# "Approval Voting" lacks a sound moral base for the individual voter's choice of approval versus non-approval, especially when the Status Quo is neglected

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March 26 2005

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## Summary

"Approval Voting" is the voting mechanism reportedly used since 1987 by professional and scientific societies such as the Econometric Society, INFORMS, ASA, AMS, MAA, IEEE and the Social Choice and Welfare Society. The method lacks a sound moral base for the choice by individual members between approval and non-approval, especially when the Status Quo is neglected. Minority rights are better protected when every voter respects the uniform Status Quo, rather than allowing that every voter determines a private (secret) reference point. A better method than Approval Voting is the (Pareto-) Borda Fixed Point rule introduced in the literature in 2001.

# Introduction

"Approval Voting" (AV) allows voters to enter only 1's (approved) and 0's (non-approved) weights. For example, on the ballot you cross out all names for the items that you want to reject, and then only the remaining items are counted. A zero value merely counts as a weight, it does not mean that the individual has veto rights. As a rule, the item with the highest score is selected.

Brams & Fishburn (2003) clarify:

> "Beginning in 1987, several scientific and engineering societies adopted AV, including the Mathematical Association of America (MAA), with about 32,000 members; American Mathematical Society (AMS), with about 30,000 members; Institute for Operations Research and Management Sciences (INFORMS), with about 12,000 members; American Statistical Association (ASA), with about 15,000 members; Institute of Electrical and Electronics Engineers (IEEE), with about 377,000 members. Smaller societies that use AV include the Society for Judgment and Decision Making, the Social Choice and Welfare Society, the International Joint Conference on Artificial Intelligence, and the European Association for Logic, Language and Information. Additionally, the Econometric Society has used AV (with certain emendations) to elect fellows since 1980 (Gordon, 1981); likewise, since 1981 the selection of members of the National Academy of Sciences (1981) at the final stage of balloting has been based on AV. Coupled with many colleges and universities that now use AV—from the departmental level to the school-wide level—it is no exaggeration to say that several hundred thousand individuals have had direct experience with AV. Probably the best-known official elected by AV today is the secretary-general of the United Nations (Brams and Fishburn, 1983)."

Professor Steven Brams is perhaps the best known theorist on AV. My discussion here benefits much from his earlier comments and literature references, and I want to express my gratitude. It may be noted that my own analysis hasn't gained his approval yet but I will be honoured if it does.

My analysis on voting in general is given in Colignatus (2001 & 2005). AV in particular is discussed only in Colignatus (2001). My conclusion there is:

- The normal state in the world is "strategic voting" (cheating) and then AV collapses to "Plurality Voting" (PV), where people basically vote for their first candidate. Voting for another item does not favour your first choice, especially when that first choice has the probability of getting most votes. (Note that the normal situation is that one item has most votes.)

- The Status Quo (SQ) provides a natural base (for a honest vote) to separate approval from non-approval. Voters reject what is worse (for them) w.r.t. the SQ and they approve of what is at least as good (for them) w.r.t. the SQ. Note that rejection here assigns individual veto power, and thus protects minority rights.

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For example, when the majority decides that they want your house, you have a right to veto that. Note that the SQ might be taken as an incumbent or a vacancy, or whatever depending upon the constitution. Setting the status quo as the norm, causes the SQ itself to have the widest approval base; the status quo is only challenged when it is Pareto inoptimal (i.e. when there is another point that is as good); but then there is no clear mechanism to break the tie.

- A morally attractive voting mechanism is where one first selects the points that are Pareto optimizing (PO) w.r.t. the SQ, and then one applies the Borda Fixed Point method to those points to break that tie (the BordaFP method was introduced in Colignatus (2001)).

My conclusion and suggestion for others is that AV lacks a sound moral base for the choice of approval versus non-approval, especially when the status quo is neglected. As a tie-breaking rule for the PO items w.r.t. the SQ, the morally attractive method is BordaFP. In the Economics Pack, see Colignatus (1999, 2005), the Pareto-BordaFP method is called "majority voting" since it closely captures what people understand by that term (for a majority that repects the minority). The implication is that AV falls out. It will be useful to express this more fully below.

The users of AV are advised to reconsider their philosophy. It is admirable that they were willing to experiment with AV since 1987. Nowadays they could take advantage of the progress in our knowledge since 2001. Of course it depends upon individual choice what voting mechanism one prefers, but social preference could converge on BordaFP, above AV, once the mechanisms are understood.


# The argument more fully


Note that the Status Quo (SQ) gives the present situation. An economic definition is that someone will approve of everything that improves over the present situation and will disapprove of everything that means a deterioration.

My impression, as I currently read the situation, is that users of AV might very well confuse the sensation of approval/non-approval with this SQ-issue.

### *One*

An example works wonders. Consider three items *A, B* and *C*. If these are better than the SQ and voters are honest about that then all are approved. Approval voting thus doesn't give a rule to break that tie. Let us then neglect the Status Quo and for example assume that all items on ballot are better than a vacancy.

Assume that 1/3 of the electorate prefers *A* and might vote for *B* as a compromise, so that their preference order is {3, 2, 1}, with a higher value for "more preferred" as in a normal utility function. Under AV they have the choice between {1, 0, 0} and {1, 1, 0} since they "do not approve" of *C*. Assume that 2/3 of the electorate prefers *C* and might vote for *B* as a compromise, thus preference {1, 2, 3} and the choice between {0, 0, 1} and {0, 1, 1} since they "do not approve" of *A*. These assumptions

are tabulated in Table 1 which also shows that the information on approval versus non-approval is additional to the standard information on preferences.

**Table 1: Example voting field on items *A, B* and *C* other than SQ**

|  | 1/3 of the electorate | 2/3 of the electorate |
|---|---|---|
| Ordinal preference | {3, 2, 1} | {1, 2, 3} |
| Additional information on approval / non-approval | No approval for *C*, true AV gives {1, 1, 0} | No approval for *A*, true AV gives {0, 1, 1} |
| Strategic vote (cheating) | {1, 0, 0} | {0, 0, 1} |

Under honesty (and assuming that there is an independent moral base for approval versus non-approval), *B* would be chosen under AV while *C* is the more logical choice under Plurality, Borda and BordaFP. Some might argue that this precisely shows that AV is the best method, in particular since professional and scientific organisations can expect their members to vote honestly. However, it makes more sense to adopt a method (i) that relies on preference and doesn't assume an independent moral base for approval versus non-approval, (ii) that generates the true majority view and (iii) that is realistic with respect to strategic voting (i.e. use BordaFP).

Indeed, if the electoral situation is tense and if the society is in need of a compromise candidate, then it is useful to foster that compromise by the better method that the candidates express their views on the issues at hand, work towards a compromise and win over the voters to accept their compromise. To rely on technique or assumptions on a moral base for approval versus non-approval is dubious. AV doesn't necessarily contribute to a compromise since it still is sensitive to strategic voting. AV already assumes and relies on a compromise-prone atmosphere, that however can also be appealed to by the open discussion of the views of the candidates and their attitude towards compromise.

If the house is highly divided, and one seriously wants to use technique to resolve this (whatever its dubious value), then the AV may conceal the true progress towards reconciliation. A better technique might be that more than 50% of the house first decides to vote only on compromise candidates. Who these are can be determined by 100% of the vote (perhaps lower if none is found). If there is only one candidate, he or she can be considered elected, otherwise BordaFP would be most sensible to break the tie on the compromise candidates. This actually is the earlier procedure on the SQ, but now applied to the notion of compromise. Actually, the only convincing reason why the house can be so divided (i.e. having a minority not accepting the majority view), while 50% of the house might accept that a "compromise" is needed for, derives from a violation of the rights of the minority on what they perceive as the SQ.

The status quo provides the only natural base for approval versus non-approval. If voter *i* has $A <$ SQ then this voter is justified to express non-approval of *A*. This is so important, with James Madison, that one should not just allow a simple 0 value but even give minorities veto rights.

In the example above, the situation for 1/3 of the electorate might in truth be $A > B > SQ > C$ while the situation for 2/3 of the electorate might in truth be $C > B > SQ > A$. It that case, "majority voting" defined as Pareto-BordaFP generates *B* as the solution, since *A* and *C* are vetoed each by one part of the electorate while *B* is for all an improvement over the SQ.

Individual veto power can be abused but a separate chamber (e.g. the Senate in a bi-cameral parliament) or the courts could check that abuse.

For users of AV it would be useful to delve into the question why people would consider something worthy of approval and something else worthy of non-approval. That is, if they think that it is something else than the SQ-issue. My question for those users is that they specify what other emotional base approval/non-approval would have, other than Madisonian protection of minority rights.

NB. 1) Note that approval/non-approval as an emotional primitive may be awkward, since this would cut off communication. People may be goaded into approving or non-approving something for reasons that go against human rights. If approval/non-approval is accepted as an emotional primitive then one does not have an argument to reject such preferences. If one accepts approval/non-approval as primitive, then one loses utility theory, and then one would be forced to accept AV.

NB. 2) Another possibility is that members of professional and scientific societies often are indifferent about candidates on ballot. Often it is easiest not to vote at all, so that one leaves the decision to more opinionated and supposedly more informed persons. The state of indifference should however not be confused with the issue at hand. One can be indifferent amongst the approved and indifferent amongst the non-approved, but that still leaves the question how one defends that original distinction.

NB. 3) Finally, note the parallel between utility theory and deontic logic in Table 2.

**Table 2: Parallel between utility theory and deontic logic**

| Simple preference | Deontic logic (logic of morals) |
|---|---|
| Better | Ought (part of Allowed) |
| Indifferent | Freedom (part of Allowed) |
| Worse | Not Allowed |

I refer to Colignatus (2001) chapter 3.5 for a discussion of this. Obviously, the vote on candidates for committee in a professional or scientific society cannot be seen as

a moral choice, though it may be confused with it. The logic of morals thus does not provide a philosophical base for AV.

For both columns, the issue on the SQ is the same as already discussed.

NB 4) I can repeat the observation that users of AV may very well be confused on this SQ-issue. On the other hand, in their confusion, it may well be that they stumbled upon a neat method. In a low resource setting, the addition of 1's may be easier than the addition of Borda counts. In the example of 1/3 $A > B > SQ > C$  and 2/3 $C > B > SQ > A,$  the AV method generates the same solution as the more complex approach of first selecting the Pareto points and then applying the BordaFP method. The answer is that theorists should be clear on the principles involved and that for practical application the proof is in the eating of the pudding.

### *Three*

Brams & Fishburn (2003) state: "Our rhetoric has remained relatively constant over the years and can be summarized by the following six propositions". My comments on these propositions are as follows.

> "1.  AV gives voters more flexible options.  They can do everything they can under PV [Plurality Voting]—vote for a single favorite—but if they have no strong preference for one candidate, they can express this fact by voting for all candidates they find acceptable.  In addition, if a voter's most-preferred candidate has little chance of winning, then that voter can vote for both a first choice and a more viable candidate without worrying about wasting his or her vote on the less popular candidate."

This is also achieved in BordaFP. The distinction between the best and second best of course means that the latter has a lower weight. Preference comes at a price. It is better that voters be not indifferent, since, when two items end up equal, a choice must be made nevertheless. It is best to put the question of choice to each individual voter.

> "2.  AV helps elect the strongest candidate.  Under PV, the candidate supported by the largest minority often wins, or at least makes the runoff if there is one.  Under AV, by contrast, the candidate with the greatest overall support will generally win.  In particular, Condorcet candidates, who can defeat every other candidate in separate pairwise contests, almost always win under AV, whereas under PV they often lose because they split the vote with one or more other centrist candidates."

This is rhetorics. Who is "strongest" depends upon, and is defined by, the voting mechanism. The point is that BordaFP has properties that many will tend to prefer (looking at what people use and say what they intend).

> "3.  AV will reduce negative campaigning.  AV induces candidates to try to mirror the views of a majority of voters, not just cater to minorities whose votes could give them a slight edge in a crowded plurality contest.  AV is therefore likely to cut down on negative campaigning, because candidates will have an incentive to broaden their appeals by reaching out for approval to voters who might have a different first choice.  Lambasting such a choice,

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rather than being more expansive, risks alienating this candidate's supporters, thereby losing their approval."

It depends. In the example above, candidate *B* indeed has an incentive to suck up to the two groups that actually prefer *A* or *C*. This behaviour might provoke *C* to state to be the "real thing", so that AV reduces to PV. This argument thus is misguided. It may have rhetorical value for professional and scientific societies that have little "negative campaigning" and that enjoy to hear that they use methods that discourage that. It is better to have an election mechanism that has attractive properties and subsequently provide a climate that recognises lambasting when it occurs.

PM. Brams & Fishburn (2003) state "psychologically there is almost surely a difference between approving and disapproving of candidates". For this reason I use the opposing pairs "approval versus non-approval". The AV literature frequently opposes "approval versus disapproval" but for disapproval one might consider a value –1.

> "4. AV will increase voter turnout. By being better able to express their preferences, voters are more likely to vote in the first place. Voters who think they might be wasting their votes, or who cannot decide which of several candidates best represents their views, will not have to despair about making a choice. By not being forced to make a single—perhaps arbitrary—choice, they will feel that the election system allows them to be more honest, which will make voting more meaningful and encourage greater participation in elections."

Borda and BordaFP allow more expression of preference than AV. It can be explained to voters that they must choose. If they cannot, then they might abstain or use dice, but that is their responsibility.

A general conclusion forwarded by Colignatus (2001) is that representative democracy works best for a whole nation. Voters select a single party of their choice. Those parties are professionally equipped to apply the more complicated procedure (BordaFP) to select the President (and other dignitaries).

> "5. AV will give minority candidates their proper due. Minority candidates will not suffer under AV: their supporters will not be torn away simply because there is another candidate who, though less appealing to them, is generally considered a stronger contender. Because AV allows these supporters to vote for both candidates, they will not be tempted to desert the one who is weak in the polls, as under PV. Hence, minority candidates will receive their true level of support under AV, even if they cannot win. This will make election returns a better reflection of the overall acceptability of candidates, relatively undistorted by strategic voting, which is important information often denied to voters today."

Borda and BordaFP allow for this too, likely better than AV. For example, in the Bush, Gore and Nader vote, the Naderites might vote {1, 2, 3} or {1, 3, 2}, depending upon how much they dislike Bush being chosen, or {2, 1, 3} or {3, 1, 2} depending upon how much they dislike Gore being chosen. In all cases, it will be recorded that they exist.

"6. AV is eminently practicable. Unlike more complicated ranking systems, which suffer from a variety of theoretical as well as practical defects, AV is simple for voters to understand and use. Although more votes must be tallied under AV than under PV, AV can readily be implemented on existing voting machines. Because AV does not violate any state constitutions in the United States (or, for that matter, the constitutions of most countries in the world), it requires only an ordinary statute to enact."

This is a practical point. It would seem that, once the best system has been chosen (see again my suggestion of "majority voting"), one could work towards solving the practical issues. Once it has been established that flying is serious option, let us put the airplane into operation.

Note that, in the example given above, where $B$ is not the SQ, that it is eminently practical that 1/3 of the electorate takes the SQ in $B$ and tries to veto $C$, while 2/3 of the electorate takes the SQ in $B$ and tries to veto $A$. Practicality is important, but the moral price can sometimes be too high. Admittedly, it is not always obvious what is the SQ. (It is important to allow individual liberty to express different opinion, especially when the majority thinks that the SQ is that they own your house.) But from economic theory we know that there is a unique SQ and it is useful to have procedures such that the whole electorate respects that unique SQ.

## Other points

Once one delves into the AV literature, it appears that one can make comments on particular points at various turns. It is not efficient that I do this here. Above gives the main argument. Then it becomes more efficient that users of AV update their reading of the literature, in particular Colignatus (2001) and the section on social choice in Colignatus (2005), after which they will be able to provide the amendments themselves.

## Conclusion

"Approval Voting" lacks a sound moral base for the individual choice of approval versus non-approval, especially when the Status Quo is neglected

The users of AV are advised to reconsider their philosophy. It is admirable that they were willing to experiment with AV since 1987. Nowadays they could take advantage of the progress in our knowledge since 2001. Of course it depends upon individual choice what voting mechanism one prefers, but social preference could converge on BordaFP, above AV, once the mechanisms are understood.

# Literature

Note: Colignatus is the name of Thomas Cool in science. Some archives may not recognize that name.

My website is at http://www.dataweb.nl/~cool while much on Approval Voting can be found in the website of professor Steven Brams at http://www.nyu.edu/gsas/dept/politics/faculty/brams/index.html

Note that Colignatus (2001 & 2005) have a non-printable PDF on the website.

Note that my conclusion is that economists must read Colignatus (2005) if they want to understand economics while social choice theorists must read Colignatus (2001), and the section on social choice in Colignatus (2005), if they want to understand social choice.

Note that Colignatus (2001) has been fully included in my software, Colignatus (1999), "The Economics Pack, Applications for *Mathematica*". This inclusion means that the text of the book is also available in the software under the Help function. There is the subtle distinction that the printed book still dates from 1999 while the software has been updated to 2005. The history is that I wrote the voting routines already in 1999 and that, with DRGTPE completed in 2000, I decided that I could write a separate volume on voting theory. The update of the voting routines in 2005 only concerns the switch to *Mathematica* 5.0 and the inclusion of Donald Saari's ingeneous triangle graphics.

Brams, S.J. and P.C. Fishburn (2003), "Going from Theory to Practice: The Mixed Success of Approval Voting", Prepared for delivery at the 2003 Annual Meeting of the American Political Science Association, August 28 - August 31, 2003

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