What if the 2004 US presidential election had been held using Range or Approval voting?

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Abstract —

We conducted a pseudo-election in parallel with the 2004 USA presidential election. Although the real election used plurality voting, we employed *range voting*. We accomplished this by soliciting range votes from 122 random voters on Election Day at three polling places on Long Island, New York. Simultaneously (and without knowing about each other), NYU undergraduate J.N. Quintal conducted an *approval voting* study with 656 voters in Philadelphia, Pennsylvania, and its suburbs. We report our combined results.

The goals were (a) to determine how results would differ if range or approval voting were the USA's voting system, (b) to determine whether voters agreed with us that range or approval voting are superior voting systems, and (c) to draw conclusions about the best variant of range voting to use in the real world, and the best strategies to get range or approval voting adopted.

Fourteen important lessons ("Lesson #1" to "Lesson #14" in the text) were learned.

1 Range voting (RV), Approval voting (AV), and their advantages

Range voting was heavily studied in the previous [12]. (It is described on the top of our sample ballot, see figure 3.5.) Approval voting [2] is the special case of range voting that arises when only 100s and 0s are permitted as numerical votes. (One "approves" or "disapproves" of each candidate.) Range and Approval voting have the following theoretical advantages over the plurality system:

Immunity to clones. Suppose that the voters vastly preferred Good to Evil, say 70-30. (If so, this would be the largest "landslide" in US history.) *But*, suppose Good's views were so popular that there were in fact *three* Good-like candidates running, Good_1, Good_2, and Good_3, with slight differences among them. Each one would beat Evil 70-30 in a head-to-head contest. However, quite probably the plurality vote would be split, e.g. 24, 23, and 23% for the Good clones and 30% for Evil. Evil wins.

Meanwhile with RV or AV, *all three* of the Good candidates would get about 70% of the maximum possible score. Evil would get about 30%; ultimately, the most popular among the Good candidates would win.

More chance of getting a result you like. If you like two candidates and can vote for them *both*, then there is a greater chance something good will happen than if you are only allowed to vote for one.

Less worrying about strategy and more about your honest opinion. In this year's presidential election, many Democrats expressed concern that Nader might "steal" votes from Kerry, causing the latter to lose to Bush.[1]

Voters who liked Nader best were urged to vote for Kerry (or Bush) in order not to "waste their vote." We call this strategic or dishonest voting. In practice, this kind of strategic dishonesty *tremendously* distorts the picture in the plurality election results. The desire not to waste votes by voting for any candidate besides the top two has led to *two-party domination* of the USA (although many other countries, with different kinds of voting systems or governments, have more than two parties) and thence to various damaging secondary effects such as

1. A frustrating absence of real voter choices;[2]

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[1] That arguably happened in the 2000 election, when Nader's 2.7% of the vote far exceeded the Bush-Gore margin. More importantly, Nader's popular vote total exceeded the Bush-Gore margin in FL and NH, likely causing Gore to lose those 29 electoral votes critical to winning the presidency. In the 2004 election, Nader was denied ballot access in the critical states of Ohio and Pennsylvania and received less than 1% of the vote. Because Nader garnered fewer votes than the Bush-Kerry margin in every state Bush won, he did not appreciably affect the outcome.

[2] Bush & Cheney and Kerry & Edwards voted the *same* on the Wars, the subsidy-laden Farm Bill, the Patriot Act, the (highly unbalanced) Budgets, the "No Child Left Behind" education act, etc, i.e. on almost every major legislative item, and both tickets supported NAFTA and WTO membership and "tort reform" caps on jury damage awards. (Also: Kerry & Edwards voted for the Bush-Cheney tax cuts, although they said during their campaign that, if elected, they would roll back the ones for those making over $200,000/year.) In contrast, the minor-party candidates (despite the vast differences among them), were against all or most of these things, see fig. 7.1 and the table below for their (undoubtably barbarically oversimplified) stances. No Italian, Asian, Hispanic, Jew, Arab, Atheist, African-American, or Woman has ever been elected President.

2. A divided and polarized society;
3. The two major candidates try to *evade* talking about the issues, especially tough ones, and try to *avoid* distinguishing themselves from the competing candidate except in very carefully selected and often minor ways;
4. Meanwhile, the minor-party candidates, who exhibit a far greater diversity of views, ideas, race, and ethnicity, carry on a much more interesting discussion, and evade issues and questions to a far lesser extent – but their efforts always are futile;
5. Independent and minor-party candidates often have strongly-held fringe views because only fanatics run against such great odds. This effectively decreases voter choice even further.[3]

With range voting, a vote for Nader is *not* wasted. Nader supporters could give, say, a full 100 to Nader, and *also* a full 100 (or a 99) to Kerry, if they wanted. These votes for Nader would not hurt Kerry in his pairwise competition with Bush. So with range voting we would expect [13] less voter strategy, more voter honesty, and a weakening of two-party domination. There would then be more credible candidates to choose from, each of whom would now be motivated to distinguish themselves from his or her (now many) opponents, leading to a greater amount of real discussion, and perhaps to a lesser amount of artificial introduction of highly polarizing, but comparatively unimportant, issues such as "flag burning" and "gay marriage."

More voter expressivity. Plurality voters can express *no information* about the candidates they did not vote for. Maybe they like some of them too. Maybe they prefer A to B but only by a little, but prefer B to C by a lot. With range voting, all these things can be expressed.

More voter interest, higher turnout. Many voters are turned off by the current system, which they see as biased. (Two-party domination in the US presently effectively usually yields *fewer* than two choices, since 98% of incumbent members of congress running for re-election succeed.) So they choose not to participate. With more choices and more chances to express their honest opinions, voters may turn out in higher numbers.

Range versus approval. Approval voting has all the same theoretical advantages over plurality that we just mentioned for range voting, and it is simpler.[4] However, although AV is more expressive than and less distorted by strategic imperatives than plurality voting, it is not as good as range voting in these respects. In fact, RV is the *same* as AV if all voters are maximally strategic, but tends to work *better* if some of the voters are honest, i.e. non-maximally strategic.

This difference is most dramatic in elections with a large number of candidates. For example, suppose there were 20 candidates, 10 Good and 10 Evil, but with a collectively perceivable gradation within the Good candidates. Then rational approval voters would approve of all the Good and disapprove of all the Evil candidates, resulting in a 10-way tie which would be broken by semi-random effects,[5] resulting, in expectation,

Canddt	Afg.War	Iraq War	Farm-Subs	Patr	TaxCut	UnbalBud	NCLB-Educ	NAFTA/WTO	TortRef
Nader	anti	anti	anti	anti	anti	anti	underfnded	anti	anti
Badnrk	?	anti	anti	anti	pro?	anti	anti	anti	anti?
Cobb	anti?	anti	anti	anti	anti	anti	underfnded	anti	anti
Pertka	pro?	anti	anti?	anti	pro?	anti	anti	anti	anti?
Calero	anti?	anti	?	anti	anti?	anti?	?	anti	anti?

Finally, we note that 7 polls (Marist, GW/Battleground, CNN/USAToday/Gallup, NBC/WSJ, CBS/NYTimes, Newsweek, FoxNews) during the week prior to election day, found that 51% of voters nationwide thought the US was "going in the wrong direction" versus 43% saying "right direction." (These % are from combined data. All 7 polls found wrong>right, with the wrong−right differences ranging from 4% to 17% and averaging 8%.) If a majority of voters thought Bush and his party (which also controlled Congress) had been taking us in the wrong direction, why would they re-elect him? Presumably, they would only do this if they felt they had little or no choice. In fact, they *had* little or no choice – effectively their only alternative was Kerry (due to plurality strategy and consequent two-party domination). And Kerry had many disadvantages. (For example, if 1/10 of the wrong-direction pollees regarded Kerry as even wronger than Bush, that would be fully compatible with the ultimate election results.) However, if they *had* had many real choices and had a voting system like range or approval in which "vote splitting" did not exist, they presumably would have been able to find somebody going in the right direction. Hence, Bush would have been defeated. The 2004 election seems to be an example in which the plurality voting system, through its direct and indirect effects, has forced the country to continue to go in what a majority of voters believe is the wrong direction.

[3] See our info sheet on the 2004 independent and minor-party candidates (figure 7.1). For conciseness, we shall just (less precisely) call these "3rd-party" candidates in the rest of this paper.

In 2000, polls showed John McCain had greater overall voter support than both Bush and Gore. But after Bush and Gore won the Republican and Democratic party nominations, respectively, McCain would not run as a 3rd-party candidate, thus denying the USA a candidate who would (at least according to early polls) have won head-to-head contests with either.

McCain, as a war veteran and sponsor of balanced budget Amendments, might have been a superior President to Bush since the top two controversial impacts of Bush's presidency were the Iraq war and the lasting budget shortfalls. If McCain's moves on these issues really would have been superior to Bush's, then the amount (measured in "dollars") by which they would have been superior would almost certainly have dwarfed the cost of (say) entirely changing the USA's voting system and replacing 100% of its voting machines.

[4] Simpler voting systems can be advantageous both because voters may be more willing to support them (a question we shall address later in this paper) and also because they can be less-costly to implement. Approval voting can be done with many currently-used mechanical voting machines ("lever," optical-scan, and punch-card), although the variant we recommend here, allowing *three* kinds of votes ("approve," "disapprove," and "blank") could only be handled with greater difficulty. Range voting could not be handled with these kinds of machines, but computerized voting machines such as "touch-screen" would have no difficulty. WDS believes that

(a) RV and AV will not be adopted on a large scale for so long that limitations imposed by old-style voting machines will no longer be important;
(b) The obtainable improvement in democracy is so great that it is well worth the cost of completely replacing all voting machines (cf. footnote 3; numerous \$200 billion decisions were made during the Bush presidency, whereas the replacement cost of all the voting machines in the USA would be about \$100 million);
(c) WDS would advocate switching to RV *but* allowing the use of AV simultaneously with it (regarding "approve" as 100 and "disapprove" as 0) during a phase-in period.

[5] E.g. which Good candidate has the most family members willing to pretend the others were "Evil"; or which Good candidate managed to delude the most voters into that view.

in the 5th-to-6th-best candidate winning. Meanwhile, with range voting, with even only a small percentage of the voters being honest or merely non-maximally strategic, the tie would be broken in the optimal way, with the best Good candidate winning.

Summary. Range voting allows every voter to provide more information in their vote, and that information tends to be more dominated by honesty (i.e. what voters prefer) than by strategy (i.e. what the major parties tell us to think). As a result, better candidates get elected.

It is possible to *measure* voting system quality with a statistical yardstick called "Bayesian regret." This measurement has been employed for many different kinds of voting systems besides plurality and range [12]. Range voting was found to be superior to all the systems compared.[6] Further, range voting's improvement over plurality is *greater* than the improvement of plurality over random winner. I.e. the utility of moving from monarchy to democracy was *smaller* than the increase in utility that we expect by converting democracy to use range voting!

2 The range voting study

WDS and DSG spent election day (Nov. 2, 2004) collecting range votes from random people who had just voted in the presidential election.

WDS's location was Port Jefferson Station and Setauket NY in about a 2:1 ratio (moved). DSG meanwhile collected range votes in Cedarhurst NY, which is about 40 miles away as the crow flies.

The election (nationwide; 118 million votes cast) was won by Bush with Kerry second and Nader third, followed by Badnarik, Peroutka, and Cobb. What is more relevant for our purposes was the New York State sub-election (7 million votes cast), which was won by Kerry, see table 2.1.

What might be thought still more relevant are the totals for WDS's and DSG's counties Suffolk and Nassau, respectively (it also should be noted that Cedarhurst is close to the border with Queens county). However, DSG and WDS's samples seem to reflect the NY statewide election results more closely than their county-wide subtotals. This is presumably because Cedarhurst is near Queens, whereas East Setauket and Port Jefferson Station are near a State University, hence, were more anti-Bush than Suffolk County as a whole.

Canddt	USA	NY-st	Suffolk	Nassau	Queens
Bush	50.7	40.1	48.53	46.6	27.4
Kerry	48.3	58.4	49.46	52.2	71.7
Nader	0.38	1.4	1.85	1.0	0.75
Badnarik	0.32	0.16	0.13	0.12	0.09
Cobb	0.10	0	0.00	0	0
Peroutka	0.12	0	0.01	0	0
Calero	0.003	0.033	0.02	0.023	0.03

Figure 2.1. Official (plurality) election totals (as %). USA and NY: from Federal Election Commission. Suffolk: from Suffolk County Board of Elections. Nassau: from Nassau County Board of Elections. Queens: from New York City Board of Elections. Note, Cobb and Peroutka were not on the NY state ballot except via write-in votes. The total number of states plus Washington DC in which the candidates were on the ballot were: Bush 51, Kerry 51, Badnarik 49, Peroutka 36, Nader 35, Cobb 28. ▲

The Cable News Network also pointed out (based on exit polls) some interesting biases in the totals.[7]

Cobb and Peroutka were included in *our* election, although they were not on the NY State ballot. They were granted ballot access in most states and write-in votes for them were allowed even in NY. We included Calero because we were under the impression he had ballot access in at least 10 states. However, that impression actually was not correct: his party, the Socialist Worker's Party, indeed ran a presidential candidate on at least 11 state ballots – but not all of them said Calero, some were James Harris!

Unfortunately we got fewer responses than we were hoping[8] for: 122 votes – and this included our own two votes. (We tabulate them in tables 3.6 and 3.3.) In comparison, polls reported in the press about contested senatorial races typically involve 500-700 likely voters. In retrospect, if we had conducted a nationwide poll of random voters, we would have needed about 4000 respondents in order to get high confidence that Bush had indeed beaten Kerry. In short, our number of respondents is insufficient for high confidence about close races. Nevertheless, with the aid of compute-intensive statistical techniques [5] to extract the maximum from our data, it *is* sufficient to draw many interesting conclusions with high confidence.[9]

Each respondent received a one-page ballot sheet (figure 3.5), and listened to an extremely short spiel (a few sentences) about how range voting works and why it might be better than plurality voting.

They then filled in their range vote, which consisted of a number in the range 0-100 for each of seven candidates (seven numbers total) and also circled Y or N indicating whether they thought range voting was a better or worse system than plurality voting.

[6] And hence AV is also the best *if* the voters are *strategic.* With *honest* voters, however, AV performs worse than many other voting systems including Range, Borda count, and Black's system, whenever the number of candidates is large enough.

[7] Although Bush won among male voters (Bush 55%, Kerry 44%) and overall, he lost among female voters 48% to 51%. (Females were 54% of the voters.) Kerry also won by about 77% among homosexuals; by about 70% among non-white voters; by about 54% among voters under age 29, urban voters, and voters with under $50,000 annual income; by about 58% among unmarried voters and non-gun-owning voters; and perhaps by a slight margin among voters with under $100,000 annual income.

[8] We were initially hoping for a nationwide range election staffed by volunteers from the internet.

[9] Furthermore, we have indicated which two of the votes were ours so that they may be separated from the sample if desired.

[10] We had an info sheet available for them to read about these candidates, but only three voters besides us ever read it, since their primary concern was to save time.

Many voters expressed **ignorance** or were unsure about the lesser-known candidates (all of them besides the top three, most commonly[10]). **We handled this differently.**

WDS's 68 voters were told to guess, or put in all 50s, or put in all 0s, or leave them blank, in short, to do whatever they wanted with no effort to influence them to take any one of these courses. Furthermore, if they were unsure about Y or N, then WDS allowed them to say "don't know."

Meanwhile DSG's 54 voters were forced to fill in all the slots, and encouraged to put 0s in cases of ignorance. Furthermore, they were forced to say Y or N.

Although this policy discrepancy was an amateurish mistake by us, it had its positive aspects, namely that it allows us to compare the two groups' responses to see how this policy difference altered the outcome.

The main concern of the voters was speed, and they were much more willing to participate when they found out it would take less than a minute. There may have been self-selection bias, e.g. perhaps only comparatively curious and non-rushed voters participated in the poll. This seems impossible to quantify. We can say that our samples were entirely compatible with the official statewide Bush-Kerry totals in table 2.1.

Five voters refused to tell WDS their political preferences *but* did want to say that they thought range voting was better or worse than plurality (two better, three worse).

Not surprisingly, the 3rd-party candidates Nader, Badnarik, Cobb, Peroutka, and Calero all did *far* better in the range election than the actual one; there is clearly a tremendous distortion caused by the plurality system.

Despite that (though of course they were acting in ignorance of this, since they were not seeing the whole set of votes as we were), most voters did not believe that range was better: 45 said range better, 70 said not, 7 said don't know.

Cnddt	WDS	DSG	JNQ
Bush	$2363/63 = 37.5$	$2323/54 = 43.0$	$24500/627 = 39.1$
Kerry	$3704/63 = 58.8$	$2876/54 = 53.3$	$38200/627 = 60.9$
Nader	$1878/62 = 30.3$	$941/54 = 17.4$	$13200/638 = 20.7$
Bdnrk	$425/45 = 9.4$	$416/54 = 7.7$	$400/627 = 0.64$
Cobb	$590/44 = 13.4$	$355/54 = 6.6$	$1300/627 = 2.1$
Prtka	$395/44 = 9.0$	$258/54 = 4.8$	$600/627 = 0.96$
Calro	$205/43 = 4.8$	$155/54 = 2.9$	—

Figure 2.2. Range and approval vote totals in the form $S/N = A$ where S is the *sum* of the nonblank numerical votes for that candidate, N is the *number* of nonblank numerical votes for that candidate, and A is their quotient, i.e. the *average* nonblank vote for that candidate. (For JNQ: approve=100 and disapprove=0.) ▲

3 The approval voting study

JNQ, with the help of high school volunteers, independently performed an *approval voting* study. 656 voters in Philadelphia, PA and surrounding suburbs participated in the survey, which was conducted as an exit poll. Despite the different voter locations, the samples are comparable in the sense that New York State voters behaved very similarly to those in the Philadelphia suburbs,[11] as may be seen in table 3.1.

Canddt	Phila.	PA-st	Del.Cnty.	JNQ	NY-st
Bush	19.3	48.4	42.32	37.0 ± 2.4	40.1
Kerry	80.4	50.9	57.15	57.5 ± 3.0	58.4
Badnarik	0.13	0.37	0.33	0 ± 0.2	0.16
Unknown	–	–	–	5.0 ± 0.9	–

Figure 3.1. Comparison of official election totals (as %) in Philadephia (city), Pennsylvania (state), Delaware County [All from Pennsylvania department of state], and JNQ's voters (with 1 std. dev. error bars) versus NY State. (We cannot compare Nader since he was excluded from the Pennsylvania ballot by court decision; Calero, Peroutka, and Cobb are similarly incomparable.) Despite considerable differences between the NY statewide, PA statewide, and Philadelphia county vote percentages, JNQ's mix of voters from Philadelphia suburbs (mostly in Delaware County) matched NY state votes quite closely. JNQ's counts are roughly compatible with Delaware County's when we consider the error bars and the 5% of JNQ's respondents who refused to divulge their votes or wrote them illegibly. ▲

JNQ chose an approval ballot design different from WDS & DSG's range ballot, motivated by (a) her desire to learn about the effect Nader would have had if he were on the ballot, and (b) her desire to acquire *both* voters' actual (plurality) votes and their approval votes – a straightforward ballot design with two columns in which voters could mark ×'s had proved confusing to test respondents. Specifically, JNQ asked voters a series of five questions:

1. Who did you vote for (Kerry, Bush, Badnarik, Cobb, Peroutka)?
2. If Ralph Nader were on the ballot, would you have voted for him instead (yes/no)?
3. What if you could have voted for Nader *and* the candidate you voted for, giving each one vote? Would you have done that (yes/no)?
4. Are there any candidates besides Nader or the candidate you voted for that you find acceptable (write their names)?
5. How do you feel about being able to vote for more than one candidate (open-ended answer)?

Approval votes were then deduced from the answers to questions 1,2,3, and especially 4. Observe that question 4 also permitted voters to write names not actually among those listed by JNQ, and some voters took that opportunity by approving of, e.g., "Holy Spirit" and "Al Sharpton."[12]

Calero was not mentioned on JNQ's ballots. Nader was listed on JNQ's ballots despite not being on official PA State ballots; similarly Cobb and Peroutka were included on WDS & DSG's

[11] Unlike DSG and WDS, JNQ asked her voters for whom they voted in the real election.

[12] Also observe that this design arguably was technically flawed in the sense that it did not permit anybody who plurality-voted for somebody to refuse to approval-vote for them (probably this had little or no effect).

ballots despite not being on the NY State ballot (except as write-in candidates[13]).

JNQ's voters did not prefer Approval over Plurality: question #5 yielded 238 who said approval was better, 296 said worse, and 122 didn't know.

Canddt	Pl.V.	Sw	Altered
Bush	243	16	227
Kerry	377	14	363
Cobb	1	0	1
Peroutka	2	1	1
Nader	(0)	—	31
unknown	33	0	33
total	656	31	656

Figure 3.2. Answers to questions 1 and 2 on JNQ's ballot: the number Pl.V. of plurality votes for each candidate, the number Sw of that candidate's voters who would have switched to Nader if Nader had been on the ballot, and the resulting altered plurality votes. ("Unknown" is for voters who either refused to say, or wrote illegibly.) ▲

Concerning question 2, table 3.2 tells us that 16 Bush voters, 14 Kerry voters, and 1 Peroutka voter said they would instead have voted for Nader had he been on the PA ballot. That is (to festoon these with 1 std. dev. error bars) 16 ± 4.1 and 14 ± 3.9 votes, with a difference of 2 ± 5.7 votes.

This is interesting because Nader had claimed throughout his campaign that, by being on state ballots (in particular PA's) he would draw more votes away from Bush than from Kerry. Therefore (Nader continued), moves by Kerry and/or the Democratic Party to try to force him off ballots were strategically stupid. Nader's claim was universally disparaged as either naive or disingenuous![14] But, at least **assuming**

1. The Bush and Kerry voters in JNQ's sample are not atypical of the full national samples with respect to their views of Nader, and
2. JNQ's pollees were not lying when they said they would have voted for Nader,

we arrive at the

Amazing conclusion: Nader was probably right! Extrapolating from JNQ's samples of 243 Bush and 377 Kerry plurality voters to the nationwide Bush (50.9%) and Kerry (48.1%) vote counts: Having Nader on the ballot everywhere would have gotten Kerry an additive amount $(1.5 \pm 1.1)\%$ more of the total votes, in his nationwide battle versus Bush, than keeping Nader off the ballot everywhere. (We employ 1 std. dev. error bars throughout this paragraph.) This means that Nader was right[15] (i.e. putting him on the ballot really would have taken more votes from Bush than Kerry) with 92% probability. This would not have been enough to make Kerry the nationwide popular vote winner. Still, consider the decisive state of Ohio. As of December 2004, Ohio appears to have been won by Bush by a margin of about 119 thousand votes out of 5.5 million cast (= 2.2%). Had Nader been on the ballot, Bush would only have won Ohio by 37 ± 59 thousand votes ($= 0.67 \pm 1.08\%$). In short, it appears at least plausible from our data[16] that kicking Nader off the Ohio ballot actually *cost Kerry the presidency!*

How can this be? More precisely: whyever should Nader remove more Bush than Kerry voters, considering that the usual political thinking – fully supported by our covariance data in table 3.7(b) – was that Kerry voters were more likely to approve of Nader than Bush voters? This quite-odd effect evidently is due to a combination of strategic voting and psychology. Few Kerry voters were willing to switch their plurality votes to Nader, perhaps because of all they'd heard about how that was strategically unwise. This was despite table 3.7(b)'s finding that under *approval* voting (where voting for Nader was strategically sound) significantly more Kerry than Bush voters approved of Nader.

Severe caveat – they lied: Unfortunately, the preceding amazing conclusion rested on two assumptions, at least one of which (probably the second) was almost certainly wrong. I.e, JNQ's respondents lied by exaggerating their pro-Nader proclivities. Why do we say that? 4.7% of JNQ's voters said they would have voted for Nader. This exceeds by a factor of about 10 Nader's actual election results nationwide in the states with Nader on the ballot ($\approx 0.53\%$). Nader never got more than 1.6% in any state and apparently never got more

[13] PA voters were also entitled to cast write-in votes for Nader in PA, but according to the PA state election code of 1937, any such voter would be forced to list the names of some or all of the 21 people Nader endorsed as his presidential electors. All of this writing would have to fit inside approximately one square inch. Nader, in total, received 2656 such votes.

[14] A nationwide CBS News telephone poll of 1048 adults, 931 of whom were registered voters, 2 weeks before the election suggested that Nader supporters would choose Kerry over Bush by a 2-to-1 margin if Nader were not in the race. (Also an examination called "Poll Watch 04" by `DontVoteRalph.net` of 121 pre-election polls – which they claimed was "every poll since Nader entered the race up to 26 July both nationwide and in battleground states" – found Nader would take more votes from Kerry in 93 polls, have no effect on Kerry vs. Bush in 24, and take more votes from Bush in 4. Across all 121 polls, Nader got 4.3% of the vote, with more than 2.5% coming from Kerry and 0.9% from Bush.) Contrast carefully: We asked *actual Bush* and *Kerry* voters, whether they would switch to Nader if he were on the ballot. The question CBS News asked was, *among likely future Nader* voters, for whom would they vote if Nader were not on the ballot. This is not the same question. Further, the CBS poll was only taking pollees' word that they were "likely future Nader voters," and was weighting the pollees according to CBS's guessed future probabilities that each would really vote (CBS claimed their "effective number of likely voters" was 678), whereas our poll was of actual voters. We suggest that both Nader and Kerry supporters had considerable strategic motivation to exaggerate their support of Nader to pre-election pollsters. That exaggeration hypothesis is supported by the fact that repeated CBS pre-election polls all estimated 2% as the fraction of voters nationwide that would "choose" Nader for president, and the `DontVoteRalph.net` estimated 4.3%, both far exceeding Nader's actual election total of 0.36%. Pollee-lying is proven by the fact that, according to CBS itself, 90% of their registered-voter respondents said they would vote, but only 68% actually do. CBS also included the following interesting sentence in their article [4]: "Among all registered voters, not just likely voters, the national race is exactly tied, with Bush at 45% and Kerry at 45%. In a two-way race without Ralph Nader on the ballot, Bush leads Kerry by one point among likely voters nationwide, 47% to 46%." In other words, exactly contrary to CBS's earlier "2-to-1 ratio" claim, they here are saying that taking Nader *off* the ballot would have helped *Bush*! So evidently their earlier claim that it would have helped *Kerry* rests entirely on their "likely voter" methodology.

[15] Because, from tables of the normal distribution ([1] p. 968) the probability that a normal variate is below its mean plus 1.38 std. dev. is 92%.

[16] Specifically, from tables of the normal distribution ([1] p. 966) we find that the probability Kerry would have won Ohio's 20 electoral votes, and therefore the presidency, would have been 27% if Nader had been on the Ohio ballot (since the probability that a normal variate is below its mean plus 0.62 standard deviations, is 73%), but was 0% without Nader.

than 3.7% in any of the 3086 US counties. Even if 2% of Delaware County voters really would have voted for Nader (which would have been a higher percentage than in any US state), then the probability that, by pure chance, JNQ would have gotten ≥ 31 Nader voters among her 656, would have been less than 1.5×10^{-5}. Further evidence for respondents lying about Nader: Essentially all pre-election polls predicted Nader was going to get far more votes than he did, cf. footnote 14. It is well known that survey respondents lie. A famous example is sex studies which always find that men have (heterosexual) sex much more frequently than women, which is mathematically impossible. Prelec [10] suggests that people be asked more than one version of each question. (Example: do you like Picasso's art? Was Picasso a great artist?) Then comparing the responses provides lower bounds on (1) how much the respondents lie, and (2) how much sensitivity there is to the exact phrasing of the question.

Lesson #1: In plurality elections, voters tend to lie to pollsters by exaggerating their support of 3$^{\text{rd}}$-party candidates.

There is a reason for this. It always makes strategic sense to to try to create the misperception of greater-than-actual support for a 3$^{\text{rd}}$-party candidate (while actually *voting* for one of the *truly* top-two most popular ones), because it usually is only strategically sensible to vote for one of the top two most-popular candidates in a plurality election. So this exaggeration always either enhances the perceived-popularity of a 3$^{\text{rd}}$-party candidate you favor, or decreases one of the top-two candidates' popularity, either way often good from your point of view. (Meanwhile, voters who do not regard this as good, would presumably just tell pollsters the truth. The result is a one-sided biasing effect.)

In our particular case there was an *additional* factor motivating pollees to lie: those voters who felt Nader was wronged by his exclusion from the PA ballot.

Bu	Ke	Na	Ba	Co	Pe	Ca	·	Bu	Ke	Na	Ba	Co	Pe	Ca	·
100	0	0	0	0	0	0	N	60	40	5	0	0	0	0	N
100	0	0	0	0	0	0	N	0	100	0	0	0	0	0	N
0	100	50	0	0	0	0	N	0	50	20	10	10	10	10	Y
0	100	0	0	0	0	0	N	40	60	20	5	5	5	5	Y
40	70	0	30	30	30	20	Y	10	90	10	0	0	0	0	Y
90	10	5	0	0	0	0	Y	0	98	0	0	0	0	0	N
90	90	0	0	0	0	0	N	75	20	20	20	20	0	0	Y
0	100	0	0	0	0	0	N	0	98	5	10	10	0	0	N
0	0	5	0	0	0	0	N	0	100	0	0	0	0	0	N
30	70	0	0	0	0	0	N	100	0	?	0	0	0	0	X
100	0	0	50	0	50	0	Y	0	90	10	2	15	3	0	N
100	20	50	0	0	50	0	N	98	0	50	60	60	0	40	N
50	50	20	0	0	0	0	Y	100	0	0	0	0	0	0	Y
0	85	75	60	50	0	45	N	50	80	75	0	72	5	15	N
35	65	75	4	2	15	0	N	25	80	0	0	0	0	0	N
0	50	75	0	0	0	0	Y	100	0	30	0	0	0	0	Y
0	75	1	0	0	0	0	N	90	0	20	0	0	0	10	N
80	0	0	0	0	0	0	X	80	0	5	30	20	10	5	N
0	100	0	0	0	0	0	N	0	100	10	0	0	0	0	N
70	30	0	0	0	0	0	N	85	15	0	0	0	0	0	N
40	65	0	20	21	0	0	N	0	85	25	15	0	0	0	Y
20	80	10	0	0	0	0	Y	10	75	5	5	5	0	5	Y
85	30	70	20	10	0	0	Y	80	50	10	25	0	0	0	N
90	0	0	0	0	80	0	N	0	100	30	0	0	0	0	N
60	40	5	0	0	0	0	N	70	60	0	0	0	0	0	Y
0	70	40	0	0	0	0	N	50	60	10	0	0	0	0	N
0	100	50	0	0	0	0	N	20	25	30	50	25	0	0	Y

Figure 3.3. DSG's set of 54 range votes from Cedarhurst NY. The last one listed is his own. All others are random strangers. The two X's are for voters unsure if range was superior; when pressured heavily to say Y or N they chose N. The "?" appeared to be marked ".2-N/C" which perhaps meant that voter wanted Nader/Camejo (full 100), or perhaps meant he was giving them 20 out of a possible 100, or perhaps meant they were his second choice after Bush/Cheney. We interpreted it as a 20.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	other
0-19	193	1	1	0	0	5	0	0	0	0	15	0	0	0	0	3	0	0	0	0	blank:
20-39	18	0	0	0	0	8	0	0	0	0	4	0	0	0	0	1	0	0	0	0	112
40-59	11	0	0	0	0	2	0	0	0	0	16	0	0	0	0	2	0	0	0	0	—
60-79	9	0	0	0	1	4	0	0	0	0	4	0	0	1	0	8	0	0	0	0	"100":
80-99	11	0	0	0	0	3	0	0	0	0	6	0	0	0	0	2	0	0	0	0	35

Figure 3.4. Number of occurrences of each numerical value 0-99 in WDS 68-vote dataset. ▲

Range Voting Study – Ballot

NOT an official ballot. Will NOT affect the real election.

To voters: Experimental study of *range voting*. To vote, fill in numerical score 0-100 in blank spot next to each candidate's name. 100="great," 0="terrible," 50="middling." Each candidate's scores (on all ballots) are summed; one with highest total score wins. Example: if three candidates A, B, and C, and Jane voted $A = 100$, $B = 0$, $C = 25$ while Tom voted $A = 13$, $B = 99$, $C = 100$, then total scores would be $A = 113$, $B = 99$, $C = 125$ so C would win. Range voting allows you to express more of your opinions more precisely, and also "tactics" (e.g. "I really like X best, but he has no chance of winning so I'll vote Y") tend to play a smaller role in range voting and honest opinions a larger role ("hey! I can still vote $X = 100$ with range voting, and it won't hurt Y!"). Long term, range voting may weaken 2-party dominance & give you a wider choice of credible candidates. Please vote the way you actually would if the real election were being held using range voting.

To scientific helpers: `http://math.temple.edu/~wds/votstudy.html` says how to email me your vote-totals & later will post study results. Recommend: make many copies of this ballot (can make 3 ballots per sheet if go 2-sided; typical precincts collect 80-2200 votes) bring "range voting study" sign, table & chair, calculator and pens & pencils to polling place...

The candidates: All candidates on ballot in at least 10 states included, in decreasing order(?) of popularity. Women *'d.

Fill in score between 0 and 100 on EVERY slot. Write CLEARLY.

Cand. for PRESIDENT	Vice president	party	YOUR VOTE 0-100
George BUSH	Dick Cheney	repub.	
John KERRY	John Edwards	democ.	
Ralph NADER	Peter Camejo	indep. & reform	
Michael BADNARIK	Richard Campagna	libertarian	
David COBB	Patricia LaMarche*	green	
Michael PEROUTKA	Chuck Baldwin	constitution	
Róger CALERO	Arrin Hawkins*	socialist workers	

Agree range voting a better system?	Y N

Figure 3.5. The range-voting ballot given to each voter. ▲

100	0	0	?	?	?	?	Y	60	40	0	0	0	0	0	N
50	20	50	50	40	50	60	Y	75	65	50	?	?	?	?	N
40	40	10	0	0	0	0	Y	40	20	100	?	?	?	?	N
100	0	0	0	0	0	?	N	65	0	40	0	0	0	0	N
70	40	10	10	10	10	10	Y	75	30	20	0	0	0	0	N
0	100	0	0	0	0	0	N	25	75	40	60	40	30	25	N
0	80	10	5	5	0	0	Y	0	85	5	?	?	?	?	N
0	100	0	0	10	0	0	N	50	80	20	0	0	0	0	Y
50	80	20	10	0	0	0	N	0	90	10	?	?	?	0	N
?	?	?	?	?	?	?	Y	?	?	?	?	?	?	?	Y
85	10	50	50	50	50	50	Y	60	20	20	0	0	0	0	N
100	0	0	0	0	0	0	N	80	0	10	10	0	0	0	Y
100	0	0	?	?	?	?	X	90	0	0	?	?	?	?	N
25	0	0	0	0	100	0	Y	50	65	20	?	?	?	?	Y
100	0	100	0	0	0	0	N	50	40	?	?	?	?	?	N
0	20	80	0	0	0	0	N	0	90	75	?	?	?	?	Y
0	80	85	60	90	30	5	N	45	55	0	25	25	25	25	Y
73	100	2	0	?	?	?	N	80	90	60	?	?	?	?	X
0	100	0	0	0	0	0	N	0	100	0	0	0	0	0	N
0	100	20	0	0	0	0	N	0	100	100	0	100	?	?	X
50	75	15	15	20	15	0	N	?	?	?	?	?	?	?	N
0	65	80	90	0	0	0	Y	?	?	?	?	?	?	?	N
0	100	70	?	?	?	?	Y	0	100	0	0	0	0	0	N
50	80	0	0	0	0	0	N	0	100	0	0	0	0	0	N
0	100	70	20	20	5	10	Y	0	60	60	0	60	0	0	N
?	?	?	?	?	?	?	N	0	100	100	0	0	0	0	Y
10	70	20	?	?	?	?	Y	20	100	80	?	?	?	?	Y
75	95	0	?	?	?	?	Y	0	100	0	0	0	0	0	X
0	100	0	0	0	0	0	Y	0	100	0	0	0	0	0	N
0	64	40	0	0	0	0	Y	45	55	35	?	?	?	?	Y
0	100	0	0	0	0	0	Y	100	0	100	0	0	0	0	N
75	0	25	0	0	0	0	N	100	0	75	?	?	80	?	Y
100	0	0	0	0	0	0	N	0	95	1	0	20	0	0	X
0	30	0	?	?	?	?	Y	0	100	100	20	100	0	20	Y

Figure 3.6. WDS's 68 range votes from Port Jefferson Station & Setauket NY (roughly in 2:1 ratio). WDS's vote is bottommost in the right column; above it is somebody he (slightly) knew; all others random strangers. The five all-? votes are from pollees who would not reveal their political leanings but did say range voting was superior/inferior to plurality.

(a)	Bush	Kerry	Nader	Badnrk	Cobb	Pertka	Calero
Bush	**1357, 1614**						
Kerry	**–1299, –983**	**1332, 1599**					
Nader	–259, 46	–130, 170	**767, 1095**				
Badnrk	–81, 106	–150, 13	**76, 266**	**196, 430**			
Cobb	–209, 6	–14, 201	**166, 489**	**103, 265**	**264, 639**		
Pertka	**48, 253**	**–326, –92**	–25, 131	**35, 139**	**16, 111**	**164, 491**	
Calero	–22, 85	–97, 17	**41, 139**	**60, 175**	**76, 184**	**10, 110**	**55, 172**

Figure 3.7. Covariances of mean-centered votes for candidate-pairs. That is, if x is a vote for one candidate (whose mean vote is $\overline{x}$) and y is the same voter's vote for another candidate (whose mean is $\overline{y}$) then their covariance is the average value of $(x-\overline{x})(y-\overline{y})$. Each covariance value is written as a pair a,b, meaning that with $\geq 90\%$ probability, its true value is $\geq a$, and with $\geq 90\%$ probability, its true value is $\leq b$. Ranges a,b with both a and b having the same sign, are in **bold font**. These covariances are for the combined DSG∪WDS 122-vote dataset. Below table same, except from JNQ's 656-approval-vote set:

(b)	Bush	Kerry	Nader	Badnrk	Cobb	Pertka
Bush	**2314, 2426**					
Kerry	**–2366, –2243**	**2327, 2435**				
Nader	**–331, –134**	**127, 325**	**1515, 1758**			
Badnrk	–13, 28	–27, 14	–8, 46	**31, 96**		
Cobb	**–109, –50**	**34, 96**	**37, 135**	–2, 31	**125, 277**	
Pertka	–16, 38	**–74, –8**	–15, 40	–1, 32	–4, 0	**31, 155**

4 How to do this exercise again

Prime lesson: Keep all reading voters must do very short. Almost all respondents do not even want to read one medium-long paragraph. WDS thinks it should be only conducted for Presidential elections because that is what voters know the most about. But DSG argues that Presidential elections come only once every four years, and this probably could be tried in any major race (e.g. NY City 2005 mayoral primaries) – indeed primaries as whole may be better, as the plurality distortions are greater and knowledge of the candidates is probably higher. Indeed this *particular* 2004 Presidential election was a particularly bad choice because it was so dominated by Kerry and Bush.

Locations: Researchers should locate themselves at polling places *other than* the ones they themselves vote at, to diminish chances of meeting people who know them (which biases the sample). (But we only got one response from anybody we knew – and that person knew WDS only slightly – so that was not a problem.)

Harassment by election inspectors: Some election inspectors seem to have an irrational hatred of researchers and want to hassle them and make them move far away. The best strategy seems to be to have a few locations in mind and move to another if necessary, and also to find one with a parking lot far away so you can catch everybody while they make the long walk. (Larger polling locations are better.[17]) It *may* be a good idea to seek written prior permission from the county Board of Elections to do the poll, as required by Nassau County BOE regulations. We regard any such requirement as an outrage because it would allow a corrupt election system to avoid any contradictions with exit polls.

5 Statistical methodology

We follow the "random data subset" compute-intensive approach to statistics advocated by Bradley Efron [5].

To review: most undergraduates are taught that sums of large amounts of data tend to approximate normal random variates and are taught to estimate the mean and variance of that distribution to compute approximate confidence regions. However, there is a better procedure to use if the amount of data is limited and one has a modern computer. That is, essentially, to figure out the *true* distribution to high accuracy by brute computational force, and then to use it to get the *exact*, i.e. best possible, confidence intervals.

Specifically, we did the following. Each of the three vote sets (WDS's, DSG's, and JNQ's) were analyzed separately because of WDS's and DSG's differences in policy about non-responding voters, and because JNQ's votes were approval, not range.

For each, we considered a random subset of half the votes. (10^6 random subsets were tried.) To answer some question about our dataset, we computed the 10^6 answers we would have got if each of these 10^6 random subsets of our dataset, had actually *been* our dataset. We then find a such that 90% of these answers are greater than a, and find b so 90% of these answers are less than b, and state the pair a-b.

For example, if the question was "what percentage of the votes are printed in black ink?" then our answer "34-55" would mean "$\geq$ 90% of the random half-cardinality datasets have $\geq$ 34% of their votes black-inked, and $\geq$ 90% have $\leq$ 55% of their votes black-inked."

Efron & Tibshirani [5] prefer their related "bootstrap" approach over our $N/2$-cardinality random subset resampling approach. The bootstrap is based on taking N samples from the N data with replacement, i.e. a random *full*-cardinality sub*multi*set. Our analysis computer program actually performs both approaches (whichever its user desires). We found empirically that their two kinds of outputs were almost exactly the same – but the subset-based approach is twice as fast.

For questions with yes/no, rather than numerical, answers, we did not adopt this procedure, since it would merely have led to one of only 3 rather uninformative possible answers "0-0," "1-1," and "0-1." Instead we just tabulated the percentages of random half-cardinality data subsets yielding "yes" and "no."

6 Results

The complete set of all our votes is available electronically at `http://math.temple.edu/~wds/homepage/votdata.txt`.

6.1 Votes for the candidates

Candidate	WDS	DSG	combined	JNQ
Bush	31-44	36-50	35-45	36-42
Kerry	52-66	46-60	51-61	58-64
Nader	24-37	13-22	20-28	18-23
Badnarik	5-14	4-11	6-11	0-2
Cobb	8-19	3-10	6-13	1-3
Peroutka	4-14	2-8	4-10	0-2
Calero	2-8	1-5	2-6	—

Figure 6.1. Mean votes for the candidates within WDS's 68-vote set, DSG's 54-vote set, combined 122-range-vote set, and JNQ's 656-approval-vote set. Bush's "31-44" entry means "if a random 34-vote subset of the WDS 68-vote set is taken, then the mean of the non-blank Bush entries in that subset is $\geq$ 31 and $\leq$ 44, each with probability$\geq$ 90%." ▲

[17] Section 17-130(4) of NY election law requires all "electioneering" to take place > 100 feet from the poll entrance. (Actually, according to dictionaries, "electioneering" is campaigning and persuasion of voters, which does not include exit polling or research studies. A lawsuit brought by Edison-Mitofsky exit polls versus the state of Ohio 1 day before 2004 election day resulted in the court ruling on 10:30pm that night that exit polling was *not* electioneering and that therefore no distance restrictions were to be placed on Edison-Mitofsky exit pollers in Ohio.) WDS satisfied that distance requirement. But in Port Jefferson Station they still tried to harass him and make him move 300 feet away. They also claimed the requirement actually was *150* feet from the *property line*, contradicting both §17-130(4) and a letter DSG later got from the Nassau County Board of elections. (The 526 pages of NY election law nowhere mention any distance larger than 100 feet, nor "property line" nor any exception for "school property." We also remark that there was a "Vote Busacca" sign in full view located directly on the property line at its entrance – which they complained to WDS about. However, when he informed them he had nothing to do with that sign, they made him leave, but left the Busacca sign up all day. Also, we remark that §8-102(c) says that poll officials, must, in order not to commit a misdemeanor, place distance markers 100 feet from the poll place, half an hour before polls open. This was never done at WDS's locations.) Eventually WDS left and went to Setauket instead.

Note the significant discrepancies between the DSG and WDS means for Nader (and perhaps Cobb) in table 6.1. This is perhaps due to there being fewer Nader supporters in Cedarhurst, or perhaps due to DSG and WDS's policy difference about blanks and 0s (see table 6.2). Indeed DSG's voters show a clear trend of liking 3rd-party candidates less than WDS's, which is probably mainly due to this policy difference.

Candidate	WDS	DSG
Bush	88-98	100
Kerry	88-98	100
Nader	88-95	100
Badnarik	58-74	100
Cobb	55-74	100
Peroutka	55-74	100
Calero	55-71	100

Figure 6.2. Non-blank vote percentages for the candidates. DSG forced voters to fill in all slots and encouraged the use of 0s for "don't knows." WDS allowed them to leave "don't know" slots blank or to fill them with 0s, 50s, guesses, or whatever they wanted. 100% of WDS's voters filled in both the Bush and Kerry slots provided they filled in any numerical slot. ▲

More importantly, note the huge difference between the Badnarik, Cobb, and Peroutka totals under range versus approval voting, although the AV and RV results are indistinguishable as far as Bush and Kerry are concerned. Nader may be getting fewer approval than range votes (the Nader discrepancy is just verging on statistical significance[18]) but Badnarik, Cobb, and Peroutka are getting *far* fewer – their discrepancies are a *factor* of about 9 – highly statistically significant.[19]

Lesson #2: Approval voters give much less support to the least popular candidates in a race – i.e. everybody besides the top 3 – than range voters. This is presumably because they are unwilling to "approve" of them, whereas range voters are willing to provide nonzero support for them in their votes. [20] This is yet another argument in favor of range voting over approval voting, in the sense that range voting will produce a less distorted picture of voter opinions.[21]

It could be counterargued that it does not matter[22] how accurate a picture voting systems get of the less popular candidates, since they are not going to be elected. It may be that AV and RV can also produce significantly different results for the top candidates (which *would* matter) but that did not happen for Bush and Kerry in the present election, although it perhaps happened with Nader.

Did Kerry have a higher average vote than Bush? Ans: The percentage of half-cardinality ballot subsets with Kerry beating Bush was 99.2% in the combined dataset, and 99.0% in the WDS subset, and 100.0% in the JNQ approval-vote set. (But keep in mind these samples were only from NY and PA, states indeed won by Kerry. The US as a whole was won by Bush by a small margin.)

Did Nader have a higher average vote than Bush?!? (This question was inspired by the overlap in the Bush & Nader ranges in the WDS dataset.) Ans: In the WDS dataset, the percentage of half-cardinality ballot subsets with Nader beating Bush was 14.5%. I.e. Nader defeating Bush in NY state would be unlikely, but clearly still within the realm of statistical plausibility with range voting, given WDS's sample. However, in half-cardinality subsamples of the combined DSG∪WDS sample, Nader only beat Bush 0.04% of the time, and 0.0% of the time in the JNQ approval-vote set.

In the actual nationwide plurality election Nader got 1% of the total votes for a *very* distant 3rd place behind Kerry (48%) and Bush (51%), and it was far more difficult to judge the winner among {Kerry, Bush} than among {Bush, Nader}; but in WDS's NY State range election the Kerry-Bush winner was easy to determine but the Nader-Bush winner difficult! Thus we see again the *vast* distortion of the picture caused by plurality voting as opposed to the range system.

Q: Did Nader have a higher average vote than Kerry? Ans: No. The percentage of half-cardinality ballot subsets with Nader beating Kerry was 0.0% in all three datasets. (In the WDS dataset, more precisely, this fraction was 5×10^{-5}.)

Lesson #3: The mean range votes for 3rd-party candidates were all vastly larger than the percentages they won in the true election, illustrating the huge distortion caused by the plurality system. (Approval votes for Nader were also far higher than his plurality vote totals.)

6.2 Choice of 0-100 for the range

Before we started, some self-appointed critics informed us that selecting the range 0-100 was silly; they thought 0-10 or 0-5 was much "simpler" but yet provided sufficient expressivity. During the actual survey, though, nobody seemed to have any difficulty with 0-100, but a few seemed to have the notion that the numbers all had to *sum* to 100. We of course quickly disabused them of that notion whenever we spotted it (probably always), but it may be that "100,"' because of its common use in "percentages," predisposed them to this misconception more than "10" or "99" would have.

58-72% of our voters gave votes consisting solely of multiples of 10, suggesting 10 would have been a better choice. But some voters used multiples of 5 and others general integers. That suggests that a few voters want a large range. Specifically, of our 117 range-voters who actually provided any real

[18] 89% of the time, Nader gets a smaller average range vote, in random half-cardinality subsets of the DSG∪WDS 122-range-vote set, than x, where $x = \frac{100}{656}\sum_{j=1}^{656} c_j$ where the c_j are independent 0-1 random variables each having probability 132/656 of being 1. Here x is a random variable intended to simulate the Nader vote (rescaled to 0-100) among a set of 656 JNQ-like approval voters, 132 of whom approved Nader.

[19] Note also from table 3.1 that Badnarik got similar plurality totals in PA and NY – indeed he enjoeyd *greater* support in PA – indicating that this huge discrepancy is *not* due to the difference in JNQ's and DSG∪WDS's locations.

[20] See also table 6.3.

[21] Caveats: It is possible, but in our judgement improbable, that this lesson is illusory and is an artifact of JNQ's question-based ballot design, which was different from WDS & DSG's range ballot. Because voters had to *write actual names* in JNQ's answer slot for question 4, which was more labor for them than DSG & WDS asked (writing a number 0-100 in a slot), and more labor than simply marking × (or not) next to each candidate's name (which would have been the obvious approval-ballot design) they may have been disinclined to do it. While we find it plausible that this caused a decrease, it seems implausible to us that this could have caused this dramatic a decrease (a factor of 9) by itself.

[22] In fact, it does matter – but not as much.

numbers, exactly 7 employed any numbers that were not multiples of 5, such as a voter who gave 1 out of 100 to Nader to express the view he was slightly better than 0. In 5 out of these 7 cases the non-$5k$ numbers were used either to denote extremely high or low scores which however were not 0 or 100 (namely 1,2,3,4, and 98) or to indicate a slight preference for one candidate over another (21 versus 20). The final two cases were a 64 and 73, for both of which there is no evident explanation. This all suggests that the range 0-10 would not be sufficient, because 28-42% of voters want at least twice as much resolution as that. The range 0-20 was evidently felt sufficient (at least in the present election) by the 95% of voters who used multiples of 5 only. But 0-20 still would not be sufficient for the purpose of expressing extremely slight preferences, as was desired by about 5% of the voters.

Voters who want to be strategic (vote 0s and 100s only) *but* wish to incorporate a *slight* amount of honesty (perturb some of the 0s to 1 and 2, and some of the 100s to 99 and 98) need a large range. This might be important in range elections with small numbers of voters: if all the voters voted in the same (or in only a few different) ways, then a fully-strategic range voting election (containing only 100s and 0s) might well be tied and the tie might then be broken in a non-optimal manner; whereas if the voters were *slightly* honest, then the ties would quite likely be broken in an honest manner, leading to greater societal benefit. The range 0-10^5 should be sufficient for the purpose of expressing slight-honest perturbations, because (as the Florida 2000 debacle made clear) votes in contemporary USA elections are not counted to accuracies better than 1 part in 10^4 anyhow – so such a voter would argue that a 1 part in 10^5 distortion of his vote would be very unlikely to hurt him.

Lesson #4: A range 0-20 or larger is clearly needed (with integer range votes) otherwise a substantial fraction of voters will be unsatisfied. There are arguments against the specific choice 0-100 and in favor of 0-99. Finally, there also are arguments in favor of a very large range such as 0-99999.

6.3 Vote styles

Style	WDS	DSG	combined
Approval	16-30	7-23	13-24
Plurality	10-25	7-23	11-21
Approval & blanks	28-47	7-23	20-33
Plurality & blanks	16-30	7-23	13-24
Had both 0 and 100	33-50	22-38	30-42
non-Plur. Approval	0-10	0	0-5
(non-Plur. App.) & blanks	9-21	0	4-11
$5k$ & blanks only	96-100	77-93	90-100
$10k$ & blanks only	63-83	48-63	58-72
Contained 0	73-87	95-100	83-93
Contained 100	35-53	21-37	30-43
All blank	3-13	0	1-7
Pro-3$^{\rm rd}$-party	60-76	62-78	63-75

Figure 6.3. Vote styles. "Approval-style" means all 100s and 0s. "Plurality-style" means one 100 and the rest 0s. If a vote contained both a 100 and an 0, that indicates that voter appreciated at least the "use the full range" aspect of range voting strategy. By $10k$ and $5k$ we mean multiples of 10 and 5. A vote is "pro-3$^{\rm rd}$-party" if it includes any positive number in any slot other than Bush and Kerry. Analogous data for JNQ's 656-approval-vote set: Plurality & blanks: 75-81; Pro-3$^{\rm rd}$-party: 20-25. ▲

Lesson #5: In retrospect, it might have been better to specifically instruct voters to "regard the best available candidate as 100, and the worst as 0." WDS's voters *were* told that the only meaning of a vote was its numerical value and they should vote in the way that would maximize their chances of good election results, but evidently they often still preferred not to give anybody 100 (although there was very little similar bias against awarding 0s).

Lesson #6: For each candidate, over 55% of the voters felt they knew enough to give him a score. (Most often, a zero score.) From this we conclude that probably the best way to handle blank entries is to ignore them, or equivalently to fill them in with that candidate's average, or equivalently to *average* all the nonblank entries for a candidate to compute his score. The point is, these stats show that we need not worry that thus allowing blanks will result in that candidate's vote being dominated by a few outlier voters. So **we recommend allowing blank entries, and averaging each candidate's non-blank entries to compute their final score.**

Let us compare this option with three inferior ways to handle blanks:

50s: make them all 50s,
0s: make them all 0s,
unified-avg: make them all the average non-blank entry (averaged over all voters and all candidates)

Why are these ideas inferior? It is clear from our data that 50s could quite plausibly result in a candidate everybody left blank, winning the election (if everybody else got < 50 on average). Many of our voters rated everybody below 100. One asked, only half facetiously, "can I give them all zeros?". Our top-rated candidate Kerry gets a mean score below 50 with probability$\geq 4\%$ in random half-cardinality range-voter subsets.

Although that "unknown winner" pathology would not be possible with unified-avg (since the winner must be above average) it still is clear from our data that unified-avg would result in a tremendous distortion of the election results versus the recommended policy of just averaging the non-blank votes for *that* candidate *only*. E.g., a candidate known to only 10% of the voters but hated by them all, could outdo a well-known candidate mildly disliked by everybody. In our case, there is a reasonable chance it could have caused Cobb to beat Nader. Zeros would also distort the data by giving an unreasonable bias against lesser-known candidates. We have already seen from comparing the WDS and DSG columns in table 6.1 that significant changes result from this. It was plain that plenty of voters automatically fill in unknowns with 0s without need of any encouragement to do so; hence this anti-unknown bias already exists, and we see no reason to increase it further.

Finally, it is clear that all the voters who wanted to leave entries blank, wanted to do so specifically *because* they felt ignorant about those candidates and *wanted* to leave the decision about rating them to more-informed minds. We see no reason to frustrate this honest desire.

6.4 Unsolicited voter opinions

Their topmost desire was that the "electoral college" should be eliminated, perhaps by forcing all "winner-takes-all" states to be "proportional" instead, like Nebraska and Maine. (But actually Maine & Nebraska's systems are not really fully proportional and hence are vulnerable to gerrymandering: Their statewide winner receives two EVs, and the winner of each Congressional District receives the EV that CD represents.)

This desire was motivated by Bush's victory over Gore by 271 electoral votes to 266 in the 2000 election, despite Bush's losing the *popular* vote to Gore by 540,000 votes. The popular vote also reflected the true opinion of the electorate as measured by attempts by the National Election Study [8] to elicit honest range votes – later analysis by B.C.Burden [3] of the NES data found that *any* head-to-head 2-man contest would have yielded a result compatible with the popular vote ordering Gore>Bush>Nader>Buchanan.

Other voter concerns included: Electronic voting machines and their potential for fraud, and insufficient present-day measures for preventing multiple and fraudulent voting. Some thought having rank-ordering votes (like in IRV) would be simpler than range voting, although they never mentioned IRV itself, and in the present context what they had in mind probably was closer to Borda Count.

6.5 Covariances

Comparing the covariance tables 3.7(a & b) shows additional significant differences between range and approval voters, which is yet another argument for the superiority of range voting (in the sense that it provides a less-distorted picture of voter opinions).

The clearest such distortion is that Nader-approval shows significant negative correlation with Bush- and positive correlation with Kerry-approval, whereas Nader range votes do *not* show any significant correlation (of either sign) with Bush and especially Kerry range votes.

This is presumably because, e.g., many Bush voters were unwilling to give full "approval" to Nader but were willing to give him fractional approval under range voting, which was enough to eliminate approval's Bush-Nader negative correlation.

6.6 Honesty versus strategy

Another pre-election critic had suggested we ask voters for twice as much data, namely:

(a) their honest opinions and
(b) how they would actually range-vote.

In view of the fact everybody wanted to spend *very little time* doing the poll, probably our choice of b-only was the right one. Also, the "National Election Study" [8] done every year 1948-present collects data about (a) also on an 0-100 scale, so there is no need for us to collect (a). However, asking voters for both (a) and (b) would have had the considerable benefit of forcing them to think about the distinction between strategic and honest voting, which probably would have led to their b-entries giving a more accurate picture of what they would have done for real than the b-only entries that we actually collected. If range voting really is adopted, then undoubtably parties and media will be blaring for years about; "Don't foolishly waste your vote by giving X less than the full 100." In contrast, our voters, with only a minute to think about it, in some cases either did not appreciate this, or valued honesty above strategy. We do not believe that any of our voters had ever heard of range voting before, and probably 90% of them had never before considered the idea that there might be a different way to vote.

Some critics of range voting had feared that "obviously" voters would employ approval-style voting (perhaps with blanks) since *strategic* range votes *are* approval votes. Therefore (the critics continued) there was no reason to prefer RV over AV.

Lesson #7: This fear/criticism is baseless because 57-70% of range voters are not even strategic enough to include both 0 and 100 in their vote! We admit that undoubtedly if range voting is really adopted, knowledge of range voting strategy will become more widespread, but it is now clear that a substantial fraction of voters will prefer honesty over strategy to at least some extent. Indeed, even WDS and DSG, although fully cognizant of range voting strategy, did not provide approval-style votes (although WDS came close)!

This is surprising because it is known [3] from National Election Study data that, e.g. fewer than 20% of voters who preferred Nader and Buchanan the most in the 2000 Bush-Gore election, actually voted for Nader and Buchanan, i.e. over 80% of them chose, strategically, to vote for somebody else. (Again illustrating the vast distortion caused by the plurality system.) So one might have suspected a priori that over 80% of range voters would be strategic. Completely wrong – at most 43% will be.

The desire to be honest in one's vote is a powerful psychological drive, and evidently that drive acts far more strongly on range voters than on plurality voters, although it probably acts only in a partial manner – i.e. many voters apply strategic distortions to their honest opinions, but not *maximally* strategic distortions.[23]

This *psychological* fact is an excellent further advantage of range voting beyond the advantages predictable from *mathematics* alone, and it strongly argues in favor of range rather than approval [2] voting. RV is better than AV for honest voters and the same as approval for strategic voters, and in practice there are many of both kinds of voter. Consequently there is a big quality advantage for range voting, especially if there are many honest voters and/or candidates, and DSG and WDS think this advantage is well worth the extra complexity of range.

Rob LeGrand's unfairness argument. Rob LeGrand brought up the concern (which "some newcomers to voting theory or election reform might have") that AV may be "superior" to RV because in the presence of both honest and strategic range voters, the latter would have an "unfair advantage" under range voting. Meanwhile with approval, all

[23] The 193 occurences of "0" in WDS's 68-vote set (see table 3.4) far in excess of any other entry and averaging nearly three 0's per range vote, are presumably strategic since it is not likely that voters really thought that the worst three candidates all were exactly equally bad.

voters are forced to be strategic (to a good approximation), eliminating that "unfairness."[24]

A strong counterargument to LeGrand would be available if the honest and strategical fractions of voters *never depend* on their political leanings, since then this unfairness would have no effect. But, if, say, all Bush voters are strategic but all Kerry voters are honest, then Bush could have a huge advantage.

The rightmost column of table 6.7 is an attempt to analyze the data to see if Bush or Kerry had any significant edge in the number of strategic range voters. We find no evidence of any such edge. If there is any, then it is well beyond our ability to resolve with the limited amount of data we have, and it would probably have required polling 100,000 voters to see it with confidence. However,

Lesson #8: Pro-3rd-party voters (according to the definition in tables 6.6 and 6.7) are clearly less strategic than Kerry and Bush voters. In fact, a specific test for that finds that the confidence that pro-3rd-party voters are less-strategic than pro-Kerry voters is about 99.4%.

In retrospect, this is not surprising. After all, in the present plurality system, voting 3rd-party is nonstrategic. Thus all 3rd-party voters are presently expected to be a self-selected less-strategic group. And this expectation is confirmed by the range voting data.

How does this impact LeGrand's argument that AV is "superior" to RV? That is not clear. In the hypothetical future when the USA uses approval and/or range voting, it will no longer be nonstrategic to vote 3rd-party. Therefore, it is not clear there will be any such self-selection mechanism in that future – it may only be available as an artifact of the present plurality setup.

6.7 Do voters like range or approval voting more than plurality?

What percentage of voters thought *range* is a better system than plurality?

yes, RV better = 31-43, no = 52-64, don't know = 3-9.

What percentage of voters thought *approval* is a better system than plurality?

yes, AV better = 33-39, no = 42-48, don't know = 16-21.

Lesson #9: If voters are asked to decide between plurality & range (or approval), and only have a minute to think about it, they will pick plurality. So the only hope for US states to adopt range or approval voting is if voters have considerably more than a minute to think about it. In other words, voting reform will take more than just a ballot proposition saying "switch to range voting." It will also require a great deal of discussion in the media to educate people.

Which has more support: Range or Approval? JNQ's voters prefer Plurality over Approval by a 1.24:1 ratio (disregarding "don't know" voters) but DSG∪WDS's preferred Plurality over Range by a 1.56:1 (i.e. larger) ratio. Thus, approval voting would seem more likely than range voting to get implemented (although both are in trouble). However, there are two reasons to weaken this comparative conclusion:

1. Bush voters prefered plurality over approval to a greater extent than Kerry voters (see tables 6.5 and 6.6). If we correct our data to compensate for the fact that JNQ's 656-vote sample included about 78 more Kerry and 78 fewer Bush voters than would have been expected from the national average,[25] then we would expect about 10 Approval supporters to transmute to Plurality supporters, transmuting the 1.24:1 ratio to 1.34:1.
2. There was a much larger fraction of "don't knows" for AV than for RV,[26] and our experience is that forcing such voters to decide causes them to go mainly with the status quo (i.e., in the present case, to stay with plurality).

The combination of both of these corrective effects could plausibly mean that voters actually like range voting *more* than approval,[27] i.e. completely the opposite conclusion.

Lesson #10: Our data makes it plausible that approval voting suffers less voter-disdain than range voting, but is insufficient for making a confident case in either direction.

Candidate	RV better	RV worse
Bush	31-46	33-47
Kerry	46-61	51-65
Nader	23-36	16-26
Badnarik	9-20	3-9
Cobb	5-16	4-12
Peroutka	6-18	1-7
Calero	3-10	0-4

Figure 6.4. Mean votes for each candidate within combined 122-range-vote set, just among those voters who thought Range Voting was *better* or *worse* voting system than plurality. ▲

Candidate	AV better	AV worse
Bush	24-34	42-50
Kerry	66-76	49-58
Nader	39-50	6-11
Badnarik	0-4	0-1
Cobb	1-6	0-2
Peroutka	0-3	0-2

Figure 6.5. Mean votes for each candidate within JNQ's 656-approval-vote set, just among those voters who thought AV was *better* or *worse* voting system than plurality. ▲

[24] This is not to say we agree with LeGrand's philosophy. It seems to us that the range system is equally fair to all voters, and anyway what matters more than some philosopher's notion of "fairness" is which voting system delivers smaller Bayesian regret – namely range voting [12].

[25] Our 656 approval votes included 245 for Bush and 382 for Kerry. Adjusting to $245 + 78 = 323$ and $382 - 78 = 304$ would yield the Nationwide Bush:Kerry 51:48 ratio. No analogous Bush-Kerry effect was found (and hence no analogous correction was needed) for range voting.

[26] Probably due to the open-ended nature of JNQ's question 5.

[27] If the 122 "don't knows" chose Plurality over Approval in a 3:1 ratio, then this combined with the previous correction would yield a 1.54:1 Plurality:Approval preference ratio, esssentially the same as for Plurality:Range.

Candidate	AV better	AV worse
Pro-Bush	16-24	50-59
Pro-Kerry	28-35	36-44
Pro-3rd	24-30	42-48

Figure 6.6. "Pro-Bush" voters are those who gave a greater vote to Bush than to Kerry. "Pro-Kerry" voters are those who gave a greater vote to Kerry than to Bush. A voter is "pro-3$^{\text{rd}}$-party" if he gave a positive vote to any candidate besides Bush and Kerry. (The first two kinds of voters are disjoint, but the third is not.) The table shows, within these three classes of voter, what percentages thought AV was better or worse than plurality voting. Data from JNQ's 656-approval-vote sample. ▲

Candidate	RV better	RV worse	%strat
Pro-Bush	16-24	50-59	27-48
Pro-Kerry	28-35	36-44	29-45
Pro-3rd	24-30	42-48	18-31

Figure 6.7. Same as table 6.6 but based on the DSG∪WDS 122-range-vote sample instead. The extra "%strat" column says the percentage of voters, among those in each class, who were strategic-enough to employ both a 100 and and 0 in their range vote. ▲

Lesson #11: The lesson of table 6.4 is that voters who want range voting favored Nader, Badnarik, Peroutka, and/or Calero to a significantly greater degree than voters who want to stay with plurality. This is perhaps because many realize that these 3$^{\text{rd}}$-party candidates would have a far greater chance under range voting than under the present system, or perhaps because they enjoy being able to express their opinions in their vote.

Table 6.5 shows similar but not quite the same effects. Nader voters (and to a less clear extent, due to their paucity) other 3$^{\text{rd}}$-party voters, are more prevalent among voters who like either AV or RV. But we now see a dramatic new effect: Approval-loving voters support Kerry to a much greater extent (and Bush to a much lesser extent) than approval-hating voters! This divergence actually makes short-term tactical sense because in the present election, AV might plausibly have *helped* Kerry by removing the feared threat of Nader-as-spoiler, and hence would have *hurt* Bush. However, table 6.4 found no analogous correlation between voters' opinions on Range Voting and their opinions on Bush vs. Kerry. Although this *non*-divergence at first seems senseless, there is a hypothesis that would provide a logical explanation for it.

Consulting the covariance tables 3.7(a & b) shows that *approval* voters tended to approve Nader if they supported Kerry, but tended to disapprove Nader if they supported Bush. However, *range* voters, due to their ability to provide fractional-votes, did *not* exhibit any significant Bush-Nader or Kerry-Nader correlations or anti-correlations. Hence these correlations are seen to be distortions caused by *strategic* voting (i.e. by AV's requirement to give Nader a full 100 or 0) which vanishes when voters are given the extra flexibility of range voting. If our voters somehow sensed this, then the comparative lack of support for RV versus AV among Kerry voters becomes less illogical.

Lesson #12: This suggests that voters would be most likely to support range or approval voting immediately after (or during) experiencing an election with *more than two*, and perhaps *more than three*, important candidates. (The present election was a particularly bad example of that since it was so dominated by two men.)

6.8 Perceived complexity

Of the 52-64% of voters who prefer Plurality to range voting, the ones who spontaneously provided their reasons were all concerned about complexity: "It makes you think a little too much." "It is a little too complicated." One said "it is hard enough just to pick a guy."[28] Some said things like "how can it be good for me to split my vote?" and "why should I vote for two guys? The goal is to pick one guy!" WDS of course then tried to explain that really, you weren't splitting, since "splitting" implied diminishing somebody's vote, which did not have to happen with range voting. Perhaps 66% of those complainers then appreciated that distinction. Another said "but if my entries add up to 300, then it's like I'm getting 3 votes, while somebody else (with sum 100) isn't." They thought that would be unfair. The response is, of course, that the entire set of numbers should be thought of as a single vote, and if you award several 0s to candidates, that is just like having "several votes," but I'm not sure that voter appreciated that argument.

Lesson #13: "Keep It Simple, Stupid" The ceaseless activity of posters on the `ApprovalVoting` and `election-methods` Yahoo Groups in devising mathematically elegant yet complex voting methods, is a waste of time when trying to propose and implement a new voting method in the real world, if a relatively simple system like range voting is perceived as too complicated.

The main commonly cited alternatives to plurality [9][7] are Approval, Range, Borda; IRV, Condorcet, River; Eigenvector, Schulze-beatpath, and Dodgson voting, listed in increasing order of perceived (by us) complexity, with the semicolons denoting comparatively large complexity increases. (Borda and IRV become substantially more complicated and arbitrary if provisions are made to handle real-world voters who refuse to rank some of the candidates.)

On the other hand, it has been estimated that 80% of Irish voters could not provide a correct description of the multiwinner Hare/Droop-STV system [14] that they themselves employ to elect district representatives. Based on our experiences, we are fully willing to believe such an estimate. IRV – used for electing Irish *presidents* – is the single winner special case of STV; the latter is used for electing Irish MPs and is considerably more complicated. The Irish nevertheless have in several referenda voted to keep STV and not switch back to (multiwinner) plurality.

That suggests that *once they get used to it*, voters can be happier with a more complicated (but better) system.

Also, there is evidence that *more-educated* voters are more likely to desire better voting systems: These organizations

[28] In response, we note that nothing stops range voters from providing plurality-type votes (one 100 and the rest 0s) if they so desire. Indeed table 6.3 shows 11-21% of voters did that.

adopted approval voting for their internal politics: Institute of Management Sciences, Mathematical Assoc. of America, American Statistical Association, American Mathematical Society, Social Choice & Welfare Society. Also, the UN uses AV to select a Secretary-General.

On the other hand, the IEEE (Institute of Electrical & Electronics Engineers, the world's largest professional society[29]) after adopting approval voting in 1987, switched *back* to plurality voting in 2002. Why? According to a reply [6] to a member complaining about this backslide,

> Based on voting statistics gathered for a multiyear period through 2001,... 80% of IEEE members were not using approval voting... also their comments indicated that most disapproved of it; some even refused to vote because of it. [So] on the recommendation of the IEEE Teller Committee and Executive Committee the Board of Directors... removed the requirement for approval voting... beginning with the 2002 annual election.

Actually, it seems to *us* that just because 80% of approval voters (and note that 75-81% of *our* approval voters voted "plurality+blanks" style) vote plurality-style,[30] by itself is no reason to abandon AV.[31] But the IEEE may have thought differently. In that case it is of interest to note that only 13-24% of *range* voters like ours vote plurality+blanks style (see table 6.3). This not only suggests once again that RV yields a less distorted picture than AV, but also

Lesson #14: An organization like the IEEE would be less likely to return to using plurality voting after adopting range voting, than it would be after adopting approval voting.

6.9 Other voting systems

It would also be possible to use our range vote data to perform other kinds of elections, e.g. IRV, Condorcet's method [7][9], et cetera. But since in the present New York State election virtually every voting system would have elected Kerry, that exercise probably would not be very interesting.

The only particularly interesting case is the one we did study – approval voting [2] – since it is not clear how our voters would have converted their range votes to approval votes. (One strategy [2] is to award all the above-average candidates 100s and the rest 0s. However, this is not the exactly strategically optimum method [12] and might not be the method the voters would adopt.)

7 Acknowledgments

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[29] The IEEE is comparable to the smallest countries, with over 320,000 members, an annual budget of over $100 million, and considerable economic influence (via standards committees).

[30] Note: that the IEEE did not say whether uncontested or two-candidate elections were included when reckoning the "80%."

[31] S.J.Brams writes: "The IEEE rationale reminds me of the claim made before 2000 about the Electoral College: Because there were no divided verdicts [cases where the Electoral and Popular winners differed] in 20th-century presidential elections, the Electoral College was no longer a problem. Then 2000 happened."

Info about lesser-known presidential candidates

Collected by study authors from info on internet. NOT official candidate-supplied info.

NADER: Green Party candidate for President in 2000 (3rd place - 2,878,000 votes - 2.7%)
Consumer advocate. Attorney. College lecturer. Author (63 books on `amazon.com` by Nader on government, environment, corporate power, consumer products, etc.). Founder of Public Citizen, Congress Watch, Essential Information, the Public Interest Research Group, Center for Auto Safety, Center for the Study of Responsive Law, Institute for Civic Renewal, Government Purchasing Project and other public interest organizations.
A.B., Princeton University, 1955; LLB, Harvard Law School, 1958. US Army Reservist 1959.
The main driving force behind the creations of the EPA and OSHA, auto safety act (requiring seat belts in cars), speed limits, freedom of information act, clean air and water acts. Also: After being "bumped" from an airline flight in 1972, Nader sued American Airlines. Eventually he won with the result that airlines now compensate bumped passengers with free flights; but the airlines forced Nader to go all the way to the Supreme Court to achieve this (where he won a 9-0 verdict).

`Camejo:` 1976 Presidential candidate of Socialist Workers Party – 90,000 votes.
Green pty 2002 candidate for California governor (3rd place – 382,000 votes – 5%.)
Financial executive, chair and co-founder of Progressive Asset Management, a broker-dealer firm which promotes "socially responsible investments." Camejo also created the Eco-Logical Trust for Merrill Lynch, the first environmentally-screened fund of a major firm. Marched in Selma with Martin Luther King in the early 1960s, protested the Vietnam War, and advocated environmental protection policies.

`Philosophical theme:` Corporations have become too powerful and are corrupting our government and environment – reign them in.

`Specific stances:` Nader opposed Iraq war from beginning, will bring troops home in 6mos. Wants $10/hour minimum wage, full health insurance for all from govt, Brady gun control bill, full public financing of elections. Opposes "tort reform" and WTO & NAFTA membership ("destroying third world," anti-environmental, secret and undemocratic superceding of US and state laws). Supports more "progressive" taxation such as eliminating tax on first $50,000 of income, create tax on stock trades, increase corporate taxes, eliminate agricultural & corporate subsidies. Supports balanced budget, RU-486, gay rights, measures to reduce corporate power by eliminating corporate "personhood," and a new enforcement agency for corporate crime. Rehabilitation not incarceration for druggies – war on drugs has been failure – treat as health problem not crime. Opposes F22 fighter plane and "star wars" antimissile system as boondoggles. Opposes death penalty and privatized prisons. Repeal PATRIOT act. Repeal Taft-Hartley act because it is anti-union. On Afghanistan: "Bush burned down haystack to find needle."

BADNARIK: Self-employed computer consultant, 2001-present. Skydiving instructor, 1998-present.
Nuclear power industry computer programmer, 1977-2001. Attended Indiana University 1972-77 but didn't graduate.

`Campagna:` "Multi-disciplinary professional": public and community service, international businessman, university instructor, attorney, consultant, and psychological counselor. Holds degrees from Brown University (B.A.), New York University (M.A.), St. John's University (J.D.), Columbia University (M.A.) and the American College of Metaphysical Theology (Ph.D. – although this last "school" is a diploma mill that sells Ph.D. degrees for $249). Also a returning scholar at the University of Chicago and fluent in six languages.

`Philosophical theme:` Cut both government and taxes drastically and many roles currently played by government should instead be played by the free market capitalistic system.

`Specific stances:` Badnarik supports unrestricted gun ownership and right to carry concealed weapons; privatizing police and schools; open immigration; gay marriage; compensation of crime victims by criminals; legalize medical marijauna; deregulate industry; abolish the FDA. Will veto any unbalanced budget. Opposes NAFTA, GATT, WTO ("WTO fosters managed trade not free trade"). Will withdraw from the UN – and evict them! Against Iraq war. Says will veto any legislation restricting women's right to choose abortion, *but* will stop tax money paying for abortions and will eliminate govt role in adoptions. Reintroduce gold standard. End mandatory minimum drug sentences. Repeal PATRIOT act and minimum wage. Abolish all foreign aid and all subsidies for corporations, farms, mass transit, foreign aid, education. Withdraw US troops from Phillipines, Iraq. Eliminate govt role in welfare, leave entirely to churches & private charities. Federal govt should stay out of health care. Says federal income tax has "no legal authority" and that people are justified in refusing to file a tax return "until such time as the IRS provides them with an explanation of its authority to collect the tax." (Would eliminate all income tax.) Accordingly, hasn't filed federal tax returns in many years. Refuses to get driver's license because Texas requires drivers to provide fingerprints and Social Security numbers – hence got several tickets for driving without license. Even refuses to use zip codes when he writes letters because sees them as illegal "federal territories."

COBB: Co-Founder, Texas Green Party, 1999.
General Counsel, Green Party of the United States, 2000-03.
Green Party nominee for Texas Attorney General, 2002 (41,000 votes = 1%).
Campaign Director, Reclaim Democracy, 2002-03.
Attorney. Former construction worker. "Only candidate who grew up in a house without a flush toilet."
B.A. (Political Science), University of Houston; J.D., University of Houston Law School, 1993.

`LaMarche:` Green candidate for Maine Governor in 1998.
BA degree from Boston College (1982).
Developed Earth Bank – a building materials company that provides "a line of environmental alternatives to the usual toxins found in construction supplies." Former director of The

Children's Miracle Network attached to Eastern Maine Medical Center, Maine's largest children's charity. Had co-hosted a radio show and worked as educator at Husson College and for the Forest Ecology Network.

`Philosophical theme:` "We are building a democratic movement that will take this country back from the corporate hooligans who have hijacked it from us." Supports "Ecological wisdom" of "agriculture which replenishes the soil; move to an energy efficient economy; and live in ways that respect the integrity of natural systems."

`Specific stances:` Supports living wage, gender and race equality, more responsible and sustainable fiscal policies, govt health coverage, demilitarization to the extent possible. Wholy pro-choice, for gay marriage & affirmative action. Eliminate corporate "personhood," death penalty, and privatized prisons. Decriminalize small amounts marijauna. Repeal WTO & NAFTA. Ban assault weapons. Eliminate "star wars." Eliminate electoral college. Repeal PATRIOT act. $10/hr minimum wage. Reregulate banks. Strict controls on genetically modified organisms. Ban landmines. Create "worker's rights." Change voting system so 3rd parties can thrive. Increase taxes on wealthy (over $75,000 annual income); decrease taxes on poor (eliminate tax if income<$25,000). All US troops out of Iraq, unless UN and Iraq both want them. Says "democratic party is like a huge statue, but it's completely hollow and only corporate cash is keeping it upright."

PEROUTKA: Founder and Director, Institute on the Constitution (conservative non-profit organization).
Health Initiatives Analyst/Attorney, US Dept. Health & Human Services, 1976-87.
Maryland Attorney (private practice), 1987-present.
Founder and Director, American College for Cultural Studies (Biblical-Constitutionalist education program).
B.A. from Loyola College; J.D. from University of Baltimore, 1981.

`Baldwin:` conservative/Christian radio talk show host; columnist; founder of Crossroads Baptist Church 1975; Baptist pastor; holds degrees in theology.

`Philosophical theme:` Honor God, support the family, and restore the primacy of the constitution.

`Specific stances/info:` Peroutka won Constitution party nomination after deposed Alabama judge Roy Moore declined it. "100% pro-life, full 9 months, no exceptions" – total ban on abortion. Also very pro-gun: says restrictions on semi- and full-automatic weapons, and "insta checks" during gun purchases, both unconstitutional. Opposes minimum wage as unconstitutional. Demands balanced budget amendment. Federal govt "has no business directing education of children," should stay entirely out. Allow prayer in schools. Drill the ANWR. Get out of UN, NAFTA, WTO, and GATT. Fund missile defense ("star wars") much more, but welfare should not be funded by Govt. Mandatory social security is unconstitutional. Ban gay marriage. Prosecute minors as adult criminals. Abolish the IRS and income taxes ("Godless") repeal estate tax, eliminate dividend taxes, fund govt largely with tariffs. Kick women out of the military, bring back the 10 commandments and the death penalty. Peroutka spent 11 years working for the federal government to create health care programs, but left in late 1980s after deciding that the programs on which he worked "had no constitutional foundation." Opposed the US action in Iraq on constitutional grounds: "It's not that Congress doesn't have the authority to declare war. It's just that it hasn't done so." But strongly supports the US troops in Iraq while opposing "the unconstitutional procedures under which they were committed to fight" says should withdraw from Iraq. "PATRIOT act is bad." Strong Christian beliefs. Says Constitution is founded on the Bible and can't be sustained without biblically-grounded judiciary.

CALERO: Associate Editor, Perspectiva Mundial (official Spanish language newspaper of the SWP) and Staff Writer, The Militant (official English language newspaper of the SWP). Former meat packer. Union organizer. Convicted for sale of marijauna 1988 and successfully resisted deportation attempt. Calero could not legally take office since was born in Nicaragua.

`Hawkins:` Leader of Young Socialists, the communist youth wing of the SWP. B.A. from University of Minnesota. Spent a year in Senegal studying the role of women in African culture. Has been garment worker, meat packer, airline baggage handler. She is the only candidate (of those listed) who is black.

`Philosophical theme:` Workers are oppressed and enslaved by capitalism; their government needs to rectify that situation and place people first.

`Specific stances:` They support Fidel Castro, trade unions, massive public works program, cost-of-living minimum wage protection, reduced work week, govt medical coverage. Abolish death penalty. Attack Bush for not funding education (e.g. the "no child left behind" act), attack govt for reductions in help for poor. Say Iraq war is about oil and SUVs. Would withdraw US troops from locations around world including Cuba, Iraq, Korea, Afghanistan, Phillipines.

SIMILARITIES: Despite their great differences, all 3rd-party candidacies above seem to agree on these: repeal the PATRIOT act, Iraq war is bad, US should drop out of WTO & NAFTA, and (not surprisingly) that 3rd parties are good and efforts should be made to level the playing field so they have more of a chance. All of these stances conflict with the stances of the top 2 parties (although the Dems are ambiguous about Iraq war, refusing to say in their party platform that it was a mistake, and Kerry voted for the Iraq war resolution but claims that was only to give Bush negotiating leverage, not because Kerry actually wanted the war). Further, all the 3rd parties seem to support a balanced budget, or at least a much greater degree of fiscal responsibility than the top 2 parties (NY Times 23 Sept 2004 front page "Deal in congress to keep tax cuts & widening deficit" reports how Democrats agreed to extend $145 billion in tax cuts without trying to pay for them because "we have people up for re-election.").

Figure 7.1. Info sheet on 3rd-party candidates, available on request to each voter. Only a few looked at it, however. ▲