September 2004

Alternative Voting Systems: Facts and Issues

Introduction

The 2000 Presidential election challenged Americans' complacency about the accuracy and fairness of our voting system as never before. With the outcome still in doubt three weeks after Election Day, the combination of a close race, multiple candidates, antiquated voting equipment, and confusing recount procedures created a perfect storm that left voters across the country frustrated and angry.

While some saw the disputes in Florida as an entertaining diversion, others began to wonder about their own state's equipment and procedures, and, for the first time in many years, some started to question seriously the fundamental structure of a winner-take-all plurality election system. When only two major party candidates are on the ballot in an election using the plurality system, majority rule is not a concern. However, when three or more candidates are running, the winner might not have received a majority of the votes.

In fact, eleven of twelve statewide elections in Minnesota conducted from 1998 through 2002 were decided by less than a majority,[1] sparking interest in alternative voting systems that would address this and other issues. Evidence of this interest includes bills permitting Instant Runoff Voting in local and state elections that were introduced in the 2002 and 2003 Minnesota Legislatures[2] and a more narrowly focused bill that would give the city of Roseville, Minnesota, the option to use alternative voting systems that was introduced in 2004.[3]

The proposed election law for Roseville passed in the Senate but was "resoundingly defeated" in the House on March 15, 2004. Comments after the vote suggest that many people are unaware that alternative voting systems exist and are unfamiliar with the steps necessary to adopt one of them.[4]

These facts suggest that League members, Legislators, and the public would find information about alternative voting systems to be a useful resource. The purpose of this study is to provide background information about the most frequently discussed alternative voting systems for reference, discussion, and debate. The study does not offer solutions or proposals for change, nor does it assume that changing the current system is necessarily desirable.

This study will use the term *voting system* to mean a collection of rules and procedures that establishes how an election will be conducted. These rules include how the ballots are marked, how the votes are tabulated, how many votes are necessary to win, and other election administration procedures.

H.F. 1719: Proposed Election Law for Roseville

"Notwithstanding any contrary provision in Minnesota Statutes, the city of Roseville may adopt by ordinance cumulative voting, ranked-order voting, or another method of voting for municipal elections in 2004 that uses a form of ballot different from that required by Minnesota Statutes, section 204B.36, subdivision 2." This bill passed in the Senate but failed in the House on March 15, 2004.[5]

The scope of the study is limited to single-seat Minnesota state and local elections, such as those for mayors, state legislators, or governor. It describes our current election system and four alternative systems—Plurality, Approval Voting (AV), Instant Runoff Voting (IRV), Borda Count, and Condorcet—in terms of how the ballots are marked and how the votes are counted. In addition, the study presents different issues raised by advocates for each system.

In the Plurality and Approval Voting systems, voters do not rank their choices; they simply indicate which candidate or candidates they prefer. In the Instant Runoff Voting, Borda Count, and Condorcet systems, however, they do rank their choices. This means that they identify their first choice, their second choice, and so on, depending on how many candidates are running and the voter's interest in ranking more than one candidate. Ranking all of the candidates is not a theoretical requirement of any system. This process is called *preference voting*.

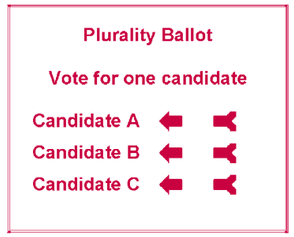
Each of these systems has advocates who are actively working for its acceptance, if not in Minnesota, then in other states or at the national level. This is not a comprehensive list of all voting systems but rather a discussion of those with vocal supporters and/or those that occur most frequently in academic publications. The League of Women Voters has incorporated the opinions of supporters and opponents of each alternative voting system as well as views from members of various academic disciplines and leaders of Minnesota's four political parties.

The report does not address presidential elections, the Electoral College, multi-seat elections, proportional representation, cumulative voting (see Glossary) or other election reform issues such as redistricting, paperless ballots, or campaign finance.

Voting Systems

Plurality: An Unranked Voting System

Minnesota uses the Plurality system, also called First Past the Post, in which each voter chooses a single candidate, and the candidate with the most votes wins. In races with three or more candidates, it is possible for a candidate to win with fewer than 50% of the votes; in other words, the winner can be elected by a minority of the voters.[6] Recent examples include Minnesota's 1998 and 2002 gubernatorial elections and, at the national level, the presidential elections of 1992 and 2000.



The Plurality system originated in ancient Greece and Rome and evolved in England before the American Revolution. Outside the United States, the Plurality system is used in the United Kingdom and other former British colonies, such as Canada and India.[7]

Although the U.S. Constitution sets out a complicated process for electing the president via the Electoral College that requires a majority vote of electors, it permits the states to determine their own election procedures.[8] Minnesota state statutes, therefore, not the U.S. Constitution, dictate how elections in Minnesota are conducted,[9] but any changes to our existing Plurality system might require modifying the Minnesota Constitution and/or these statutes. The section on legal issues later in this document discusses these statutes.

Approval Voting (AV): An Unranked Voting System

In the Approval Voting system, voters are allowed to vote for as many candidates as they wish. The candidate receiving the greatest total number of votes wins the election. Approval Voting was created in Venice in the 13th century when the Venetians used it to elect members to their Grand Council.[10]

Approval Voting did not surface again until the mid-1970's, when it was independently proposed by several scholars, including Steven J. Brams, professor of politics at New York University, who remains its champion to this day. Best known for its use in electing the Secretary-General of the United Nations, Approval Voting is also used to elect officers of professional organizations such as the Institute of Management Sciences, the Mathematical Association of America, and the American Statistical Association.[11]

Interest in using this system to elect public officials is growing in the United States. An organization called "Americans for Approval Voting" has formed to work for the adoption of Approval Voting for public elections in the United States.[12]

The following example shows how AV might work. Four professors in a college English Department are trying to choose a handbook (a text with rules for grammar and punctuation) for their students. They have narrowed the choice to three books, which are virtually the same except for the titles. They decide to use the Approval Voting system, so the professors vote for all of the handbooks of which they approve. The *Pocket Handbook of Grammar* is the winner.

Professor	*Pocket Handbook of Grammar*	*Great Big Picture Book of Grammar*	*Grammar and Videogames*
Angelou	YES	YES	
Tan	YES	YES	
Dickinson	YES		YES
Woolf	YES	YES	
Totals	**4**	**3**	**1**

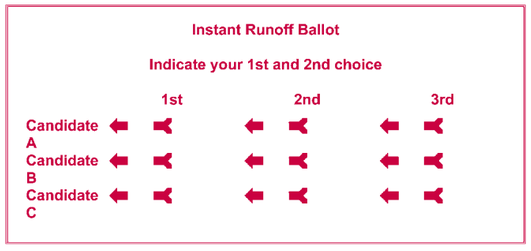
A reverse form of the Approval Voting system (Brams calls it *Disapproval Voting*) has been used since 1987 in some Eastern European countries and the former Soviet Union. Voters cross off the names of candidates of whom they disapprove. Brams adds that this procedure is similar to Approval Voting in that "candidates not crossed off are, in effect, approved of, although psychologically there is almost surely a difference between approving and disapproving of candidates."[13]

And the Winner Is—Kicked Out

"One of the earliest forms of democracy in Greece was introduced by Cleisthenes in 508 B.C. This was a rather negative form of an election. Each year voters were asked to cast a vote for the politician they most wished to exile for ten years. Votes were written on *ostraka,* which were broken pots, and from this comes our present word to *ostracize*. If no politician received more than 6000 votes, then all remained, but if any received more than 6000, then the one with the largest number was exiled. Requiring that someone had over 6000 votes before being ostracized was an added feature to try to ensure that only when a person was unpopular with a large number of voters was exile the result. If there was a fairly even spread of votes, nobody would get over 6000 and, although someone would get the most, it would not matter in such a case." [14]

Instant Runoff Voting (IRV): A Ranked Voting System

In the United States, the terms *Instant Runoff Voting* and *Single Transferable Vote (STV)* are often used interchangeably, but STV also is used in elections that produce more than one winner. This study examines Single Transferable Vote as it is used in contests with a single winner among multiple candidates and uses the term *Instant Runoff Voting* for this process.[15]



In Instant Runoff Voting, voters rank the candidates on the ballot, marking their first, second, and third choices, depending on how many candidates are in the race; however, a voter does not have to vote for more than one candidate. In round one, the first-choice votes are counted. If a candidate gets 50% + 1 of the votes, he or she is declared the winner. If no one has a majority, the counting goes to round two. The candidate with the lowest number of votes is eliminated. The votes cast for the eliminated candidate are then transferred (or moved) to the second choice listed on each ballot. If someone gets a majority, the election is over. If no one receives a majority, the counting goes to round three and continues until someone has 50% + 1 of the total votes. There is no need for a separate runoff election, thus explaining the term *Instant Runoff Voting*, and the winner always has a majority of the votes.[16]

A simple example illustrates how IRV works. One hundred citizens are voting for the most architecturally unique county courthouse in Minnesota. The candidates are Stearns County, Freeborn County, and St. Louis County (Duluth).

Round One

County Courthouses	First Choice	Second Choice
Stearns	41	6 for Freeborn 35 for St. Louis
Freeborn	40	10 for St. Louis 30 for Stearns
St. Louis (Duluth)	19	15 for Stearns 4 for Freeborn

No courthouse has a majority, so the election goes to the next round. The lowest vote-getter, St. Louis, is eliminated, and the 19 votes are redistributed—15 for Stearns and 4 for Freeborn.

Round Two

Courthouses	First Choice	Second Choice
Stearns	41+15	6 for Freeborn 35 for St. Louis
Freeborn	40+ 4	10 for St. Louis 30 for Stearns
~~St. Louis County (Duluth)~~	~~19~~	15 for Stearns 4 for Freeborn

Now Stearns has 41 + 15 votes or 56, and Freeborn has 40 + 4 or 44. The Stearns County courthouse wins with the majority of the votes.

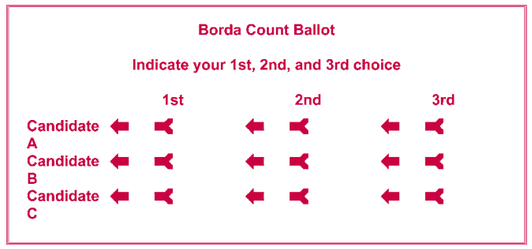
A national advocate of IRV is the Center for Voting and Democracy, and its Minnesota affiliate is FairVote Minnesota. These organizations sponsor extensive websites, which provide information about IRV and other voting systems.[17]

Instant Runoff Voting is not a new concept: "The key to development of Instant Runoff Voting (IRV) was the invention of the single transferable vote (STV) in the 1850's by Thomas Hare in England and Carl Andrae in Denmark. Instant Runoff Voting, using a preference ballot, was invented by W.R. Ware, a professor at Massachusetts Institute of Technology, around 1870."[18]

Four states—Florida, Indiana, Maryland, and Minnesota—used variations of Instant Runoff Voting in primary elections as early as 1912. Ireland and Australia currently use IRV in national elections,[19] and London uses it to elect its mayor.[20] San Francisco is implementing IRV for its November, 2004 elections as well.[21] In 2003, at least nineteen states, including Minnesota, introduced legislation to enact IRV, but the bills failed or were carried over in every instance.[22]

Other organizations also use Instant Runoff Voting. The Academy of Motion Picture Arts and Sciences uses it to determine the finalists, and the American Political Science Association uses it to elect its president .[23]

Borda Count: A Ranked Voting System



In about 1428, a young German scholar named Nicolaus Cusanus devised an election system that assigned points to each candidate.[24] His invention was largely forgotten by 1770 when French mathematician Jean-Charles de Borda became concerned that the Plurality voting system caused the French Royal Academy of Science to make bad decisions. He proposed (or reinvented) Cusanus' voting procedure, which became the Borda Count system. The Royal Academy adopted this system, which stayed in place for the next forty years.[25]

Borda's idea was to have voters rank order the candidates and assign points to each first place vote (perhaps three), each second place vote (perhaps two), and so on. If 30 Academy members were trying to decide which of three regions produced the best wine, for example, each member would vote on which region he liked best, which he liked second best, and which he liked least. The votes would be converted to points and totaled to determine the winner.[26] Alsace wins with 65 points.

Region	1st place—3pts	2nd place—2 pts	3rd place—1 pt	Total
Alsace	15 votes = 45 pts	5 votes = 10 pts	10 votes = 10 pts	65 pts
Bordeaux	5 votes = 15 pts	20 votes = 40 pts	5 votes = 5 pts	60 pts
Champagne	10 votes = 30 pts	5 votes = 10 pts	15 votes = 15 pts	55 pts

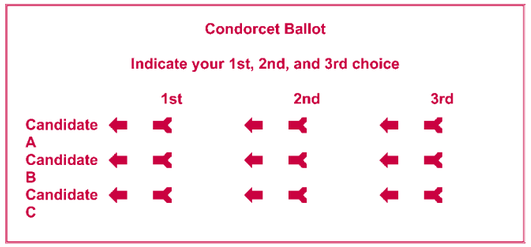
Although Napoleon Bonaparte quashed the Borda Count election system in the nineteenth century, twentieth century sports writers and fans revived a complicated version of it to determine who receives Major League Baseball's Most Valuable Player (MVP) award. Two sportswriters in each league city can nominate up to ten players to be the MVP. Each writer must rank the players from one to ten. The player getting a first-place vote receives fourteen points, a second place vote counts nine points, a third place vote gets eight points, and so on to a tenth place vote, which is worth one point.[27]

The Borda system is also used in "various scientific and technical applications such as handwriting recognition and space navigation, where the votes come from unbiased sensors or systems rather than people."[28] It is included in this study because some mathematicians believe it is the best way to measure the "will of the voters," and in some situations it might provide citizens with a useful alternative to other voting systems. Businesses often use the Borda voting system to rank applicants as well. Donald G. Saari, a professor of mathematics at the University of California at Irvine, is an outspoken advocate of the Borda Count voting system.

Would the Borda Count Have Avoided the Civil War?

Abraham Lincoln's victory in the 1860 presidential election probably would not have occurred under a different voting system. Political scientists Alexander Tabarrok and Lee Spector speculate that the peculiarities of the Plurality voting system gave Lincoln the victory over Stephen Douglas and three other candidates. Lincoln was popular in the North but hated in the South. Douglas, who was Lincoln's closest competitor, was the second choice of nearly everyone—both Northerners and Southerners. According to Tabarrok and Lee, "On paper, Lincoln's victory looks overwhelming, but he actually didn't have broad-based support." Would there have been a Civil War if Douglas had defeated Lincoln? If so, how would it have ended? [29]

Condorcet: A Ranked Voting System

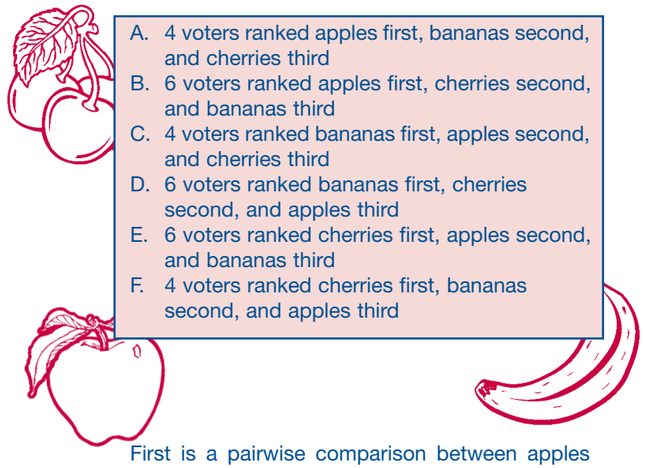


Some mathematicians believe that the Condorcet system is superior to all others because it best identifies the candidate preferred over each of the other candidates, the "Ideal Democratic Winner."[30] Even though mathematician Donald Saari prefers the Borda Count system, he explains that the Condorcet system is the "standard used to compare other approaches."[31] We include this system in the study because many academic texts and journals refer to it as the "best" way to measure the will of the voters.

Marie Jean Antoine Nicolas Caritat, Marquis de Condorcet (1743 to 1794) was a French philosopher, mathematician, and early political scientist who is credited with inventing the Condorcet system of vote tabulation in elections,[32] although recent findings in the Vatican Library prove that the real credit goes to thirteenth century scholar and poet Ramon Llull.[33]

From the point of view of voters, the Condorcet system is another ranked system. Voters rank the candidates, marking their first choice, second choice, third choice (or more, depending on the number of candidates); they do not have to rank all of the candidates. Under the Condorcet system, the winning candidate is the person who "can top each of the others in a series of head-to-head contests."[34] The tabulation of votes, called "pairwise" contests by mathematicians, is more complicated than any of the other systems discussed in the study. The Condorcet winner is determined by pairwise comparisons of each candidate with all the other candidates.

Imagine an election held by 30 members of the Association of Fruit Producers. They want to decide which fruit to emphasize in their upcoming marketing campaign. They are considering apples, bananas, and cherries. They decide to use the Condorcet system to select the winner. The vote turned out as follows:



A. 4 voters ranked apples first, bananas second, and cherries third
B. 6 voters ranked apples first, cherries second, and bananas third
C. 4 voters ranked bananas first, apples second, and cherries third
D. 6 voters ranked bananas first, cherries second, and apples third
E. 6 voters ranked cherries first, apples second, and bananas third
F. 4 voters ranked cherries first, bananas second, and apples third

First is a pairwise comparison between apples and bananas. Here is how it works: apples are preferred over bananas by 4 voters in line A, 6 voters in line B, and 6 voters in line E for a total of 16 votes. Bananas are preferred over apples by 4 voters in line C, 6 voters in line D, and 4 voters in line F for a total of 14 votes. Total: apples are preferred over bananas 16 to 14.

The next pairwise comparison is between apples and cherries. Cherries are preferred over apples by 6 voters in line D, 6 voters in line E, and 4 voters in line F for 16 votes. Apples are preferred over cherries by 4 voters in line A, 6 voters in line B, and 4 voters in line C for 14 votes. Total: cherries are preferred over apples 16 to 14.

The last pairwise comparison is between bananas and cherries. Cherries are preferred over bananas by 6 voters in line B, 6 voters in line E, and 4 voters in line F. Bananas are preferred over cherries by 4 voters in line A, 4 voters in line B, and 6 voters in Line D for a total of 14 votes. Total: cherries are preferred over bananas 16 to 14.

Bananas does not win any of the pairwise comparisons. Apples wins only one pairwise comparison—against bananas. Cherries wins two pairwise comparisons—against bananas and apples, so cherries is the Condorcet winner.

Although the pairwise comparisons of tallying votes is more difficult to follow, the use of computers and computer software makes the actual tabulation of votes in an election no more difficult than the tabulation in the other voting systems. However, the Condorcet system does not always produce a winner. As a result, election officials must decide before the election on a method to break a tie.[35]

Ramon Llull Sets the Record Straight

"Dear Readers,

It is my distinct pleasure to respond 'from the beyond' to your kind invitation to set the historical record straight. I was born in 1232 on the Island of Mallorca in the Mediterranean Sea. It was my dream to persuade people of the virtues of Christian belief by relying, not on force, but on reason. Unfortunately, people did not find it easy to follow my arguments, so I was more than pleased to discover some down-to-earth applications, including an election system. My idea was to oppose every pair of candidates, one-on-one, and ask the electors whom of the two they would prefer—very much like a medieval jousting tournament. . . .I wrote three papers on the topic. More than a century after my death, in 1428, the young German scholar Nicolaus Cusanus journeyed to Paris to read my works in libraries there. . . .Reading my papers, Cusanus was inspired to invent his own electoral system. Did he not understand mine, or just find it inadequate? Who knows?

While I had been concerned with electing church officials, Cusanus sought a system to elect the Holy Roman Emperor. In his system, each elector assigns each candidate a rank score, with the lowest candidate getting a score of 1, the second lowest a score of 2, and the best candidate the highest score possible, e.g., 10 when there are 10 candidates. . . .My first electoral paper—actually the one which is longest and most detailed, written around 1280 or so—was rediscovered only in 2000 filed away in the Vatican Library. . . .My electoral writings are now on the Internet (in the original and in translations into English and German) at www.uni-augsburg.de/llull/" Adapted from a "letter" by Friedrich Pukelsheim of the University of Augsburg, Germany.[36]

Issues: Determining the Will of the People

Arrow's Impossibility Theorem

In 1952 Kenneth Arrow won a Nobel Prize in part for proving that there is no such thing as a perfect voting system. He was trying to put together a set of minimal conditions that would consistently translate individual preferences into group preferences, but he found that this was impossible. In other words, there is no voting system that consistently meets Arrow's minimal criteria— except a dictatorship.[37] This discovery startled mathematicians and political scientists who have been studying and debating Arrow's theorem ever since.[38]

Arrow's discovery, according to Harvard University government professors Kenneth Shepsle and Mark Bonchek, suggests that systems of combining individual votes into a group choice or winner is not as straightforward as it seems. No system is consistently fair when the number of voters is large, when their preferences are varied, or when more than two candidates are in the race. They observe that "even though each individual in the group has preferences that are consistent, . . . this need not be true of the group's preferences."[39] This explains why it is so difficult to identify the "true will" of the voter or the "Ideal Democratic Candidate." (See Appendix 1 for Condorcet's Paradox.)

Research also indicates that no fixed set of criteria for a "good" voting system exists. Citizens creating a new voting system or changing an old one must set priorities and make tradeoffs among a number of competing goals. Some might want to encourage third parties, some might want to measure the "will of the voters" as perfectly as possible, some might want to reduce factions, some might want a specific kind of representation, and so on.[40]

Instead of focusing on the criteria for a "good" voting system, this study discusses the issues most frequently raised by advocates for particular systems, those mentioned in the literature of mathematics and political science,[41] and those of specific relevance to Minnesota.

Majority Rule

According to the proponents of alternative systems, the most important criterion for any single-winner voting system is that it produce a winner elected by a majority of eligible voters. They point to statements such as that by Noah Webster, who wrote in 1787, "Hence the doctrine, that the opinions of a *majority* must give law to the *whole* State: a doctrine as universally received, as any intuitive truth."[42] Although the United States Constitution requires a majority of votes to elect the president in the Electoral College and to pass certain bills in Congress, it does not require the states to adhere to the principle of majority rule. Nevertheless, this doctrine is so deeply embedded in the minds of most citizens that they are often surprised to learn that a candidate can be elected by a minority of the voters; however, some people see no problem when a candidate wins an election with less than a majority of the votes.

Almost two hundred years after Webster's affirmation of rule by the majority, the Vermont House of Representatives commissioned a study that endorsed Instant Runoff Voting for the state of Vermont. This

commission stated that the Plurality voting system contains "a fundamental defect that violates the most basic precept of democracy: majority rule" because a candidate can be elected with fewer than 50% of the votes. [43]

Asserting that Instant Runoff Voting will solve this problem, the Center for Voting and Democracy says, "IRV advantages the majority, since it ensures that a minority of voters can never defeat a candidate supported by a majority."[44] The Vermont study adds that this "is the main attribute of IRV that prompts this Commission to recommend its adoption for all statewide elections."[45]

Promoters of Approval Voting suggest that it will generally elect the candidate with the greatest overall support.[46] Robert J. Weber of Northwestern University in Illinois presents a mathematical proof that Approval Voting will usually result in a winner preferred by a majority of the voters in "a three-candidate setting in which two similar candidates share the support of a majority of the voters." He believes that Approval Voting more effectively represents the preferences of the electorate in the three-candidate race than either the Plurality or the Borda system.[47]

Donald Saari of the University of California at Irvine uses mathematical proofs to support his claim that the Borda Count system is much more likely to support majority rule than the other systems.[48] He speculates that the Borda system is least likely to produce a voting paradox, which occurs when "the voters do not elect who they really want," adding that there are many examples of actual elections in which this has happened.[49] Saari discusses several scenarios that give rise to a variety of voting paradoxes. (See Appendix 2 for a real-world example of a voting paradox.)

Fans of the Condorcet system say that in most situations, this system will produce a winner who has a majority of the votes and will be "the candidate who is preferred by a simple majority of voters to *each* of the other candidates in pairwise contests, provided that such a candidate exists."[50] This winner is called the "Condorcet candidate," and even champions of other systems acknowledge that such a Condorcet winner is more truly representative of the will of the majority and therefore more "democratic."[51]

Christopher Gilbert, political science professor from Gustavus Adolphus College, St. Peter, Minnesota, believes that the Condorcet system is interesting in theory but perhaps too complicated in practice. The Borda Count system might be a better choice for people concerned about determining the precise will of the majority because it is easier to count.[52]

Winning with a minority of votes is not a new occurrence. In seventeen presidential elections, including the election of 1860 won by Abraham Lincoln, the winner received fewer than 50% of the popular votes.[53] One could argue that even though these candidates received less than a majority of the popular vote, they did receive a majority of votes in the Electoral College, thus not violating the principle of majority rule.

In Minnesota, it is not unusual for officials to win elections with a minority of the votes. Minnesota Governors Jesse Ventura and Tim Pawlenty were both elected without a majority. In 1998, Reform Party candidate Jesse Ventura won with only 37% of the votes, defeating both of the major party candidates. In 2002, Republican Tim Pawlenty became governor with 44% of the votes, with Democrat Roger Moe earning 36% and Independent Tim Penny receiving 16%. Between 1998 and 2002, eleven statewide offices were won with a minority of the votes and one with a majority.[54]

Year	President	U.S. Senator	Governor	Secretary of State	State Auditor	State Treas.	Attorney General
1998			Ventura 37.0%	Kiffmeyer 46.8%	Dutcher 49.1%	Johnson 45.4%	Hatch 47.8%
2000	Gore 47.9%	Dayton 48.8%					
2002		Coleman 49.5%	Pawlenty 44.37%	Kiffmeyer 47.56%	Awada 44.63%		[Hatch—majority 54.64]

Even though some believed that these elections did not measure the "true will" of the voters, few people thought they were unfair, given the rules set out by the Plurality voting system.

"Sincere" vs. Strategic Voting

Supporters of each of the voting systems discussed here believe that a voting system should enable citizens to "honestly vote according to their consciences."[55] They claim that their particular system will promote "sincere" voting rather than strategic or tactical voting, which they consider "gaming" the system. They prefer a voting system that discourages people from voting for anyone but their "true favorite."

Douglas Amy, professor at Mount Holyoke College in Massachusetts and author of *Real Choices/New Voices*, explains the importance of voting sincerely: "To produce a true mandate, voters must be voting sincerely—that is, they must be casting a vote for a party that truly represents their own specific ideological and policy preferences."[56] If in 2000, for example, one's true favorite was Ralph Nader, some would say that voting for anyone else would be insincere.[57]

Proponents of alternative voting systems criticize the Plurality voting system, in particular, for encouraging strategic voting, saying that people who want to vote for third party candidates may feel that they must settle for the "lesser of two evils" by voting for their second choice. They fear that a sincere vote for a minor party candidate may lead to the election of a candidate they dislike. The minor party candidate may become a "spoiler" in the election, contributing to the election of a candidate not supported by the majority of the voters.

Eliminating the "lesser of two evils" choice is one of the main advantages of the Instant Runoff Voting system, according to the Center for Voting and Democracy: "Voters have every incentive to vote for their favorite candidate rather than the 'lesser of two evils' because their ballot can still count toward a winner if their first choice loses."[58]

Advocates of the Approval system believe that AV encourages sincere voting. Steven Brams and Peter Fishburn argue that Approval Voting is less vulnerable to manipulation than any of the others. In addition, voters don't have to rearrange the order of their votes or vote for someone they don't like to keep someone else from winning.[59]

Others argue that the Approval Voting system does not reward honest voting in every situation. Voting for one's first, second, and third choice candidates without ranking them in some cases can lead to the defeat of one's favorite candidate because the ballots are equally weighted. Voters cannot indicate a strong preference for one candidate and a weak preference for another.[60] If enough other people voted for their second choice, that candidate might win. Approval voting proponent Brams admits that this is a valid concern but states that rational voters can use information from polls to help them decide whether to vote for a second or a third candidate.[61]

Brams speculates that a benefit of sincere voting under the Approval Voting system is that it will make it possible to measure the true level of support of minor party candidates. Election results will be relatively undistorted by strategic voting, so voters and political parties will have access to important information which is unavailable under the Plurality system.[62] A national example of election results distorted by strategic voting is the presidential election of 1992. Gerald Posner wrote in the *New York Times Magazine* that Perot did not take more votes from Bush and help elect Clinton as many people believe: "In fact, exit polling showed that Perot hurt both parties almost equally, taking roughly the same number of votes from Clinton as he did from Bush. Exit polls also show that more people would have voted for Perot if they thought he had a chance to win—his vote total could have approached 40 percent (Clinton won with only 43 percent)." [63]

Critics claim that the opposite is the case: the intensity of a candidate's support will not be accurately measured with the Approval Voting system because a voter's third-choice Approval vote counts as much as his or her first-choice Approval vote.[64]

One must also keep in mind that each of these alternative voting systems except Instant Runoff Voting is vulnerable to another kind of strategy: "bullet voting." Individual voters (perhaps at the suggestion of campaign organizers) could mark only one candidate or "bullet" vote rather than mark or rank several candidates. Bullet voting would distort the results, and the election system would revert back to the Plurality system.[65]

A simplified example using the Borda Count election system offers a rough idea of how insincere or tactical voting might work in one situation. Imagine that thirty people are on a committee to plan the menu for a high school reunion. The caterer offers them four choices for dessert: rhubarb pie, chocolate cake, vanilla ice cream, and a low-carb bar. They decide to use the Borda Count system to make their decision. Ten of the committee members want rhubarb pie and twenty want chocolate cake. First choice votes count 4, second choice votes count 3, third choice votes count 2, and fourth choice votes count 1. Even though the ten pie lovers like cake second best, they put it last so they can win the election.

Vote distribution of the ten pie-lovers:

First	Rhubarb Pie	40 points
Second	Low-Carb Bar	30 points
Third	Ice Cream	20 points
Fourth	Chocolate Cake	10 points

The 20 cake lovers like rhubarb pie second and sincerely put it in second place.

Vote distribution of the twenty cake-lovers:

First	Chocolate Cake	80 points
Second	Rhubarb Pie	60 points
Third	Ice Cream	40 points
Fourth	Low-Carb Bar	20 points

Total points for each dessert:

First	Rhubarb Pie	100 points
Second	Chocolate Cake	90 points
Third	Ice Cream	60 points
Fourth	Low-Carb Bar	50 points

One could argue, however, that the rhubarb pie fans are not insincere but practical, and that the issue of "insincere" votes or strategic voting is relatively unimportant, given the fact that it's difficult to measure a voter's "sincerity." Some think that in a three-person contest, voters who decide not to support their first choice because that candidate is a long-shot are making a rational choice rather than gaming the system. They are merely making compromises, which are frequently necessary in a democracy. As long as everyone knows the rules of the game, then an election system's susceptibility to manipulation may not be a valid criterion on which to evaluate it.[66] After all, as Donald Saari points out, "*All* non-dictatorial methods involving three or more alternatives can be manipulated."[67]

Borda himself was aware of the problem with strategic/insincere voting. When someone pointed it out, he replied optimistically, "My system is only for honest men."[68]

"Wasted" Votes

In voting system terminology, "wasted" votes are those which do not go towards the election of any candidates. Whether or not voters believe that their vote has been "wasted" depends on their definition of the term. If voting for a candidate who loses means one's vote is wasted, then as many as 49% of the voters will feel that way in any election that requires a majority of the votes to win. Most often the term is used to mean votes for a third party candidate who has little chance of winning.[69]

Some people might choose to vote for a candidate they know will lose in order to lodge a protest or stand on principle. A strong third party showing may, for example, cause major parties to incorporate new issues in their platforms. Dennis Thompson, Harvard professor and author of *Just Elections*, says that "protest votes, in sufficient numbers, can send a powerful message and can have an effect on campaigns and elections in the future."[70] Issues once deemed immune to legislative change were first proposed by third parties: abolition of slavery, minimum wage, women's right to vote, social security, end to child labor, and the 40-hour workweek. They are now accepted laws of the land.[71]

Advocates of Instant Runoff Voting assert that reducing the number of "wasted" votes is one of the advantages of IRV. According to Ted Halstead and Michael Lind, voters realize that if they vote for a third party candidate in the current Plurality system, their vote will probably be wasted. The authors explain that voting for a third party so easily backfires that voters in a Plurality system "are offered a stark choice between voting for one of two major national parties or not voting at all. Increasing numbers of Americans have chosen the latter option."[72]

The Vermont Commission points out that under Instant Runoff Voting, when a first choice candidate is eliminated, the vote is reassigned to the second choice candidate that the voter designated, reducing the chance that the voter's vote will be "wasted."[73]

Advocates of Approval Voting also speculate that voters won't have to worry about "wasting" their votes with this system. If their most preferred candidate has little chance of winning, they can vote for him or her and a more viable candidate without worrying about "wasting" their vote on the less popular person.[74]

Voter Turnout

Many people are very concerned about the issue of low voter turnout, blaming the Plurality system. Some speculate that changing to an alternative election system will bring more voters to the polls, but this claim is difficult to verify, according to a study by political scientists about the effects of voting systems on turnout. The authors found that factors such as cultural differences, registration barriers, weak parties, non-competitive races, the perception that one's vote doesn't count, and so on may depress voter turnout. State-to-state comparisons of turnout are difficult as well because states have different ways of tracking turnout, and so far no significant history of alternative voting systems exists in this country for which state-to-state comparisons would be possible.[75]

The Minnesota Secretary of State's office explains that Minnesota's turnout statistics may appear as percentages of three different numbers:

- Voting-Age Population. This number comes from Census Bureau estimates and includes non-citizens, felons, and those under "guardianship of the person."
- Voting-Eligible Population. This number does not include non-citizens but does include felons and those under "guardianship of the person," even though they can't in fact register. It is not an exact number.
- Population registered to vote.[76]

Despite these problems, the study found that changing to an alternative voting system increased voter turnout by about five percentage points. The authors examined the effect of cumulative voting (see Glossary) on turnout in about 100 communities across the United States, mostly in Texas, some in Alabama, New Mexico, and a scattering of others, including one in South Dakota.[77] One of the authors of the study, Shaun Bowler of University of California Riverside, said, "The best we can tell is that changing the electoral system will boost turnout—probably somewhere in the low single digits. It's a consistent finding. So far as I know all studies show an increase is likely. None show a decrease."[78]

The Vermont Commission speculates that IRV would increase turnout by pointing to mayoral elections in Ann Arbor, Michigan, in the 1970's that were conducted using IRV. When an election had only two credible contenders, voter turnout was low. When a third party candidate was added, voter turnout jumped 28%. It adds that other nations that use IRV have far higher levels of voter participation than Vermont does, but other factors may be responsible for this as well, such as the day (or days) of the week on which elections are held or whether voting is required by law.[79]

Intensity vs. Breadth of Support for a Candidate: Finding a Compromise Candidate

Intensity of support refers to how strongly a voter supports or opposes a candidate. Those who are passionate are often mobilized and highly motivated to vote. On the other hand, breadth of support indicates a candidate who can appeal to a wide variety of people across opinions and party lines. In alternative systems, candidates have an incentive to appeal to supporters of other candidates as their second or third choice.

Proponents of preference voting systems, ones in which the voters rank the candidates, believe that an election system should balance the intensity of a candidate's support with the breadth of his or her support. Going too far in either direction can call into question the legitimacy of the winner. According to Samuel Merrill III in *Making Multicandidate Elections More Democratic*, it is vital that the voters perceive the winner as the one preferred by the majority of the electorate: "The belief that a loser is preferred by a majority of the electorate to the winner or enjoys greater intensity of support can call into question that legitimacy."[80]

Critics of the Plurality voting system say that it measures only the amount of intense, core support for a candidate, and breadth of support is irrelevant, permitting single-interest groups to take over a political party in races with more than three candidates.[81] Instant Runoff Voting supporters believe that their system offers "a compromise between two extremes: it requires sufficient core support to avoid elimination and enough broad support to win a majority of the votes."[82]

Instant Runoff Voting does not always offer a compromise, say its opponents. It can prevent the "spoiler" effect in races in which the minor parties have little core support; however, "as soon as one of those minor parties gains power, its supporters vote for it at the risk of hurting their own cause, just as in the current plurality system."[83]

Proponents of IRV acknowledge that in a three-way race, a compromise candidate can be eliminated and an extremist elected. They present this example in an article that discusses the flaws in all of the voting systems in this study; they point out, however, that IRV "generally does a better job of finding the true compromise candidate than either plurality or two-round runoff elections: Two extreme candidates have strong core support, neither can appeal to a majority, and a moderate candidate has weak core support but is preferred by a majority as a compromise over the other two candidates.

Candidate	Support
Jones	45%
Marvin (Moderate)	15%
Smith	40%

Under IRV, the moderate candidate is eliminated first, and one of the extremists is elected."[84]

IRV advocates criticize Approval Voting because it measures only "whether or not a candidate is acceptable to the voter; it does not distinguish between a candidate who is intensely liked—a first choice—and those who are more weakly approved of—second and lower choices."[85]

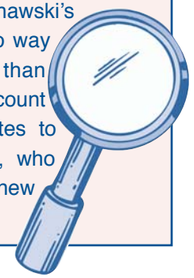
They add that "the adoption of Approval Voting could cause the defeat of a candidate who was the favorite of 51% of the voters by a candidate who was merely acceptable to 75% of the voters." They speculate that if a candidate who is the first choice of 51% of the voters loses to someone who is the second choice of 75% of the voters, then the Approval Voting system "would likely be repealed."[86] See sidebar for example.

Cherchez La Femme Association of Female Private Investigators

An adapted scenario shows how Approval Voting might allow a candidate with strong majority support to lose in an election with 100 voters. The structure of this scenario was presented by backers of Instant Runoff Voting to show why IRV is superior to Approval voting.

Three women private detectives are running for president of Cherchez La Femme, an association of female private investigators. J. Marple has the genteel lady detective vote, K. Millhone attracts quirky free-spirits, and V. I. Warshawski appeals to the feminists. Under plurality voting, Marple is the favorite choice of 65 voters, Millhone is preferred by 25, and Warshawski is liked by only 10. Marple is the unambiguous winner, and Warshawski is a distant third. Marple would also win using the Instant Runoff system.

Under Approval Voting, however, many genteel lady detectives might approve of Warshawski as well as Marple, being secretly attracted to Warshawski's feminist philosophy. But since there is no way to say that they like Marple better than Warshawski, Marple can lose. The final count might give 70 votes to Marple, 35 votes to Millhone, and 75 votes to Warshawski, who would win the election and become the new president of Cherchez La Femme.[87]



Approval Voting system champions believe that the one with the broadest appeal is also the strongest, minimizing the importance of intensity of support. They explain ways that both the Plurality system and the Instant Runoff Voting system can produce a winner who is not supported by the majority of voters: "Under Approval Voting, by contrast, it would be the candidate with the greatest overall support—the one most widely approved of—who would win."[88]

Others point out that intensity and breadth of support are descriptive concepts, too subjective to measure. Lynn Arthur Steen, professor of mathematics at St. Olaf College, Northfield, Minnesota, believes that intensity and breadth of support are not useful ways to compare different voting systems because they cannot be measured objectively.[89]

Legality of Alternative Voting Systems

No consensus exists about whether it is legal for Minnesotans to use alternative voting systems in state and local elections. Two questions are being debated:

- Would any of the alternative voting systems under consideration require a constitutional amendment?
- What statutory changes, if any, would be needed to adopt a constitutional voting system in various jurisdictions, such as cities, school districts, counties, or state government?

Constitutional Amendment

The question of constitutionality was raised in Minneapolis during a 2001 petition drive to amend the city charter. The petition would have asked the voters whether the city should adopt Single Transferable Vote, in this case Instant Runoff Voting, for Minneapolis elections. The charter commission and its attorney recommended against the proposed amendment, basing its recommendation on a 1915 Minnesota Supreme Court ruling. The petition drive failed to collect the required signatures and the issue was dropped.

Tony Solgård and Paul Landskroener, advocates for IRV, examined the constitutional question and believe that the commission had misread the Court case.[90] In *Brown v. Smallwood*,[91] an alternative voting system established in Duluth's 1912 charter was declared unconstitutional. However, Solgård and Landskroener claim that the system in question was not Single Transferable Vote/Instant Runoff Voting, but another preferential voting system called "the Bucklin method." They list the constitutional tests offered by the Court, contrast Single Transferable Vote from Bucklin with regard to those tests, and conclude that Single Transferable Vote/Instant Runoff Voting passes constitutional muster. (See Appendix 3 for a discussion of the Court's decision, its test for constitutionality, and a chart evaluating the constitutionality of each voting system in the study.)

Statutory Change

The debate over this question is exacerbated by multiple and sometimes conflicting statutes, as exemplified by the experience of Roseville, Minnesota. The city of Roseville raised the question of whether statutory changes are needed to authorize use of an alternative voting system in 2001 when the city was considering adopting a charter and becoming a home rule city. A proposal was made to the city's Charter Commission to adopt Instant Runoff Voting for city elections. The Commission's legal counsel advised that it was not authorized by Minnesota statutes.[92]

At that time Minnesota Statutes Section 205.185, subdivision 2, read: "A municipal election shall be by secret ballot and shall be held and returns made in the manner provided for the state general election, so far as practicable." The City's counsel found that the state general election is governed by Section 204B.35 to 204B.44, which prescribed a ballot format and instructions to the voters that would not permit a ranked ballot such as the one necessary for Instant Runoff Voting.

However, Solgård and Landskroener also examined this question and found that several places in the election statutes allow exceptions where otherwise provided by law. (See Appendix 4 for a detailed discussion of these exceptions in the election statutes.)

Alternative Voting Systems in Minnesota

Alternative voting systems are not completely new to the state. In 1912, a modified form of Instant Runoff Voting was adopted for all primary elections, including those for city, county, district, and state offices, but it was repealed in 1915, possibly for political reasons and possibly because election judges had trouble tallying the results. In 1947 the city of Hopkins adopted the Single Transferable Vote as part of its original charter, but voters repealed it in 1959.

Recently, several cities have shown interest in alternative voting systems. Charter Commissions in Two Harbors, Duluth, St. Cloud, Fridley, Hopkins, Roseville, Minneapolis, and Eagan have considered different voting systems. Citizens in Minneapolis circulated a "formal initiative" (i.e. a petition of the voters), and various citizens and officials presented proposals to Charter Commissions for referendum-style charter changes in Duluth, St. Cloud, and Roseville.[93]

Monotonicity

Instant Runoff Voting has a mathematical problem—it does not pass the monotonicity test. Mathematicians define monotonicity as follows: "With the relative order or rating of the other candidates unchanged, voting a candidate higher should never cause the candidate to lose, nor should voting a candidate lower ever cause the candidate to win;" voting your choice should only help your candidate.[94] In certain very specific circumstances, however, such as an extremely close three-way race, more first-place votes can hurt, rather than help, a candidate. Voters, by raising the ranking of a candidate, may actually cause that candidate to lose.[95] (For an example of how this might happen, see Appendix 5.)

The Center for Voting and Democracy, however, defends the IRV system against the charge that non-monotonicity makes it unacceptable. An article titled "No System Is Perfect" reminds readers that Arrow's Impossibility Theorem proves that every system has problems and that the problem of non-monotonicity exists only in theory, not in the real world: "If the theoretical problems with choice voting occurred even as frequently as 0.1% of the time, there would be many such examples, but there are none."[96] Samuel Merrill says that it would be relatively impossible in an election with large numbers of voters to use non-monotonicity to a candidate's advantage: "This strategy, if it is possible at all, is at once difficult to design and implausible to implement in a large electorate."[96]

Administrative Issues

Voter Education

The League of Women Voters interviewed current and former local and state election officials to see how a change in election systems would affect election administration. These officials had similar concerns.

The task of educating voters about a fundamental change in voting method appeared difficult but not impossible to almost all of the election officials and administrators interviewed. They mentioned that every election confuses a small number of voters, even though the voting system has been in place for over 200 years. Citizens seek answers from hot lines, election judges, and the Minnesota Secretary of State's Office—or they simply do not vote. They agreed that it would take a well-planned and adequately funded campaign to reach all of the voters sufficiently in advance of the election to teach them how to fill out their ballots. Secretary of State Mary Kiffmeyer, whose office would bear the primary responsibility for voter education, showed more concern, asking, "How could we explain a new system if no one can understand what we have now?"[98]

Elaine Voss, former Deputy Secretary of State, indicated that it would be "absolutely critical" for voters to fully understand the system by which someone is elected: "It would discourage voter participation if they didn't understand the method."[99]

Training Election Judges

Local election officials were also concerned about the costs of training election judges so they would understand any new election system. Local governments normally pay for training judges, so at least initially they would need state funding for the retraining. Some felt the burden would be greatest in precincts which count the votes by hand.

Voting Equipment

Several local and state officials in Minnesota felt that changing to any of the alternative voting systems in

this study would require upgrading the software in the voting machines to meet new vote-tallying procedures. This is not a problem, said Ramsey County Election Manager Joe Mansky, because software used in voting machines can be programmed to tabulate the votes regardless of which election system is used. He said that with the right computer software, "we can count any ballot you want."[100] Although some expense is involved, several election officials responded that a software upgrade would not necessarily be a significant cost burden for local governments.

Some of the smaller, township precincts in Minnesota do not have voting machines and currently require a hand count, and this process wouldn't change with an alternative system. No complicated formulas would be applied to ballots at the precinct level. Election judges would simply report the vote totals to a central location. [101]

Election administrators were also concerned about having more than one type of election system on the same ballot. They wondered for example, what if IRV were used to elect the mayor but Plurality was used for the city council or school board. Voting machine vendors at a conference for county election officials said that their machines could be programmed to allow a mixed type of ballot without a significant cost increase.[102]

It is possible that more complicated vote tabulation involved in alternative methods could slow down the process of reporting the outcome of the election.

Errors

Election officials said that a change in election system would inevitably produce some degree of administrative errors, at least in the beginning, but a paper trail for all ballots could allow recounts if necessary. To prevent errors, the League of Women Voters "supports the implementation of voting systems and procedures that are secure, accurate, recountable, and accessible," regardless of the voting system or equipment that is adopted. [103]

Help America Vote Act (HAVA)

The 2002 Help America Vote Act (HAVA) provides $3.9 billion to improve elections nationwide. The first stream of money has brought $5.5 million to Minnesota to modify the statewide voter registration system and to upgrade voting equipment for voters with disabilities. Another $41.5 million to upgrade equipment for all voters could come to Minnesota in the next three years. Secretary of State Mary Kiffmeyer hopes to phase in the new voting equipment as the money becomes available. This equipment would make it possible to use alternative systems in all precincts to tabulate votes.[104] HAVA addresses other important election issues as well, including payments to states for election administration improvements and voting rights. These are important but beyond the scope of this study.

Political Issues

Introduction: Political Context

Accounts from other states as well as experience in Minnesota suggest that politics affects attitudes toward changing the voting system. Parties that benefit from the current system often do not want to alter it, and parties that have lost, particularly third parties, are often very interested in changing the system. For example, in the 1990 election for governor in Alaska, the vote was split between the Republican and the Independence Party candidates, permitting the Democratic candidate to win with 42 percent of the vote. This election prompted Republicans to support an initiative to create Instant Runoff Voting in Alaska.[105] The situation was reversed in a 1998 New Mexico election for a Congressional seat, inspiring the Democrats to introduce a bill to amend New Mexico's Constitution to permit Instant Runoff Voting and require that a candidate win by a majority of the votes.[106]

The League of Women Voters sought comments from leaders of Minnesota's four main political parties about alternative voting systems.

Democratic-Farmer-Labor Party (DFL)

Bill Amberg, Communications and Research Director for the DFL, said that the party did not have an official opinion on any of the alternative voting systems but that "anything we can do to make our democracy stronger is a worthwhile endeavor."[107]

In 2003, several DFL Representatives and Senators sponsored bills in the Minnesota House and Senate to permit Instant Runoff Voting, suggesting that some Democrats are leaning toward alternative voting systems. These bills were much broader in scope than the one introduced in 2004, which applied to a one-time election in the city of Roseville and had bi-partisan support. The Roseville bill passed in the Senate with 33 Democrats, 4 Republicans, and 1 Independent in favor and 26 Republicans opposed.[108] The bill failed in the House of Representatives with 48 Democrats and 6 Republicans in favor and 73 Republicans and 5 Democrats opposed.[109]

Green Party

Nick Raleigh, chair of the Green Party, states that Instant Runoff Voting is called for in the Green Party's Platform. The party uses IRV for its internal elections. He says that ranked ballots allow voters to express their political will in a more comprehensive way by indicating that "if my favorite candidate doesn't win, then I'd prefer to see so-and-so win." He feels that the "spoiler argument" that is used against minor party candidates "serves to silence political dialogue and to muffle the support of salient viewpoints expressed by the smaller political parties."

As for changing election systems in Minnesota, he believes that it is important for municipalities to begin using alternative systems in their local elections. This would allow voters "to become accustomed to and gain confidence in [them]. The final step is for state law to be changed so that all state elections are conducted via the preferred alternative voting system. If a new system were introduced at the state level first, I fear there'd be a rebellion against the unknown." [110]

Independence Party

Jim Moore, chair of the Independence Party, believes that IRV and other options are "popular but not much [is] pushing them." He says that IRV allows a candidate "with great ideas" but outside the two entrenched parties to compete and that IRV alleviates the problem of "wasted vote syndrome." No one from the two "non-entrenched" parties (Independence or Green) wants to be a "spoiler." They want people's votes to matter and for people to vote for what they believe in. This party used IRV to determine the winner in its 2004 presidential preference ballot.[111]

Republican Party

Steve Sviggum, Republican Speaker of the Minnesota House of Representatives, does not see a problem with the current Plurality system and is not sure what it is that people are trying to fix.[112]

When asked about the House's rejection of the bill to permit Roseville to use Instant Runoff Voting, House Majority Leader Erik Paulsen, R. Eden Prairie, said that the current election system is clear, Instant Runoff Voting "looks like it would be a very confusing process. Just philosophically, there's no need for the state to be involved with this. People vote for the one person they think should hold office, and you live with the results. That's democracy." [113]

Ray Cox, R. Northfield, is concerned that under Instant Runoff Voting the results of the first round would not be kept secret, and he didn't think the electorate would accept a winner who did not have the most votes on the first ballot. He said, "It doesn't bother me that a person may be elected with less than 50% of the vote . . in three or more candidate races." [114]

Summary

Voting Systems

Each of the voting systems in the study raises issues that vary depending on what people value and what they want to accomplish. This list summarizes the most frequently cited pro and con statements made regarding each system.

Plurality Voting System (Voters select one candidate; candidate with most votes wins)

- Is easy for voters to understand
- Preserves tradition
- Requires no legislative change
- Does not ensure majority rule when more than two candidates are running
- Votes for third party candidates may be "wasted"
- Is vulnerable to "spoiler" candidates
- Is vulnerable to manipulation

Approval Voting System (Voters select as many candidates as they wish; candidate with most votes wins)

- Is easy for voters to understand
- Expands voters' choices because they can vote for more than one candidate
- Might eliminate "wasted" votes, "spoiler" candidates in some cases
- Measures only whether or not a candidate is acceptable; does not distinguish between intense and weak approval
- Could lead to defeat of a candidate whom a majority support as their first choice
- Is vulnerable to manipulation

Borda Count Voting System (Voters rank candidates; points assigned according to rank; candidate with most points wins)

- Allows voters to express preferences among candidates
- Considered by some mathematicians to best identify winner in three-way race
- Is vulnerable to manipulation (may require honesty for best performance)
- Voting for one's second choice can defeat one's first choice

Condorcet Voting System (Voters rank candidates; winner is the one who can top each of others in a series of head-to-head contests)

- Allows voters to express preferences among candidates
- Considered by some mathematicians to best identify winner in three-way race
- May result in a tie that requires pre-election decision on how to break tie
- Is vulnerable to manipulation
- May be difficult for voters to understand

Instant Runoff Voting System (Voters rank candidates; votes for candidate with fewest first-choice votes are redistributed according to their second choices until one candidate achieves a majority)

- Ensures majority rule
- Allows voters to express preferences among candidates
- Eliminates problems of spoiler candidates knocking off major candidates
- Eliminates need for run-off elections
- Does not meet mathematical requirement for monotonicity

Issues and Questions

The issues that have emerged in this study of election systems produce the following questions:

1. **Majority Rule**: Is the fact that someone may be elected with less that 50% of the vote important enough to change to a different election system? If it happens too frequently, will it reduce the legitimacy of Minnesota's elected officials? How important are voting paradoxes that are found in all of the systems being discussed?
2. **"Sincere Voting" vs. Strategic Voting**: How important is it for an election system to encourage citizens to vote for their true favorite rather than for someone who has a better chance of winning? Is an "insincere" or strategic vote "gaming the system" or making a compromise? Might an "insincere" or strategic vote for a candidate reduce the ability of the winner to interpret the will of the people?
3. **"Wasted" votes**: Does it matter that a vote for a third party candidate under the Plurality system might be considered "wasted" because it cannot lead to the election of the voter's preferred candidate?
4. **Intensity vs. Breadth of Support**: Should a voting system balance intensity of support with breadth of support? What kind of impact does the type of support have on the winner's ability to govern?
5. **Preferences:** Are there benefits to allowing voters to express their preferences by approving or ranking multiple candidates?
6. **Legality of Alternative Systems:** Are the benefits of alternative methods sufficient to warrant a change in the Minnesota Constitution (if determined to be necessary) and/or Minnesota Statutes?
7. **Political Parties**: Would alternative voting systems that encourage third parties upset the traditional two-party system? In the Plurality system, how important is it that third party candidates can take votes from one major party candidate, perhaps enabling the candidate from the other major party to win?
8. **Voter Education**: Is the fact that some voting systems require complex tabulation be sufficient reason to reject them? How important is it that the voters understand how votes are tabulated? Would the additional costs of a new system be too much of a burden on Minnesota election districts in terms of educating voters and election officials?
9. **Change**: Who benefits from changing to an alternative system? Who is disadvantaged? Is it possible to reduce the impact of the unintended consequences which almost always follow any institutional change?

Most of the answers to these questions will be based on values judgments and speculation. No one can really predict the outcome of changes in our voting system, but the more we know about the issues, the less likely we are to make choices that we regret. The League of Women Voters hopes that the information in this report helps League members, Legislators, and citizens to understand some of the most widely discussed alternative voting systems, to sort out the claims made by supporters and critics, and to identify which of these voting methods they feel are beneficial and appropriate for use in state and/or local elections.

Appendices

Appendix 1: Condorcet's Paradox

A mathematics text provides an example of Condorcet's voting paradox that shows why it is so difficult to identify the "true will of the people": "In general, the word *paradox* is applied whenever there is a situation in which apparently logical reasoning leads to an outcome that seems impossible. . . ." Condorcet considered the following set of three preference lists and found that they indeed lead to a situation that seems paradoxical:

Rank	Number of voters (3)		
First	A	B	C
Second	B	C	A
Third	C	A	B

The text continues, "If we view society as being broken down into thirds, with one-third holding each of Condorcet's preference lists, then society certainly seems to favor *A* to *B* (two-thirds to one-third) and *B* to *C* (again, two-thirds to one-third). Thus, we would expect society to prefer *A* to *C*. That is, we would expect the relation of social preference to be *transitive*: If *A* is 'better than' *B*, and *B* is 'better than' *C*, then surely *A* is 'better than' *C*. But exactly the opposite is true. Society not only fails to prefer *A* to *C* but, in fact, rather strongly prefers *C* to *A*, (i.e., by a two-thirds to one-third margin)! With, say, 10 alternatives, a similar phenomenon can occur with 'two-thirds' replaced by 90%."

"That fact that two-thirds of society can prefer *A* to *B*, two-thirds prefer *B* to *C*, and two-thirds *C* to *A* is known as *Condorcet's voting paradox".*[115]

Appendix 2: A Real World Voting Paradox

Donald G. Saari, a mathematician at the University of California at Irvine, explains a real-world voting paradox that occurred in a 12-way general election in the 1991 Louisiana gubernatorial race: "Republican David Duke, a former Ku Klux Klan grand wizard, received 32 percent of the vote, while Democrat Edwin W. Edwards, a former governor who bragged about his gambling and had been indicted twice on federal racketeering charges, got 34 percent, both eking out more votes than the incumbent Republican governor Charles E. (Buddy) Roemer, who received 27 percent. 'It was reasonable to suspect that incumbent governor Roemer would have beaten either of them in a head-to-head race,' says Mr. Saari.

"The result was a widely disparaged "Krook-or-Klan" runoff. Bumper stickers supporting Mr. Edwards read 'Better the lizard than the wizard.' Mr. Edwards won the runoff with 61 percent of the vote. A poll found that almost half of the voters who chose Mr. Edwards said their main motive was to defeat Mr. Duke."[116]

Appendix 3: Constitutionality of Alternative Voting Systems in Minnesota

Solgård and Landskroener explain the State Supreme Court's decision in the *Brown v. Smallwood* case. The Court found that Duluth's 1912 voting system failed constitutionality in two ways. First, if no candidate received a majority after the voters ranked their preferences and cast their ballots, the voters' additional preferences were counted as additional votes added to the candidates' tallies. When the results were final, there were 18,860 votes but only 12,313 voters. The Court said that the voting system had the effect of giving more than one vote to some voters and greater or lesser effects on the election, which it said was not intended by the Constitution.

The Court's second objection was that by marking additional preferences, the voters were hurting the prospects of victory for their first choices. The Court found it unacceptable to put the voters in this position.

Below is a chart in which each of the alternative voting systems is evaluated according to the Court's tests of constitutionality:

	Is it the case that there is no more than one vote per voter per office? ('Yes' passes test)	Is it the case that second preferences do not hurt first preferences? ('Yes' passes test)
Approval	No	No
Borda	No	No
Condorcet	Yes	No
Instant Runoff	Yes	Yes

When Solgård and Landskroener apply the tests of constitutionality in the one Minnesota Supreme Court case to address the subject of alternative voting systems, they find that Instant Runoff Voting appears to be the only one that passes the tests. The other three systems would likely require a constitutional amendment to be acceptable for use in Minnesota elections.[117]

Appendix 4: Election Statutes and Home Rule Cities

Solgård and Landskroener pointed out that Section 410, the law authorizing home rule cities, grants broad authority to home rule cities, including control of its election system: "Not only does [Section 410.21] vest a city with the affirmative power to enact in its charter an election system that is 'valid and shall control…not withstanding' any inconsistency with other general election

law, it also reinforces this affirmative grant of power by expressly providing that charter provisions take precedence over any general law that is not consistent with the charter." They further observed that the *Brown v. Smallwood* decision expressly stated that home rule power extended to the choice of voting system, so long as it was constitutional.[117]

Solgård explains, "If there was any remaining conviction that Section 205.185 might still prohibit home rule cities from going their own way, it may have been overcome when, in one of its final acts of the 2004 session, the legislature amended that provision by adding the same 'except as expressly provided by law' qualifier found in other statutes. With that exception embedded in the same sentence as the original instruction for municipalities to conform to the state general election, it is quite clear that home rule cities may adopt an alternative voting system, so long as it is constitutional."[118]

Solgård provided this chart to show which laws, in his opinion, would need to be changed for various jurisdictions to adopt one of the alternative voting systems considered in this study.[119]

	Approval	Borda	Condorcet	Instant Runoff
Home Rule City	Constitution, Charter	Constitution, Charter	Constitution, Charter	Charter
Statutory City	Constitution, Statute	Constitution, Statute	Constitution, Statute	Statute
School Board	Constitution, Statute	Constitution, Statute	Constitution, Statute	Statute
County	Constitution, Statute	Constitution, Statute	Constitution, Statute	Statute
State	Constitution, Statute	Constitution, Statute	Constitution, Statute	Statute

Appendix 5: Monotonicity

An example from a math text helps explain this issue. [In the original, the term *plurality-with-elimination* was used for Instant Runoff Voting.] "Three cities, Athens (A), Babylon (B), and Carthage (C) are competing to host the next Summer Olympic Games. The final decision is made by a secret vote of the 29 members of the Executive Council of the International Olympic Committee, and the winner is chosen by the Instant Runoff system. Two days before the actual election, a straw vote is conducted by the Executive Council just to see how things stand. The results of the straw poll are shown in Table 1.

Table 1: Preference Schedule in Straw Vote Two Days before the Actual Election

Number of Voters	7	8	10	4
1st choice	A	B	C	A
2nd choice	B	C	A	C
3rd choice	C	A	B	B

"The results of the straw vote are as follows: In the first round Athens has 11 votes, Babylon has 8, and Carthage has 10, which means that Babylon is eliminated first. In the second round, Babylon's 8 votes go to Carthage, so Carthage ends up with 18 votes, more than enough to lock up the election.

"Although the results of the straw poll are supposed to be secret, the word gets out that unless some of the voters turn against Carthage, Carthage is going to win the election. Because everybody loves a winner, what ends up happening in the actual election is that even more first-place votes are cast for Carthage than in the straw poll. Specifically, the four voters in the last column of Table 1 decide as a block to switch their first-place votes from Athens to Carthage. Surely this is just the frosting on the cake for Carthage, but to be sure we recheck the results of the election.

Table 2 shows the preference schedule for the actual election. Table 2 is the result of switching A and C in the last column of Table 1 and combining columns 3 and 4 (they are now the same) into a single column.

Table 2: Preference Schedule for the Actual Election

Number of Voters	7	8	14
1st choice	A	B	C
2nd choice	B	C	A
3rd choice	C	A	B

"When we apply the Instant Runoff system to Table 2, Athens (with 7 first-place votes) is eliminated first, and the 7 votes originally going to Athens now go to Babylon, giving it 15 votes *and the win*! How could this happen? How could Carthage lose an election it had locked up simply because some voters moved Carthage from second to first choice? To the people of Carthage this was surely the result of an evil Babylonian plot, but double-checking the figures makes it clear that everything is on the up and up—Carthage is just the victim of a quirk in the Instant Runoff system: The possibility that you can actually do worse by doing better! In the language of voting theory this is known as a *violation of the monotonicity criterion* ."[120]

Notes

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Glossary

Approval Voting: Voters are allowed to vote for as many candidates as they approve of; the candidate receiving the greatest number of votes wins.

Borda Count: Voters rank order candidates and assign points according to the ranking, i.e. three points for first choice, two points for second choice, one point for third choice.

Burying: Strategic voting that insincerely ranks an alternative candidate lower in the hope of defeating him or her.

Compromise: Strategic voting that insincerely ranks an alternative candidate higher in the hope of getting him or her elected.

Condorcet: A voting systems in which voters rank their choices, marking them first, second, third, and so on. The winning candidate is the person who can top each of the others in a series of head-to-head or "pairwise" contests. The Condorcet winner is considered by many mathematicians to best measure the will of the people.

Contradictory majority preferences: A case in which the majority holds contradictory opinions. Kenneth Arrow demonstrated that the collective preferences of groups cannot always be determined from the individual preferences of their members.

Cumulative voting (accumulation voting or weighted voting): This is a multiple-winner voting system intended to promote proportional representation. In this system, a voter facing multiple choices is given X number of points. The voter can then assign his or her points to one or more of the choices, thus enabling one to weight one's vote if desired. Unlike preference voting where the numbers represent ranks of choices or candidates in some order (i.e. they are ordinal numbers), in cumulative votes the numbers represent quantities (i.e. they are cardinal numbers). This form of voting is advocated by those who argue that minorities deserve better representation, and thus could (by concentrating their votes on a small number of minority candidates) ensure some representation from the minority.

Hare system: A method of voting invented by Thomas Hare that is also known as the Single Transferable Vote system.

HAVA: Help America Vote Act is federal legislation that provides money to the states to upgrade their voting equipment.

Independent or third party candidates: Candidates from any political party organized in all or nearly all states other than the two current leading parties, which since the time of the American Civil War have always been the Democratic and the Republican parties.

Insincere voting: Occurs when a voter's reported preference order differs from his or her true preference order.

IRV-Instant Runoff Voting: Using a preference ballot, voters go to the polls once and designate their 1st, 2nd, and 3rd choices at one time. A series of runoff elections are conducted using voters' preferences until one candidate emerges with a majority of the votes.

Kenneth Arrow: Nobel Prize winner who proved no voting system is free from counterintuitive properties: i.e., a vote for someone can actually hurt that candidate. The idea is that no voting system is perfect.

Majority vote: A method of voting which calls for the winner to have a majority of the votes—50% + 1.

Monotonicity: The mathematical criterion which states that with the relative order or rating of the other candidates unchanged, voting a candidate higher should never cause the candidate to lose, nor should voting a candidate lower ever cause the candidate to win. The idea is that voting for one's choice will help one's candidate.

Multi-seat election (multi-member district): A district from which more than one representative is elected.

Nonmonotonicity: Voting characteristic in which voting for one's choice may hurt one's candidate's chances of winning. If a voting system is not monotonic, it may encourage tactical voting.

Plurality vote: A method of voting in which the candidate with the most votes wins. In elections with three or more candidates, the winner may have considerably fewer than one-half the total votes cast.

Preference voting: A method of voting that calls for voters to rank candidates in order of their preference.

Proportional Representation: A principle of elections that says voters should win representation in proportion to their share of the electorate. Many voting methods embody the principle of proportional representation. Common to them all is that they use multi-winner districts and empower each voter to help elect a representative to the extent of theoretical limits. This method usually produces winners from each party as well as more women and minority legislators. It is used for legislative bodies. Most European parliaments have used PR since the early 20th century.

Push-overs: Candidates who are unlikely to win but selected by voters as a strategic choice to bury strong opponents.

Ranked ballot: A method of voting which calls for voters to put their choices in order of preference.

Runoff election: An election that is held if the first election does not produce a majority winner. It is usually held 1-3 weeks later and requires voters to return to the polls.

Sincere Vote: One with no falsified preferences or preferences left unspecified when the election method allows them to be specified.

Spoiler effect: Occurs when a third candidate takes enough votes away from a candidate that it causes the candidate to lose.

STV: Single transferable vote is a ranked ballot voting method designed to accurately achieve proportional representation in multi-candidate elections. When similar methods are applied to single-candidate elections they are sometimes called Instant Runoff Voting. In both systems of voting the ballot choices represent an ordinal ranking of preferences, but they are tallied differently.

Tactical or Strategic Voting: Describes any decision by the voter in marking a ballot that is intended to improve the outcome of the election from the voter's point of view; see Insincere Voting.

Voting paradox: Situation in which an election outcome is not what our common sense says it should be (see contradictory majority preferences).

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