

CrossRef DOI of original article:

1 Evolving Decision-Making: Exploring the Shift from Binary to 2 Preferential Voting

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4 *Received: 1 January 1970 Accepted: 1 January 1970 Published: 1 January 1970*

6 Abstract

7 Covid and Climate Change are telling us that we must all work together. But we cannot work
8 well with each other, if we are forever taking decisions by voting (for or) against each other.
9 By viewing problems in more detail, however, by not oversimplifying our controversies, and
10 then by expressing our preferences on a range of, say, half-a-dozen options, cooperation and
11 collective decision-making are indeed possible. Accordingly, this article first looks at a history of
12 decision-making voting procedures, from the binary (either 'Option X, yes or no?' or 'Option
13 X or option Y?'), to the multi-optional or, better still, preferential; next, it critiques majority
14 voting and considers some of the other, more sophisticated mechanisms, before concluding
15 that a preferential points procedure is actually the most accurate. Finally, the text outlines
16 the beneficial consequences that could accrue from developing such a non-binary political
17 structure; majority voting leads to majority (sic) rule, whereas preferential decision-making
18 could be is the basis of a quantum polity and real majority rule: a non-partisan polity of
19 all-party power-sharing. Such a structure is often used in post-conflict zones, but could also be
20 the basis of cooperation and consensus seeking in the UN's efforts on Climate Change.

22 *Index terms—*

23 1 Introduction

24 electoral systems are often discussed? but not so decision-making. The former may be used to elect a single
25 individual, as in a presidential election, or a large number of representatives, as in a congressional/parliamentary
26 contest, and they vary from the simplistic binary vote used in North Korean elections, via many single-preference
27 voting procedures as in first-past-the-post FPTP in the UK and USA, or the relatively unsophisticated forms
28 of proportional representation PR such as the single-preference Dutch version, to the multi-preference systems
29 of ranked choice voting RCV 1 1 The European name is the single transferable vote, as in PR-STV; and in
30 Australasia, this system is called preference voting PV. which is used in Ireland and Tasmania, and is becoming
31 more popular in the USA. With sometimes the exception of binary voting, most or even all of these electoral
32 systems -and there are over 300 of them -are regarded as democratic. They can however be compared and ranked
33 from the unfair via the mediocre to the accurate.

34 Decision-making systems are less numerous, not least because the outcome is usually either just one social
35 choice, a decision, or one social ranking, a prioritisation; so decision-making does not involve PR. The systems
36 nevertheless vary from the binary to the multi-optional, from the single-preference to the preferential. Admittedly,
37 some voting procedures can be used in both functions: at a national level, binary voting is used in elections only
38 rarely (almost exclusively in North Korea) 2 but ubiquitously in decision-making; FPTP is called plurality voting
39 when used in decisionmaking; the two-round system TRS has just the one name in either role; while the alternative
40 vote AV 3 Having critiqued (simple or weighted) majority voting, the text then considers and compares some of
41 the other decision-making voting mechanisms -single and approval voting may also be used in both functions.
42 Though fewer in number, these systems may also be ranked on a scale of excellence.

43 A further consequence of binary voting is the way many elected chambers divide into two. And because
44 political parties also use this voting procedure, they too tend to split into opposing wings or factions. Now

45 mathematically, a half of a half is a quarter; 51% of 51% is only 26%; and likewise, a majority of a majority
46 might well be a minority. So majority rule, especially in countries like Israel where all too often the policies
47 of government are those of the extremist wing, rarely exists. (See also para 4.1.) One notable exception is
48 Switzerland, which enjoys all-party power-sharing. 2 This electoral system is often used in committees, not least
49 at AGMs when choosing next year's officers. 3 Otherwise known as RCV or STV; (see also footnote 1).

50 2 E

51 Author: The De Borda Institute, 34-6 Ballysillan Road, Belfast BT14 7QQ, Northern Ireland. e-mail:
52 pemerson@deborda.org This article is devoted almost entirely to decision-making, a subject all too rarely
53 considered by politicians and/or political scientists. It first reflects on the history of binary voting, its inherent
54 errors, and some of the consequences of the widespread application of this divisive, adversarial and often inaccurate
55 voting mechanism. Asking a resident of Northern Ireland -"Are you Protestant or Catholic?" -or a citizen of
56 Rwanda -"Are you Hutu or Tutsi?" -or anybody during the Cold War -"Are you communist or capitalist?" -was
57 at least unwise. Indeed, "[s]imple majority decisions? cannot be fair in a democratic sense because the imposition
58 of binary alternatives is itself unfair." ??Riker 1988: 64.) Global Journal of Human Social Science -Year 2023

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60 Evolving Decision-Making: Exploring the Shift from Binary to Preferential Voting preference systems like
61 plurality voting and two-round voting; the non-preferential approval voting; and three preferential systems,
62 AV, along with the Condorcet and Borda rules. It then presents a scientific analysis of the last named, which is
63 a preferential points procedure. Finally, it discusses the potential benefits that might accrue from a world-wide
64 adoption of this more sophisticated methodology: cooperation and compromise; both of which could help to
65 facilitate the survival of our species.

66 4 II.

67 5 A Little History

68 In Greece about 2,500 years ago, "sovereign power was held to reside in the Assembly, and was exercised by
69 majority vote, by counting hands." (De Ste Croix 2004: 75.) Some 400 years later, binary voting was also used
70 in China in "the Court Conference of the Former Hàn Dynasty, [202 BCE -23 CE] and decisions were based on
71 the opinion of the majority? [which] as a rule, were accepted by the Emperor," ??Wang 1968: 176).

72 Though confined to the male gender, the developments in Greece were profound. Those involved "learned? the
73 powers of the proposer, the rights of expressing an opinion? when to give way and when to stand firm, how long
74 to speak and when to keep silence? how to introduce an amendment, in short the whole of senatorial procedure."
75 (McLean and Urken 1995: 14).

76 And procedures there must be, of course, especially on contentious issues in which, initially at least, there
77 may well be a majority against every proposal. Such was the case recently in the UK, when the British House of
78 Commons was debating its relationship with the EU -the Brexit debate. In two so-called 'indicative votes,' the
79 members of parliament voted on eight and then just four options; in both ballots, there were majorities against
80 everything? but they varied, from over 300 members against the most unpopular option, to just six members
81 against the least unpopular. So maybe the last named was the winner.

82 That, after all, was how Slovenia resolved a three-option referendum in 1996: there were three options, and
83 majorities against all of them? so the winner was judged to be the option with the smallest majority against. In
84 Britain, however, there was only more wrangling, and at that time, no decision was taken.

85 If and when there is a majority against everything, there might also be a majority opposed to the final result.
86 In theory. The conundrum is overcome by the fact that, as mentioned in the abstract, there are two types of
87 majority vote: a singleton, "Option X, yes or no?" and a pairing "Option X or option Y?" With singletons,
88 the outcome might indeed be in the negative; there could well be a majority against everything; with pairings,
89 however, (unless, of course, it's a draw), there will always be a definite outcome. And this is how Britain's Brexit
90 debate was 'resolved': Boris Johnston used a pairing, "Do you want 'his deal' or 'no deal'?" was the question.
91 The latter 'no deal' was the most unpopular of all options, so 'his deal' won. But in a pairing, 'any deal' would
92 have won.

93 6 a) Binary Voting

94 Reducing complex problems to a stark choice of only two options may lead to unfortunate consequences. Consider,
95 first, the theory, a situation in which 9 voters, all of whom don't like the status quo option S very much, are in
96 dispute as to what might be better: 4 of them propose option X, 3 seek to amend this to option Y, and 2 would
97 prefer a different amendment, option Z. The procedure, as laid down by the Greeks of old and still in use today, is
98 utterly dependant on binary voting? which was, after all, the only known voting procedure at that time. Suffice
99 to say, however, that it is based entirely on pairings:

- 100 + choose the more preferred amendment; + adopt or reject this preferred amendment to get the substantive;
- 101 + choose either this substantive or retain the status quo.

102 Let it be assumed that the 9 voters have the preferences shown in Table ??.
103 Number of Voters 4 3 2 1 st X Y Z 2 nd Y Z S 3 rd Z S X 4 th S X Y

104 Sure enough, there may be singleton majorities against every option: 5, 6, 7 and 9 against X, Y, Z and S
105 respectively. When the pairings are considered, however, X is more popular than Y which is written as $X > Y$,
106 and the full analysis is this: According to those ancient and current procedures, the order of voting shall be as
107 shown in Diagram I. $X:Y = 6:3$, so $X > Y$ $X:Z = 4:5$ so $X <$

108 7 Diagram I: The Order of Voting

109 $Y \text{ v } ? \ Z \text{ v } ? \ X \text{ v } ? \ S$

110 Therefore, if none of those concerned change their opinions, the vote will proceed as in Diagram II.
111 II: The Vote $Y \text{ v } Y \ Z \text{ v } X \ X \text{ v } S \ S$

112 So having decided, initially, that they did not like option S, the 9 then decide, democratically, that they
113 like option S? Something is wrong! Furthermore, if instead of the motion being for option X while the two
114 amendments were options Y and Z, the motion moved was for option Y with 'X and Z as the two amendments,
115 the outcome, as in Diagram III, would be different.

116 8 Diagram III: Another Equally Democratic Decision

117 $X \text{ v } Z \ Z \text{ v } Y \ Y \text{ v } Y \ S$

118 Or again, in another setting: Diagram IV: Yet Another Result $X \text{ v } X \ Y \text{ v } Z \ Z \text{ v } Z \ S$

119 So something is definitely wrong. And that something is the binary vote. In a nutshell, binary voting is
120 manipulable (and often manipulated), especially if, as is the case in this instance, there is a paradox: $X > Y > Z$
121 $> X?$ or $X > Y > Z > S > X?$

122 first noted by Le Marquis de Condorcet in 1793, and it goes round and round forever!

123 If there is such a paradox, the final outcome of any procedure can be determined by adjusting the order of
124 voting; and when there isn't a paradox, if there is a majority in favour of an option which is not favoured by the
125 chair, other options can be introduced in order to split that majority and create a paradox? and then the chair
126 can continue to manipulate at will! III.

127 9 A Little More History

128 As implied earlier, majority voting worked fairly well both in Greece and in China -but there were no political
129 parties in those days and no other voting procedures had yet been devised. One of the first to realise that this
130 binary procedure had its limitations, however, was Pliny the Younger in the year 105. ??McLean and Urken
131 1955: 15). In a murder trial in a Roman court of law, the jury had three options: A Acquittal, B Banishment
132 and C Capital punishment.

133 So if the question asked was a binary singleton such as "Execute, yes or no?" the A and B supporters would
134 oppose the C crowd, and if asked "Innocent, yes or no?" B and C would oppose A, and so on. Therefore, if
135 there was no majority in favour of any one option, there would be an impasse. Some ones, somewhere, were
136 bound to devise other decision-making methodologies such as plurality voting, for which credit goes to Pliny the
137 Younger, and the first to use this in governance were the Chinese in 1197, during the Jurchen dynasty. The
138 debate concerned the possibility of war with Mongolia, but of the 84 "highest officials" involved, "only 5 favoured
139 an attack, 46 were for a defensive strategy and the rest ??33] preferred alternating between attack and defence,"
140 ??Franke and Twitchett 1994: 266).

141 In Europe meanwhile, in the Middle Ages, approval voting was quite widely used, (McLean and Urken 1955:
142 22). Then, in 1299, Ramón Llull first thought about preferential voting; a century and more later, in 1433,
143 Nicholas Cusanus invented a preferential points system and, as a result of developments undertaken by Jean-
144 Charles de Borda in 1770, this is now called the Modified Borda Count MBC. The 18 th Century also witnessed
145 the emergence of AV and the Condorcet rule. The world's first multi-option referendum was held in 1894 in New
146 Zealand, in a rather unique form of TRS, and a number of other countries have also held multi-option plebiscites.
147 In their parliaments and councils, however, most countries continue to rely on binary ballots; most of the very few
148 exceptions are in Scandinavia: Denmark's Folketing frequently uses plurality voting but only on three options;
149 the Finnish and Swedish parliaments use serial voting when debating amendments; and the Norwegians used
150 TRS, but only once.

151 10 a) The Bind of the Binary Ballot

152 Majority voting, however, is ubiquitous: it is used in democracies, theocracies and autocracies, and the
153 consequences have often been horrific. In 1903 the All-Russian Congress of Social Democrats split into two on a
154 majority vote: 19 to 17, with 3 abstentions (Deutscher 1966: 71); whereupon the winners -not the majority but
155 only the largest minority -'pretended' they were the majority (bolshinstvo) and called themselves the Bolsheviks,
156 while the 17 whom they called the minority (menschinstvo) became the Mensheviks. (Later, when Mikhail
157 Gorbachev, who did not speak English, came to power in 1985, western 'experts' advised him to adopt the
158 western democratic norm of majoritarianism, without acknowledging that the Russian word for this polity is
159 'bolshevism'. 4)

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161 In 1979, Iran became an Islamic Republic on the basis of a referendum, the Shi'a majority voting en bloc, a Sunni
 162 minority abstaining. China also uses majority voting. In 1989, with tens of thousands of students protesting in
 163 Ti?n'?m?n Square, the CCP Standing Committee under De?g Xia?pi?g, is understood to have taken a majority
 164 vote on the question of military deployment, although Zhào Ziyáng disputes this; (Fenby 2012: 180 and Zhao
 165 2010: 29); it passed, it is said, by one vote, ??Emerson 2020: 167).

166

167 With the collapse of the USSR, democratisation spread to the countries of eastern Europe: Czechoslovakia
 168 split peacefully, but the Balkans exploded: indeed, "all the wars in the former Yugoslavia started with a [binary]
 169 referendum," (Oslobodjenje, 7.2.1999), as did today's conflict in Ukraine in 2014.

169

170 In 1994, the Interahamwe launched its genocide in Rwanda with the slogan, "Rubanda nyamwinshi," 'we are
 171 the majority,' ??Prunier 1995: 83).

171

172 Despite this appalling history, let alone the above scientific proof of the divisive, adversarial inadequacies of
 173 binary voting, many politicians do not even try to embrace pluralism. Instead, they prefer to control things,
 174 and in binary voting, especially if the question asked is a singleton, they are in total control of the agenda. In
 175 congressional/parliamentary votes, where the powers that be usually command a majority, the question almost
 176 always becomes the answer -and binary voting in western if not universal decision-making is manipulable, just as
 177 it is in elections in North Korea (and the comparison goes no further); suffice to say that majority voting, both
 178 simple and weighted, is enshrined in Article 97 of Pyongyang's constitution. For better or worse, it's not used
 179 very often -Article 92 stipulates that parliament shall meet only once a year, (DPRK 2017: 21-2).

179

180 In a summary of the above, binary voting is inadequate; in a modern pluralist democracy, it is inappropriate;
 181 on contentious topics, it can be hopelessly inaccurate; and at worst, as noted, it can be and often is a provocation
 182 to violence.

12 b) Multi-option Voting

182

183 Multi-option decision-making procedures include: + plurality voting, where the voters cast just one preference
 184 and in which the outcome is the option with the most 1 st preferences, either a majority or maybe just the largest
 185 minority. + TRS, which is a plurality vote followed if need be by a second-round majority vote between the two
 186 leading options from the first round. + AV (RCV or STV); this is a series of plurality votes, the least popular
 187 option being eliminated and its votes transferred to its voters' subsequent preferences, until one option does get
 188 majority support; (NB: a TRS winner may not be the same as an AV social choice). + approval voting, which I
 189 repeat is non-preferential; voters may 'approve' of as many options as they wish, and the winning option is that
 190 which wins the most 'approvals'. The intransigent voter will therefore tend to vote for his/her favourite option
 191 only. In analysing this procedure, either the top two 'preferences', 1 st and 2 nd , may be analysed, or the top
 192 three, or even all of them? and of course, if a different counting procedure is adopted, there may well be different
 193 outcomes. + the BC and MBC, both of which employ a preferential points system, and this, to a greater or
 194 lesser extent respectively, can be vulnerable to an irrelevant alternative, (see below). And + the Condorcet rule,
 195 which is an analysis of all the pairings: a Condorcet winner wins all of them; if there is no outright winner, the
 196 Copeland winner wins most of them; and in yet other scenarios, there might be a paradox.

197

198 Consider then the scenario in which 21 voters are bitterly divided, with the largest minority of 6 voters having
 199 the exact opposite set of preferences to the 5 in the next largest minority, while the other ten voters are split in
 200 their support for the other options, B, C, D and E.

200

201 Their voters' profile is shown in Table II, and while most voters have cast all their preferences, 3 voters have
 202 cast only four preferences and 4 only a 1 st preference.

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203

204 In all, therefore, with this particular voters' profile (and many another) the outcome of a democratic vote could
 205 be anything at all! So in this (and other) instances, the result depends not upon the preferences of the voters
 206 but on the voting rule used! Of the decision-making procedures listed, the two most accurate are the MBC and
 207 Condorcet; after all, they are the only two methodologies here analysed which always take all preferences cast
 208 by all voters into account. These two analyses may be compared to a sporting contest: in many tournaments,
 209 the champions are the team which wins the most matches (or pairings, for the Condorcet winner}, rather than
 210 the team which gets the best goal difference (or points, the MBC social choice). Only rarely do sporting contests
 211 rely entirely on a binary procedure, and those that do, tennis for example, seed their competitors. Of the two
 212 best procedures, the MBC and Condorcet, the former is the more nuanced, and it has one other noteworthy
 213 characteristic: it can identify the option with the highest average preference, and an average, of course, includes
 214 every (voting) member of the given electorate. The methodology is inclusive, literally. It is non-majoritarian. It
 215 is also robust, colour-blind and very accurate.

216

217 As in electoral systems, so too in decisionmaking methodologies: politicians choose that which suits their
 218 vested interest. Furthermore, in any multioptional setting, they are unlikely to support a methodology in which
 219 a vote for their 2 nd preference might detract from their 1 st preference -as is the case in approval voting.

219 15 c) The Preferential Points System

220 When Jean-Charles de Borda proposed his methodology, he suggested a voter's least popular preference gets 1
221 point, his next least popular option gets 2 points, and so on. In mathematical terms, this may be described as
222 follows: in a ballot of n options, the voter may cast m preferences, and needless to say: $n > m > 1$.

223 in the count, points shall be awarded to (1st, 2nd ? last) preferences cast, according to the rule: $(m, m-1 ?$
224 $1)$.

225 rule (i) Accordingly, in a five-option ballot: + he who casts only a 1st preference gets his favourite just 1
226 point (and because he says nothing about the other options, they get 0 points); 1st A F B E C D 2nd B E D
227 D E 3rd C D C E C 4th D C B B B 5th E B F F 6th F A A A

228 With singleton majority voting, there is indeed a majority against every option: of 15:6 against option A, of
229 16:5 against option F, 17:4 against B, and so on.

230 While with pairings -of which there are 15 -A:B = 6:15, so $B > A$, while $E:F = 12:5$, so $E > F$, and so on. In
231 this profile, the plurality vote social choice, option A, is actually less popular than all the others and loses every
232 pairing in which it may be involved; all the other options, however, win one or more pairings: as noted, $F > A$;
233 in addition, $B > F$; $C > B$, $E > C$ and $D > E$.

234 A comparison of the various methodologies here discussed is shown in Table III. Table III: A Comparison
235 Methodology Social Choice Social Rankings Plurality voting A A-6 F-5 B-4 E-3 C-2 D-1 TRS F F-8 A-6 AV E
236 E-11 A-6

237 Approval voting + she who casts two preferences gets her favourite 2 points (and her 2nd choice gets 1 point);
238 and so on; therefore + those who cast all five preferences get their favourite 5 points (their 2nd choice gets 4
239 points, their 3rd gets 3 points, etc.). 1st / 2nd B B-10 E-9 A/D-6 F-5 C-2 1st -3rd

240 The option with the most points is the winner, the electorate's social choice.

241 Even during M de Borda's own lifetime, this m rule was changed to $(n, n-1 ? 1)$ or $(n-1, n-2 ? 0)$

242 rules (ii) and (iii) which, for any one voters' profile, give exactly the same social choice and ranking of course.
243 Unfortunately, these n rules have come to be called the Borda Count. What Jean-Charles actually proposed,
244 however, was the m rule, ??Saari 2008: 197), which today is called the MBC.

245 The m formula encourages (but does not force) the voters to cast many if not all of their preferences; to state
246 not only their 1st preference but also their 2nd and subsequent preference(s), their compromise option(s)? and
247 if everyone does that, then of course it is relatively easy to identify the collective compromise. And that, of
248 course, is what politics is all about. Or it should be.

249 In effect, a voter's (x) th preference always gets just 1 point more than his/her $(x+1)$ th preference, regardless
250 of whether or not they have cast that $(x+1)$ th preference. So in a five-option ballot, he who casts a full ballot
251 exercises $5 + 4 + 3 + 2 + 1 = 15$ points, whereas she who casts only one preference exercises just 1 point. So it
252 could be said that his influence is much greater than hers; there again, her influence is far greater than that of
253 those who abstain. It must therefore be repeated, the difference is always just 1 point; the MBC is unbiased.

254 The n rules, in contrast, tempt the voter to submit a truncated ballot and, at worst, on a really controversial
255 topic, if everyone does submit just a 1st preference so to give their 1st preference an $(n-1)$ advantage over all
256 the other options, the whole thing is not much better than approval voting or even a plurality vote.

257 It might also be noted that if the 4 voters who gave option B their 1st preference had submitted not just a
258 partial ballot of one preference but a full ballot of six preferences, then their favourite option B would probably
259 have received a more favourable result. So the MBC encourages all to participate, and to the full.

260 16 d) The Science of Social Choice

261 In nearly every field of human development, as new ideas have been tested and adapted, most inventions and
262 devices have been modernised and improved. One glaring exception is in the science of decision-making, and
263 despite the invention of more sophisticated voting procedures, the 2,500-year-old binary vote is still the basis
264 of decision-making today, in law, business and politics. A knowledge of the science would doubtless help to
265 promote change, yet "the theory of voting?" appears to be wholly unknown to anyone concerned with its
266 practical applications. It is certainly quite unknown to the politicians? ??and] experts in political institutions?"
267 ??Dummett 1984: 5).

268 Needless to say, with binary voting, the voter (who does not abstain) has a choice of only two options: either
269 'yes' or 'no' in a singleton, or at best in a pairing, A or B. In a three-option ballot, in contrast, the voter may
270 cast a full set of preferences in any one of six ways:

271 17 A-B-C, A-C-B, B-A-C, B-C-A, C-A-B and C-B-A. With four

272 options on the ballot paper, there are 24 different ways of voting, while with five options, up to 120 different
273 opinions and nuances may be expressed; thus may societies relish the very natural diversity which is so
274 fundamental to our species. "There's nought as queer as folks," as they say in England's Yorkshire.

18 . Single-peaked Preferences

The choice offered in a preferential ballot may be qualified somewhat in any poll in which the various options may be listed in, as it were, a logical spectrum. A debate on tax rates, for example, might consider various options, from the lowest to the highest; a tax rate of either 0% or 100% would probably be impractical, so the more normal debate could finish up with, say, five options, for example, 40, 45, 50, 55 and 60%. Needless to say, the list should be balanced and represent all the valid options proposed in the debate which precedes it.

Now he who has a 1 st preference for 40% would probably have a 2 nd preference of 45, a 3 rd of 50% and so on; so his full set of preferences would be 40-45-50-55-60. She whose 1 st preference was for 45 might have a set, as shown in Table ??V, of 45-50-55-60-40, or something similarly logical, like 45-40-50-55-60. These sets are called single-peaked preferences. Furthermore, if (most or at best) every member submits a single-peaked set, the collective will of all the voters shall also be single-peaked, always! As too would be any consensus. The joys of science! It would of course be highly unlikely for a politician to have a set of preferences with more than one peak, something like 45-55-40-60-50, as shown in Table ???. In a Congress or Parliament where the votes of elected representatives shall be in the public domain, in many debates, most if not all sets of preferences cast will be single-peaked; if not, the members' constituents and/or the press may have some serious questions to ask! And if everyone gives option C a 3 rd preference, or an equal number of 2 nd and 4 th preferences, or some other equally balanced combination of them all, like 50 each of 2 nd , 3 rd and 4 th preferences:

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Table V: A Questionable Set

In any vote, if the final outcome gets a CC of less than 0.70, then there is no consensus and no decision should be taken. Instead, as in traditional decision-making in the barazas 5of Africa, the debate should be resumed at a later time, concentrating perhaps on those options which were albeit only slightly more popular. If however: it may be termed the best possible compromise. If it could be called the consensus. And if $0.90 < CC \text{ WINNER} < 1.00$ it might well be regarded as the collective wisdom. 6 IV.

An Historical Reflection 6 The Speaker may wish to adjust these thresholds, as Congress/ Parliament becomes more used to their deployment. 7 The author, a Russian speaker, was an OSCE election observer in 2014, and in five earlier contests. ii. Consensus Coefficients Admittedly, on some occasions, for reasons of conscience or whatever, some members may submit only partial ballots, casting not a full slate of five preferences but only some or, at worst, only one. In which case, calculating the options' average preference scores becomes difficult if not impossible. For this reason, and also to make the numbers a little more manageable, consensus coefficients are used. An option's consensus coefficient CC is defined as that option's total number of points received, divided by the maximum possible number of points which could have been received.

With 150 members voting in a five-option ballot, and with everyone casting all five preferences, the highest possible average preference score would be a result for let's say option A of 150 in number 1 st preferences:

As noted, the MBC was developed by Jean-Charles de Borda at the same time as Le Marquis de Condorcet devised his Condorcet rule. After a debate between the two in l'Académie des Sciences, the former methodology was adopted in l'Académie where it worked fairly well. Unfortunately, some of those involved opted to truncate their ballots, which prompted M de Borda to say that his system, "was only for honest" voters. (McLean and Urken 1955: 40.)

These of course were traumatic times, revolution was in the air, and one politician in particular, the new boss of the now re-named l'Institut Français, did not like this preferential format, so he reverted to majority voting? for thus he could control things. Indeed, all too often, in majority voting, the question is then the answer, and "The vast majority of referendums have been sponsored by governments and have produced the voting outcomes desired by those governments" ??Butler and Ranney 1994: 261). Shortly afterwards, in 1803, he held his third referendum: he chose the question, he chose himself, and so he became l'empereur, a 'democratic dictator' one might say. The vote in favour was 99.7%. The next dictator managed to improve on this performance, and he was an Irishman: Bernardo O'Higgins got 100% when he became El Supremo in Chile in 1818. Other dictators soon followed: Adolf Hitler and Frances Duvalier, ??Emerson 2012: 147), to name but two.

Not only he but almost all politicians -as noted earlier, democratic, theocratic and autocratic -like majority voting. As often as not, it means that they can choose the question and in many instances, not only in referendums but also in congresses/parliaments, that question is then the answer. Hence the calls by those who want their own particular constitutional settlement for referendums in Ireland, Scotland, Catalonia and Republika Srpska, and hence too the 'false flag' ballots in Crimea, Donetsk and Luhansk wanted by Vladimir Putin. In 2014, (which was also the year of Scotland's referendum), when Putin wanted the people of the two latter regions in Ukraine to be independent (of Ukraine), the word 'Shotlandya' was used by Russian separatists. his mind: he how wanted these citizens to vote to be incorporated (into Russia)? and sure enough, we are told, the electorates had also changed their mind in exactly the same way!/? V.

20 A Quantum Polity

A quantum polity is a political structure in which decision-making is based on a non-majoritarian, preferential points voting procedure. A major change would stipulate that, in any referendum and in any vote in the elected

336 chamber, the choice of options on the ballot paper should always be taken by those independent of the executive.
337 So how would it work?

338 In let us say a five-party congress or parliament, in a debate on, say, the nation's finances, the government
339 of the day might propose its budget. If other parties wish for something different, then, similar in a way to a
340 German constructive vote, (Federal Republic of Germany, 1949: Article 67), they may propose an alternative
341 budget -not an amendment to this or that paragraph, but a complete package, albeit laid out in a similar format.
342 The Speaker shall allow every relevant proposal (which complies with the UN Charter) to be 'on the table' and
343 computer screen, if not too a dedicated website. Next, in the debate itself, participants may suggest amendments,
344 a composite, or even a deletion. Such alterations, however, shall only be adopted if the original proposer(s) agree
345 to such a change.

346 Thus, during the course of the debate, the number of options in contention may vary. If it all boils down to
347 just the one policy, this may be deemed to be the verbal consensus. If not, the Speaker shall draw up a ballot of
348 at least three or better still four, but seldom more than seven options, to represent the entire debate. Next, if
349 all the proposers whose options are still on the table agree that their particular option has been included -either
350 verbatim, amended or in composite -they may proceed to the vote. Then, if the winning option has passed the
351 predetermined CC threshold, it may be enacted.

352 21 a) Consensus

353 Binary voting is adversarial. So wherever binary voting is used -i.e., almost everywhere, although one notable
354 exception is in the United Nations' Conferences of the Parties COP gatherings -politics is adversarial, and many
355 elected chambers divide into two. It need not be so.

356 Since the Kyoto Climate Change Conference in 1997, the COPs have been meeting every year, to discuss the
357 latest proposals to limit, for example, Global Heating, or the destruction of the rain forests, or the melting of
358 the icecaps and the resulting rise in sea levels. Trying to get over 100 countries to agree on anything, however,
359 is difficult. And yet, for reasons unknown, the COPs have thus far failed to even consider any of the above
360 multi-option let alone preferential procedures.

361 As noted, the MBC can identify the option with the highest average preference. Now in every democracy,
362 the people elect the congress/parliament and, if the electoral system is fair and accurate, the will of the
363 elected chamber should approximate to the will of the people. Furthermore, in democratic theory, the elected
364 representative should participate, not only in identifying the will of the House, but also in implementing this
365 democratic will? even if it is not his/ her 1 st preference.

366 In debate, every member shall respect the right of others to hold different legitimate viewpoints, all of which, if
367 these opinions and/or aspirations are on the ballot paper, then they have already been recognised by the Speaker
368 as being compliant with the UN Charter. Accordingly, in casting their preferences, members should be able to
369 submit a full ballot, for all the options listed have been determined to be valid. Furthermore, because success in
370 the vote will depend not only on 1 st but on all preferences received, every party campaigning for its own policy
371 will have a vested interest in cooperation. Now if every member does thus state not only their 1 st preference
372 but also their individual compromise option(s), it is of course possible to identify the collective compromise (para
373 3.3): at best, (i.e., if everyone has cast a full ballot), this is the option with the highest average preference. Thus
374 might the words 'majority' and 'minority' fade from the political lexicon. Instead, as is so necessary in these
375 days of Climate Change, politics could be non-partisan, and governance could be real majority rule, that which,
376 as was said above, pertains in Switzerland and which in conflict zones is called all-party power-sharing.

377 As has been seen in many European countries, choosing even just a majority administration can be problematic.
378 In recent years, parliaments in Germany, the Netherlands and Belgium have often spent long periods behind closed
379 doors, working to concoct an executive -161 days in 2017 and 298 in 2021 in the first two, while Brussels holds the
380 world records of 541 and 494 days in 2010/11 and 2019/20. In some countries, the resulting administration is not
381 very wholesome: in the UK in 2017, the Tories joined forces with the extremist Protestants from Northern Ireland;
382 in Austria in 1999, the extremist Freedom Party was a member of a right-wing coalition with the People's Party,
383 both on 52 seats, while the bigger Social Democrats on 65 were left in opposition; the Netherlands had something
384 similar in 2010, although its Freedom Party, the third member of a coalition, had no ministerial positions; perhaps
385 the worst instances are in Israel where extremists often wag an already right-wing dog, sometimes as in 2015
386 with a majority in parliament of only one. ?? Real majority rule demands all-party coalitions. Switzerland has
387 enjoyed power-sharing since 1959, using what it calls 'a magic formula' so that the five most popular parties in
388 parliament may appoint the seven members of its Federal Council according to the ratio 2:2:1:1:1 and, with one
389 change in the formula to reflect emerging differences in the various parties' electoral fortunes, the magic seems
390 to be working.

391 In conflict zones, any purely verbal procedure for forming an administration would be protracted at best, so
392 in many instances, a formula has again been adopted: Northern Ireland relies on a d'Hondt interpretation of its
393 Assembly elections, Bosnia shares power in a three-way presidency, and Lebanon ensures all the main religious
394 groupings are in at least one influential position of power. Unfortunately but inevitably, these formulas tend to
395 perpetuate the very sectarian divisions they were designed to mitigate.

396 A better polity would allow the said jurisdiction's general election to be followed by a second equally open and
397 transparent contest in which the members of the newly elected chamber would (not select but) elect its executive

398 in a voting procedure called the matrix vote. This involves a two-dimensional ballot paper -and hence the name
399 'matrix' -on which every member could choose, in order of preference, not only those whom they wanted to be in
400 the executive, but also the department in which they wished each nominee to serve. A matrix vote is PR, so at
401 best, the outcome would be an all-party executive in which every minister appointed would be regarded (albeit
402 maybe only in the consensus of the House) as suitable for his/her portfolio, while every faction in the assembly
403 would be represented in its proportional due. ??Emerson 2022: 39-46.) Given that the matrix vote is preferential
404 PR, any party with 40% of the seats in Congress could expect to get roughly 40% of the seats on the executive
405 and, as seen with RCV in the States and PR-STV in Ireland, this electoral procedure prompts every party to
406 nominate only as many candidates as it thinks it can get elected. 8Therefore, in voting, there would be no point
407 in any member of this 40% party in voting only for members from just this one party. The vote is also based
408 on the MBC, which means the member would be incentivised to submit a full ballot. Thus every member would
409 be encouraged to cross not only the gender gap and the party divide, but also, in conflict zones, the sectarian
410 chasm; this, it is suggested, is an essential feature of any good power-sharing polity.

411 22 VI.

412 23 Conclusion

413 The human race will not survive unless we learn to share this little planet in a sustainable way. As the COPs know
414 all too well, reaching consensus decisions can be difficult. As implied above, with binary voting it is impossible,
415 so the COPs have resorted to a purely verbal procedure which they call consensus? but this sometimes leads
416 to protracted debates if not, at worst, to the application by one or more countries of a vetothe very opposite
417 of consensus! With preferential points voting, however, with the MBC, cooperation in decision-making become
418 possible. In a real democracy, it could be argued, nothing should happen without consensus. If there is no
419 consensus for oil exploration and extraction in the Arctic, Mr Trump, then there should be none. If there is no
420 consensus for the further destruction of the rainforest, Mr Bolsonaro, then again there should be none. Consensus
421 is not, however, a formula for inaction. These two individuals would find working in a non-partisan administration
422 at least difficult. A structure in which ministers appointed to serve in the administration were those who won the
423 most cross-party support; a structure in which in any dispute, the options to be voted on were not theirs alone
424 but rather a selection chosen independently by the Speaker, would not be to their liking. Indeed, when the most
425 powerful positions in the land were thus no longer to be in politics, ambitious politicians might well confine their
426 goals to the marketplace (which if it too were no longer based on majority holdings and the like, might also not
427 suit their lust for power).

428 At the moment, however, both in Ireland and Germany for example, there is huge opposition amongst the more
429 established parties to working with the extremists, Sinn Féin and the Alternative für Deutschland respectively.
430 Their reluctance continues, despite the fact that in Ireland for example, Sinn Féin is rising in the polls, and with
431 the support of a few independents perhaps, might even command a majority after the next elections.

432 But that is almost by the way. The priority for humankind must be a comprehensive agreement on
433 policies required to tackle Climate Change. Hence the need for the above preferential points system of voting.
434 Furthermore, this consensus voting is part of an holistic policy: it can facilitate the resolution of problems both
435 small and large. No majority has the right to dominate; no minority has the right to veto; instead, everyone
436 has the responsibility to come to a collective decision. Nothing else is democratic. Nobody wins everything, but
437 (almost) everybody wins something. Indeed, the MBC can be the very catalyst of consensus. ^{1 2 3}

¹ Embarrassed somewhat, back in the 1980s, Moscow coined a new term, majoritarnost.

² The Kiswahili word denoting a meeting, often of the elders, in which those concerned sat in a circle to debate a dispute until, maybe days later, a verbal consensus was found.

³ A party with three quotas of supporters should best nominate just three candidates. If it nominates six of them, each might get only half a quota of 1 st preferences and it would thus fail to get anyone elected, at least in the first stage of the count.

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Figure 4:

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