

**VOTING AND ELECTIONS: NECESSITIES OF DEMOCRACY**

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**AUTHOR NOTE**

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### ABSTRACT

From the 6<sup>th</sup> century BCE, the then Athenian democracy used voting, however it was seen as the least democratic among methods used for selecting public officials and the system of voting was little used, as elections were believed to inherently favor the wealthy and well-known over average citizens. Most elections in the early history of democracy were held using plurality voting or some variant, but as an exception, the state of Venice in the 13th century adopted approval voting to elect their Great Council. Jean-Charles de Borda proposed the Borda count in 1770 as a method of electing members to the French Academy of Sciences. His method was opposed by the Marquis de Condorcet, who proposed instead the method of pairwise comparison that he had devised. Implementations of this method are known as Condorcet methods. He also wrote about the Condorcet paradox, which he called the *Intransitivity of Majority Preferences*. However, recent research has shown that the philosopher Ramon Llull devised both the Borda count and a pairwise method that satisfied the Condorcet criterion in the 13th century. The manuscripts in which he described these methods had been lost to history until they were rediscovered in 2001 (G. Hägele, 2001). Later in the 18th century, apportionment methods came to prominence due to the United States Constitution, which mandated that seats in the United States House of Representatives had to be allocated among the states proportionally to their population, but did not specify how to do so (Huntington, 1928). Over the years, many countries have developed many systems of voting. Some are simple, while some are very complex. Which one is better for a good and stable democratic government? Which of these systems enable the best representation of the people? This paper talks about the various systems of voting and the types of electoral system. Also, this paper discusses the Arrow's Impossibility Theorem and the Condorcet Paradox. *Keywords:* Voting, Constitution, Democracy, Elections.

## **VOTING**

Voting is a method for a group such as a meeting or an electorate to make a decision or express an opinion, usually following discussions, debates or election campaigns. Democracies elect holders of high office by voting. Residents of a place represented by an elected official are called “constituents,” and those constituents who cast a ballot for their chosen candidate are called “voters.”

### **Voting and Politics**

In a democracy, a government is chosen by voting in an election: a way for an electorate to elect, i.e. choose, among several candidates for a rule. In a representative democracy voting is the method by which the electorate appoints its representatives in its government. In a direct democracy, voting is the method by which the electorate directly make decisions, turn bills into laws, etc.

A vote is a formal expression of an individual’s choice in voting, for or against some motion, for or against some ballot question, for a certain candidate, a selection of candidates, or a political party. A secret ballot has come to be the practice to prevent voters from being intimidated and to protect their political privacy.

Voting usually takes place at a polling station; it is voluntary in some countries, compulsory in others, such as Australia.

### **Electoral Systems.**

Different voting systems use different types of votes. Discussed in detail in the next section titled “Electoral Systems.”

**Referendums.**

Most of the time, when the citizens of a country are invited to vote, it is for an election. However, people can also vote on referendums and initiatives. Since the end of the eighteenth century, more than five hundred national referendums (including initiatives) were organized in the world; among them, more than three hundred were held in Switzerland. Australia ranked second with dozens of referendums. (Marti, 2013)

**Fair Voting.**

Results may lead at best to confusion, at worst to violence and even civil war, in the case of political rivals. Many alternatives may fall in the latitude of indifference—they are neither accepted nor rejected. Avoiding the choice that the most people strongly reject may sometimes be at least as important as choosing the one that they most favor.

There are social choice theory definitions of seemingly reasonable criteria that are a measure of the fairness of certain aspects of voting, including non-dictatorship, unrestricted domain, non-imposition, Pareto efficiency, and independence of irrelevant alternatives but Arrow's impossibility theorem states that no voting system can meet all these standards.

**Negative Voting.**

Negative voting allows a vote that expresses disapproval of a candidate. For explanatory purposes, consider a hypothetical voting system that uses negative voting. In this system, one vote is allowed, with the choice of either for a candidate or against a candidate. Each positive vote adds one to a candidate's overall total, while a negative vote subtracts one, arriving at a net favorability. The candidate with the highest net favorability is the winner. Note that not only is a negative total possible, but also, a candidate may even be elected with 0 votes if enough negative votes are cast against their opponents.

**Proxy Voting.**

Proxy voting is the type of voting where a registered citizen who is able to vote passes on his or her vote to a different voter or electorate legitimately.

**Anti-Voting.**

In South Africa, there is a strong presence of anti-voting campaigns by poor citizens. They make the structural argument that no political party truly represents them. For instance, this resulted in the “No Land! No House! No Vote!” The campaign which becomes very prominent each time the country holds elections. The campaign is prominent among three of South Africa’s largest social movements: the Western Cape Anti-Eviction Campaign, Abahlali baseMjondolo, and the Landless Peoples Movement.

Other social movements in other parts of the world also have similar campaigns or non-voting preferences. These include the Zapatista Army of National Liberation and various anarchist-oriented movements.

It is possible to make a blank vote, carrying out the act of voting, which may be compulsory, without selecting any candidate or option, often as an act of protest. In some jurisdictions, there are special is an official none of the above option and it is counted as a valid vote. Usually, blank and null votes are counted but are not considered valid. (Indy Media, 2005)

**Voting and Information.**

Modern political science has questioned whether average citizens have sufficient political information to cast meaningful votes. A series of studies coming out of the University of Michigan in the 1950s and 1960s argued that voters lack a basic understanding of current issues, the liberal–conservative ideological dimension, and the relative ideological dilemma.

Studies from other institutions have suggested that the physical appearance of candidates is a criterion upon which voters base their decision. (McCubbins, 1998)

**Religious Views.**

Some religious groups have a policy of not participating in politics through voting. While Rabbis from all Jewish denominations encourage voting; some even consider it a religious obligation. (Ask the Rabbis, 2016)

## **ELECTORAL SYSTEMS**

An Electoral System is the set of rules that determines how elections and referendums are conducted and how their results are determined. Political electoral systems are organized by governments, while non-political elections may take place in business, non-profit organizations, and informal organizations.

Political electoral systems are defined by constitutions and electoral laws, are typically conducted by election commissions, and can use multiple types of elections for different offices.

Some electoral systems elect a single winner to a unique position, such as prime minister, president or governor, while others elect multiple winners, such as members of parliament or boards of directors. There are a large number of variations in electoral systems, but the most common systems are first-past-the-post, the two-round system, proportional representation and ranked or preferential voting. Some electoral systems, such as mixed systems, attempt to combine the benefits of non-proportional and proportional systems.

Impossibility proofs such as Arrow's impossibility theorem demonstrate that it is impossible to design a "perfect" electoral method, so academic comparisons of proposed methods typically involve mathematical voting criteria.

### **Types of Electoral Systems**

Many countries use different systems of Voting. The most popular systems are Plurality, Proportional and Mixed Systems.

#### **Plurality System**

Plurality voting is an electoral system in which each voter is allowed to vote for only one candidate, and the candidate who polls the most among their counterparts is elected. In a system based on single-member districts, it may be called first-past-the-post, single-choice voting,



simple plurality or relative/simple majority. In a system based on multi-member districts, it may be referred to as winner-takes-all or bloc voting. The system is often used to elect members of a legislative assembly or executive officers. It is the most common form of the system, and is used in Canadian Parliament, the Lok Sabha in Indian Parliament, most elections in the United Kingdom (excluding some Scottish and Northern Irish elections), and most elections in the United States.

Plural voting is distinguished from a majoritarian electoral system, in which, to win, a candidate must receive an absolute majority of votes i.e. more votes than all other candidates combined. Both systems may use single member or multi-member constituencies, in the latter case it may be referred to as an exhaustive counting system: one member is elected at a time and the process repeated until the number of vacancies is filled.

In some countries, such as France, a “two-ballot” or “runoff election” plurality system is used. This may require two rounds of voting. If on the first round no candidate receives over 50% of the votes, then a second round takes place, with just the two highest-voted candidates in the first round. This ensures that the winner gains a majority of votes in the second round. Alternatively, all candidates above a certain threshold in the first round may compete in the second round. If there are more than two candidates standing, then a plurality vote may decide the result.

In political science, the use of plurality voting with multiple, single-winner constituencies to elect a multi-member body is often referred to as single-member district plurality. This combination is also variously referred to as winner-takes-all to contrast it with proportional representation systems. This term is sometimes also used to refer to elections for multiple winners in a particular constituency using bloc voting. (FairVote.org, n.d.)

**Advantages.**

The advantages of the Plurality System is as follows:

***Preservation of “One person, One vote” principle.***

The arguments for plurality voting rely on the preservation of the “One person, One vote” principle, wherein each voter is only able to cast one vote in a given election, where that vote can only go to one candidate. Plurality voting elects the candidate who is preferred first by the largest number of voters, although this need not be an absolute majority. Other electoral systems, such as instant-runoff voting, party-list proportional representation or single transferable vote also preserve “One person, One vote” principle, but it is not as obvious that they do so, because they rely on lower voter preference to enable a candidate to earn either an absolute majority, in a single member district or a quota, multi-member district, respectively.

***Moderation***

Some other electoral systems can end up giving a greater chance of victory to a candidate perceived as having extreme views. Under the First-past-the-post system, voters are often afraid of “wasting” their vote on a candidate unlikely to win, so they vote for the candidate they perceive as the least bad candidate who has a chance a win. Advocates of plurality voting suggest that this results in most serious candidates have to present a fairly moderate or centrist position.

***Advantages compared to proportional representation***

Plurality is often conflated with single-winner electoral systems in general, in order to contrast it with proportional representation. In this context, it shares advantages, such as local accountability, with other single-winner systems.

**Disadvantages.**

The disadvantages of the Plurality System is as follows:

***Tactical voting.***

To a much greater extent than many other electoral methods, plurality electoral systems encourage tactical voting techniques, like “compromising.” Voters are pressured to vote for one of the two candidates they predict are most likely to win, even if their true preference is neither because a vote for any other candidate will likely have no impact on the final result. Any other party will typically need to build up its votes and credibility over a series of elections before it is seen as electable.

Proponents of other single-winner electoral systems argue that their proposals would reduce the need for tactical voting and reduce the spoiler effect. Examples include the commonly used two-round system of runoffs and instant runoff voting, along with less tested systems such as approval voting, score voting, and Condorcet methods. (Rosenbaum, 2004)

***Fewer political parties.***

Duverger’s law is a theory that constituencies that use first-past-the-post systems will have a two-party system, given enough time. First-past-the-post tends to reduce the number of political parties to a greater extent than most other methods do, making it more likely that a single party will hold a majority of legislative seats. In the United Kingdom, 21 out of 24 General Elections since 1922 have produced a single-party majority government.

First-past-the-post system’s tendency toward fewer parties and more frequent one-party rules can also produce a government that may not consider as wide a range of perspectives and concerns. It is entirely possible that a voter finds all major parties to have similar views on issues

and that a voter does not have a meaningful way of expressing a dissenting opinion through his vote.

As fewer choices are offered to voters, voters may vote for a candidate although they disagree with him, because they disagree even more with his opponents. Consequently, candidates will less closely reflect the viewpoints of those who vote for them.

Furthermore, one-party rule is more likely to lead to radical changes in government policy even though the changes are favored only by a plurality or a bare majority of the voters, whereas a multi-party system usually requires greater consensus in order to make dramatic changes in policy.

***Wasted votes.***

Wasted votes are votes cast for losing candidates or votes cast for winning candidates in excess of the number required for victory. For example, in the UK General Election of 2005, 52% of votes were cast for losing candidates and 18% were excess votes— a total of 70% wasted votes. This is perhaps the most fundamental criticism of First-past-the-post, that a large majority of votes may play no part in determining the outcome. Alternative electoral systems attempt to ensure that almost all votes are effective in influencing the result and the number of wasted votes is consequently minimized. (Mech, 2016)

***Gerrymandering.***

As First-past-the-post permits a high level of wasted vote, an election under First-past-the-post is easily gerrymandered unless safeguards are in place. In gerrymandering, constituencies are deliberately designed to unfairly increase the number of seats won by one party at the expense of another. (USC Annenberg Center, n.d.)

***Manipulation charges.***

The presence of spoilers often gives rise to suspicions that manipulation of the slate has taken place. The spoiler may have received incentives to run. A spoiler may also drop out at the last moment, inducing charges that such an act was intended from the beginning.

***Spoiler effect.***

The spoiler effect is the effect of vote splitting between candidates or ballot questions with similar ideologies. One spoiler candidate's presence in the election draws votes from a major candidate with similar politics thereby causing a strong opponent of both or several to win. Smaller parties can disproportionately change the outcome of an First-past-the-post election by swinging what is called the 50-50% balance of two party systems, by creating a faction within one or both ends of the political spectrum which shifts the winner of the election from an absolute majority outcome to a simple majority outcome favoring the previously less favored party. In comparison, for electoral systems using proportional representation small groups win only their proportional share of representation.

**Example**

Here are some results of elections which use First Past the Post System. Table 1 represents the summary of the 2011 Presidential Elections of Singapore. Under the First-past-the-post voting method, the highest polling candidate is elected. Here, Mr. Tony Tan Keng Yam obtained a greater number of votes than the other candidates and so was declared as the President-elect, although a majority of voters did not vote for him. (Government of Singapore, 2011)

The effects of First-past-the-post can be seen in a system based on single-seat constituencies. In such a system, the larger parties gain a disproportionately large share of seats,

while smaller parties are left with a disproportionately small share of seats. It is more likely that a single party will hold a majority of legislative seats. In the United Kingdom, 18 of the 23 general elections since 1922 have produced a single-party majority government. For example, the 2005 United Kingdom general election results in Great Britain as in Table 2. The data shows that the Labour Party took a majority of seats, 57%, with only 36% of the votes. The largest *two* parties took 69% of the vote and 88% of the seats. By contrast, the smaller Liberal Democrats party took more than a fifth of the vote but only about a tenth of the seats in parliament. (UK Political Info, 2005)

Table 3 shows the results of the UK General Election which was held on 7<sup>th</sup> May 2015. Here, the Conservatives took 51% of the seats with only 37% of the vote. More significantly, the Liberal Democrats and the SNP together had fewer votes than UKIP, but each gained more seats; with fewer votes, they together managed to win 64 times the number of UKIP seats in parliament. It should be noted that the Liberal Democrats also suffered under first-past-the-post, by winning only 1% of the seats on 8% of the national popular vote. (Eardley, 2015)

***Countries using the Plurality System.***

Figure 1 shows the countries which use the Plurality System of Voting.

## **Proportional System**

Proportional Representation characterizes electoral systems by which divisions in an electorate are reflected proportionately in the elected body. If  $n\%$  of the electorate support a particular political party, then roughly  $n\%$  of seats will be won by that party. The essence of such systems is that all votes contribute to the result: not just a plurality, or a bare majority, of them. Proportional Representation requires the use of multiple-member voting districts, also called super-districts; it is not possible using single-member districts alone. In fact, the most proportional representation is achieved when just one super-district is used. (Mill, 1861)

The two most widely used families of Proportional Representation electoral systems are Party List Proportional Representation and Single Transferable Vote. Party List Proportional Representation systems are a family of voting in which multiple candidates are elected through allocations to an electoral list. In these systems, parties make lists of candidates to be elected, and seats get allocated to each party in proportion to the number of votes the party receives. Voters may vote directly for the party, as in Albania, Argentina, Turkey, and Israel; or for candidates whose vote total will pool to the party, as in Finland, Brazil, and the Netherlands; or for a list of candidates, as in Hong Kong. The order in which a party's list candidates get elected may be pre-determined by some method internal to the party or the candidates, which is a closed list system or it may be determined by the voters at large i.e. an open list system or by districts, a local list system. (Douglas J. Amy, n.d.)

The single transferable vote (STV) is a voting system designed to achieve proportional representation through ranked voting in multi-seat organizations or constituencies. Under STV, an elector (voter) has a single vote that is initially allocated to their most preferred candidate and, as the count proceeds and candidates are either elected or eliminated, is transferred to other

candidates according to the voter's stated preferences, in proportion to any surplus or discarded votes. (Government of New Zealand, 2016)

As with all electoral systems, there are overlapping and contentious claims in terms of its advantages and disadvantages.

### **Advantages.**

The advantages of the Proportional Representation System is as follows:

#### ***Fairness***

Proportional Representation tries to resolve the unfairness in Plurality systems, where the largest parties receive an "unfair seat bonus" and smaller parties are disadvantaged and have difficulty winning any representation at all, as stated in the Duverger's law. (Andrew Reynolds, 2014)

#### ***Election of minor parties***

The use of multiple-member districts enables a greater variety of candidates to be elected. The more representatives per district and the lower the minimum threshold of votes required for election a minor parties can gain representation. In emerging democracies, the inclusion of minorities in the legislature can be essential for social stability and to consolidate the democratic process. Open list systems and Single Transferable Vote, or Proportional Representation Systems which does not require political parties, enable independent candidates to be elected. (Andrew Reynolds, 2014)

#### ***Voter participation***

Plurality systems usually result in single-party government because relatively few votes in the most finely balanced districts, the "swing seats," can transfer sufficient seats to the opposition to swing the election. More partisan districts remain invulnerable to swings of



political mood. With PR, there are no “swing seats,” most votes contribute to the election of a candidate so parties need to campaign in all districts, not just those where their support is strongest or where they perceive most advantage. This fact, in turn, encourages parties to be more responsive to voters, producing a more “balanced” ticket by nominating more women and minority candidates. Since most votes count, there are fewer “wasted votes,” so voters, aware that their vote can make a difference, are more likely to make the effort to vote, and less likely to vote tactically. Compared to countries with plurality electoral systems, voter turnout improves and the population is more involved in the political process. (Andrew Reynolds, 2014)

### ***Gerrymandering***

To ensure approximately equal representation, plurality systems are dependent on the drawing of arbitrary boundaries of their single-member districts, a process vulnerable to political interference i.e. gerrymandering. To compound the problem, boundaries have to be periodically redrawn to accommodate population changes. Even a politically drawn boundaries can unintentionally produce the effect of gerrymandering, reflecting naturally occurring concentrations. Proportional Representation systems with their multiple-member districts are less prone to this – research suggests five-seat districts are immune to gerrymandering. The district boundaries are less critical and so can be aligned with historical boundaries such as cities, counties, states, or provinces; population changes can be accommodated by simply adjusting the number of representatives elected. (Andrew Reynolds, 2014)

### ***Wider benefits to society***

Wider benefits from Proportional Representation systems have been identified in societies using it as compared to those using First Past the Post, including higher scores on the

UN Human Development Index, a measure of health, education, and personal security, higher economic growth, less inequality, and better environmental protection. (Andrew Reynolds, 2014)

### **Disadvantages.**

The disadvantages of the Proportional Representation System is as follows:

#### ***Coalitions***

The election of smaller parties gives rise to the principal objection to Proportional Representation systems that they almost always result in coalition governments. Coalitions are at times effective for a democracy as it forces the parties in power to compromise to form a government, and so leading to continuity and stability. However, coalitions make the governments unstable and increase in horse trading. All these disadvantages, the Proportional Representation opponents contend, are avoided by two-party plurality systems. Coalitions are rare; the two dominant parties necessarily compete at the center for votes, so that governments are more reliably moderate; the strong opposition necessary for proper scrutiny of government is assured; and governments remain sensitive to public sentiment because they can be, and are, regularly voted out of power. (Andrew Reynolds, 2014)

#### ***Link between constituent and representative***

It is generally accepted that a particular advantage of the plurality or majoritarian electoral systems, such as first-past-the-post, is the geographic link between representatives and their constituents. As there are large multiple member districts in Proportional Representation systems, this link is weakened if not completely lost. Hence, this system is heavily criticized. (Andrew Reynolds, 2014)

**Attributes of Proportional Representation Systems.*****District magnitude.***

Academics agree that the most important influence on proportionality is an electoral district's magnitude, the number of representatives elected from the district. Proportionality improves as the magnitude increases. Scholars recommend voting districts of between three and seven members. (Andrew Reynolds, 2014)

***Minimum Threshold.***

The minimum threshold is the minimum vote required to win a seat. The lower the threshold the higher the proportion of votes contributing to the election of representatives and the fewer the votes wasted. All electoral systems have thresholds, either formally defined or as a mathematical consequence of the parameters of the election. (Andrew Reynolds, 2014)

***Party magnitude.***

Party magnitude is the number of candidates elected from one party in one district. As party magnitude increases a more balanced ticket will be more successful encouraging parties to nominate women and minority candidates for election. But under STV too many candidates can be counter-productive, splitting the vote and so losing seats. (Andrew Reynolds, 2014)

***Others.***

Other aspects of PR can influence proportionality such as the size of the elected body, the choice of open or closed lists, ballot design, and vote counting methods. (Andrew Reynolds, 2014)

**Example**

The Republic of Ireland uses Proportional Representation with a single transferable vote. Table 4 shows the results of the General Elections of 2016. (Kilkenny, 2016)

Another example is the Presidential Elections of India. In Table 5, the numbers from the Elections of 2012. (Zeenews Bureau, 2012)

### *Illustration*

As an illustration, consider there were 6 candidates A, B, C, D and E. The country where the council elections are held using the Single Transferable Vote Proportional Representation System of voting. Assume, the following Table is the result of the election for a particular constituency A of the country. Let this constituency be represented by 3 members of the council. This means that a candidate must secure a minimum of 33% of the votes.

Candidate	1 <sup>st</sup> Preference	2 <sup>nd</sup> Preference	3 <sup>rd</sup> Preference
A	5		
B	28	<b>33</b>	<b>33</b>
C	<b>33</b>	<b>33</b>	<b>33</b>
D	21	21	<b>34</b>
E	13	13	

Hence, B, C, and D represent the constituency X.

Consider another constituency Y, where there are two parties and each have two candidates running A and B, and C and D respectively. Again this constituency shall be represented by 3 members of the council. This means that a candidate must secure a minimum of 33% of the votes.

Candidate	Party	1 <sup>st</sup> Preference	2 <sup>nd</sup> Preference	3 <sup>rd</sup> Preference
A	M	65	<b>33</b>	<b>33</b>
B	M	1	<b>33</b>	<b>33</b>
C	N	16	16	
D	N	18	16	<b>34</b>

Hence, A and B of party M and D of party N represent the constituency Y.

### *Countries using the Proportional Representation System.*

Figure 2 shows the countries which use the Proportional Representation System of Voting.

**Mixed Member Proportional Representation Systems.**

Mixed-member proportional representation is a hybrid two-tier voting system. It is a hybrid method that uses party list proportional representation as for its proportional component, and most commonly first-past-the-post voting as its district component. It is considered a mixed system (also known as a hybrid system or a semi-proportional representation system), which is a distinct voting system. Personally, this is the best method of election as both the party and the candidate are held accountable. (Electoral Reform Society, 2016)

In Germany, where it is used on the federal level and on most state levels, MMP is known as personalized proportional representation. In the United Kingdom such systems used in Scotland, Wales, and the London Assembly are referred to as Additional Member System. In the Canadian province of Quebec, where a Mixed-member proportional representation model was studied in 2007, it is called the compensatory mixed-member voting system. (Forder, 2011)

**Procedures.**

In most models, the voter casts two votes: one for a constituency representative and one for a party. Voters can vote for the local person they prefer for local MP without regard for party affiliation since the partisan make-up of the legislature is determined only by the party vote. In each constituency, the representative is chosen using a single winner method, typically first-past-the-post. Most systems used closed party lists to elect the non-constituency MPs (also called list MPs). Depending on the jurisdiction, candidates may stand for both a constituency and on a party list, or may be restricted to contend either for a constituency or for a party list, but not both. If a candidate is on the party list but wins a constituency seat, they do not receive two seats; they are instead crossed off the party list and replaced with the next candidate down. (iefs.org, 2009)

At the regional or national level i.e. above the constituency level, several different calculation methods have been used, but the basic characteristic of the Mixed-member proportional representation is that the total number of seats in the assembly, including the single-member seats and not only the party-list ones, are allocated to parties proportionally to the number of votes the party received in the party portion of the ballot. This can be done by the largest remainder method or a highest averages method: either the D'Hondt method or the Sainte-Laguë method. Subtracted from each party's allocation is the number of constituency seats that party won so that the additional seats are compensatory. If a party wins more Plurality seats than the proportional quota received by the party-list vote, these surplus seats become "Overhang Seats" to work towards restoring a full proportionality. (iefs.org, 2009)

In cases of Overhang seats, some countries allow these constituency members to keep their seats. For example, in New Zealand's 2008 General Election the Māori Party won 2.4% of the Party Vote, which would entitle them to 3 seats in the House, but won 5 constituency seats, leaving an overhang of 2 seats, which resulted in a 122-member house. If the party vote for the Māori Party had been more in proportion with the constituency seats won, there would have been a normal 120-member house. In most German states, and in the federal Bundestag since 2013, the other parties receive extra seats to create full proportionality. For example, the provincial parliament (Landtag) of North Rhine-Westphalia has, instead of the usual 50% compensatory seats, only 29% unless more are needed to balance overhangs. If a party wins more local seats than its proportion of the total vote justifies, the size of the Landtag increases so that the total outcome is fully proportional to the votes, with other parties receiving additional list seats to achieve proportionality. (iefs.org, 2009)

As in numerous proportional systems, in order to be eligible for list seats in many Mixed-member Proportional Representation models, a party must earn at least a certain percentage of the total party vote, or no candidates will be elected from the party list. Candidates having won a constituency will still have won their seat. In New Zealand, the threshold is 5%, in Bolivia 3%, in Germany 5% for elections for federal parliament and most state parliaments. A party can also be eligible for list seats if it wins at least three constituency seats in Germany or at least one in New Zealand. Having a member with a 'safe' constituency seat is, therefore, a tremendous asset to a minor party in New Zealand. (Ferrara, 2005)

This system ensures:

1. A candidate has good ties with the party;
2. A candidate has a good rapport with the constituents;
3. The party is responsible to the people; and
4. All sections of the society are represented.

Hence, although cumbersome this is the best method of representation of people in a multi-party democracy. (Ferrara, 2005)

## THEOREMS

There are many paradoxes revolving around Voting and Electoral Systems. The main paradoxes are Arrow's Paradox and Condorcet Paradox.

### Arrow's Paradox

In social choice theory, Arrow's impossibility theorem or Arrow's paradox is an impossibility theorem stating that when voters have three or more distinct alternatives, no ranked voting electoral system can convert the ranked preferences of individuals into a community-wide ranking while also meeting a pre-specified set of criteria: unrestricted domain, non-dictatorship, Pareto efficiency, and independence of irrelevant alternatives. The theorem is often cited in discussions of voting theory as it is further interpreted by the Gibbard–Satterthwaite theorem. (Sen, 1999)

The theorem is named after economist Kenneth Arrow, who demonstrated the theorem in his doctoral thesis and popularized it in his 1951 book *Social Choice and Individual Values*. The original paper was titled "A Difficulty in the Concept of Social Welfare." (Racnchetti, 2002)

In short, the theorem states that no rank-order electoral system can be designed that always satisfies these three "fairness" criteria:

- If every voter prefers alternative X over alternative Y, then the group prefers X over Y.
- If every voter's preference between X and Y remains unchanged, then the group's preference between X and Y will also remain unchanged, even if voters' preferences between other pairs like X and Z, Y, and Z, or Z and W change.
- There is no "dictator": no single voter possesses the power to always determine the group's preference.



### **Condorcet Paradox**

The Condorcet paradox (also known as the voting paradox or the paradox of voting) is a situation noted by the Marquis de Condorcet in the late 18th century, in which collective preferences can be cyclic, even if the preferences of individual voters are not cyclic. This is paradoxical because it means that majority wishes can be in conflict with each other. When this occurs, it is because the conflicting majorities are each made up of different groups of individuals. (Condorcet, Sommerlad, & McLean, 1989)

Thus an expectation that transitivity on the part of all individuals' preferences should result in transitivity of societal preferences is an example of a fallacy of composition.

### **Singly Peaked Preferences**

Single-peaked preferences are a kind of preference relations. A group of agents is said to have single-peaked-preferences if:

1. Each agent has an ideal choice in the set; and
2. For each agent, outcomes that are further from his ideal choice are preferred less.

Single-peaked preferences are typical of one-dimensional domains. A typical example is when several consumers have to decide on the amount of public good to purchase. The amount is a one-dimensional variable. Usually, each consumer decides on a certain quantity which is best for him, and if the actual quantity is more/less than that ideal quantity, the agent is then less satisfied.

With single-peaked preferences, there is a simple truthful mechanism for selecting an outcome: it is to select the median quantity. See the median voter theorem. It is truthful because the median function satisfies the strong monotonicity property. (Austen-Smith, 2000)

### **Median Voter Theorem**

The median voter theorem states that “a majority rule voting system will select the outcome most preferred by the median voter.” The median voter theorem rests on two main assumptions, with several others detailed below. First, the theorem assumes that voters can place all election alternatives along a one-dimensional political spectrum.

The median voter theorem rests on two main assumptions, with several others detailed below. First, the theorem assumes that voters can place all election alternatives along a one-dimensional political spectrum.

It also assumes that voters always vote, regardless of how far the alternatives are from their own views. The median voter theorem implies that voters have an incentive to vote for their true preferences. Finally, the median voter theorem applies best to a majoritarian election system. (Holcombe, 2006)

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## TABLES

Table 1

*Summary of the 27 August 2011 Singaporean presidential election results. (Government of Singapore, 2011)*





Candidate	Symbol	Votes	Percentage of valid votes
Tony Tam Keng Yam		745,693	35.20
Tan Cheng Bock		738,311	34.85
Tan Jee Say		530,441	25.04
Tan Kin Lian		104,095	4.91
Valid Votes		2,118,540	98.24% of total votes cast
Rejected Votes		37,849	1.76% of total votes cast
Total Votes Cast		2,156,389	Voter turnout: 94.8% of electorate
Absent		118,384	
Electorate		2,274,773	

Table 2

*Summary of the 5 May 2005 House of Commons of the United Kingdom election results (parties with more than one seat; not incl. N. Ireland) (UK Political Info, 2005)*






Party	Symbol	Seats	Percentage of seats	Total votes	Percentage of votes
Labour		355	56.5	9,552,436	36.1
Conservative		198	31.5	8,782,192	33.2
Liberal Democrats		62	9.9	5,985,454	22.6
Scottish National		6	1.0	412,267	1.6
Plaid Cymru		3	0.5	174,838	0.7
Others		4	0.6	1,523,716	5.7
Total		628		26,430,908	

Table 3

*Summary of the 7 May 2015 House of Commons of the United Kingdom election results.*

(Eardley, 2015)

Party	Leader	Seats	Percentage of seats	Total votes	Percentage of votes
Conservative	David Cameron	331	50.9	11,334,920	36.8
Labour	Ed Miliband	232	35.7	9,344,328	30.4
UK Independence	Nigel Farage	1	0.2	3,881,129	12.6
Liberal Democrats	Nick Clegg	8	1.2	2,415,888	7.9
Scottish National	Nicola Sturgeon	56	8.6	1,454,436	4.7
Green	Natalie Bennett	1	0.2	1,154,436	3.8
Democratic Unionist	Peter Robinson	8	1.2	184,260	0.6
Plaid Cymru	Leanne Wood	3	0.5	181,694	0.6
Sinn Féin	Gerry Adams	4	0.6	176,232	0.6
Ulster Unionist Party	Mike Nesbitt	2	0.3	114,935	0.4
Social Democratic & Labour Party	Alasdair McDonnell	3	0.5	99,809	0.3
Total		628		27,926,179	100

Table 4

*Summary of the 2016 General Elections of the Republic of Ireland. (Kilkenny, 2016)*

Party	Leader	1 <sup>st</sup> Preference Votes	Vote Percentage	Seats	Seat Percentage
Fine Gael	Enda Kenny	544,140	25.5	50	31.5
Fianna Fáil	Micheál Martin	519,356	24.3	44	28
Sinn Féin	Gerry Adams	295,319	13.8	23	14.5
Labour Party	Joan Burton	140,898	6.6	7	4.5
AAA–PBP	-	84,168	3.9	6	4
Independents 4 Change	-	31,365	1.5	4	2.5
Social Democrats	Stephen Donnelly Catherine Murphy Róisín Shortall	64,094	3.0	3	2
Green Party	Eamon Ryan	57,999	2.7	2	1
Total		17,377,339	100	158	100



Table 5

*Summary of the 2012 Presidential Elections of the Republic of India. (Zeenews Bureau, 2012)*

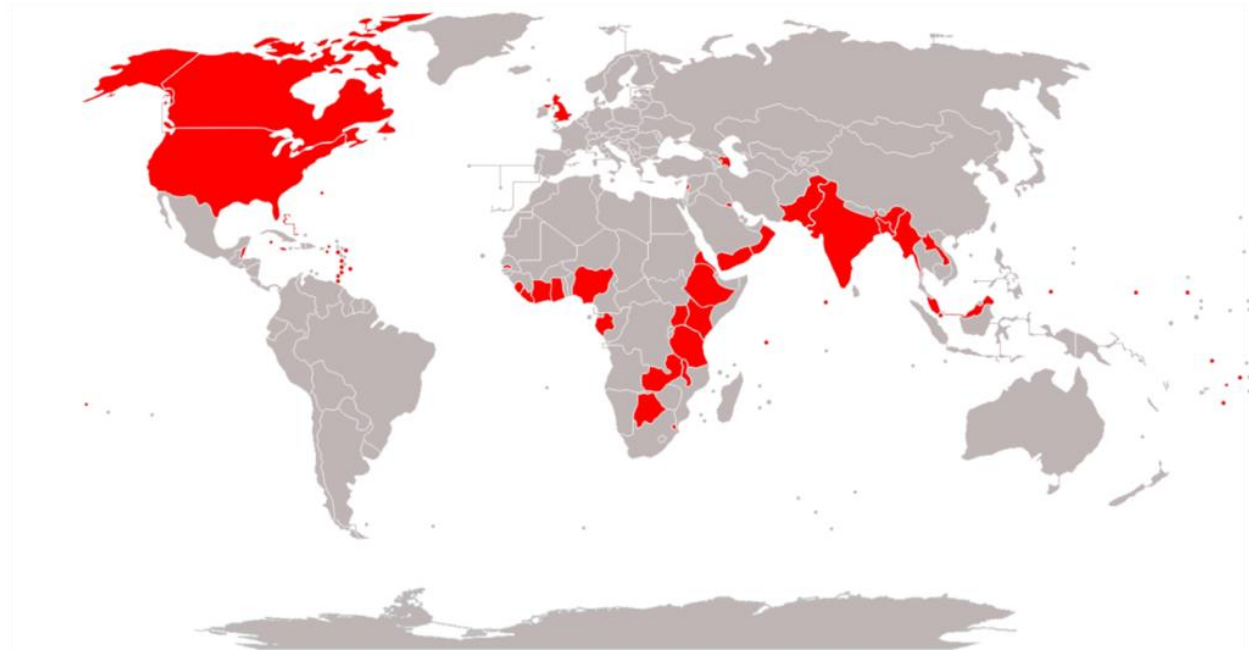
State/Parliament	Electors	Vote Value	Votes for Pranab Mukherjee	Votes for P. A. Sangma	Invalid Votes
Parliament	748		527	206	15
Andhra Pradesh	299	248	182	3	114
Arunachal Pradesh	60	8	54	2	4
Assam	126	116	110	13	3
Bihar	243	173	146	90	7
Chhattisgarh	90	129	39	50	1
Goa	40	20	9	31	0
Gujarat	182	147	59	123	0
Haryana	90	112	53	29	8
Himachal Pradesh	68	51	23	44	1
Jammu and Kashmir	87	72	68	15	4
Jharkhand	81	176	60	20	1
Karnataka	224	131	117	103	4
Kerala	140	152	124	0	16
Madhya Pradesh	233	131	73	156	4
Maharashtra	274	175	225	47	2
Manipur	60	18	58	1	1
Meghalaya	60	17	34	23	3
Mizoram	40	8	32	7	1
Nagaland	60	9	58	0	2
Odisha	141	149	26	115	0

Punjab	116	116	44	70	2
Rajasthan	198	129	113	85	0
Sikkim	31	7	28	1	2
Tamil Nadu	197	176	45	148	4
Tripura	57	26	56	1	0
Uttar Pradesh	398	208	351	46	0
Uttarakhand	70	64	39	30	1
West Bengal	282	151	275	3	4
National Capital Region of Delhi	65	58	42	23	0
Union Territory of Puducherry	28	16	23	5	0
Total	4,788	1,029,723	3,093 713,736	1,490 315,987	204

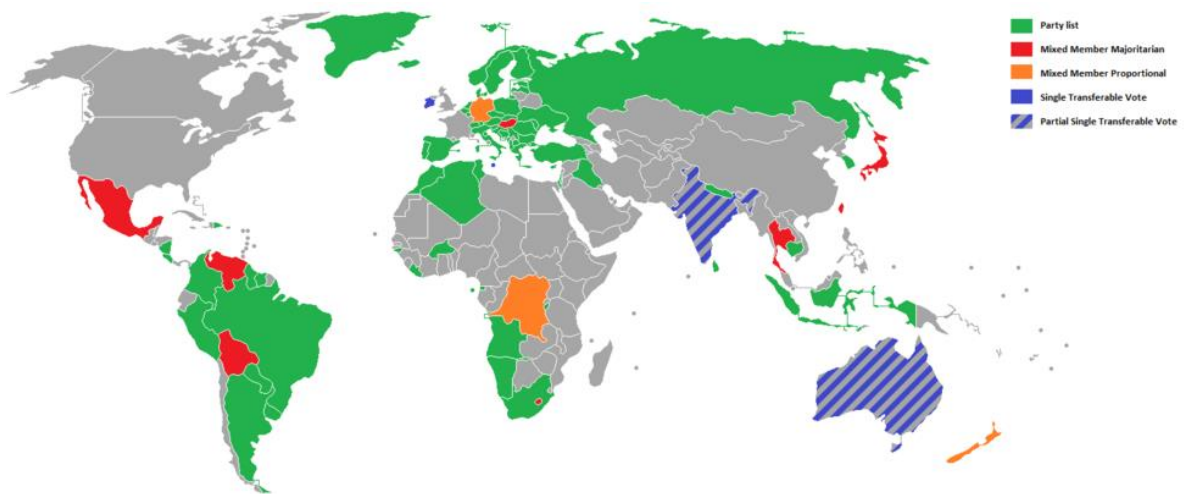
*The candidate requires 50% of the vote value i.e. 514,862.*

*Pranab Mukherjee secured the required votes and hence was declared President.*

## FIGURES



*Figure 1 Countries which use the First past the Post Plurality System. (Jipvigo)*



*Figure 2 Countries which use the Proportional Representation System. (EvilFred)*