EMERSON'S TAXONOMY OF DECISION-MAKING

*When voting on a decision, the extent to which the outcome can be described as representing the collective will,
the consensus, (and the will of the majority), increases (a) as the voting procedure becomes more consensual and (b)
as the number of options increases in excess of two… usually, on topics complex and/or controversial, up to a maximum of six.*

THE WILL OF THE PEOPLE

In theory, the will of the people may be

+   identified either directly by all in referendums,
+   estimated by some in a citizens' assembly, or
+   assumed indirectly in parliamentary votes by the people's elected representatives.

In this third scenario, much depends upon who is in that parliament, i.e. on the said nation's electoral system, and comparisons of electoral systems are a familiar aspect of political science. In all three scenarios, however, a lot also depends upon the decision-making system but comparisons of the different decision-making methodologies are rare.

When electing representatives, the outcome may be just a singleton – a president, for example – or it may be an entire parliament, in which case its members might be elected in single-seat constituencies (as in Britain), multi-member constituencies of 3-5 members (Ireland), or in just the one constituency of the entire nation, (Netherlands, Israel and Ukraine). Little wonder these systems vary enormously, from the manifestly unfair via mediocre to fairly accurate. There are over 300 of them.

When making a decision, the outcome is either a single social choice or a single prioritization, always a singleton, so there are far fewer decision-making systems. Nevertheless, the dozen or so different methodologies vary from the binary to the preferential and they too range from the unfair via the mediocre to the accurate.

A simple taxonomy of the many electoral systems distinguishes between one- and two-round systems, between majority/plurality systems and mixed/proportional systems, between single- and multi-preference systems. What's more, the choice of electoral system has many consequences; according to Duverger's Law, [1] as electoral systems vary, so too do the numbers of political parties which gain representation. No matter what the resulting political structures – two-party, multi-party, all-party states, and even communist one-party states – most parliaments and/or congresses take most of their decisions by majority vote. This, too, leads to what are often tragic consequences.

An understanding of the following taxonomy may have great consequences, for if the very exclusive measure of collective opinion, majority voting, were to be replaced by the most inclusive preferential points voting, which is non-majoritarian, there would then be no further justification for [binary] majority rule; instead, every democracy could enjoy all-party power-sharing.

EMERSON'S TAXONOMY OF DECISION-MAKING

This taxonomy concerns those voting procedures which may be used to identify the collective will of a set of voters – {not the unanimous viewpoint (which will be obvious and will not normally require a ballot)} – but their consensus, or maybe just their best possible compromise. The taxonomy is based on an analysis of how decisions may be voted on, not only in elected/appointed chambers, committees and citizens' assemblies, but also in other settings such as referendums. The classification is based on the number of options on the ballot, the number of preferences a voter may cast, the number of those preferences that are counted, and the character of the procedure used for identifying the winning option.

HOW MANY OPTIONS ON THE BALLOT, HOW MANY PREFERENCES MAY BE CAST, AND HOW WILL THEY ALL BE COUNTED?

I)   In a binary or adversarial (and at worst dictatorial) **majority vote** procedure, one powerful individual or group decides which question or which pair of options is to be voted on, and voters are faced with an "Option X, yes-or-no?" choice or, at best, "Option *X* or option *Y*?" In many such ballots, the phrasing of the question virtually determines the answer. In plebiscites, party caucuses and parliaments, the most obvious examples of dictatorial procedures were those binary votes taken by the likes of Napoléon, Lenin and Hitler respectively, [2] all trying to provide a veneer of legitimacy to their regimes. But this adversarial procedure is also used extensively in many parliamentary settings, where an individual or group, the Executive, sets the agenda. In most instances, the authors of the ballot question get what they want; a notable exception was the 2016 UK referendum on Brexit.

        Political leaders in their national Executive often have considerable powers as even the most complex problems are reduced to dichotomies – or a series of dichotomies – with sequential parliamentary votes on amendments and the final substantive all taken on a 'for-or-against' basis. These votes are usually subject to a simple majority vote, but may be dependent on a weighted majority vote, and a minimum turnout or quorum may also be required. A less hierarchical methodology allows the people to propose the question, as in a Citizens' Initiative.

II)   In a multi-option non-preferential procedure, decisions are made from a choice of more than two options. The procedure may still be fundamentally majoritarian. The simplest of these is **plurality voting**, in which members of the given electorate, as for example the Danish Parliament, [3] may vote for one option only. In a more complex, **two-round system TRS**, voters may vote for one of several options in the first round and, if no one option gains a majority, the two options with the highest totals are subject to a second round majority vote. In **serial voting**, a series of votes is taken between different pairs of options. A few jurisdictions – Guam, New Zealand, Sweden and Uruguay, for example – have used multi-option voting in referendums that offer from three to six or even seven options, using either plurality voting or a form of TRS to decide the winner. Norway has used TRS in parliament but only once. When debating amendments, Finland and Sweden use serial voting.

III)   A multi-option preferential procedure enables decisions to be made from a list of more than two options by means of a non-majoritarian process. For example, the **Modified Borda Count MBC,** allows those concerned to participate, not only in voting on the final ballot, but also in choosing the options in the debate which precedes the ballot; this is sometimes delegated to elected representatives in Parliament or selected individuals in a Citizens' Assembly. With *n* alternatives, voters may cast *m* preferences – where $n \geq m \geq 1$ – and *m* points are awarded to their 1st preference, *m-1* to their 2nd preference, and so on. The outcome is the option with the highest total score. To date, it is thought that only one elected chamber has used a multi-option preferential procedure in decision-making: Dublin City Council, [4], admittedly a **Borda count BC,** (see below) rather than an MBC.

METHODS OF DECISION-MAKING

Binary (Two-option) Methodologies

i) **Majority voting**, which may be subject to a simple (50% + 1), weighted (2/3rds or some other fraction greater than ½), double (sometimes used in Switzerland, when success depends upon a majority of the voters *and* a majority of the cantons), qualified (as in the European Union, so bigger countries have more clout), or consociational (as in Belgium or Cyprus, where the parliamentarians or electorate are divided into two constituencies and in which success depends on both majorities; in Bosnia in 1990, a three-way version was attempted… in vain).

Multi-option Non-Preferential Methodologies

ii) **Plurality voting**, in which voters cast only a 1st preference, and the option with the highest number of 1st preferences wins.

iii) The **two-round system TRS**, is a plurality vote is followed by a majority vote if no one option wins a majority in the first round.

iv) In **approval voting**, the voter may 'approve' of more than one option, but each 'approval' has the same value – there are no preferences – and the option with the most 'approvals' wins. **Range voting** gives the voter a fixed number of points that he/she can distribute to the various options at will: either some points to each of two or more options, or all the points to just one option and none to any of the others.

v) **Serial voting**, in which, say, proposed amendments are listed in order, (cheap to expensive, or whatever); the procedure is a series of majority votes between the two extreme options, with the loser being eliminated after each vote; the outcome is a Condorcet winner (but see below).

Multi-option Preferential Methodologies

vi) The **alternative vote AV**, (also known as **instant run-off voting IRV, preference voting PV**, and the **single transferable vote STV**), [5] allows the voter to cast preferences for one, some or all the options listed. The count is a series of plurality votes, the least popular being eliminated after each stage and its votes transferred in accordance with its voters' 2nd and next highest preferences, until one option gains majority support.

vii) A **Borda count BC**, asks the voters to cast their preferences, and points are awarded to (1st, 2nd … last) preferences cast according to the rule (*n, n-1 … 1*) or (*n-1, n-2 … 0*); this procedure may encourage the voters to truncate their vote. A **Modified Borda Count MBC**, allows for partial voting. It uses M de Borda's original formula: [6] (*m, m-1 … 1*), and this encourages the voters to cast a preference for every option.

viii) The **Condorcet** rule in which the preferences cast for each option are compared with those of every other option, in turn. The option which wins the most pairings and therefore beats every other option – if there is one – is the Condorcet winner. If there isn't one, the option which wins the most pairings is chosen, (the **Copeland** rule). There may, however, be a paradox.

The MBC and Condorcet are the only methodologies which always take all preferences cast by all voters into account; not least for this reason, they can be claimed to be the most inclusive and therefore most consensual procedures, and provide the most accurate measure of the will of the said set of voters. Indeed, in many voters' profiles, the MBC social choice is also the same as the Condorcet social choice. [7]. What's more, experience suggests that on many occasions, the MBC social choice is the same as the Condorcet social choice, and even the social rankings are often similar. [8]

VOTING PROCEDURES IN DECISION-MAKING

Voting procedures used in decision-making vary from the exclusive and blunt binary ballot in the bottom left-hand corner, to the inclusive and accurate MBC in the top-right corner.

Preferences counted	BINARY		MULTI-OPTION NON-PREFERENTIAL		MULTI-OPTION PREFERENTIAL
all					MBC
					Condorcet
lots			BC [9]		BC
			Approval Voting		
some			Range Voting [10]		
				Serial Vote Sweden	AV, IRV, PV or STV
a few					
1st only	Weighted Majority Finland, SA UN Security Council	Consociational Belgium, Cyprus, NI	Two-round Voting, TRS Norway		
	Simple Majority Vote China, Ireland, UK, USA, USSR	Double Majority Vote Switzerland (referendums)	Plurality Vote Denmark		
	one		some		lots or all
	1 of 2 options		1 of some options	1 or some of all options	1 or some or all of all options
	Preferences cast →				

Notes to table

Colour-coding is from red (least consensual) to green (most consensual).

References to nations relate to parliamentary/congressional votes unless otherwise stated.

AV	=	alternative vote (= IRV, PV & STV)	BC	=	Borda count	IRV	=	instant run-off voting (= AV, PV & STV)
MBC	=	modified Borda count	PR	=	proportional representation	PV	=	preference voting (= AV. IRV, & STV)
STV	=	single transferable vote (= AV. IRV, & PV)				TRS	=	two-round system
NI	=	Northern Ireland	SA	=	South Africa	UK	=	United Kingdom
UN	=	United Nations	USA	=	United States of America	USSR	=	Union of Soviet Socialist Republics

Notes

1. Duverger, Maurice (1955). *Political Parties.* London: Methuen. p 217.

2. Emerson, Peter (2012). *Defining Democracy* (second ed.). Heidelberg: Springer. pp. 143–50. ISBN 978-3-642-20903-1.

3. To quote private correspondence from the Danish Embassy in London, "A member of the Danish Parliament has three voting options when voting on a bill: Yes, No, Neither for or against." http://www.ft.dk/Leksikon/Afstemning.aspx (in Danish).

4. Baker, John. "Rosie Hackett - A landmark in decision-making". *http://www.deborda.org/storage/Report%20on%20Rosie%20Hackett%20decision-final2.pdf*. The de Borda Institute.

5. As an electoral system in its PR format, it is called PR-STV.

6. Donald G Saari, *Disposing Dictators, Demystifying Voting Paradoxes*, CUP, Cambridge, p 197.

7. In a similar way, the sports team which wins the Premier League, the team which wins the most matches (a sort of Condorcet measure) is usually, but not always, the team with the best goal difference (a sort of MBC).

8. www.deborda.org home page, 'Practical Examples'.

9. In a BC, if everyone casts a full ballot, the outcome using the (*n, n-1 … 1*) or (*n, n-1 … 0*) rule is the same as that of an MBC with the (*m, m-1 … 0*) rule. If some cast only partial ballots, however, and at worst, if some cast only their 1st preferences, the BC can be similar to a plurality vote.

10. Range voting allows the voters to be consensual, but incentivises them to be the very opposite; hence the grey.

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