
Benin 1991–	436	Israel 1951–69, 1992–	468–9
Brazil 1932–45	96–7, 121	Italy 1924, 1946–48, 1956–92	200–1, 237
Colombia 1931–	98	Lithuania 1920–26, 1992–	327–8, 332
Costa Rica 1953–	98–9, 133	Madagascar 1993	437
Cuba 1940–50	99	Namibia 1990–	437
Denmark 1915–	194	The Netherlands 1918–	201–2
Ecuador 1947–96	99–100	Nicaragua 1987–	101
El Salvador 1963–	100	Poland 1991	329, 369
Estonia 1989–	326–7, 332	Romania 1993–	329
France 1986	196–7, 209	Slovenia 1990–	330
Germany 1920–33, 1985–	197–8, 222	Sri Lanka 1978–	472
Honduras 1981–	100	Turkey 1965	473
Indonesia 1953–55, 1991–	468, 497	Venezuela 1989–	104

First-past-the-post. See *plurality rule*.

Fixed quota. Number of votes to allocate seats. Proposed separately by Gergonne and Gilpin. See:

Germany 1919	197–8
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Flexible list. See *open list*.

Free list. See *apparentement*, *open ballot*, *open list*.

Gergonne formula. Proportional representation formula invented by mathematician Joseph Diaz Gergonne (Nancy, France, 1771 – Montpellier, France, 1859). See *fixed quota*.

Gerrymandering. Manipulative *districting* or *apportionment*.

Gilpin formula. Proportional representation formula invented by manufacturer Thomas Gilpin (Chester C., Pennsylvania, USA, 1728 – Winchester, Virginia, USA, 1778). See *fixed quota*.

Hagenbach-Bischoff formula. Proportional representation procedure invented by physics professor Eduard Hagenbach-Bischoff (Basel, Switzerland, 1833–1910) to calculate the ‘sufficient’ or d’Hondt quota by starting tentatively with the quota $1/M + 1$ and decreasing it down until fitting. See *sufficient quota*.

Hamilton formula. Proportional representation quota invented by politician Alexander Hamilton (Newis, West Indies, 1755 – Weehawken, New Jersey, USA, 1804). See *exact quota*.

Hare formula. Proportional representation quota invented by lawyer Thomas Hare (London, UK, 1806–1901). See *exact quota*.

Hare-Niemeyer formula. See *exact quota*.

Highest average. See *sufficient quota*.

Imperiali formula. Proportional representation quota based on the divisor between the total number of votes and the total number of seats plus two in a district, $1/M + 2$. It can be a supplementary criterion to allocate remaining seats after using some other quota: see *largest remainders*, *multiple tiers*. See:

Italy 1956–92	200–1, 237
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Instant-runoff. See *alternative vote*.

Jefferson formula. Proportional representation quota invented by politician and United States President Thomas Jefferson (Shadwell, Virginia, USA, 1743 – Monticello, Virginia, USA, 1826). See *sufficient quota*.

Largest remainders. Frequent supplementary formula to allocate the remaining seats after using the exact (Hare), Droop or other quotas.

Lemas. Each voter can vote for a single candidate; seats are allocated on the basis of all a party's candidates' votes, and filled by those candidates with higher numbers of votes within each party. See *apparentement*, *open list*. See:

Uruguay 1919–99 104

Limited vote. In a multi-member district by plurality rule, each voter can vote for fewer candidates than seats in the district ($K \geq M > V > 1$). Also called *lista incompleta* (Latin America). See *single non-transferable vote*. See:

Argentina 1912–30	95–110	Japan 1946	469, 512
Bolivia 1924	95–6	Portugal 1884–95, 1901–11	203–4
Brazil 1875–78, 1892–1930	96–7, 121	Spain 1878–1936	204–5
Colombia 1910–29	98	United Kingdom 1868–80	207
Italy 1882–90	200–1		

Lottery. The winner(s) is selected by some random device producing impartiality and rotation in office.

Magnitude. Number of seats to be elected in a district.

Majority rule. The winner is the alternative with more than half the votes. Also called simple majority rule. See *alternative vote*, *runoff*. See also *plurality rule*, *qualified majority rule*, *qualified plurality rule*.

Majority-preferential. See *alternative vote*.

Minimum barrier. See *threshold*.

Mixed system. Combination of different rules and procedures for the election of a single assembly, usually including plurality or majority rules and proportional representation ($K \geq M = V > 1 / K \geq M = V = 1$). See *coexistence*, *multiple tiers*, *parallel system*.

Mixed-member majoritarian. See *parallel system*.

Mixed-member proportional. See *personalized proportional representation*.

Multi-member district. A district electing more than one seat.

Multiple ballot. In a multi-member district by plurality or majority rules, each voter can vote for as many candidates as seats in the district ($K \geq M = V > 1$). See also *approval vote*, *cumulative vote*, *limited vote*.

Multiple tiers. In proportional representation systems, each voter can vote only for a list, but two or more overlapping districts (tiers) are used to allocate different portions of seats from the same votes; it is used frequently with exact (Hare), Droop or other quotas requiring a supplementary procedure to allocate the remaining seats. See:

Austria 1918–	193	Greece 1926, 1932,	198–9
Belgium 1919–	193	1936–51, 1958–	
Croatia 2000–	326	Guatemala 1985–	100
Czechoslovakia 1920–35	326	Italy 1946–48, 1956–92	200–1, 237
Denmark 1920–	194	Netherlands 1933–	201–2
Dominican Republic 1966–	99	Norway 1989–	202
Ecuador 1978–96	99–100	Poland 1991–97	329, 369
El Salvador 1984–	100	Sri Lanka 1978–	472
Estonia 1992–	326–7, 332	Sweden 1970–	205–6, 265
Germany 1920–33	197–8, 222	Venezuela 1989–98	104

In mixed systems, each voter has only one vote, either for a single candidate or for a list, but two or more overlapping districts (tiers) are used to allocate different portions of seats by different rules, including plurality rule and proportional representation. See:

Croatia 1995	326
Korea S. 1963–71, 1987–	469
Mexico 1963–76, 1986–	101, 145
Senegal 1992–	438

Taiwan 1991– 472

Ofen-Bader formula. See *sufficient quota*.

Open ballot. In a multi-member district by proportional representation, each voter can vote for as many candidates as seats in the district from any party or list. Also called *panachage* (French). See:

Switzerland 1918– 206–7, 279

Open list. In a multi-member district by proportional representation, each voter may select one or more individual candidates from a single list. Also called preferential vote, flexible list, free list, *liste pré-ordonnée non bloquée* (French), *lista cerrada y no-bloqueada* (Spanish); when the selection of an individual candidate is compulsory, quasi-list system.

Optional-preferential voting. See *alternative vote*, *open list*.

Ordinal ballot. Each voter can order all or a certain number of candidates as preferred. See *alternative vote*, *single transferable vote*, *supplementary vote*.

Panachage (French). See *open ballot*.

Parallel system. Mixed system in which each voter has two votes, one for a single candidate and one for a list, and different portions of seats are allocated on the basis of each vote by two different rules, including plurality or majority rule and proportional representation. Also called mixed-member majoritarian. See:

Albania 1992–	325	Lithuania 1992–	327–8, 332
Armenia 1995–	467	Macedonia 1998–	328
Brazil 1933	96–7, 121	Mexico 1977–85	101, 145
Bulgaria 1990–	325–6	Philippines 1995–	471–2
Georgia 1995–	468	Russia 1993–	329, 382
Hungary 1922–35, 1990–	327, 359	Thailand 1997–	472–3
Italy 1993–	200–1, 237	Ukraine 1993–	330
Japan 1994–	469, 512		

Personalized proportional representation. In a system of proportional representation, each voter can vote either for a single candidate (which counts for the party) or for a single candidate in a single-member district and a party list in a multi-member district; seats are allocated on the basis of party votes; individual candidates are selected to fill part of the seats by plurality rule in single-member districts and the rest from party lists. Also called additional-member system, compensatory allocation, double-vote system or mixed member proportional. See:

Bolivia 1994–	95–6
Denmark 1918	194
Germany 1949–	197–8, 222
New Zealand 1993–	471, 530
United Kingdom regional elections	294
Venezuela 1989–98	104

Plurality rule. The winner is the alternative(s) with highest number(s) of votes, not necessarily achieving a majority or any other quota. Also called relative majority rule or first past the post (Britain and Commonwealth), winner-takes-all (USA), *pluralité* (French), *pluralidad* (Spanish). See for assembly elections:

Argentina 1826–1962	95, 110	Malawi 1994–	437
Australia 1902–17	46, 475	Malaysia 1957–	470
Bangladesh 1971–	468	Mongolia 1992	470
Botswana 1965–	436	Nepal 1959–	470
Brazil 1890–1930	96–7, 121	New Zealand 1890–1905,	
Canada 1867–	97	1914–93	471, 530

Argentina 1826–1962	95, 110	Malawi 1994–	437
Chile 1833–1924	97	Nicaragua 1984–90	101
Colombia 1857–1929	98	Nigeria 1959–	437
Denmark 1848–1915	194	Pakistan 1970–	471
Ecuador 1895–1928	99–100	Papua New Guinea 1975–	471
El Salvador 1886	100	Peru 1828–1919	102
France 1871–72	195–7	Philippines 1935–95	471–2
Ghana 1956–	436	Slovenia 1991–	330
Greece 1864–1923, 1928, 1933, 1952	198–9	Spain 1868–1923	204–5, 265
India 1950–	468, 487	Sri Lanka 1946–1977	472
Italy 1882–90	200–1, 237	Taiwan 1996–	472
Jamaica 1962–	101	Thailand 1978–96	472–3
Kenya 1963–	436	Trinidad-Tobago 1962–	103
Korea S. 1950	439	Turkey 1946–57	473
Lebanon 1953–	470	United Kingdom 1832–	207, 294
		United States 1789–	103, 155, 164

See for presidential elections:

Bangladesh 1977–	474	Mexico 1917–	107, 145
Bolivia 1956–64	105	Panama 1946–	108
Bosnia-Herzegovina 1998–	331	Paraguay 1989–	108
Brazil 1945–60	105, 121	Peru 1896–1915	108
Colombia 1853–60, 1910–90	106	Philippines 1935–	474
Dominican Republic 1962–94	106	Slovenia 1991–	331
Honduras 1981–	107	Uruguay 1899–1994	109
Korea S. 1950–	474	Venezuela 1946–	109
Malawi 1994–	439		

Preference voting. See *alternative vote, single transferable vote, supplementary vote.*

Preferential vote. See *open list.*

Proportional representation. In a multi-member district, seats are allocated to different parties or lists in proportion to the votes received. See *exact quota, fixed quota, sufficient quota, personalized proportional representation*, as well as *d'Hondt, Droop, Gergonne, Gilpin, Hagenbach-Bischoff, Hamilton, Hare, Imperiali, Jefferson, Sainte-Laguë, Webster formula.*

Qualified majority rule. The winner is the alternative with certain proportion of votes fixed between majority and unanimity, such as 3/5, 2/3, 3/4, etc. Also called supermajority rule.

Qualified plurality rule. The winner is the alternative with higher number of votes and certain fixed proportion lower than half, such as 1/4, 1/3, 2/5, etc. See *runoff.*

Quasi-list system. See *open list.*

Quota. Proportion of votes for winning a seat. See *exact quota, fixed quota, simple quota, sufficient quota.*

Redistribution. See *apportionment and districting.*

Relative majority rule. See *plurality rule.*

Runoff. Second round of voting, either by majority rule between the two most voted candidates at the first round ($K \geq M = V = 1 / K = 2 > M = V = 1$) or by plurality rule among a higher number of candidates ($K \geq M = V = 1 / K > M = V = 1$). Also called double-round runoff, second round, second ballot, two-round system, ballottage (French). See for assembly elections:

Albania 1991	325	Lebanon 1943–51	470
Armenia 1990	467	Lithuania 1919, 1978–90	327–8, 332
Belarus 1996–	325	Mali 1992–	437
Belgium 1831–98	193	Moldova 1990–	328–9
Benin 1991–	436	Mongolia 1990–	470
Brazil 1881–89	96–7, 121	The Netherlands 1848–1913	201–2

Albania 1991	325	Lebanon 1943–51	470
Central African Republic 1993–	436	New Zealand 1908–11	471, 530
France 1817–71, 1875–1936, 1958–81, 1988–	195–7, 209	Norway 1906–18	202
Germany 1871–1912	197–8, 222	Poland 1989	329, 369
Greece 1844–62	198–9	Portugal 1859	203–4
Italy 1870–80, 1892–1913	200–1	Spain 1836, 1837–67	204–5, 253
Latvia 1979–90	327, 332	Ukraine 1990	330
		Uruguay 1996–	104

After first round by qualified plurality rules:

Mongolia 1996–	470
Portugal 1852–56	203–4

See for presidential elections after first round by absolute majority rule:

Argentina 1972	105, 110	Germany 1918–30	208
Armenia 1991–	474	Ghana 1979–	439
Austria 1945–	208	Guatemala 1944–	107
Belarus 1996–	331	Honduras 1879–1957	107
Benin 1991–	439	Israel (for prime minister) 1996–2001	474
Bolivia 1899–1951, 1980–	105	Lithuania 1993–	331–2
Brazil 1892–1930, 1986–	105, 121	Macedonia 1994–	331
Bulgaria 1991–	331	Madagascar 1992–	439
Cape Verde 1992–	439	Mali 1992–	439
Central African Republic 1993–	439	Moldova 1991–	331
Chile 1925–	105	Mongolia 1993–	474
Colombia 1991–	106	Mozambique 1994–	439
Costa Rica 1913–32	106, 133	Namibia 1990–	439
Croatia 1990–	331	Nicaragua 1911–32,	107–8
Dominican Republic 1995–	106	Peru 1978–	108
Ecuador 1895–1996	107	Poland 1990–	331, 369
Estonia 1992	331–2	Portugal 1976–	208
El Salvador 1886–	107	Romania 1990–	331
Finland 1988–	208	Russia 1990–	331, 382
France 1848, 1962–	208	Ukraine 1994–	331
Georgia 1995–	474		

After first round by qualified plurality rules:

Argentina 1994–	105, 110	Nicaragua 1995–	107–8
Costa Rica 1936–	106, 133	Nigeria 1979–	439
Ecuador 1998–	107	Peru 1931–63	108
Kenya 1963–	439		

Sainte-Laguë formula. A proportional representation formula invented by mathematician André Sainte-Laguë (Paris, France, 1882–1950) which is based on a quota higher than the sufficient quota, which is used to allocate seats together with half quotas. Procedures include the divisor series of odd numbers. Modified versions increase the first divisor to 1.4 or other value. Also called Webster formula. See:

Bosnia-Herzegovina 1996–	325	Norway 1953–	202
Denmark 1953–	194	Poland 1991, 2001–	329, 369
Latvia 1922–31, 1992–	327, 332	Sweden 1952–	205–6, 265
New Zealand 1993–	471, 530		

Second ballot. See *runoff*.

Second round. See *runoff*.

Simple majority rule. See *majority rule*.

Simple quota. See *exact quota*.

Single ballot. In single-member districts, each voter can vote for a single candidate ($K \geq M = V = 1$).

Single non-transferable vote. In a multi-member district by plurality rule, each voter can vote for only one candidate ($K \geq M > V = 1$). See *limited vote*. See:

Japan 1947–93	469, 512
Spain 1865–76	204–5

Single transferable vote. In a multi-member district by some formula of proportional representation (usually Droop quota), each voter can order all the candidates as preferred; seats are allocated on the basis of quotas, elimination of least voted candidates and voters' second and further preferences ($K = V > M > 1$). Also called choice voting, or preference voting (United States). See:

Australia Senate 1949–	467
Denmark-Schleswig 1855	194
Estonia 1990	326–7, 331
Ireland 1922–	200

Also some local elections in Australia, Canada, South Africa, United Kingdom, United States.

Single-member district. A district electing a single seat.

Sounder and greater part rule. The winner is the alternative favoured by voters with special qualifications or seniority.

Sufficient quota. Quota of votes (or inhabitants) able to allocate all seats in a district. Procedures to calculate the quota include the divisor series of natural numbers, using tentatively the $1/M + 1$ quota, and others. Also called highest average, *cifra repartidora* (Latin America) as well as d'Hondt, Hagenbach-Bischoff, Jefferson or Ofen-Bader formulas. See:

Argentina 1963–	95, 110	Israel 1949, 1973–88	468–9
Austria 1918–	193	Italy 1919–21	200–1
Belgium 1899–	193	Moldova 1993–	328–9
Bolivia 1997–	95–6	Mozambique 1993–	437
Brazil 1950–,	96–7, 121	The Netherlands 1933–	201–2
Bulgaria 1911–31, 1991–	325–6	Norway 1919–49	202
Cape Verde 1992–	436	Paraguay 1993–	102
Chile 1925–	97	Peru 1933–,	102
Croatia 2000–	326	Poland 1918–30, 1993–97	329, 369
Czech Republic 2002–	326, 347	Portugal 1975–	203–4
Denmark 1915–50	194	Spain 1977–	204–5, 253
Dominican Republic 1966–	99	Sweden 1909–48	205–6, 265
Estonia 1919–32, 1992–	326–7, 332	Switzerland 1918–	206–7, 279
Finland 1906–	194–5	Turkey 1961, 1969–	473
Germany 1949–83	197–8, 222	Uruguay 1918–	104
Greece 1926, 1932, 1936–51,		Venezuela 1946–98	104
1958–85, 1990–	198–9	Yugoslavia 1992–	330
Guatemala 1984–	100		

Supermajority rule. See *qualified majority rule*.

Supplementary vote. In a single-member district by majority rule, each voter can order two or some other low number of candidates as preferred; seats are allocated

by majority first preferences, or by majority first-plus-second preferences ($K \geq M = 1 < V = 2$). See:

Sri Lanka president 1978–	474
United Kingdom London local election	294

Threshold. In a system of proportional representation, minimum number or proportion of votes required to obtain representation. Also called minimum barrier.

Threshold of exclusion. The maximum proportion of votes obtained by a candidacy not receiving a seat, or the minimum proportion of votes guaranteeing a seat. For a district, it may be estimated as $T = 100\% / M + 1$, where M is the district magnitude (except for multi-member districts with bloc vote by plurality rule, where M should be replaced with 1), or as the legal threshold, if higher.

Threshold of inclusion. The minimum proportion of votes obtained by a candidacy receiving a seat. It is different for different electoral rules, but lower the higher the number of candidacies competing.

Tier. See *district, multiple tiers*.

Two rounds. See *runoff*.

Two tiers. See *multiple tiers*.

Unanimity rule. The winner is the alternative with either all votes, or selected by acclamation, passive acquiescence or assent to the result of some preliminary voting.

Webster formula. Proportional representation quota invented by United States senator Daniel Webster (Salisbury, New Hampshire, USA, 1782–1852). See *Sainte-Laguë formula*.

Winner-takes-all. See *plurality rule, single-member district*.