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**ON RELATIVE UNIMPORTANCE OF VOTING WEIGHTS: OBSERVATIONS ON  
AGENDA-BASED VOTING PROCEDURES\*\***

**INTRODUCTION**

The scholarly debate on the reform of EU institutions focuses to a large extent to aspects of power distribution in the Council of Ministers and/or European Parliament. Yet, important developments have occurred in the decision making procedures of the Union. For example, the introduction of co-decision procedure has changed the power-sharing between two institutions in ways that are impossible to capture by looking at merely to the resource distribution in the Commission, Council or Parliament. Admittedly, also the inter-institutional power distribution has received some attention by the power index scholars (see e.g. Napel and Widgrén 2006), but the bulk of work also in this literature deals with one institution, the Council.

Another aspect largely ignored by the scholarly community is the procedures used in the actual decision making in the Council. In fact, very little is generally known about the way in which the Council decisions are reached. Axel Moberg (2007) and Rafal Trzaskowski (2007) have in their presentations emphasized the absence of actual voting in the Council and also the account given by Mattila and Lane (2001) suggests that voting only rarely takes place in the this body. Rather, it is the presidency that proposes and modifies decision alternatives to reach a consensus

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International workshop  
**"Distribution of power and voting procedures in the European Union"**  
Natalin European Centre, Warsaw  
October 12-13, 2007

decision or at least one apparently supported by the qualified majority. Thus, while informative and sometimes useful in institutional design, the power indices -- both *a priori* and preferential ones -- capture but one and seemingly not very important facet of collective decision making. If the aim is to make EU decision making more efficient, then surely not just the weight distribution and majority threshold, but also the voting procedures are of paramount importance. If the decision procedures lead to a stalemate, then even the most just distribution of voting weights is of no practical consequence.

The way in which the decisions in the EU (and elsewhere) are reached depends not only on the voting weight (or, in general, resource) distribution and majority thresholds, but also on the voting procedures and agenda formation principles. These are the foci of the present contribution. The main results on agenda control and voting procedures are reviewed in an effort to show that it makes a great deal of difference which voting system is used. The difference may in some cases be one between Pareto optimal and sub-optimal outcomes.

The relationship between power and representation is often thought to be straight-forward one: the more representation an actor has, the more significant is his/her influence over the decision outcomes. This is often seen as a truism and certainly explains the eagerness with which the representatives of EU member states defend their share of voting weights or parliament seats in the design of EU institutions. However, it is possible that we encounter the following paradox: less representation gives more power. Given this possibility we could perhaps assume a more relaxed attitude towards marginal changes in seat or vote distribution in various EU bodies.

There is yet another aspect of EU decision making that is often overlooked in the institutional design literature, viz. the way in which various issues to be decided upon are packaged into decision alternatives. This is a very important stage of decision making and one that often calls for political skill. This paper tries to show that political skill sometimes plays a quite central role in

International workshop  
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Natolin European Centre, Warsaw  
October 12-13, 2007

the formation of public policies. It also emphasizes the role of agenda in determining the policy outcomes.

## **THE MAIN AGENDA PROCEDURES**

It can be argued that all balloting is preceded by an agenda-formation process. In political elections, it is often the task of the political parties to suggest candidates. In committee decisions the agenda-building is typically preceded by a discussion in the course of which various parties make proposals for the policy to be taken or candidates for offices. By agenda-based procedures one usually refers to committee procedures where the agenda is explicitly decided upon after the decision alternatives are known. Typical settings of agenda-based procedures are parliaments and committees.

Two procedures stand out among the agenda-base systems: (i) the amendment and (ii) the successive procedure. Both are widely used in contemporary parliaments. Rasch (1995) reports that the latter is the most common parliamentary voting procedure in the world. As the amendment procedure it is based on pairwise comparisons so that at each stage of the procedure an alternative is confronted with all the remaining alternatives. If it is voted upon by a majority, it is elected and the process is terminated. Otherwise this alternative is set aside and the next one is confronted with all the remaining alternatives. Again the majority decides whether this alternative is elected and the process terminated or whether the next alternative is picked up for the next vote. Eventually one alternative gets the majority support and is elected.

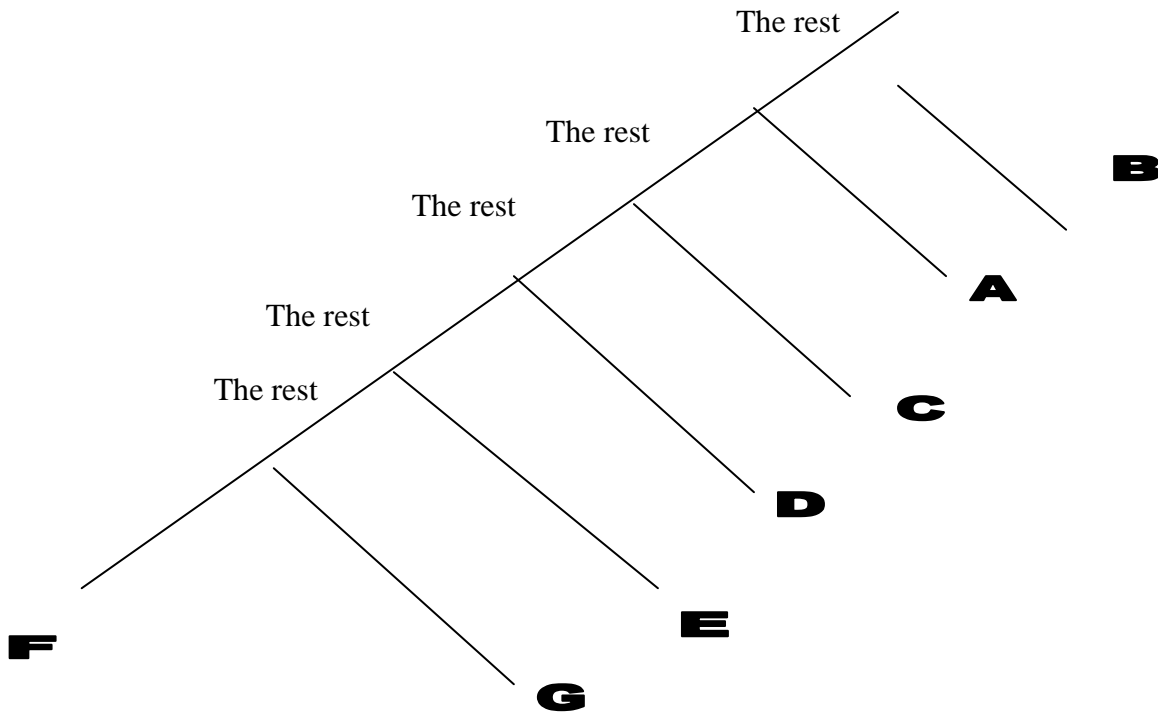


Figure 1: The successive agenda

Figure 1 one shows an example of a successive agenda where the order of alternatives to be voted upon is B, A, C, D, E, F and G. Whether this sequence will be followed through depends on the outcomes of the ballots. In general, the maximum number of ballots taken of  $k$  alternatives is  $k-1$ .

The amendment procedures confronts alternatives with each other in pairs so that in each ballot two separate alternatives are compared. Whichever gets the majority of votes proceeds to the next ballot, while the loser is set aside. Figure 2 shows an example of an amendment agenda over 3 alternatives: x, y and z.

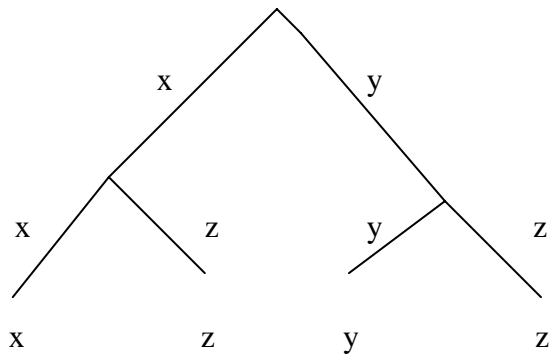


Figure 2: The amendment agenda

In Figure 2 alternatives  $x$  and  $y$  are first compared and the winner is faced with  $z$  on the second ballot.

Both the amendment and successive procedure are very agenda-sensitive systems. In other words, two agendas may produce different outcomes even though the underlying preference ranking of voters and their voting behaviour remain the same. Under sincere voting -- whereby for all alternatives  $x$  and  $y$  the voter always votes for  $x$  if he/she prefers  $x$  to  $y$  and vice versa -- the well-known Condorcet's paradox provides an example: of the three alternatives any one can be rendered the winner depending on the agenda. To determine the outcomes -- even under sincere voting -- of successive procedure requires assumptions regarding voter preferences over subsets of alternatives. Under the assumption that the voters always vote for the subset of alternatives that contains their first-ranked alternative, the successive procedure is also very vulnerable to agenda-manipulation.

## NEWS – GOOD AND BAD

The agenda-base systems have received some attention in the social choice theory. Thus, we know e.g. the following about the amendment and successive systems:

1. Condorcet losers are not elected (not even under sincere voting),
2. sophisticated voting avoids the worst possible outcomes,
3. Condorcet winner is elected (even under sincere voting) by the amendment procedure, and
4. the strong Condorcet winner is elected by both systems.

The first point follows from the observation that the alternative that wins under the amendment procedure has to win at least one other alternative. Hence, it cannot be the Condorcet loser. Under the successive procedure if the winner is determined at the final pairwise vote, it cannot be the Condorcet loser. If, on the other hand, the winner appears earlier, it cannot be the Condorcet loser either because it is ranked first by more than half of the voting body.

Sophisticated voting avoids Pareto violations. In other words, if the voters anticipate the outcomes ensuing from various voting strategies, the resulting strategy combinations exclude outcomes for which unanimously preferred outcomes exist (see Miller 1995, 87).

That the amendment procedure results in the Condorcet winner under sincere voting, follows from the definition. Finally, the strong Condorcet winner -- i.e. one that is ranked first by more than half of the electorate -- is elected by both systems regardless of whether the voting is sincere or strategic.

To counterbalance the basically positive results mentioned above, there are some negative ones. To wit,

1. McKelvey's (1979) results on majority rule and agenda-control.
2. All Condorcet extensions are vulnerable to the no-show paradox (Moulin 1988).
3. Pareto violations are possible.

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Natolin European Centre, Warsaw  
October 12-13, 2007

McKelvey's well-known theorem states that under fairly general conditions -- multi-dimensional policy spaces, continuous utilities over the policy space, empty core -- any alternative can become the voting outcome under amendment procedure if the voters are sincere and myopic. Under these circumstances the agenda-controller determines the outcome even though at every stage of voting the majority determines the winner of the pairwise vote. Although some of the conditions are not as liberal as they seem at first sight, the theorem is certainly important in calling attention to the limits -- or rather, lack thereof -- that the majority rule per se can impose on the possible outcomes. The upshot is that the majority rule guarantees no correspondence between voter opinions and voting outcomes.

Although no analogous result on the outcomes of the successive procedure in multi-dimensional policy spaces exists, the discussion in the next section shows that it is also very vulnerable to agenda-manipulation.

### **AGENDA IS IMPORTANT**

An obvious corollary of McKelvey's theorem is that under the stated conditions the voting outcome may be an alternative that is Pareto dominated, i.e. the winner may be an alternative that every voter regards worse than another alternative that has been eliminated in some pairwise comparison "on the way" to the final outcome. While McKelvey's theorem deals with many-dimensional real spaces, the Pareto violation -- that is the choice of a Pareto dominated alternative - - may be encountered in a finite alternative setting.

The following example (Table 1) illustrates.

1 voter & AEBCD

1 voter & DAEBC

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**"Distribution of power and voting procedures in the European Union"**  
Natolin European Centre, Warsaw  
October 12-13, 2007

1 voter & CDAEB

1 voter & EBCDA

Table 1. Pareto violation of amendment procedure

With sincere voting and agenda 1. A vs. E, 2. the winner vs. D, 3. the winner vs. C, and 4. the winner vs. B, B wins. Yet, E is preferred to C by everyone. Hence, we have instance of Pareto violation.

We notice, moreover, that all pairwise comparisons result in 3/4 of the electorate supporting the winner. Hence, not even this high majority threshold enables the amendment procedure to avoid Pareto violations.

The successive procedure is also vulnerable to Pareto violations under sincere voting as show in Table 2.

1 voter & CABD

1 voter & DABC

1 voter & ABDC

Table 2. Pareto violation of the successive procedure

With sincere voting and agenda 1. A vs. others, 2. C vs. others, B wins even though B is Pareto dominated by A. If the majority threshold is increased the possibility of Pareto violations is not thereby removed. Consider Table 3 and the agenda: 1. A vs. the rest, B vs. the rest, 3. C vs. the rest and 4. E vs D. Assume that to win an alternative has to get 4/5 of the vote total. Under sincere voting E wins (once A and B are eliminated). Yet, A Pareto dominates E.

2 voters & AEBCD

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October 12-13, 2007

1 voter & CAEBD

2 voters & BAECD

Table 3. Pareto violation with high majority threshold

So, in amendment and successive procedures agenda is a very important determinant of the voting outcomes, especially under sincere voting. In fact, the above examples demonstrate that the voting weight plays practically no role in determining the outcomes. After all, the Pareto violations indicate that the agenda controller can overrule the entire voting body.

### **BUT HOW IMPORTANT?**

But surely committees consisting of experienced politicians or experts would not voluntarily agree to be led to decisions that are blatantly against the most obvious explication of group rationality, viz. Pareto optimality. Indeed, there is an antidote to agenda manipulation, viz. sophisticated voting. Sophisticated voting by a voter aims at securing the best possible outcome of the voting process, given the other voters' voting strategies; "best" seen from the voter's point of view.

Sophisticated voting in the amendment procedure has been extensively studied over the past decades (Farquharson 1969; McKelvey and Niemi 1978; Gretlein 1983; Banks 1986; Miller 1995; Moulin 1988). The upshot of this research is that, instead of spreading all over the policy space, the sophisticated voting outcomes are always a subset of the Pareto set, i.e. Pareto violations do not occur if the voters are strategic. Moreover, the sophisticated voting outcomes are in general located in a proper subset of the uncovered set. This subset is known as the Banks set. Its superset, the uncovered set consists of alternatives not covered by some other alternatives. The definition of covering says that  $x$  covers  $y$  if (1)  $x$  beats  $y$  and (2) everything that  $y$  beats.

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Natalin European Centre, Warsaw  
October 12-13, 2007

In the case of successive procedure, sophisticated voting imposes less stringent constraints on agenda control. To wit, any outcome in the top cycle set can be rendered the outcome under the successive procedure if the voters are sophisticated (Miller 1995, 85). The top cycle consists of the smallest set  $A$  of alternatives that all alternatives in  $A$  beat all other alternatives not in  $A$ . This set is a superset of the uncovered set and may even contain Pareto dominated alternatives. So, strategic behaviour helps, but the upshot remains that agenda control is a very important determinant of the voting outcomes. Indeed, marginal changes in voting weights are of secondary importance when compared to agenda influence.

In fact, the actors' influence over outcomes may sometimes be increased with smaller vote shares. The following example illustrates (Nurmi and Hosli 2003). The decision concerns the location of an EU agency. Alternatives are Brussels, Helsinki and Madrid. For the sake of argument we assume that the distribution of voting weights over alternatives of the then 15-member EU states are the following.

17 votes: 1. Brussels 2. Helsinki 3. Madrid

30 votes: 1. Helsinki 2. Madrid 3. Brussels

40 votes: 1. Madrid 2. Brussels 3. Helsinki

With sincere amendment procedure and agenda 1. Helsinki vs. Madrid, 2. the winner vs. Brussels, Brussels wins.

Suppose now that the middle group loses 4 seats to the uppermost and 4 votes to the lowermost one. Madrid then becomes the Condorcet winner and is thus elected. This outcome is clearly preferred Brussels by the "losing" group.

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October 12-13, 2007

To conclude with a provocative question: why bother with gaining a few units of voting weight if one may be better off with less weight? Of course, the above fictitious example is a special case, but even so calls attention to features often ignored in the voting power analysis.

### **ON THE BLACK ART OF POLITICAL PACKAGING**

Political skill is sometimes referred to as an explanation of an actor's success in the political process. Sometimes a person is described as a skillful negotiator. The skills referred to then often pertain to ability to spot common gains of the negotiating parties, to link the problems at hand to a wider context, to inform the negotiating actors of the views and possible reactions of third parties etc. Political skill is basically the ability to construct and de-construct packages of issues. It is form of agenda control and as such an important determinant of decision outcomes. Moreover, it has nothing to do with voting weights.

The importance of packaging is shown by the following example which is known in the literature as Ostrogorski's paradox (Rae and Daudt 1976).

issue}	issue 1	issue 2	issue 3	majority alternative
voter A	X	X	Y	X
voter B	X	Y	X	X
voter C	Y	X	X	X
voter D	Y	Y	Y	Y
voter E	Y	Y	Y	Y

Table 4. Ostrogorski's paradox

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Natolin European Centre, Warsaw  
October 12-13, 2007

The example (Table 4) summarizes a party contest where parties X and Y are competing in a single-member constituency. Whichever gets more votes is the winner. There are three electoral issues of equal importance to voters: issues 1-3. Each voter has a stand on each of the issues and knows the stands of the two parties with adequate certainty to be able to determine which one is closer to his/her stand on each issue. These closest parties are depicted in the above table. Thus, for example, voter A thinks that X is closer to his/her opinion on issue 1 and 2, while Y is closer on issue 3.

Assuming that the issues are equally important to all voters, it is reasonable to assume that each voter votes for the party that is closer to his/her stand on more issues than the other party. The right-most column indicates the parties voted upon.

It is clear that the packaging has a major role in determining the outcome. With all three issues subjected to an election, X wins, while Y would win in every election should the issues be voted upon separately.

A related phenomenon is known as Anscombe's paradox. In essence, it says that under issue-by-issue majority voting it is possible to end up in a situation where a majority of voters is in a minority -- i.e. on the losing side -- on a majority of issues. The following example is an instance of Anscombe's paradox. Voters 1-3 are on the losing side on two issues out of three. Yet, they constitute a majority of voters. The antidote to this paradox is cooperative voting or log-rolling, whereby voters 1-3 would agree on a joint strategy X on issue 1, Y on issue 2 and X on issue three. The outcome would be preferable to each one of the three to the YXY outcome that would ensue without the cooperation.

International workshop  
**"Distribution of power and voting procedures in the European Union"**  
 Natolin European Centre, Warsaw  
 October 12-13, 2007

issue}	issue 1	issue 2	issue 3
voter 1	Y	Y	X
voter 2	X	X	X
voter 3	X	Y	Y
voter 4	Y	X	Y
voter 5	Y	X	Y

Table 5. Anscombe's paradox

Anscombe's paradox also stresses the importance of packaging of issues in determining the outcomes. There is yet another paradox related to packaging of electoral issues. It is described in the following.

Voters	issue 1	issue 2	issue 3
3 voters	X	X	X
1 voter	X	X	Y
1 voter	X	Y	X
1 voter	X	Y	Y
3 voters	Y	X	Y
3 voters	Y	Y	X
1 voter	Y	Y	Y
majority	Y	X	X

Table 6. Paradox of multiple elections (Brams et al. 1998)

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**"Distribution of power and voting procedures in the European Union"**  
Natolin European Centre, Warsaw  
October 12-13, 2007

If the issues are voted upon separately, the outcome as shown on the last row is YXX. Looking at the individual voters, we observe, however, that no voter voted for this package. This possibility is particularly important in contexts where the issues are mutually dependent or non-separable. Again the packaging plays a key role in determining the outcome.

## **CONCLUSIONS**

1. The procedures used in EU decision making may render the study of vote distribution of secondary importance.
2. Political skill is largely ignored in modelling collective decision making. Yet, it plays crucial role in determining the voting outcomes.
3. Aggregation paradoxes abound and are should be taken into account in decision making models.

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October 12-13, 2007

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