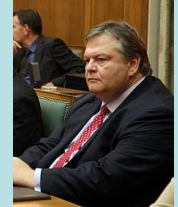




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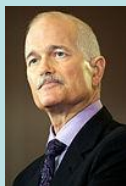


PR



Electoral Engineering and Electoral Manipulation

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PL



AV



MMP



The “Useful Arts”...



- Engineering (n):
- The application of:
mathematics, empirical
evidence (experimental data)
and scientific, economic,
social, and practical
knowledge in order to invent,
design, build, maintain,
research, and improve
structures, machines,
devices, systems, materials,
and processes.

RIDDLE ME THIS



Q. WHAT IS THE DIFFERENCE BETWEEN ELECTORAL
ENGINEERING
AND
ELECTORAL MANIPULATION?

Electoral Engineering



Electoral Manipulation

KEY ELECTORAL RULE CHOICES

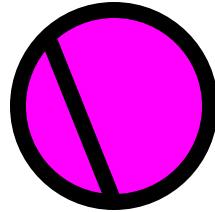
- (1) CHOICE OF ELECTORAL SYSTEM**
- (2) RULES SPECIFYING HOW THE SET OF CANDIDATES OR PARTIES THAT ARE ON THE BALLOT IS DETERMINED**
- (3) APPORTIONMENT** , i.e., the allocation of the number of seats to be given to particular geographic areas based on the population in those areas, and the assignment of responsibility for apportionment
- (4) DISTRICTING.** including decisions about the geographic location and the district magnitudes of the various constituencies, and the assignment of responsibility for redistricting
- (5) ELECTION TIMING**
- (6) BALLOT RECORDING TECHNOLOGY**, including questions such as whether it is easy to cast a straight party ticket in elections where there are multiple offices on the ballot
- (7) RULES FOR CAMPAIGNING AND CAMPAIGN FINANCE**

Four BIG questions of earlier research:

- 1. (party competition and representation) How do electoral systems impact on the translation of votes to seats with respect to proportionality? (Lakeman)**
- 2. (party competition) How do electoral systems impact on the number of parties? (Duverger)**
- 3. (party competition) How do electoral systems impact on the likelihood that extremist parties will be represented (Hermens)**
- 4. (governance) How does choice of electoral system impact on size and duration of cabinets, e.g., will there be single party governments (Dodd) , will governments be short-lived**

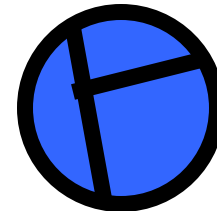
I. CLASSIFYING ELECTORAL SYSTEMS

There are two kinds of people in the world:



(1) those who divide things up into threes

and



(2) those who don't.



ELECTORAL SYSTEM SCHOLARS HAVE HISTORICALLY BEEN OF BOTH KINDS

- A . Dichotomies –PR versus plurality/majoritarian**
- B. Trichotomies- PR versus plurality/majoritarian,
with
mixed systems as a third and intermediate category**
- C. Trichotomies- PR versus plurality/majoritarian,
with
so-called “semi-proportional systems” as a third
and intermediate category**

Secrets of the Political Science Universe

In devising nominal variables there is a tradeoff between creating a limited number of categories to facilitate comparisons, and doing more fine-tuned analyses to recognize diversity – at the potential cost of having (almost) as many categories as you have cases

Recent electoral system scholarship is skeptical of a simple PR versus plurality dichotomy, and this is a skepticism I share.

First, there are parallels between plurality and list PR that are largely neglected in the electoral system literature because of the emphasis on a PR versus plurality dividing line or continuum of methods which places them at opposite poles. In particular, both list PR and plurality have the property that they only focus on first preferences, not overall preference rankings (Kurrild-Klitgard, 2013; Grofman, 2014). Moreover, PR and plurality both allow groups with less than majority support to (sometimes) gain seats, and this is not true for majoritarian systems.

Second, this distinction fails to distinguish among types of proportional representation, e.g., list PR versus the single transferable vote (STV) versus the single non-transferable vote (SNTV) versus cumulative voting.

Third, this distinction fails to distinguish between plurality and majority systems, and among subtypes of each. There is an immense and too neglected variety within the family of plurality/majority systems.

The most common form of multiseat plurality is what is called in the U.S. plurality bloc voting, where each voter has as many votes to cast as there are seats to be filled. Here, even if candidates are listed on a (party) slate, voters may cross lines to vote for whichever candidates they choose. Another form of multiseat plurality voting in the U.S., is bloc voting with numbered places. Here voters again have as many ballots to cast as there are seats to be filled, but now the contests are divided into M single seat contests and voters may cast only one vote in each such contest. Sometimes, when voting is by numbered places, the candidates in the subdistricts must reside in the subdistricts.

Plurality slate bloc voting, used in Singapore, where voters have but a single vote, to be cast for an M member party list, and where the plurality winner in the constituency wins all the seats, is one type of another family of electoral rules that I have labeled *party slate bloc voting* (Tan and Grofman, 2014, 2015), PBV for short. Another member of that family is *majority slate bloc voting*, a voting rule for multiseat competition which gives all the seats to that party, if any, which gets a majority of the votes in the district, but which uses some other rule to divide seats if no party gets a majority. That rule is found in places such as Cameroon and Chad and Djibouti and Senegal (Tan and Grofman, 2014)

In previous literature, multi-seat districts with rules that are not (fully) proportional involving elections requiring choice among party slates have not been treated as belonging to the same family of voting rules; some variants have simply been labeled as *complex rules* (see e.g., Reynolds, Reilly, and Ellis, 2005).

Not only is there a major difference between plurality decision rules in single seats and plurality in multiseat districts, and between multiseat plurality with and without party slates, there is also a difference between single round plurality based elections and runoff systems such as the French presidential election two run round ballot, which involves a runoff between the top two vote getters on the first round in the event that no candidate receives a majority on the first round, or sequential ranked vote methods like the alternative vote, which require a winner to get a majority and drop the candidate with the fewest votes, redistributing their vote share. Moreover, within the set of plurality elections there are very important differences in structure within the class of runoff systems (Grofman, 2008; see also Grofman and Feld, 2004).

ELECTORAL SYSTEM SCHOLARS HAVE HISTORICALLY TAKEN TWO DISTINCT APPROACHES TO THE PROBLEM OF ELECTORAL SYSTEM COMPLEXITY

A. Using lots of *dummy variables* for particular electoral system features, e.g. national thresholds, tiering.

B. Trying to make use of the Przeworski and Teune advice to replace proper nouns *with variables*, e.g., by using *mean* or *median district* magnitude , or the *Loosemore-Hanby Threshold of Exclusion*, as a way to categorize ALL electoral systems

EACH APPROACHES TO THE PROBLEM OF ELECTORAL SYSTEM COMPLEXITY CREATES PROBLEMS OF ITS OWN

A . The use of *dummy variables* tends to be atheoretical, with no model of how various features should affect/ interact with each other.

B. Variables such *the Loosemore-Hanby Threshold of Exclusion* may give the same value to rather different electoral systems

C. District magnitude operates completely differently for multi-seat plurality than it does for multiseat PR, i.e., there is a very real *interaction effect*.

II. HOW IMPORTANT ARE ELECTORAL SYSTEM EFFECTS?

HOW IMPORTANT ARE ELECTORAL INSTITUTIONS?

Are electoral systems and other aspects of electoral rules powerful determinants of policy choices through their effect on election outcomes?

Or are they more like house cats, who exist primarily at their owner's sufferance and who can be spayed (neutered) at the owner's pleasure?

A house cat -- who only resembles a tiger?



or

A veritable tiger?



VIEWS OF HARRY ECKSTEIN

The skeptic's view is that electoral systems do not count for much as compared to other factors. As Rogowski (2003) has noted, an early skeptic was Harry Eckstein, who asserted that "electoral systems have little, if anything, to do with the character and performance of representative systems . . . [and] do not, in fact, have important consequences for other aspects of the policy process." (Eckstein, 1966: quoted in Rogowski, 2003).

According to this skeptical view, electoral system effects are dwarfed by other features of society, such as shared patterns of culture or the lingering effects of political history (e.g., the consequences of the Civil War for the shape of U.S. party competition over much of the subsequent hundred years).

An even stronger claim is that electoral systems do not really exercise independent effects. As Eckstein asserts in the same article (reprinted in the Eckstein-Apter *Reader in Comparative Politics*) "electoral systems only express . . . the *deeper determinants* of the politics of a society." I take this to mean that Eckstein viewed electoral systems as a kind of epiphenomenon to political culture, in much the same way Marx regarded politics as an epiphenomenon, with real power being decided by ownership of the means of production

REJOINDER TO VIEWS OF HARRY ECKSTEIN

The rejoinder to the arguments alluded to above is two-fold.

I first would note that the present day empirical evidence on behalf of the thesis that electoral systems matter is just too strong, whatever may have been the case when Eckstein was writing in 1966. There are simply too many domains where we know that choice of electoral systems can matter -- due to both formal /mechanical effects and incentive/psychological effects on voters and parties/candidates. These effects can be both direct, on voters and parties; and indirect, in consequences for the nature of governance and for policy outcomes. For example, choice of electoral system can impact the nature of the political party constellations that a given electoral system tends to foster: involving the number of parties, the translation of votes into seats, the relative strength of left-wing and conservative parties (via effects on the magnitude of socio-economic differences in turnout between the eligible pool of voters and the actual electorate), and the likelihood that “extremist” parties will achieve representation. Electoral system effects on parties/candidates in turn have consequences for both governance, e.g., the likelihood of single-party governments; and potential implications in many different policy arenas, perhaps most notably for the size of government and for the likelihood that policies seeking to reduce social inequality will be implemented. .

One useful way to classify possible electoral system effects is under the following four-fold rubric:

- A. Voter choice.**
- B. Parties and party and candidate competition**
- C. Representation and governance**
- D. Impact on specific policy outputs**

NOTE: These four categories are not mutually exclusive, and some factors, e.g, proportionality of party representation, voter turnout, have consequences for more than one category.

2.1 Effects on Voter Choice

- a. Turnout**
- b. Strength of partisan loyalties**
- c. Locally oriented (particularistic and pork-barrel) versus nationally oriented (class oriented and policy oriented) voting**

2.2 Parties

- a. Number of and size distribution of parties**
- b. Proportionality of seats-votes relationship**
- b. Effects on organizational features of parties (e.g., party membership rules, party centralization, party control over the nomination process, party discipline in the legislature)**
- c. Volatility of party vote share/seat share**
- d. Number of issue dimensions**
- e. Ideological range of party spectrum**
- f. Partisan bias and/or incumbency bias**
- g. Candidate characteristics**
- h. Nature of campaigning (e.g., intra-party versus inter-party campaigns, localistic vs. national campaigns)**

2.3.(b) Effects on Representation and Governance (cont.)

- a. Size of governing coalitions**
- b. Cabinet durability**
- c. Government ability to enact policies**
- d. Level of political civility**
- e. Long terms stability of government choices/time horizons**

2.3 (a) Effects on Representation and Governance

- a. Descriptive racial or ethnic or gender representation**
- b. Responsiveness of government policies to changes in voter preferences**
- c. Congruence between voter positions and government policies**
- d. Overall voter satisfaction with the political process**

2.4. Effects on Specific Policy Choices

- a. Proportion of GDP spent by government**
- b. Size of the welfare state**
- c. Degree of localistic/pork-barrel orientation for policies**
- d. Size of budget deficits**
- e. Openness to trade (trade over GDP, trade barriers)**

REJOINDER TO VIEWS OF HARRY ECKSTEIN (cont.)

A second “modern” response to pure skepticism about electoral law effects is in the emphasis of many authors on the contingent and contextual nature of electoral system effects. Just as the debate about “nature versus nurture” is silly, so too is any attempt to say that only institutions matter or only culture matters.

With respect, to the importance of electoral system effects, I am a *Goldilocksian* --neither a skeptic nor a dogmatist.

In particular, I have argued for what I call an “embedded systems” approach.

VIEWS OF HARRY ECKSTEIN (cont.)

For example, we might see plurality rules and majoritarian institution chosen in nations such as the U.S. and Canada because these nations are attached to both majoritarian and individualistic values. But then, if we find, say, greater social inequality in these countries than in countries with PR, we should not attribute the differences to electoral system effects. Correlation is not causation, even if we think we may have controlled for possible confounding factors. If this view is correct then, when we change electoral systems, we won't really achieve other anticipated political changes unless there has been a change in the social balance of forces. Otherwise, "the empire will strike back," acting to negate the impact of the changes by proceeding with business as usual regardless of the official forms, or by making compensating adjustments in other elements of the political process.

Embedded Systems Ideas

The hallmark of this style of work is concern for the impact of electoral rules in the context of the overall constitutional, social, and party systems in which they are embedded, Of special concern are

- i. how *similar systems* can yield different outcomes in different contexts,
- ii. the need for care in attributing causality to electoral system effects when the choice of electoral rules may be endogenously determined – a concern which leads to an interest in lab and field experiments and *natural experiments*
- iii. attention to how seemingly trivial differences in electoral rules, e.g., different rules for nominating candidates, can have major consequences.

While the term '*embedded systems*' is introduced in Grofman (1999a, b, c) and used in subsequent work by Grofman and co-authors (see the next slide) ,but many others use this approach without calling it by that name.

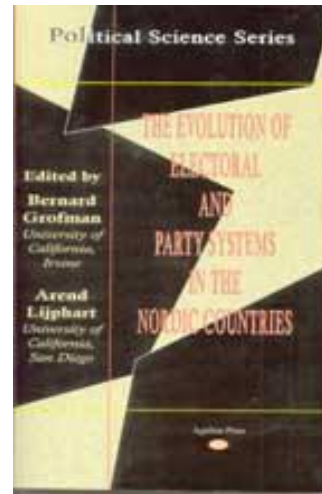
STV



SNTV



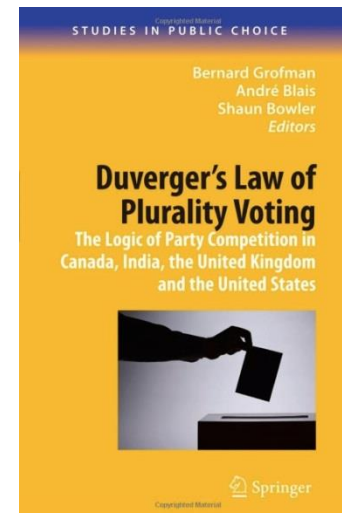
List PR



Mixed Systems



Plurality in SMDs



III. TOOLS OF ELECTORAL ENGINEERING/MANIPULATION

When we think about electoral system effects it is useful to distinguish

A. The “***logical effects***” of electoral systems, i.e., how we would expect them to operate if they were implemented in a neutral/ non-partisan way

B. The “***engineered/manipulated effects***” of electoral systems when those in charge of putting the rules into place have had a chance to tinker with their implementation either to improve “equity”, on the one hand, or to advantage/ themselves and disadvantage others, on the other.

Forms of Manipulation of Voting Rules: Committee and Legislatures

- (1) At the level of individual voters, there can be voting for strategic purposes in ways that provide misleading signals of the voter's true preference ordering over alternatives (see e.g. Blais et al **XX**).
- (2) At the level of candidates or parties, there can be strategic manipulation of the set of candidates or parties that are on the ballot, e.g., the encouragement of candidates who will take strength away from particular rivals (**XX**) or, in Nauru, the use of “filler” candidates to change rank ordering scores of the Dowdall rule (Fraenkel and Grofman, forthcoming)
- 3) Within legislatures, for voting rules that have a sequential character (e.g., a bill and a sequence of amendments) there can be strategic manipulation of the sequence of agenda items (**XX**).
- 4) Within legislatures, the separateness among distinct votes (say on different bills) can be breached by logrolling across bills.
- 5) Within legislatures, to the extent that committees act as gatekeepers (and/or have preferences that are given some deference as part of an implicit global logroll that I will honor your committee's choices if you will honor mine), then the allocation of bills for consideration by particular subsets of the legislature can matter a great deal.
- 6) Within legislatures, there can be attempts to bribe/coerce members to vote in particular ways; there can also be bidding wars.

THREE KEY DIFFERENCES BETWEEN THE (MOSTLY) POLITICAL SCIENCE LITERATURE ON COMPARATIVE ELECTORAL SYSTEMS AND SOCIALCHOICE LITERATURE IN THE TRADITION OF ARROW, SEN, FARQHARSON, AND SAARI

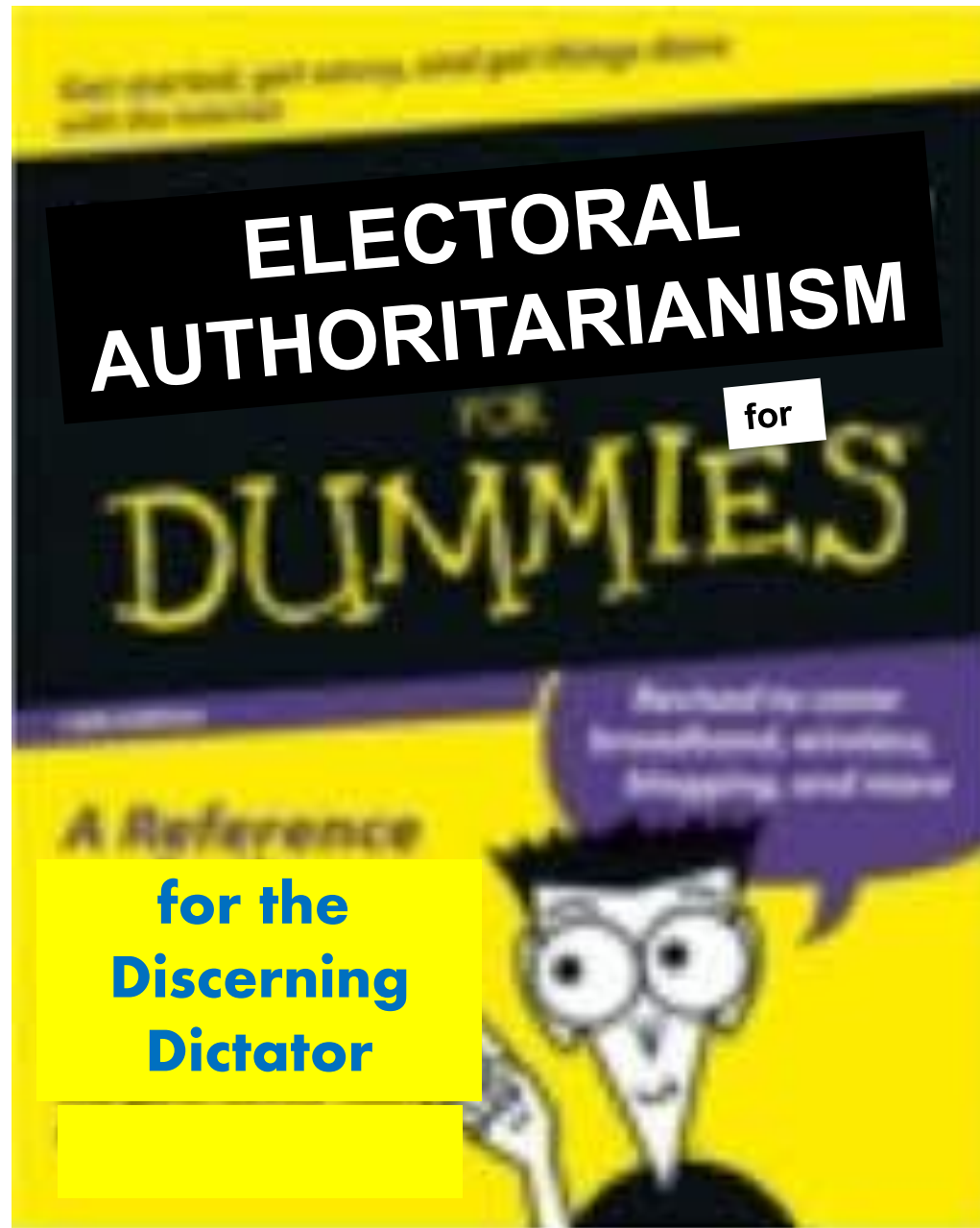
- (1)The key role of political parties**
- (2)The importance of multiple simultaneous elections for a legislature within (geographically defined) constituencies**
- 3) The importance of ideology or other relevant dimensions (such as strength of ethnic attachment)**

.

ELECTORAL ENGINEERING/MANIPULATION

-Multicandidate/Multiparty elections

- (1) **CHOICE OF ELECTORAL SYSTEM** -- is a fundamental choice that affect lots of key variables, i.a., expected proportionality of seats-votes relationships and whether smaller or larger parties have electoral bias in their favor, expected ideological range in the legislature, expected (effective) number of political parties, likely success of geographically concentrated vs. non-concentrated parties, incentives for candidate-centric campaigning, etc. But, in addition some electoral rules are more vulnerable to some of the various forms of manipulation described below.
- (2) **THE SET OF CANDIDATES OR PARTIES THAT ARE ON THE BALLOT** -can be manipulated by rules about ballot access, but also aby encouragement of candidates who will take strength away from particular rivals (multiple “Kennedy”s) or, in Nauru, the use of “filler” candidates to change rank ordering scores of the Dowdall rule (Fraenkel and Grofman, forthcoming)
- (3) **APPORTIONMENT** –can be manipulated via selective malapportionment
- (4) **DISTRICTING.** – (a) can be manipulated via partisan or ethnic or incumbency related gerrymandering; In particular, the distribution of partisan voting strength across districts can yield a non-proportional relationship between party vote share and party seat share. This discrepancy can be intentionally manipulated through tools of gerrymandering such as *packing*, *cracking*, *stacking*, and *kidnapping*. (b) additional manipulation is possible in some systems via y variation in district magnitudes
- ASSIGNMENT OF RESPONSIBILITY FOR APPORTIONMENT/ REDISTRICTING** – can be manipulated by entrusting responsibility to partisan bodies operating in secrecy, and by denying information about the new lines to regime opponent until immediately prior to an election to discourage well organized opposition candidates
- (5) **ELECTION TIMING** –can be manipulated to help incumbents
- (6) **BALLOT RECORDING TECHNOLOGY**-can be manipulated in situations where multiple offices are on the ballot by making it easier or harder to cast a straight ticket ballot
- (7) **RULES FOR CAMPAIGNING AND CAMPAIGN FINANCE**- can make it easier or harder for incumbents to win.



CHAPTER 1

Picking electoral rules that

look democratic,
allow multiple parties,
and will pass
scrutiny from
international
election
observers;

but will nonetheless,
make it near certain
that
you stay in office

forever.

RIDDLE ME THIS



**Q. WHAT ARE THE ELECTORAL SYSTEMS MOST
LIKELY TO BE BELOVED OF (SMART) ELECTORAL
AUTORITARIANS?**

Secrets of the Political Science Universe

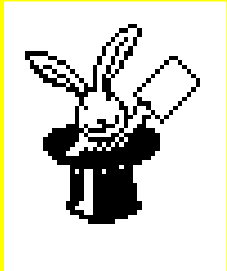
In terms of the aspects of voting rules identified in the previous slide some electoral systems are more easily manipulable than others.

If they are in a position to do so, smart dictators pick electoral systems that they can manipulate easily for partisan advantage

ANSWER

I. Variants of multiseat plurality

II. Two-Round Ballot



IV. FORMS OF MANIPULATION UNDER PLURALITY AND PLURALITY BLOC VOTING

THREE BASIC TOOLS OF MANIPULATION:

PLURALITY RULES

1. Use of SMD *plurality* elections facilitates the drawing of boundaries to achieve partisan and /or racial and/or incumbency *gerrymandering* when redistricting is left in the hands of political authorities (U.S.)
2. Choice of MMD plurality elections (*plurality bloc voting*) still further enhances the potential for exaggerated representation of the largest party or bloc, e.g. whites in the U.S, South.
3. Malapportionment is an historically important tool in plurality systems

Disproportionality of Votes and Seats under Plurality

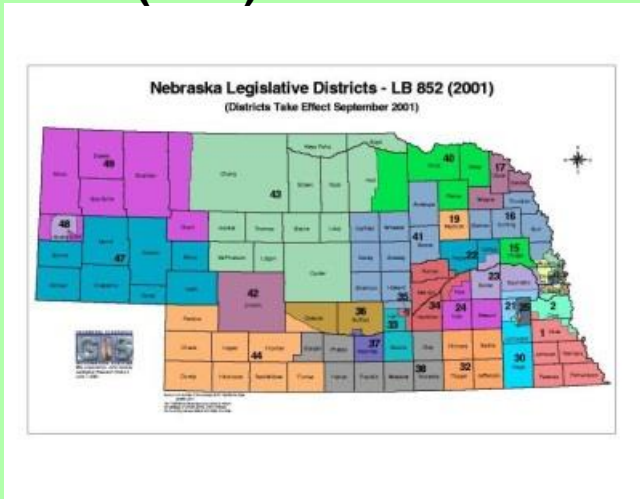
The single-member district plurality system is supposed to produce a two-party system (Duverger, 1959) because of the combination of three factors (Blais and Carty 1991): the mechanical effect, the psychological effect on parties, and the psychological effect on voters. The mechanical effect boils down to the fact that large parties typically get an inflated share of seats (compared to their vote share) to the detriment of small parties. The effect can be easily observed in Canadian elections. In the 2008 Canadian election, for instance, the Green party did not have any of its candidates elected despite obtaining 7% of the vote. Likewise, the NDP won only 12% of the seats with 18% of the vote. At the same time, it is important to keep in mind that this mechanical disadvantage does not apply to small parties with regionally concentrated support, such as the Bloc Québécois, which then got 17% of the seats with 10% of the vote. (Blais, Bowler, Grofman, 2008)

Disproportionality of Votes and Seats of in Plurality Multi-Party Settings

Canada - 2011

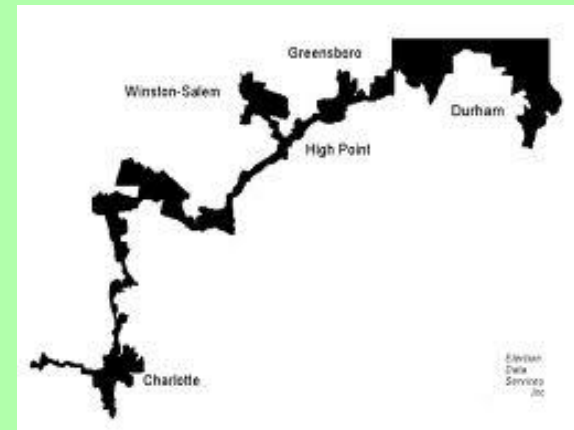
Party		Party leader	Candidates	Seats					Popular vote			
				2008	Dissol.	2011	% Change	% seats	#	# Change	%	pp Change
	Conservative	Stephen Harper	307	143	143	166	+16.08%	53.90%	5,832,401	+623,332	39.62%	+1.97pp
	New Democratic	Jack Layton	308	37	36	103	+178.38%	33.44%	4,508,474	+1,993,186	30.63%	+12.45pp
	Liberal	Michael Ignatieff	308 ¹	77	77	34	−42.86%	11.04%	2,783,175	−850,010	18.91%	−7.36pp
	Bloc Québécois	Gilles Duceppe	75	49	47	4	−91.84%	1.30%	889,788	−490,203	6.04%	−3.93pp
	Green	Elizabeth May	304	—	—	1	N/A	0.32%	576,221	−361,392	3.91%	−2.86pp

1. Use of plurality elections (SMD or MMD)-- facilitates the drawing of boundaries to achieve partisan and /or racial and/or incumbency gerrymandering when redistricting is left in the hands of political authorities (U.S.)



Nebraska –unicameral legislature

North Carolina –U.S. Congress



Rectangles and Rorshach Tests:

To Remind Us of the Range of the Possible

(The North Carolina 12th Congressional District in 1992 was drawn to make likely the election of an African-American Candidate, under pressure from the U.S. Department of Justice to draw two minority seats in the state. However, the lines were also chosen so as to protect Democratic party incumbents).)

MALAPPORTIONMENT

- 1. The failure to reapportion decennially (much of the U.S. prior to 1962)**
- 2. Apportionment rules that put limits on the representation of urban areas independent of what their population share might be (California, Georgia, and many other states in the U.S. prior to 1962)**
- 3. Permissible high variance in population equality, coupled with intentional partisan bias (U.S. state of Georgia in 2002)**
- 4. Multiple suffrage for some voters in special electorates that violate one person, one vote (Hong Kong in 2012 and earlier)**

2. Use of MMD plurality elections (*plurality bloc voting*) still further enhances the potential for exaggerated representation of the largest party or bloc, e.g. whites in the U.S, South over what we obtain from SMD plurality elections.

- 3. A mix of plurality SMD and plurality bloc voting elections -- allows for exaggerating responsiveness (to the benefit of the largest party) via manipulation of mean district magnitude (Singapore since the 1970s; Tunisia pre-Arab Spring, also used in such bastions of democracy as Cameroon, Chad and Djibouti)**

V. PARTY SLATE BLOC VOTING

**MANIPULATION OF OUTCOMES
via ELECTORAL RULES:**

PARTY SLATE BLOC VOTING

In Singapore, the People's Action Party has maintained a 90%+ seat share for decades despite a decline in votes from 86.7% to 60.1%.

In Djibouti, the ruling coalition won 63% of the votes and 100% of the seats in 2003.

In Chad's 2011 election, the ruling coalition won 82% of the seats with 53% of the vote.

Cameroon displays similar patterns of legislative overrepresentation of the ruling party.

**MANIPULATION OF OUTCOMES
via ELECTORAL RULES:
PARTY SLATE BLOC VOTING**

Use of a mix of SMDs (using plurality) and MMDs using some form of *party slate bloc voting, i.e.,* a party list for a multiseat constituency combined with some form of plurality rule allows for an even greater *swing ratio (responsiveness)* than simple plurality. This greater responsiveness, especially when combined with gerrymandering and manipulation of mean district magnitude (and perhaps also malapportionment) can be used to the benefit of the dominant party to enhance that dominance.

**Singapore since the 1970s
Cameroon
Chad
Djibouti
Senegal
Tunisia pre-Arab Spring
Portugal under Salazar**

There are various forms of *party slate bloc voting*. We use the term *party slate plurality bloc voting* to refer to a voting rule for multiseat competition which gives all the seats to the plurality winning party in a MMD;^[1] and we use the term *party slate majority bloc voting* to refer to a voting rule for multiseat competition which gives all the seats to that party, if any, which gets a majority of the votes in the district, but which uses some other rule to divide seats if no party gets a majority.

[1] Following the U.S. nomenclature, where multiseat plurality is common for local elections, we refer to the party ticket in a multiseat constituency using plurality or majority voting as a *slate*, rather than as a list, since the names on it are not ordered, while the party list in the most common closed proportional representation (PR) list systems are ordered. However, in the U.S. nomenclature, multiseat plurality is often called *plurality bloc voting*, since many of those elections are nonpartisan. But, since we are dealing with party-based competition, we prefer the term *party slate plurality bloc voting* for winner-take all multiseat competition under plurality.

Table 1: Elections, Electoral Systems and Democracy in Chad, Cameroon, Djibouti and Singapore as of 2013

	Electoral System	Vote Share of largest bloc	Seat Share of largest bloc	Percentage of Seats that are MMDs	Range of District Magnitude of MMDs	Voter turnout (%)	Freedom House Scores (2013)
Singapore	PBV plus SMDs using FPTP	PAP (60.1 %)	93% (2011) (81/87)	86.2% (2011)	4-6	93.8	Party Free 4, 4
Cameroon	Mixed: MBV/with potential for List PR plus SMDs using FPTP	CPDM (N.A.)	82.2% 148/180 (2013)	34.9% 51/146 (2011)	2-7	62	Not Free 6, 6
Chad	MBV/with potential for Partial List PR plus SMDs with Two-Round Majority Runoffs*	MPS coalition (55.8 %)	80.9% (152/188) (2011)	20.8% 34/163 (2013)	2-7	56.6	Not Free 7, 6
Djibouti	PBV	UMP coalition (61.5 %)	84.6% (55/65) (2013)	100% 65/65 (2013)	3-35	72.6	Not Free 6, 5

Source: Freedom House Scores from (Freedom House 2013); Voter turnout from (IDEA 2013); Vote and Seat Shares of largest party/coalition (IPU 2013) *See footnote⁵⁰: We agree with (Kuenzi and Lambright 2005, 441) that due to the majoritarian nature for the MMD component, it is inappropriate to classify Chad's electoral system as a mixed/parallel system. (See footnote⁵ on Blais-Massicotte's typology of mixed systems).

**MANIPULATION OF OUTCOMES
via ELECTORAL RULES:
PARTY SLATE BLOC VOTING**

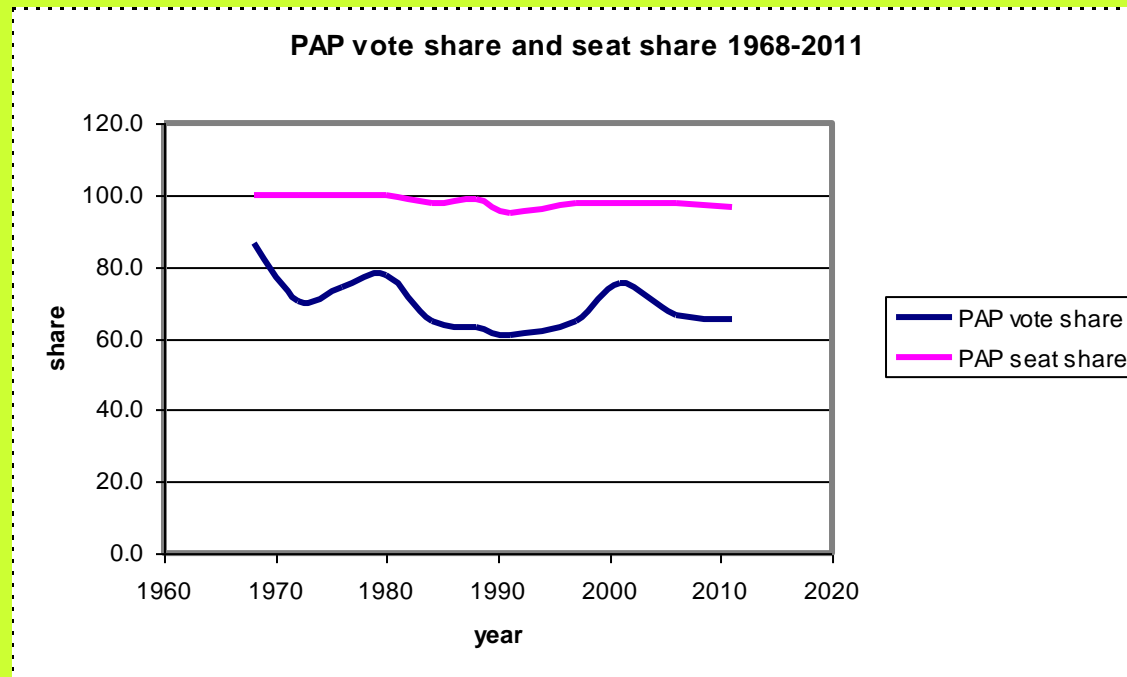
The form(s) of gerrymandering (“stacking,” “packing” or “cracking”) used in each country depend upon the geographic distributions of opposition strength. We can show that Singapore’s use of ethnic housing quotas allows the PAP to rely heavily on the *stacking* form of gerrymandering, one where pockets of potential opposition are submerged into areas of ruling party strength in large multiseat constituencies. [\[i\]](#) Likewise, Djibouti, which has a large ethnic majority that forms the basis of strength for the ruling party, but has geographically concentrated opposition groups, also uses the *stacking* form of gerrymandering to submerge opposition strength. In Cameroon, on the other hand, we find extensive use of *packing* and *cracking* gerrymandering tools as well as selective malapportionment. [\[ii\]](#) As for Chad with a history of ethnic and religious conflicts, [\[iii\]](#) arbitrary increases in the size of the National Assembly, malapportionments in the pro-ruling regime Northern region and allocations of bigger MMDs in the pro-opposition Southern region have benefitted the ruling MPS party, largely controlled by the minority Zaghawa ethnic group. [\[iv\]](#)

MANIPULATION OF OUTCOMES via ELECTORAL RULES:

PARTY SLATE PLURALITY BLOC VOTING IN SINGAPORE

- **Li** The puzzle to be explained is how, despite the PAP's trend of declining popular support as shown in Figure 1, can it maintain a seat share of over 90%, without any electoral fraud such as ballot stuffing or misreporting election returns?
- First, the choice of *PBV rule* advantaged the ruling party and the increasing sizes of the multiseat constituencies operated, on average, to increase the *swing ratio*. This created increased disproportionality in the seats to votes relationship that benefited the largest party, the PAP, despite its declining voting support. Second, after the 1991 election, the multiseat constituencies also essentially prevented Malay-based opposition parties from winning with only Malay support. Third, the higher district magnitude of the multiseat constituencies that increased higher funding requirements for campaigning, made it more costly for the opposition parties to compete. Fourth, Singaporean districts are malapportioned (E. Tan 2010), though the degree to which the malapportionment benefits the ruling party is not that clear. Fifth, the PAP uses the “stacking” gerrymandering technique by submerging pro-opposition areas into pro-ruling party multiseat districts, thus increasing its seat share by denying seats to the opposition. Finally, the frequent redistrictings involving boundary changes with little advance warnings served partisan ends, as they make it harder for the opposition to build mass support and coordinate its candidate selection before each election. Each of these mechanisms is discussed in more detail below.
- There are other pre-electoral tools to suppress dissent, such as the use of libel suits to intimidate opposition leaders and the media control. See (George 2012; Gomez 2006; Rodan 2009).

Illustrating Seats-Votes Discrepancy: The Case of Singapore



Achieving Seats-Votes Discrepancy by Manipulating District Magnitude: Singapore

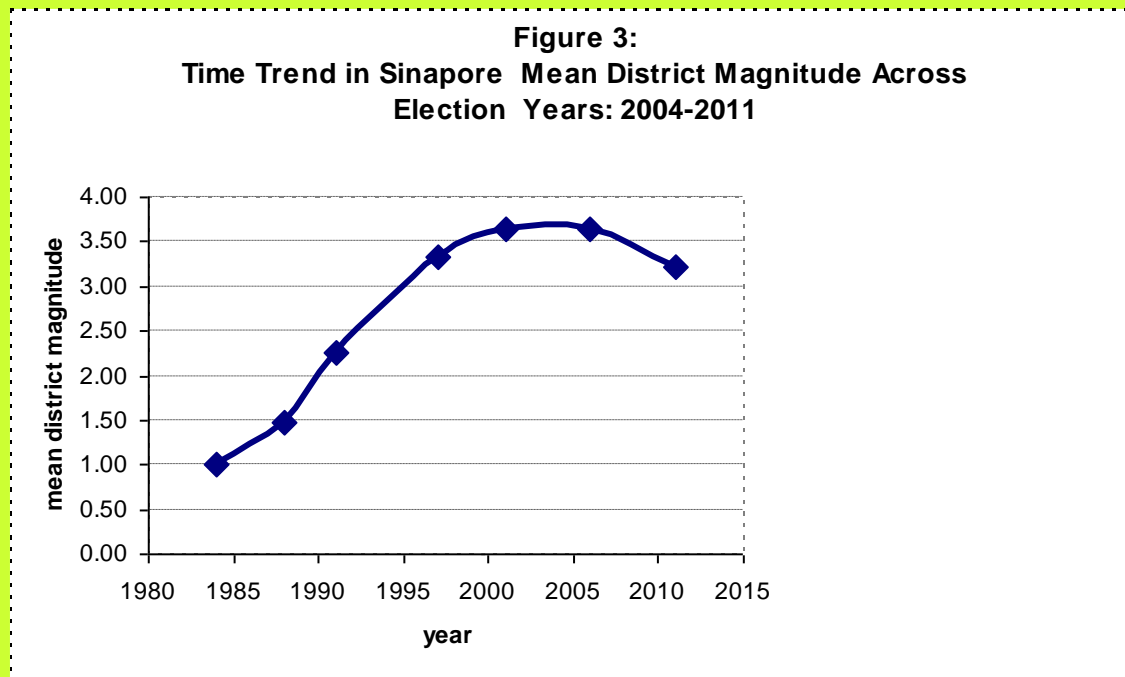


Table 16: Manipulatory Tools in Cameroon, Chad, Djibouti and Singapore

	Electoral System	Vote Share and Seat Share of Largest Party/Bloc	Manipulation of Sizes and Range of MMDs	Stacking Gerry-mandering	Cracking/ Packing Gerry-mandering	Manipulation of Population Census/ Registration/ Suffrage	Independent Electoral Commission/ Administration	Secrecy and delayed notification of electoral boundary changes	Explanations for district configurations
Singapore	PBV and FPTP for SMDs	PAP (60.1% to 93%)	Yes 4-6	Yes larger MMDs (often electing major PAP ministers) used to submerge potential pro-opposition votes in the North-Eastern region	No*	None	No	Yes	No
Djibouti	PBV	UMP coalition (61.5% to 84.6%)	Yes 4-35	Yes Very large MMD used to submerge potential pro-opposition votes	No	Major	No**	Yes	No
Chad	MBV/with potential for Partial List PR and SMDs Two-Round Majority Runoffs*	MPS coalition (55.8% to 80.9%)	Yes 2-7	No	Yes larger MMDs in pro-opposition areas take advantage of list-PR potential when the ruling bloc is a minority	Very Severe	Partly**	Yes	No
Cameroon	Mixed: MBV/with potential for List PR and FPTP for	CPDM (82.2% seat share)	Yes 2-7	No Larger MMDs are placed in pro-opposition	Yes	Severe	No**	Yes	No

VIII(a). TWO-ROUND BALLOTS

MANIPULATION UNDER THE TWO ROUND BALLOT (cont.)

Sarah Birch (2003) has argued that the two round ballot is the “dictator’s friend.” Her basic argument is that in addition to the fact that this is a majority system with a high Threshold of Exclusion, thus making it hard for non-geographically concentrated minorities to gain election of for opposition parties to squeak by with a plurality, the first round serves like an honest and accurate poll in a country that is unlikely to have such. As a consequence, the dominant party (time to mobilize its resources in those areas where it feels itself most threatened.

She asserts (p. 320) i“that the TR electoral system is inimical to democracy in two senses: It tends to prevent democratization from occurring and if it does occur, destabilization is likely to result”. She also calls attention to a then relatively little noticed increase in the number of countries using the TR system from what had been true in the past, namely that, for legislative elections, the system was almost entirely confined to former French colonies (although it was more common for presidential elections).

MANIPULATION UNDER THE TWO ROUND BALLOT (xont.)

Table 1

The Distribution of Two-Round (TR) Electoral Systems on January 1, 1999^a

Country	Percent of Seats Governed by TR System ^b	Single-Member (SM) or Multimember (MM) Districts
Former Soviet Union and Eastern Europe		
Albania	74	SM
Azerbaijan	80	SM
Belarus	100	SM
Georgia	36	SM
Hungary	46	SM
Kazakhstan	100	SM
Kyrgyzstan	100	SM
Lithuania	50	SM
Macedonia	71	SM
Tajikistan	100	SM
Turkmenistan	100	SM
Uzbekistan	100	SM
Sub-Saharan Africa		
Central African Republic	100	SM
Chad	100	SM and MM
Comoros	100	SM
Congo (Brazzaville)	100	SM
Gabon	100	SM
Mali	100	MM
Mauritania	100	SM and MM
Togo	100	SM
Other		
Cuba	100	SM & MM
Haiti	100	SM
Egypt	100	2-member
France	100	SM
Iran	100	SM & MM
Iraq	100	MM
Kiribati	100	SM & MM
North Korea	100	SM
Vietnam	100	MM

Sources: See appendix.

a. Lithuania has since switched to a single-ballot system for its single-member seats; Kazakhstan, Kyrgyzstan, and Tajikistan have now adopted mixed systems but have retained TR voting for the single-member components of those systems.

b. Percentage of the total number of directly elected members.

MANIPULATION UNDER THE TWO ROUND BALLOT (xont.)

Birch (2003: 322) notes that “ TR systems were common in parliamentary elections throughout Europe until well into the late 19th and early 20th centuries, but they were virtually all relinquished in favor of proportional representation at or around the time of mass enfranchisement (Carstairs, 1980; Rokkan, 1970). France remainsthe only major country to have used the TR system in fully democratic elections to the lower house of its national legislature. Nevertheless, about 40states have employed TR systems at some point during the postwar period. This is currently the electoral formula in use in some of th eworld’s least democratictates—Cuba, Chad, Egypt, Iran, Iraq, Mauritania, North Korea, T urkmenistan, and Vietnam—as well as in several that have recently madeunsuccessful attempts at democratization (see Table 1). Finally, a number of states have employedTR systems for one or two elections before switching to single-round voting (Algeria, 1991; Armenia, 1995; Côte d’Ivoire, 1980 and 1985; Lithuania, 1992 and 1996; Ukraine, 1994).

MANIPULATION UNDER THE TWO ROUND BALLOT (cont.)

Table 3

Levels of Democracy in One-Round and Two-Round Systems, 1999

System Type	Average Polity IV Score	Average FHPR Score (Inverted)
One round	4.860	4.912
Two round	-.759	3.000
All	3.371	4.385

Sources: See appendix.

Note: FHPR = Freedom House Political Rights. Both differences of means are significant at the .001 level.

MANIPULATION UNDER THE TWO ROUND BALLOT (cont.)

Birch (2003: 326) writes “If all actors knew for certain what the outcome would be, it would be in the (short-term) interest of losers to opt for nonelectoral methods of achieving their ends. It may well be the thickness of the veil of ignorance, surrounding elections—especially in countries with little or no recent experience of electoral competition—that prompts actors to acquiesce to the relatively fair method of popular election as a means of distributing power. The TR system goes a substantial way toward removing this element of uncertainty by revealing the distribution of electoral strength in midcourse before the final outcome is decided. It is a system that obliges the players to reveal their cards halfway through the game.

This has at least two important consequences. First, it encourages midgame defections. If democratization is about getting all major parties to play the electoral game, to take the electoral gamble (DiPalma, 1990; Przeworski, 1991), there is a need for institutions that encourage commitment to unconditional participation by all major players. TR systems provide an exit option after the first round. They thus promote a wait-and-see attitude on the part of some actors. If the results of the first round indicate that a party is likely to perform worse than it had initially anticipated, it has an interest in calling foul by claiming fraud or rigging. In many emerging democracies such claims have considerable plausibility, especially if instances of malpractice have been identified by monitoring organizations or if the regime supervising the elections has a poor record of rule of law. This has been a common scenario in the democratizing world: The opposition perceives that it has little chance of winning so it boycotts the second round, as transpired in Congo (Brazzaville) in 1993, Macedonia in 1994, and Haiti in 1995.”

MANIPULATION UNDER THE TWO ROUND BALLOT (cont.)

“Moreover, defection may not be limited to boycotts. Losers can be encouraged to take direct action after the first round, as was the case in Togo in 1994. Under this system power holders also have a last option if things are clearly not going their way. As happened in Algeria in 1991, they can abort the election after the first round and wait for a better moment, something that is much more difficult to do when a legislative body has actually been chosen and may begin to meet regardless of the efforts of the regime to suppress it. The consequences of such events require no elaboration: Defection by any major player breaks the democratic bargain and undermines the credibility of the results.

Sartori (1994, p. 64) praises the TR system for allowing voters to make an informed choice in the second round—what he calls “intelligent choosing.” This may make sense in the context of the established democracies that were Sartori’s main point of reference. But in the context of democratization, there is a danger that an “informed” choice may be an antidemocratic choice. TR systems also reduce uncertainty by allowing powerful players to retarget their resources between rounds, giving more power to those who have resources to redistribute. Though this strategy is available to all actors, government-supported parties are at a particular advantage in this regard.” (Birch, 2003: 327)

MANIPULATION UNDER THE TWO ROUND BALLOT (cont.)

“TR laws cannot be expected to generate moderate outcomes. Their ability to do so is largely dependent on the incentives provided by the system for the formation of alliances between parties. In a state with a relatively established and restricted party system in which parties have extended histories of coexistence in the legislature, strategic bargaining will be highly credible, and patterns of cooperation can be expected to be regular. But for this mechanism to function, parties across the political spectrum have to be both willing and able to form alliances. In a young party system such agreements may be hindered by a number of factors.

First, lack of trust among parties and fears of defection may limit the extent to which alliances are entered into. Furthermore, even if parties are able to make credible commitments, these are likely to be characterized by a great degree of geographical diversity, especially in single-member districts and especially in new party systems in which political organizations have geographically restricted support bases. This diversity of electoral alignments will, in all likelihood, have the effect of destabilizing the legislative process in that legislators from different parts of the country will have an incentive to build ties with different parties in the legislature in anticipation of future electoral agreements. Such a situation can put considerable strain on the internal coherence of parliamentary parties in their ability to function as effective coalition partners. “ (Brich, 2003; 328)

MANIPULATION UNDER THE TWO ROUND BALLOT (cont.)

“Second, vote choice in the definitive round is ultimately up to the voters, and there are reasons for believing that voters in young democracies may not always follow the recommendations of their favored candidates when the latter have been eliminated in the first round of voting. Such compliant voter behavior is predicated on the existence of relatively strong party identification and tight party discipline, which are not necessarily present in emerging democracies. Even recent French experience shows that such alliances have not always been feasible in practice, because a party’s supporters in the electorate are not necessarily willing to follow the lead of “their” candidates in making second-round vote choices (Bartolini, 1984; Converse & Pierce, 1986, p. 391; Cole & Campbell, 1989, pp. 27-28, 91-131; Criddle, 1975).¹ In reality, the TR system is more likely to encourage abstention or negative voting in the second round.⁶ For those voters who do go to the polls a second time, choice of candidate will be, to a great extent, arbitrary with respect to party identification, as their main concern may well be to prevent the election of a least-liked alternative (Duverger, 1960, p. 266). Such arbitrariness will tend to fragment the parliamentary party system even further by allowing the entry of small parties and obscure independents.”

“Campbell (1958, p. 24) identifies ... as one of the principal problems with the TR system as it operated in France during the early phase of democratization; the diversity of electoral alliances entered into by candidates led to parliamentary parties with divided loyalties. And even in recent times, French candidates have not always been consistently willing to follow the central party leadership in forging agreements at the district level (Converse & Pierce, 1986, pp. 395-396; Criddle, 1975, p. 177)..” (Birch, 2003: 329)

* If the PAP vote share continues to slide there is the possibility that the PAP will make use of the packing form of gerrymandering in the future by seeking to create some districts where the opposition wins overwhelmingly.

** Coding for election administration for the three African cases is taken from Mozaffar (2002, 93). We code 'autonomous' as a Yes, 'non-autonomous' as a No, and 'semi-autonomous' as Partly. The coding for Singapore is the authors' own.

MANIPULATION OF OUTCOMES via ELECTORAL RULES: PARTY SLATE BLOC VOTING

- [i]** See the discussion of gerrymandering tools in Grofman (1985).
- [ii]** *Packing* refers to creating districts in which the opposition party strength is concentrated, and which they win easily, thus wasting their votes by limiting the numbers of constituencies in which they might be a plurality or majority winner. *Cracking* refers to taking concentrations of opposition party strength and dividing them up into districts in which they will be outvoted by ruling party supporters. Stacking, packing and cracking are standard terms in the literature on gerrymandering (see Grofman, 1985). For more on the various forms of gerrymandering see Methodological Appendix (available on-line from the authors).
- [iii]** Chad's ethnic rivalries are complex and fluid, and they have been compounded by conflict over land and limited natural resources such as water. Ethnic violence between President Déby's ethnic group, the Zaghawa, and the Tama, and both non-Arab were a concern. The Zaghawa, who compose less than 3 percent of Chad's population, control a majority of government positions (Ploch, 2008).
- [iv]** In opposition dominated areas, but where the opposition does not have a majority, the default option of Chadian list PR operates to benefit any party with enough support to gain representation in a PR system, a percentage that falls with increasing district magnitudes of the MMDs.



**The Dictator's Rule:
Never explain, never apologize !**

The End

**IV. 3 BIG QUESTIONS
ABOUT ELECTORAL SYSTEM EFFECTS
FOR TODAY'S LECTURE**

3. Three BIG questions for today's talk:

1. If you are dictator in a one-party state and you are under pressure to democratize, what electoral rule should you choose that will allow your party to maintain itself in power while conducting elections that look democratic?

2. Are there electoral rules that will facilitate a transition to democracy, especially in states that are deeply divided ethnically or religiously?

3. How do you increase the representation of women in the legislature?

V. WHAT ELECTORAL RULES ARE FAVORED BY DICTATORS?

1. Party Bloc Voting

2. Two Round Ballots

X(A). GENDER QUOTAS

GENDER QUOTAS

There are many mechanisms that can be used to make more likely women's (descriptive) representation in parliament.^[i] One increasingly common mechanism is some form of quota to achieve a stipulated (minimum) level of representation.^[ii] Krook and Messing-Mathie (2013) observe that well over 100 countries currently have some form of gender quota.^[iii] Remarkably, candidate quotas and reserved legislative seats for women have been introduced under a wide variety of regimes, including “right-wing and military governments (in Argentina, Pakistan, and Peru) and governments where women have wielded little influence (Jordan, Morocco)” (Htun and Weldon, 2010: 207). Such quota mechanisms can be imposed by the parliament itself, or in the form of a constitutional amendment, or may be imposed by parties, and used by all parties or only by some. Quotas may or may not make use of reserved seats, and they can differ in what level of women's representation is mandated/suggested^[iv] Quotas also differ in whether or not they are formal or informal, i.e., merely recommendations or enforceable requirements, and in how fully/effectively they are enforced. Moreover they can differ in the proportion of seats to which they apply.

GENDER QUOTAS (cont.)

[i] For general discussions of gender representation see e.g., Norris (2004).

[ii] Some political parties have used quotas since the 1970s (Caul, 2001, 2006). Left parties (and parties in the Nordic countries) were more likely to be first adopters. Schwindt-Bayer (2009) notes that Argentina was the first state to “pass a law that applied to *all* political parties,” and that, between 1991 and 2007, “twenty-five very diverse countries have followed Argentina’s example and adopted [national] gender quotas, either through national legislation or constitutional provisions (or both).”

[iii] Constitutional courts have responded in quite different ways to the imposition of gender quotas. While such quotas have been upheld under challenge in most countries, in a few they have been struck down. For example, in Italy, laws were passed in 1993 that directly affected gender representation. The first required that that on party lists, neither gender could be represented by more than 75% of all candidates, i.e., both women and men were guaranteed at least 25% representation. The second law was even more restrictive, requiring that male and female candidates would appear alternately on party lists, i.e., imposing the “zipper system” for all party lists. However, in 1995, the Italian Constitutional Court declared both laws unconstitutional as violating equal treatment. The Constitution was subsequently modified in order to make it possible for new quota legislation to be put into place. (Pilaci di Sini, 2012; see also Guadagnini, 1998, 2005, 2007).

[iv] Quotas vary: from as low as 5% (Armenia’s initial quota) to as high as 50% (France).

GENDER QUOTAS

Three characteristics of quota rules have frequently been investigated:

- a. whether or not there is a placement mandate for candidates, i.e., a stipulation that female candidates must be placed in winnable constituencies or winnable positions on party ballots;
- b. whether or not there is a strong enforcement mechanism; and
- c. the magnitude of the quota.

Each has been found to favorably impact women's representation (see e.g., Htun and Jones, 2002; Krook, 2009; Jones, 2009; Schwindt-Bayer, 2009).^[i] There is also solid evidence that the longer the time the quota has been in place the higher is gender representation.^[ii] Another well established result is that efficacious quota rules are more easily implemented in proportional representation (PR) systems than in single member district (SMD) plurality systems (see e.g., Krook and Moser, 2012).^[iii] However, because of the wide variation in types of quota rules, and the different types of regimes that have made use of them, establishing the impact of particular forms of quotas on level of women's representation using cross-national data is not that simple. ^[iv]

GENDER QUOTAS (cont.)

[i] In Schwindt-Bayer (2009), for example, magnitude of (suggested) quota is coded as a percentage, while the other two of the three variables are each coded as a trichotomy.

[iii] In Costa Rica, for example, when women's representation was just 5%, a 40% gender quota was put in place in 1996. The first election with that quota brought women's representation to 19%, but further mobilization and an electoral court decision interpreting the provision – generated a further increase to 35%. (Jones, 2004; *IDEA*, 2012). In the 1993 election in Argentina, the first after the quota law went into effect, women won 14.4% of the seats in the Chamber, compared to only 6% in the 1991 election. By 2001, Argentina's Chamber of Deputies was 31% female. A variety of factors might explain a delay in quota rules achieving their full impact. e.g., the spread of information about quotas may lead to a growth in the pool of potential women candidates and/or greater mobilization by women's groups, or mechanisms of enforcement may not go into effect immediately or may not be as efficacious in the beginning. Brazil, on the other hand, has had almost no change in women's legislative representation after its target percentage of 25% was implemented in 1997, with women's representation in the lower chamber still at only 7.7% ca. 2008 (Schwindt-Bayer, 2009: 7, see Tables 1 and 2). The Brazilian anomaly is arguably due in part to enforcement issues, and in part to its open list form of proportional representation (Htun and Power, 2006).

[iiii] As Dahlerup (2008: 216) observes: “gender quotas of some sort have been introduced in 72 per cent of countries with proportional representation (PR) electoral systems, as opposed to only 29 per cent of countries with single member constituencies.” (see also Matland, 2006; Dahlerup, 2007).

GENDER QUOTAS (cont.)

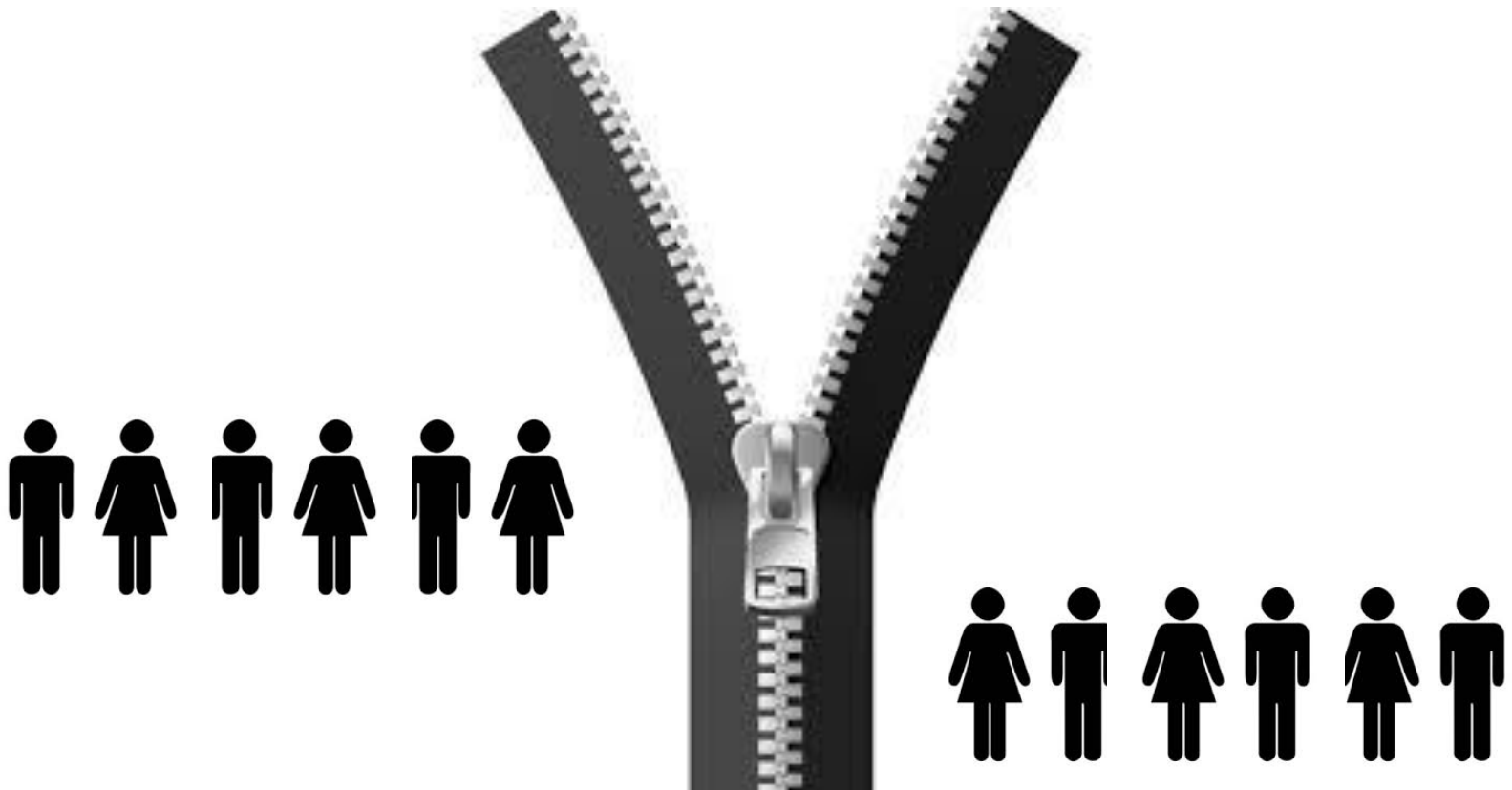
[iv] For example, although Schwindt-Bayer (2009) is sensitive to potential confounds, e.g., GDP/capita, due to small sample size (a model that contains about a third as many variables as cases), while she gets a strong and statistically significant result for quota magnitude, her findings about effects of placement procedures, level of enforcement, and effects of electoral rules (PR versus plurality), although in the predicted direction, are not statistically significant. Also, Schwindt-Bayer confines her study to quotas that are national in character – which, in principle, offer the greatest opportunity to increase women's representation in the entire legislature, not merely in one political party's legislative delegation, but because of this restriction, strong quota effects in countries with gender quotas imposed/recommended by parties are not visible in her data set, e.g., South Africa, where a party based quota rule generated 30% women's representation in the first democratic election in that country. There were also some methodological issues in that article that we discuss later.

GENDER QUOTAS (cont.)

My own recent research has been concerned with one particular form of quota for list PR systems, a placement mechanism that has been called a zipper *quota* such that, within each party subject to the rule, the party list must consist of an alternation of men and women candidates (Krook, 2010).^[ii] At the national level, *zipper quotas* are in use in France (for the upper chamber), were used for the first post Arab Spring elections in Libya and Tunisia, and are used in South Korea,^[iii] Senegal, and increasingly in Latin America (e.g., Ecuador, Bolivia);^[iiii] while party quotas involving zippers are common among Green parties, and are found among some Nordic nations (Krook, 2009). Mona Lee Krook (personal communication, December 2013) has suggested that this type of quota may be “the wave of the future,” at least for PR systems.

The puzzle I have sought to shed light vis-à-vis *zipper quotas* is how, if approximately 50% of the candidates on each party list subject to the quota are (supposed to be) women, we can nonetheless observe a range of outcomes in terms of women’s representation in the legislature across such parties that ranges from well below 50 per cent to somewhat above 50 per cent, even if the quota is fully enforced.

The Zipper Quota



GENDER QUOTAS (cont.)

[i] Perhaps most closely related to my work are papers by Frechette, Maniquet, and Morelli (2008), dealing with France, by Shin and Yoon (2013), dealing with South Korea, and by Lust (2013), dealing with Libya and Tunisia, though none offers the type of analytic propositions about the mathematical properties of zipper quotas that are intended to be the main original contribution of this essay.

[ii] The form of zipper quota used in South Korea says that women are to be placed in the odd numbered places on party lists; it does not require that men be placed in the even numbers. However, at the national level, it appears that women are placed in odd number positions and only in odd-numbered positions; while at the municipal level women may sometimes be placed in even numbered places as well (Shin and Yoon, 2013: 9). We would still characterize the practices at the municipal level as a kind of zipper rule, but one in which the alternation is between women, on the one hand, and positions open as to gender, on the other.

[iii] A new constitutional provision was recently passed in Mexico for a 50% quota, although the form it will take had not yet been operationalized as of this writing (Mona Lee Krook, personal communication, 2013; see also Baldez, 2004).

GENDER QUOTAS (cont.)

There are four important considerations that may have explanatory force in addressing the puzzle of why a 50% zipper quota sometimes achieves above and more often below 50% gender representation for a given party. First, it could be the case that the quota is not strictly enforced. Second, if a country had a mixed system it could be the case that, since the zipper quota applies only to the PR component of such a system, women's success in the PR component could be near to or even above 50% and yet the overall women's representation (from the party) could be considerably lower if the PR component elected only a relatively small share of legislative seats and if women's success was much lower in the non-PR component (say single member districts using plurality) than in the PR component. A third important factor, applicable only to the PR component subject to a *zipper rule*, is the exact order of sequencing, e.g., which sex is more likely to be in the first place on party lists and whether or not the alternation is between women and men or between women and seats open to gender. Thus, PR *zipper quotas* can operate differentially: to open up opportunities for men that are less constricted than those for women, or vice versa.

A Simple Way to Limit the Effects of Gender Quotas

Party lists [in Egypt] were required to alternate male and female candidates. However, because men headed the vast majority (about 94 percent) of the lists, the representation of women in the Constituent Assembly reached only 22.5 percent (i.e., 49 women in its 217-member Constituent Assembly and a female Vice President).

Issues included debates over the role of women in politics, concerns about their level of experience, and, in cases of smaller parties, the ability to find sufficient numbers of female candidates.

Lust, Ellen 2012. “Voting For Change: The Pitfalls And Possibilities Of First Elections In Arab Transitions.” Program On Arab Reform and Democracy, CDDRL, Stanford University and the Brookings Institution.

GENDER QUOTAS (cont.)

In most uses of *zipper quotas* there is no requirement of which gender will be placed first as long as there is subsequent alternation, although in South Korea women must always be placed first on the national party lists and in subsequent odd numbers.^[i] In contrast, in France, careful strategic maneuvering has left many incumbents, virtually all of whom are male, placed at the head of PR lists for small new parliamentary “parties” that were apparently created to allow them to be listed first (Frechette, Maniquet, and Morelli, 2008: 904).^[ii] A fourth factor, which interacts with the third factor to determine the effects of zipper quotas on gender representation from PR lists, is the distribution of electoral success across parties at the district level, i.e., the aggregate distribution of what are called *partymagnitudes*.^[iii]

GENDER QUOTAS (cont.)

[i] In South Korea, there is not a requirement that men be placed in the even numbers. As a result it is theoretically possible for a list to consist entirely of women.

[ii] In 11 of the 29 senatorial districts an incumbent who had previously run on one party label now ran on another label, only to rejoin his original party after the election. In eight districts, a group of male non-incumbent candidates, each of whom had won on a different ticket, abandoned that ticket to (re)join a large party. Murray (2004, 2010) and Dolez and Laurent (2011) consider the effects of the quota rule used for the French Assembly, where elections are conducted in single seat constituencies using a two round ballot. France also has a form of quota for municipal list PR elections that is less restrictive of list placement of male candidates than is the Senate zipper rule. See also Murray, Krook, and Opello (2012) on the general issue of women being slated in seats they are unlikely to win.

[iii] *Party magnitude* is defined as the number of winners for a given party in a given district (Matland, 1993). Note that we rely on party magnitude as the key variable rather than on the more usual *district magnitude*, M . While there is a link between these two, in that M sets an upper bound on party magnitude in the district, the link is very far from perfect. Indeed, some large magnitude districts may have more parties winning one or two seats than is the case in districts of moderate M simply because of the decreased *Threshold of Exclusion* in the former type of district.

GENDER QUOTAS (cont.)

PROPOSITION 1

In a PR system, if the zipper always begins with men (women), and then alternates men and women (women and men), then women (men) will always be underrepresented when we look at elected officials.

PROPOSITION 2

In a PR system, if the zipper begins with men (women) and alternates men and women (women and men) then, *ceteris paribus*, expected women's (men's) proportion of officials will be lower in the parties whose typical district list has only one or a few winners than in the parties whose typical district list has a larger number of winners. If there are an odd number of winners from a party list, then, for any odd k , the proportion of women (men) who are winners will be given by

$$(((k+1)/2)-1) = (k-1)/2k \quad (1)$$

COROLLARY 1 TO PROPOSITION 2

Let $p_i(k)$ be the proportion of party i wins that involve districts in which the i th party wins exactly k candidates, $k > 0$; let w_i equal the overall proportion of women among party i 's winning candidates. In a PR system, if the zipper begins with men (women) and alternates men and women (women and men), then expected representation for women (men) in party i is given by

$$w_i = \sum p_i(k) * (k-1)/2k, \text{ for } k \text{ odd} \quad (2)$$
$$+ \sum p_i(k) * 1/2, \text{ for } k \text{ even}$$

COROLLARY 2 TO PROPOSITION 2

Let p_i be the proportion of seats held by the i th party in the parliament as a whole (or in some particular component of the electoral system, e.g., the PR seats), and again let w_i be the proportion of women among that party's winners. Let $p(W)$ be the share of the seats held by women. In any list PR electoral system or list PR component of any mixed system, share of representation for women, $p(W)$, is given by

$$p(W) = \sum p_i * w_i \quad (3)$$

GENDER QUOTAS (cont.)

COROLLARY 3 TO PROPOSITION 2

Let $p_i(k)$ be the proportion of party i wins that involve districts in which the i th party wins exactly k candidates, $k > 0$; let w_i equal the overall proportion of women among party i 's winning candidates, and $p(W)$ be share of representation for women. In a PR system, for male headed zipper lists

$$p(W) = \sum p_i * (\sum p_i(k) * (k-1)/2k, \text{ for } k \text{ odd} + \sum p_i(k) * 1/2, \text{ for } k \text{ even}). \quad (4a)$$

While, for female headed lists, we have

$$p(W) = \sum p_i * (\sum p_i(k) * (k+1)/2k, \text{ for } k \text{ odd} + \sum p_i(k) * 1/2, \text{ for } k \text{ even}). \quad (4b)$$

PROPOSITION 3

As before, let p_i be the proportion of seats held by the i th party in the parliament as a whole (or in some particular component of the electoral system, e.g., the PR seats), w_i be the proportion of women among that party's winners, and let $p(W)$ be the share of the seats held by women, and $p_i(k)$ be the proportion of party i wins that involve districts in which the i th party wins exactly k candidates, $k > 0$. Further, let $p(w_{ik})$ equal the proportion of women from that party elected in districts where the party magnitude of party i is k , i.e., where party i elects exactly k representatives, and $p(W_i)$ be the share of elected women coming from the i th party.

In any electoral system or component of any mixed system where there is a distribution of party magnitudes ($k > 0$), then share of representation for women, $p(W)$, is given by

$$p(W) = \sum_i (p_i * (\sum_i \sum_k p_i(k) * p(w_{ik}))) \quad (5)$$

GENDER QUOTAS (cont.)

PROPOSITION 1

In a PR system, if the zipper always begins with men (women), and then alternates men and women (women and men), then women (men) will always be underrepresented when we look at elected officials.

PROPOSITION 2

In a PR system, if the zipper begins with men (women) and alternates men and women (women and men) then, *ceteris paribus*, expected women's (men's) proportion of officials will be lower in the parties whose typical district list has only one or a few winners than in the parties whose typical district list has a larger number of winners. If there are an odd number of winners from a party list, then, for any odd k , the proportion of women (men) who are winners will be given by

$$(((k+1)/2)-1) = (k-1)/2k \quad (1)$$

COROLLARY 1 TO PROPOSITION 2

Let $p_i(k)$ be the proportion of party i wins that involve districts in which the i th party wins exactly k candidates, $k > 0$; let w_i equal the overall proportion of women among party i 's winning candidates. In a PR system, if the zipper begins with men (women) and alternates men and women (women and men), then expected representation for women (men) in party i is given by

$$w_i = \sum p_i(k) * (k-1)/2k, \text{ for } k \text{ odd} \quad (2)$$
$$+ \sum p_i(k) * 1/2, \text{ for } k \text{ even}$$

COROLLARY 2 TO PROPOSITION 2

Let p_i be the proportion of seats held by the i th party in the parliament as a whole (or in some particular component of the electoral system, e.g., the PR seats), and again let w_i be the proportion of women among that party's winners. Let $p(W)$ be the share of the seats held by women. In any list PR electoral system or list PR component of any mixed system, share of representation for women, $p(W)$, is given by

$$p(W) = \sum p_i * w_i \quad (3)$$

GENDER QUOTAS (cont.)

To understand how the various formulae given above work, a simple example may be helpful. Let us consider outcomes of a five party contest over five 20-seat list PR districts, operating under a zipper quota, with A male headed list, and where party A wins 35 of the seats, party B 25, party C 20, Party D 15 and party E 5, but where some party's support bases are heavily geographically concentrated while others have more widely diffused support. The hypothetical data for this “toy” example is shown in Table 1.

<<Table 1 about here>>

The key parameters that go into the calculations required for Eq. (5) are provided in the various subtables in Table 2, while the conclusions about overall gender representation by and within parties is shown in Table 3.

Table 1
Hypothetical Data for a Five Seat District, 100 seat Legislature with Five Parties Operating under a Male-Headed List
PR Zipper Quota
(a) raw data (arrayed alphabetically by party)

District/ winners	I	II	III	IV	V
1	A	A	A	B	B
2	A	A	A	B	B
3	A	A	A	B	B
4	A	A	A	B	B
5	A	A	A	B	B
6	A	A	A	C	B
7	A	A	A	C	C
8	A	A	A	C	C
9	A	A	A	C	C
10	A	A	A	C	C
11	A	B	B	D	C
12	A	B	B	D	C
13	A	B	B	D	C
14	A	B	B	D	D
15	A	B	B	D	D
16	B	C	C	D	D
17	B	C	C	D	D
18	B	C	C	D	D
19	B	C	C	D	D
20	E	E	E	E	E

Table 1
(b) Summed data

Party Magnitudes	Party	TOTAL	party share of leg
15, 10, 10	A	35	0.35
5, 5, 5, 6, 4	B	25	0.25
4, 4, 5, 7	C	20	0.2
9, 6	D	15	0.15
1,1,1,1,1	E	5	0.05

Table 2
Key Parameters Calculated from Hypothetical Data in Table 1
(a) party magnitudes

party magnitudes		A	B	C	D	E
	1	0	0	0	0	5
	4	0	1	2	0	0
	5	0	3	1	0	0
	6	0	1	0	1	0
	7	0	0	1	0	0
	9	0	0	0	1	0
	10	2	0	0	0	0
	15	1	0	0	0	0

Table 2
Key Parameters Calculated from Hypothetical Data in Table 1

(b) $p_i(k)$

$p_i(k)$		A	B	C	D	E
	1	0.00	0.00	0.00	0.00	1.00
	4	0.00	0.16	0.40	0.00	0.00
	5	0.00	0.60	0.25	0.00	0.00
	6	0.00	0.24	0.00	0.40	0.00
	7	0.00	0.00	0.35	0.00	0.00
	9	0.00	0.00	0.00	0.60	0.00
	10	0.57	0.00	0.00	0.00	0.00
	15	0.43	0.00	0.00	0.00	0.00

Table 2

Key Parameters Calculated from Hypothetical Data in Table 1

(c) $(k-1)/2k$, for k odd; .5, for k even
 (data only shown for non-zero party magnitudes in the example)

$(k-1)/2k$, for k odd; .5, for k even		A	B	C	D	E
1	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.50	0.50	0.00	0.00	0.00
5	0.00	0.40	0.40	0.00	0.00	0.00
6	0.00	0.50	0.00	0.50	0.00	0.00
7	0.00	0.00	0.43	0.00	0.00	0.00
9	0.00	0.00	0.00	0.44	0.00	0.00
10	0.50	0.00	0.00	0.00	0.00	0.00
15	0.47	0.00	0.00	0.00	0.00	0.00

Table 2
Key Parameters Calculated from Hypothetical Data in Table 1
(d) data used to calculate $w_{i,k}$

data used to calculate $w_{i,k}$		A	B	C	D	E
1		0.00	0.00	0.00	0.00	0.00
4		0.00	0.08	0.20	0.00	0.00
5		0.00	0.24	0.10	0.00	0.00
6		0.00	0.12	0.00	0.20	0.00
7		0.00	0.00	0.15	0.00	0.00
9		0.00	0.00	0.00	0.27	0.00
10		0.29	0.00	0.00	0.00	0.00
15		0.20	0.00	0.00	0.00	0.00
row sum = w_i		0.49	0.44	0.45	0.47	0.00

Table 2
Key Parameters Calculated from Hypothetical Data in Table 1

(e) $p(w_{i,k})$

$p(w_{i,k})$		A	B	C	D	E
	1	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.18	0.44	0.00	0.00
	5	0.00	0.55	0.22	0.00	0.00
	6	0.00	0.27	0.00	0.43	0.00
	7	0.00	0.00	0.33	0.00	0.00
	9	0.00	0.00	0.00	0.57	0.00
	10	0.59	0.00	0.00	0.00	0.00
	15	0.41	0.00	0.00	0.00	0.00

Table 3
Summary Gender Representation Data for the Hypothetical Data in Table 1

Party	TOTAL party seats	party share of legislature	WOMEN's share of party's elected	WOMEN	party's share of elected WOMEN
A	35	0.35	0.49	17	0.39
B	25	0.25	0.44	11	0.25
C	20	0.2	0.45	9	0.20
D	15	0.15	0.47	7	0.16
E	5	0.05	0.00	0	0.00

GENDER QUOTAS (cont.)

When we look at Table 3 we find – what would normally be the case, *ceteris paribus*, under a zipper quota in a list PR system—that the larger the party seat share in the legislature the more women that party elects. On the other hand, if we look to women's share of party winners, the pattern is a non-monotonic one. This latter parameter depends on the distribution of party magnitudes across districts, which may be linked to, but is far from perfectly correlated with, party seat share in the legislature. If we wish to investigate further why some parties do a less effective job than others, since we have controlled for list placement by positing a male headed zipper for all parties, the only factor that can explain the differences in levels of within-party gender representation across parties are the differences in the distributions of party magnitudes across parties

X(B). UNUSUAL FORMS OF QUOTA

QUOTAS for workers and farmers

Egypt's candidates are classified either as workers (i.e., registered with a labor union), or farmers(dependent on agriculture for main source of income, but owning less than 10 feddans of land, which is equivalent to 10.4 acres,), or professionals (all others).

In each district, at least one half of seats must go to a worker or farmer, even if he or she is not one of the top two vote-getters. Candidates in ICs [single seat constituencies] are required to win at least 50 percent+ 1 vote to win the race, entering run-offs if they do not succeed in round one. If a worker or farmer fails to win in round one, the top two worker/farmer candidates advance to a run-off.

Lust, Ellen 2012. "Voting For Change: The Pitfalls And Possibilities Of First Elections In Arab Transitions." Program On Arab Reform and Democracy, CDDRL, Stanford University and the Brookings Institution.

IX. WHAT ELECTORAL RULES FAVOR DEMOCRACY?

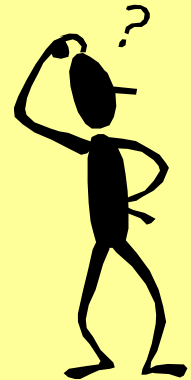
**(ESPECIALLY IN ETHNICALLY OR RELIGIOUSLY
DIVIDED COUNTRIES)**

- 1. The Alternative Vote?**
- 2. Particular Forms of Proportional Representation?**
- 3. Scoring Rules such as Borda and Dowdall?**

**IX(C). CHOICE OF PR RULES
TO FAVOR DEMOCRATIZATION**

IX(A). THE ALTERNATIVE VOTE

**Comparing Coombs and the Alternative Vote
with multicandidate competition
for a single office
over alternatives on a single dimension**

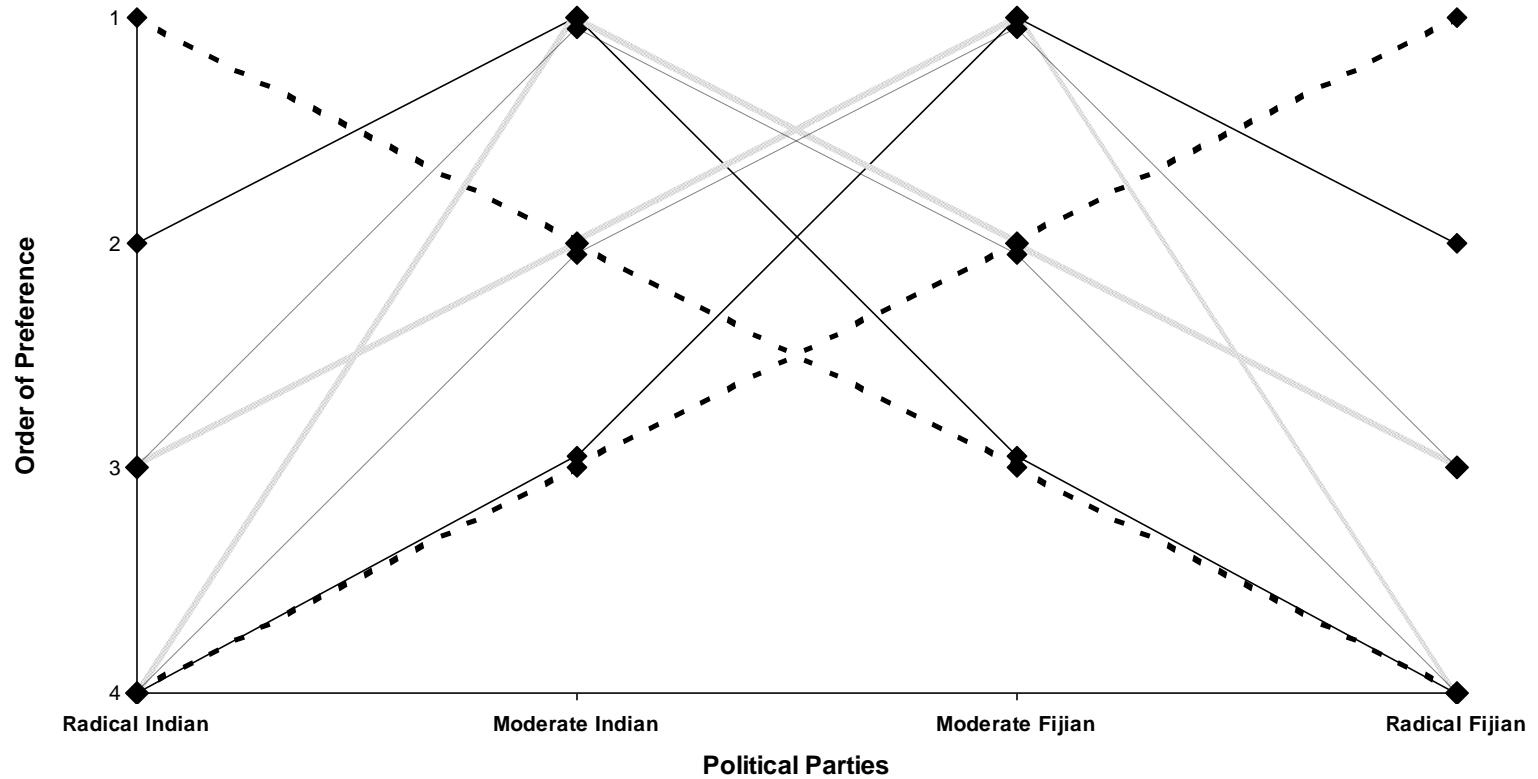


. THERE IS CONSIDERABLE ROOM FOR MANIPULATION OF OUTCOMES via ELECTORAL RULES

RANKED METHODS

- 1. The Coombs rule can make it easier to get a Condorcet winner (and prevent a Condorcet loser from being chosen), and the same is true for the alternative vote with fewer than 4 parties if voter references are single-peaked. However, the alternative vote does not guarantee centrist choices if centrist voters prefer an extremist party to a centrist party across the political or ethnic divide.**
- 2. Rank Based Scoring Rules such as Borda and the Dowdall rule used in Nauru, though often treated as similar minor variants of one another, can have dramatically different consequences in terms of behaving more like a plurality vs. more like a proportional voting system.**

Figure 1; Single-Peaked Preferences Along an Ethnically-Defined Four-Party Continuum



Some Results About Condorcet Efficiency Across Voting Rules

Proposition 1: If we assume single-peaked preferences over a single dimension and no party holding a majority of first place preferences, and posit that voter preferences are sincere, when we have four parties or fewer, the candidate of the median party is more likely (or at least no less likely) to win when voting is conducted under the *alternative vote* than when voting is conducted under *plurality*.

Proof: See Grofman and Feld (2004)

On the other hand, once we have five or more alternatives, then the superiority of AV over plurality even when preferences are single-peaked, is no longer assured. We demonstrate this fact by providing an example, for five alternatives, where the Condorcet winner is the plurality winner but is eliminated by the alternative vote sequential choice process.

Some Results About Condorcet Efficiency Across Voting Rules (cont.)

Example 1 (a five alternative example where the Condorcet winner is chosen by plurality but not by AV) : Suppose that voters are distributed uniformly from 0 to 100 with the median voter being at 50. Suppose that one candidate, C, is located at 50, and that candidates A, B, D and E are located at 9, 29, 71, and 91, respectively.

We show this situation below:

A	B	C	D	E
9	29	50	79	91

Here, of course, C is the Condorcet winner; and we further note that C is also the plurality winner. The first place votes go roughly 19.5 to A, 20 to B, 21 to C, 20 to D, and 19.5 to E. But what happens under AV? Under AV, we would, say, first eliminate A. After the resulting vote transfers, B now gets 39.5. So, then we would eliminate E, and D gets 39.5 votes. Now we are down to the set {B, C, D}. But now AV will eliminate C, since C has only 21 first place choices, fewer than either B or D. So even though the alternative supported by the median voter (the Condorcet winner) was also the plurality winner, it would not be the alternative vote winner.

Some Results About Condorcet Efficiency Across Voting Rules (cont.)

Nonetheless, particular counterexamples notwithstanding, simulation work by Anthony McGann and myself (McGann, Koetzle, and Grofman 2002; McGann, Grofman and Koetzle, 2002) has shown that, in general, AV (or its runoff equivalent, MRSE, multiple runoffs with sequential elimination) has a higher Condorcet efficiency than plurality under single-peakedness over a single dimension almost regardless of what assumptions we make as to the underlying distribution of voter ideal points. On the other hand:

Proposition 2: If voters have single-peaked preferences over a single dimension, and voter preferences are sincere, then the Coombs rule always selects the Condorcet winner (i.e., the alternative supported by the median voter).[ii](#)

Also, even if voter preferences are not completely single-peaked but only *net single-peaked* (see Feld and Grofman, 1986; Regenwetter and Grofman, 1998) we would still expect that Coombs would pick the Condorcet winner. Because the introduction of the concept of net single-peakedness would take into technical complexities we do not wish to pursue here we refer the reader to the above references. We also omit considerations of a further complication, systematic bias in voter perceptions of candidate/party locations (see e.g., Merrill, Grofman and Adams, 2001).

THERE IS A (MOSTLY OLDER) LITERATURE THAT SEES PR AS DETRIMENTAL TO DEMOCRACY

- 1. I remember Weimar and I remember Hitler (see esp. Hermens, 1945)**

Jewish Children's Kindertransport, 1939?



- 2. I look at Israeli politics catering to religious extremists, and I shudder.**
- 3. I remember when we had PR in New York City city council elections, and guess what, an extremist minority elected a Communist in the 1940s. Of course, we ended PR in NYC soon thereafter.**
- 4. I remember when we had PR in Cincinnati in the 1950s, and guess what, we elected an African-American. Of course, we ended PR in Cincinnati soon thereafter.**

List PR Variants

- Quota Rules (Methodes de la Tranche?)



D'hondt, Victor 1841-1901



Hagenbach-Bischoff, Eduard, 1833-1910

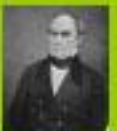


Sainte-Laguë, Andre, 1882-1950

= **Jefferson**, Thomas, 1743-1826



= **Webster**, Daniel, 1782-1852



= **Hill**, Joseph Adna, 1860-1938



Huntington, Edward V., 1874-1952
(a.k.a. **method of equal proportions**)



= **Adams**, John 1735-1826



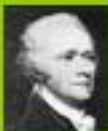
= **Dean**, James (at U. Vermont 1806-182_)



- Non-quota Rules

Largest Remainder

= **Hamilton**, Alexander, 1755-1804



THERE IS STILL CONSIDERABLE ROOM FOR MANIPULATION OF OUTCOMES EVEN IF THE ELECTORAL RULE IS A FORM OF PR

1. Largest remainder PR using the Hare Quota rather than the Droop Quota – restricts votes for the largest party (Tunisia, Egypt) and can encourage strategic choice re how many distinct slates a party runs (Hong Kong in 2012 and earlier)
2. Open list PR is sometimes thought to be bad for new democracies.
3. The *Adams rule* (for apportionment) make it easier to allow small geographic units to have representation.
4. The *uberhang* rules in mixed (MMP) systems – encourages insincere voting because it allows for violation of *positive responsiveness* of voting (e.g.. Germany)

- 1. Largest remainder PR using the Hare Quota rather than the Droop Quota – restricts votes for the largest party (Tunisia, Egypt) and can encourage strategic choice re how many distinct slates a party runs (Hong Kong in 2012 and earlier)**

Within list PR methods there are a number of alternative ways of making allocations to parties based on the votes they receive. Some of these, e.g., D'Hondt, favor larger parties; others, like largest remainder, can operate to limit the seat share of the largest party. Let us first illustrate how the largest rule remainder can limit the seat share of the largest party with a hypothetical example taken from Hope (2011). Imagine that we have two seats to be filled in a district with 2000 voters. The (Hare) quota used to calculate the largest remainder is therefore 1000. Imagine three parties with 1300, 400, and 300 votes each. Even though the first party has more than three times as many votes as the second ranked party, and even though there are only two seats to be filled, the second party, with only 400 votes will get the second seat, since the remainder after quota of the first party is only 300 votes.

While some list allocation rules, like D'Hondt, provide incentives either for smaller parties to merge with others to form parties large enough to benefit from the disproportionality involved or, if *apparentement* is allowed, provide incentives for multi-party coalitions to form (Bochsler, 2010), in contrast, the use of greatest remainder provides incentives for large parties to split (or at least to run multiple lists, albeit with great coordination costs imposed in doing so) in that, for the same (or even lower) vote share they may expect to do better in terms of seats

A real world example of these seemingly perverse incentives is from the 2012 election in Hong Kong, As described in an article in the [New York Times](#) (Bradsher, 2012) : “The pro-Beijing Democratic Alliance for the Betterment and Progress of Hong Kong used ...[largest remainder] to its advantage, running multiple slates in election districts across Hong Kong, and using its formidable logistical network to guide tens of thousands of supporters to vote for one or another of its slates. As a result, the party won a series of seats for its top-of-the-slate candidates despite a weak overall vote count.”

Indeed, in the 2012 legislative election in Hong Kong, the pro-Beijing DAB ran as two lists and gained twice as many seats as the single-list Civic Party despite receiving fewer votes in total.

We can illustrate how this is possible with a slight modification of the previous example. Imagine that there are three seats to be filled in a district with 3000 voters. The (Hare) quota used to calculate the largest remainder is again 1000. Imagine three parties with 1600, 700, and 700 votes each. Even though the first party has more than twice as many votes as the second or the third party, the second and third seats will go these parties, since the remainder after quota of the first party is only 600 votes. Thus 1400 votes yields two seats while 1600 votes yields only one.

In both these examples the largest party never got to use its remainder to gain an additional seat. In the terminology of social choice theory, it was held to “lower quota.” (Balinski and Young, 1982). However, the largest remainder system satisfies both “lower quota” and “upper quota” (see e.g. Balinski and Young, 1982) and thus the largest remainder system can also hurt large parties by holding them to “upper quota,” i.e., setting a bound on the maximum number of seats they can win.

To see how that would work, consider an example with five seats to be filled in a district with 5000 voters. The (Hare) quota used to calculate the largest remainder is again 1000. Imagine one party with 1803 votes and six other parties, three with 600 votes each, two with 599 votes and one with 199 votes. Now the largest party does get to use its remainder to gain an additional seat, but it is still penalized, since it gets only two seats even though it has three times as many votes as its nearest rivals. Here 1803 votes yields two seats, while 1800 votes yields three. Under the D'Hondt rule, in the same circumstances, the largest party would get three seats. Note, too, that if the largest party ran as three separate slates, and could so perfectly coordinate its vote that each slate received exactly 601 votes, if the vote shares for the other parties stayed the same, by splitting itself into three lists, the plurality party could pick up three seats under largest remainder, i.e., it could win 60% of the seats with less than 40% of the votes.

Greece also uses a largest remainder form of list PR, but there the bonus rule compensates in terms of providing incentives for a party to run as a single list. Tunisia (like Egypt) used greatest remainder in its first post Arab Spring elections. In both Tunisia and Egypt, this method was chosen at least in part so as to reduce the likelihood that a single party would be able to win a majority of the seats (Hope, 2011; Lust, 2012, footnote 9). In new elections, we usually have a proliferation of parties and this can lead to many parties going unrepresented, especially if there is a minimum threshold for representation--3% in Tunisia. When many parties go unrepresented, and thus their support is essentially wasted, under any list system method, the largest party(ies) are going to gain seats in excess of their vote share, but use of greatest remainder can minimize the gains of the largest party relative to those of other parties, for the reasons we have indicated above. And that is exactly what happened in Tunisia's first election.

Largest remainder with a threshold makes the fusion incentives strong only for the very small parties. With a proliferation of parties, even a small increment in vote share might be enough to gain a party a seat in some constituencies. Of course, some of the disparities in translating votes into seats resulted from differences in geographic concentration of support, so merging parties might not benefit that much if their components had greatly different geographic support bases

Tunisia's first democratic election had 217 seats, divided into 33 constituencies, with 27 constituencies inside the country and 6 for Tunisians living elsewhere. Each constituency elected between four and ten representatives. There were over 100 parties, with a total of 11,686 candidates on 1,517 lists: 828 running with political parties, 655 running as independents, and 34 running with party coalitions. Because there were so many parties running, most lists received too few votes to overcome the 3% threshold needed for representation, or simply were denied seats at the constituency level because of their poor showing. The party lists that received no seats had nearly 32% of the votes, so the "wasted" vote in Tunisia was huge. The Ennahda Movement had a vote share (among valid votes cast) of 37.04% and a seat share of 41.01% for a ratio of seat share to vote share of 1.11; but this was a poor showing relative to the "bonus" given to the next largest four parties that comes from getting "extra" seats because of the vote share "wasted" on parties gaining no seats. These four parties had a ratio of seat share to vote share ranging from 1.50 to 2.69. These moderately large parties benefited from the limited bonus given to the largest party under a largest remainder system, and thus did not have strong incentives to combine. Calculations done by the authors from data in <http://www.tunisia-live.net/2011/11/14/tunisian-election-final-results-tables/>.

When we look at Ennhada's share of the votes received by seat-winning parties, rather than as a share of the total valid vote, we find that Ennhada had 54.3% of those votes, and yet it only got 41% of the seats. Clearly the greatest remainder system operated to penalize it severely.

In contrast, many smaller parties were able to benefit from the largest remainder system by having their remainders count, i.e., their vote share was rounded "up" to one. Indeed, the small parties that did win seats were often dramatically overrepresented relative to their vote support by being the highest vote getter in a highly splintered electorate. For example the Faith to the Martyrs list got a seat with only 2,540 votes, despite a national Hare quota of 18,678!

On the other hand, we conjecture that Ennhada itself, had it had perfect information about constituency level outcomes and the ability to instruct its voters exactly how to vote, would have been able to substantially increase its seat share by running more than one list per constituency in at least some districts.

Clearly the largest remainder appears to operate to “favor smaller parties” (Lust, 2012, fn. 9) and thus penalize the largest party (or parties). However, we must be careful in how we describe the properties of the largest remainder form of PR, since the system can also be described as proportional as mathematically possible given the need to assign a fixed number of seats using whole numbers.

Consider the standard way in which political scientists have measured disproportionality, the Loosemore-Hanby Index of Distortion (Loosemore and Hanby, 1971), which is $\sum |s_i - v_i| / 2$, where s_i is the seat share of the i th party, and v_i is the vote share of the i th party, with 2 merely a normalizing constant so that the measure will run between zero and one. The largest remainder allocation will minimize the the Loosemore-Hanby Index of Distortion (Pennisi, 1998). We can readily give a proof sketch to provide the intuition as to why this must be so. Imagine that each party gets its whole quotient of seats, but there is, for simplicity, one seat still to be allocated and the choice is between two parties, A and B. Imagine that Party A (the larger of the two parties in vote share) has a remainder of a , while Party B has a remainder of b , with $b > a$. If you allocate the seat to Party A then the Loosemore-Hanby index goes up by $1 - a$, since you have “overrepresented” Party A relative to its whole number of quotients, and the Loosemore-Hanby index also goes up by b , since you have “underrepresented” Party B relative to its whole number of quotients. This gives you an increase in the index of $1 - a + b$. In contrast if you give the seat to Party B, the index goes up by $1 - b + a$. But, since $a < b$, $1 - b + a < 1 - a + b$, the allocation that minimizes the Loosemore-Hanby Index is exactly that provided by the largest remainder method.

The Loosemore-Hanby Index is not the only index of disproportionality. In fact, electoral formulae and measures of disproportionality are strictly related: each disproportionality index has a proportionality formula (e.g., D'Hondt, Sainte Lagüe, largest remainder) which minimizes it (see Balinksi and Young, 1982; Pennisi , 1998: Table 1, p. 7). So it might seem that we could find a disproportionality measure under which the largest remainder would not look so proportional. And we can, namely the measure which makes D'Hondt look good (see Pennisi , 1998: Table 1, p. 7). Because of this fact, Pennisi(1998) cautions against what had been a standard practice in political science of applying a particular measure (the Loosemore-Hanby Index or the Gallagher Index) to real-world seats data under actual or hypothetical PR allocation formula and then assessing the proportionality of the various rules on the basis of those comparisons.

But , not only does the largest remainder method minimize the Loosemore-Hanby Index , it is also the PR allocation formula that minimizes the next most common index of disproportionality used in political science, the Gallagher (1991) least-squares index. Moreover, when we average across multiple measures of proportionality, the largest remainder with Hare Quota can be shown to be the most proportional of all integer rounding methods, while Sainte-Lagüe (also known as Webster, after the U.S. legislator, Daniel Webster, who proposed it as an apportionment method for the U.S. Congress) can be shown to be the most proportional of all quota rules (Pennisi, 1998).

2. Open versus Closed Party Lists; MMDs in Egypt

Debates over whether candidates should run in individual candidacies (ICs) or on party lists (PLs) directly reflect the fear that the old regime will return. Many believe old regime allies can take advantage of ill-gotten power and resources to win elections.

Egyptian revolutionaries thus sought a closed, party list system, hoping it would lock out those who ran on local reputations – and often under the banner of the former ruling National Democracy Party (NDP). It was thought that requiring candidates to run on party lists, given the discrediting and disbandment of the NDP, could advantage revolutionaries and facilitate the emergence of new political parties.

3. PR RULES DIFFER IN THE DEGREE TO WHICH THEY FAVOR SMALL UNITS

Adams	round up to next integer value
Dean	round up if \geq harmonic mean of j and $j+1$
Hill/Huntington	round up if \geq geometric mean of j and $j+1$
Webster (Ste. Laguë)	round up if and only if remainder greater $\geq .5$
Jefferson (D'Hondt) [1]	round down to next integer value

.

Adams	set $d_j = (0, 1, 2, 3, \dots, n-1)$
Dean	set $d_j = (0, 1.333, 2.400, 3.429\dots, 2n(n+1)/(2n+1))$
Hill/Huntington	set $d_j = (0, 1.414, 2.449, 3.464\dots, (n(n+1))^{1/2})$
Webster (Ste. Laguë)	set $d_j = (1, 3, 5, 7, \dots, 2n-1),$ or alternatively, set $d_j = (.5, 1.500, 2.500, 3.500\dots, n-.5)$
Jefferson (D'Hondt) [1]	set $d_j = (1, 2, 3, 4, \dots, n)$

[\[1\]](#) The term D'Hondt is commonly applied in the electoral systems literature when the rule is defined in terms of division by some set of real numbers, as immediately above; while it is often called the Hagenbach-Bischoff method when the rule is defined in terms of a largest λ -based division involving rounding down to the nearest integer.

**IX(B). RANKED METHODS:
BORDA AND THE DOWDALL RULE**

To better understand the effects of voting rules we must be able to see them in comparative and theoretical context. The rule used in the Pacific island state of Nauru for legislative elections in multimember districts is little known or understood even among electoral system specialists. It is an example of what is called in the social choice literature a *scoring rule* (Saari, 1994, 1995), examples of which are the simple plurality rule and the *Borda rule* (Borda, 1787; Black, 1958; Young, 1974). Unlike the more usual applications of scoring rules, the system in Nauru is used to select not a single alternative but rather two or more alternatives, so that if there are m seats to be filled, the m alternatives with highest “scores” are the ones chosen.

We may represent a scoring rule as a vector of values arrayed in descending order. These values must be monotonically non-increasing, i.e., ties are allowed. For example, the plurality rule has the vector $(1, 0, 0, 0, 0, 0, \text{etc.})$. Two scoring rules are identical if one can be obtained from the other by multiplying all values by a given scalar, or if you add a constant to each value. Each value gives the weight to be attached to a k th place preferences in each individual's rank ordering of the available alternatives. For plurality, we see from the vector given above that only first place preferences are counted.

If we are only interested in the first n values of the vector; then we can normalize the vector values by dividing through by their sum, so that the normalized values will now sum up to one. Because this transformation is equivalent to multiplying all values by the inverse of a fixed sum it preserves the scoring rule. Also, using this normalization method allows us to more directly compare alternative scoring rules.

Consider the Borda rule. If we are choosing among n alternatives, a standard way of representing the Borda rule is as the vector of weights $(n-1, n-2, \dots, 2, 1, 0)$. The sum of those weights is, of course, $(n)(n-1)/2$. Consider $n = 6$; the sum of the weights is 15. Thus, we may equivalently represent the Borda vector for $n = 6$ as $(1/3, 4/15, 1/5, 2/15, 1/15, 0) = (.33, .27, .20, .13, .07, 0)$ so that its values sum to one.

Among scoring rules, any representation of the Borda rule is uniquely characterized by the property that the difference between each pair of immediately adjacent values in its characterizing vector is a constant. In contrast, the scoring rule used in Nauru has values of the form $(1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \text{etc.})$. For $n = 6$, we can normalize those weights by dividing through by

$$\sum_{n=1, 6} (1/n) = 2.45$$

This gives us the Nauru vector $(.41, .20, .14, .10, .08, .07)$. However, since any scoring rule is the equivalent of any other scoring rule that is a linear transformation of the first rule, we can make the Nauru rule more obviously comparable to the Borda rule by first subtracting $1/6$ from each of the values in the vectors above and then renormalizing. This gives us a normalizing factor of $\sum_{n=1, 6} (1/n) - 6 \cdot 1/6 = 1.45$,

to be applied to the original vector after $1/6$ has been subtracted from each value. This gives us an equivalent vector of $(.57, .23, .11, .06, .02, 0)$.

If we compare this latter vector with the normalized Borda vector of (.33, .27, .20, .13, .07, 0) it is apparent that the Borda rule places greater weight on intermediate values and less weight on first place and near to last place values than does the scoring rule used in Nauru. This suggests that the Nauru rule might be closer to plurality in its choices than the Borda rule. Of course, the relative weights the rules attach to voter's higher ranked and lower ranked alternatives depends upon n . But we find that the Nauru rule uniformly places higher weight on first place choices than does Borda, for all values of n except $n=2$, where both rules are equivalent to picking the candidate with the most first place votes, since Borda declines less rapidly from the top and thus when we normalize we find that the highest ranked item is less highly weighted as we increase n . While the normalization also lowers the weight attached to the highest ranked item under the Nauru rule, that share does (under the normalization where all weights sum to one) does not go down as slowly.

The Nauru system was devised by the country's Secretary for Justice, an Irishman, Desmond Dowdell, in 1971. It requires voters to record as many preferences as there are candidates (i.e. ranking is compulsory to record a valid vote). Instead of then eliminating the lowest polling candidates, as under the alternative vote or single transferable vote systems, the Nauru system entails an immediate tallying of all preferences. In this sense, it resembles the Borda rule. However, with the Nauru rule, a first preference is worth '1', a second preference '0.5', a third preference '0.33', a fourth preference '0.25' and so on. Hence, in a hypothetical constituency with three candidates, if one candidate obtains ten first, ten second and ten third preferences, his or her vote tally will be 18.333 [i.e., $(10 \times 1) + (10 \times 0.5) + (10 \times 0.333)$]. By contrast, the Borda count weights preferences differently depending on the number of candidates, according to a principle that ensures that the gap between each preference value is equal. Figure 1 shows twenty alternative Borda rankings, dependent on the number of candidates, as compared to the single Nauru ranking scheme (the bold black line).

Nauru & Borda Count Preference Values with 2-20 Candidates

The graph illustrates the relationship between the number of candidates (X-axis, 1 to 20) and the value of preferences (Y-axis, 0 to 1) for two counting methods: Nauru and Borda. The Nauru method (thick line) shows a gradual decrease in preference value as the number of candidates increases, while the Borda method (thin line) shows a more rapid decrease, reaching zero at 20 candidates. Other lines represent intermediate preference values, all starting at (1, 1) and ending at 0 at various candidate counts.

Number of Candidates	Nauru	Borda	Intermediate 1	Intermediate 2	Intermediate 3	Intermediate 4	Intermediate 5	Intermediate 6	Intermediate 7	Intermediate 8	Intermediate 9	Intermediate 10	Intermediate 11	Intermediate 12	Intermediate 13	Intermediate 14	Intermediate 15	Intermediate 16	Intermediate 17	Intermediate 18	Intermediate 19	Intermediate 20
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	0.50	0.50	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00
3	0.33	0.33	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00
4	0.25	0.25	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00
5	0.20	0.20	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00
6	0.17	0.17	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00
7	0.15	0.15	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00
8	0.13	0.13	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.11	0.11	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.10	0.10	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.09	0.09	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.08	0.08	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.07	0.07	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.06	0.06	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.05	0.05	0.30	0.25	0.20	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.05	0.05	0.25																			

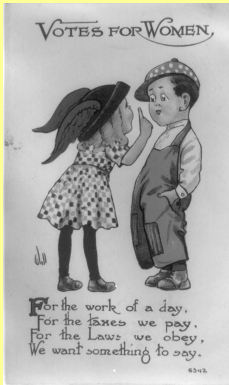
Thinking About Voting and Elections

- I. 10 Key Elements of the Election Process + 1**
- II. 4 Loci for Electoral System Effects**
- III. 4 BIG Questions about Electoral Engineering-Traditional**
- IV. 3 BIG Questions about Electoral Engineering-Today's talk (if I get that far)**
- V. 3 Issues of Measurement of Party System Effects**
 - I. Proportionality**
 - II. Responsiveness**
 - III. Partisan Bias**
- VI. 7 Basic Modes of Political Manipulation**
- VII. Electoral Manipulation under Plurality**
 - I. Plurality in single seat constituencies**
 - II. Plurality Bloc Voting**
- VIII. What Electoral Rule(s) is(are) the Dictator's Friend(s)**
 - I. Runoffs**
 - II. Party Slate Bloc Voting**
- IX. What Electoral Rule(s) is(are) Good for Fledgling Democracies**
 - I. The Alternative vote vs. proportional methods**
 - II. Which form of PR is best?**
- X. What Electoral Rules Foster the Representation of Women**

Thinking About Voting and Elections (cont.)

- XI. 5 Approaches to the Study of Electoral Systems**
- XII. 5 Theories of Electoral Rule Origins**
- XIII. 10 Key Elements of the Election Process + 1 revisited in detail**
- XIV. Measurement Tools and Methods of Graphical Display**
- XV. Some Final Thoughts**

I. TEN KEY ELEMENTS OF ELECTIONS TO PUBLIC OFFICE



Suffrage



Political Parties

Candidates



Etc.

I. Ten Key Elements of Elections for Political Office



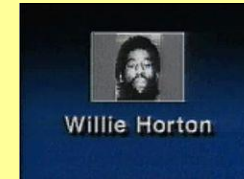
Districts

Campaign



Finance

Campaigns



Election Timing

**Voter
Cognitions
And
Evaluations**



Ballots



**Ballot Aggregation
Mechanism**

Political Parties



Candidates



Ballots

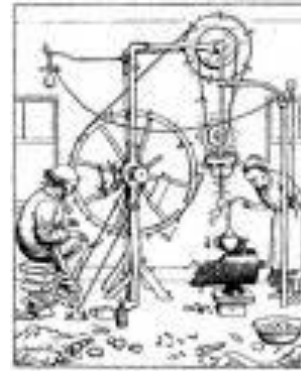


THE ELEVENTH ELEMENT IN U.S. (and some other) ELECTIONS



Aggregation Rule

- in smds
 - simple plurality
 - Ranking method (Alternative vote/STV in a single seat, Coombs, Borda, Balinski and Laraki methode majoritaire, Dowdall, etc.)
 - Other voting methods (approval voting, vote for k)
- in mmds
 - list PR (Quota variants of PR vs. Greatest remainder variant of PR)
 - STV and other ranking methods
 - cumulative voting
 - SNTV
 - semi-PR (limited voting other than SNTV)
 - Plurality Bloc Voting
 - Party Slate Bloc Voting
- in mixed system (smds for some, mmds for others) with PR or semi-PR in mmds
 - with or without compensatory seats
 - with single vote or double vote structure



Types of Choices- Number of Winners/ Number of Rounds of Balloting

How many candidates are chosen? //How many rounds of balloting are needed?	Exactly 1 winner	1 or 2 winners	1, 2, , up to k (many) winners
Exactly 1 round	<p>simple plurality (U.S.)</p> <p>alternative vote (Australia)</p> <p>Borda rule (CNRS)</p>	<p>former British 2 seat constituencies (using limited voting)</p> <p>first round of French presidential elections</p>	<p>list PR</p> <p>single non-transferable vote</p> <p>first round of French legislative election (up to 8)</p> <p>limited voting in Spain</p>
Between 1 and 2 rounds	<p>double ballot (France)</p> <p>Non-partisan double ballot (Louisiana)</p> <p>Various forms of presidential elections (Latin America)</p>		
Between 1 and k (many) rounds	<p>MRSE elections (leadership choice in U.S. and Canadian parties)</p>		

Further complications in PR or mixed systems

- Geographic tiers?
- Thresholds?
 - national
 - local
- Bonus rules?
- Open List or Closed List?



SOME NOTES OF CAUTION



**AS IS APPARENT FROM THE PREVIOUS SLIDES
THERE ARE LOTS AND LOTS AND LOTS
OF DIFFERENT VOTING RULES,
AND NUMEROUS VARIANTS THEREOF.**

**TO KEEP LIFE SIMPLE, WE WILL FOCUS
ON ONLY FIVE VOTING RULES:
USING SIMPLE PLURALITY AS A BASELINE OF
COMPARISON**

- 1. Party Slate Bloc Voting**
- 2. The two round ballot (majority runoff)**
- 3. The Alternative Vote (a.k.a., the Instant Runoff)**
- 4. The list form of proportional representation (PR)**
- 5. Systems that mix PR and some form of Plurality**

III. 4 TRADITIONAL BIG QUESTIONS ABOUT ELECTORAL SYSTEM EFFECTS

V. 3 ISSUES OF MEASUREMENT

- a. Proportionality**
- b. Responsiveness**
- c. Partisan Bias**

5. 3 Tools for Measurement of Electoral System Effects on Parties

1. Proportionality

a. in theory (*a priori*)

Threshold of Exclusion

Threshold of Representation

b. In practice

Loosemore Hanby Index of Distortion

Gallagher Index

empirical measures of responsiveness

2. Responsiveness

a. in theory (*a priori*)

the “cube law” for plurality in single seat districts

b. In practice

regression estimates of the coefficient of responsiveness using historical data on aggregate outcomes

log odds and other logit forms for estimating hypothetical swing ratio from constituency data in a single election (with or without the uniform swing assumption)

aggregate measure of *swing* in a single election

3 Tools for Measurement of Electoral System Effects on Parties (cont.)

3. Partisan Bias

a. in theory (*a priori*) -- I DON'T KNOW ANY

b. In practice

regression estimates using aggregate level historical data to simultaneously estimate swing ratio and bias

log odds and other logit forms for simultaneously estimating hypothetical swing ratio and bias from constituency data in a single election (with or without the uniform swing assumption)

comparisons of means and medians of the two party (or two bloc) distribution of votes at the constituency level

NORMATIVE QUESTIONS ABOUT CHOICE OF ELECTORAL RULES

- 1. Do you redistrict solely on the basis of geography or you mix in other consideration, e.g., gender quotas, ethnic rolls, racially targeted district boundary drawing?**
- 2. Do you use a plurality or majoritarian type of electoral rule or do you use some form of proportional representation, or do you adopt a mixed system?**
- 3. If you opt for plurality/majoritarian rules, do you go with first-past-the post in SMDs (Britain, Canada, and other former British colonies), the two round ballot or some other form of runoff (France and many former French colonies); first-past-post in multi-seat constituencies with simple plurality with or without numbered places (U.S. local elections); first past the post in multi-seat constituencies with plurality list bloc voting (Singapore); the alternative vote (Australia, Fiji), or some type of scoring rule that allows voters to input a ranking of alternatives, with alternatives lower down in the ranking not counted as highly as those more highly ranked (Nauru)?**
- 4. If you opt for PR do you use STV (as in Ireland), or a list form of PR (as in most of the Western world that is not English speaking?**
- 5. If you use list PR do you use open or closed lists?**
- 6. If you use list PR what form do you use (e.g., largest remainder, or one of the quota rules such as D'Hondt or Sainte Lagüe)?**
- 7. If a mixed rule, is it MMM or MMP; is it one ballot or two?**
- 8. Do you have threshold for representation, do you have a bonus rule for either parties or blocs?**

V(a). PROPORTIONALITY

proportionality of party representation

One way to understand an essential feature of any voting rule is to look at its *Threshold of Exclusion* (Gallagher, 1992). Rae, Hanby and Loosemore (1971) define the *Threshold of Exclusion* (TE) as the largest vote share a party can receive and still, be denied any seats in the district (see also Rae, 1967, 1971). Calculating the value of TE for any voting rule involves a hypothetical worst case scenario in terms of the distribution of votes among the other parties that will minimize the given party's seat share.^[1] The *Threshold of Exclusion* is a commonly used metric in the political science literature on electoral systems, though it is not well known in the social choice literature.

The *Threshold of Exclusion* has been calculated for all of the better known voting rules used at the national parliamentary level (Rae, Hanby and Loosemore, 1971; Lijphart and Gibberd, 1971; Grofman, 1975; Gallagher 1992).

¹ Paralleling the *Threshold of Exclusion* there is also a *Threshold of Representation*, which is the smallest vote share a party can receive and still win at least one seat in the district (see Rae, Hanby and Loosemore, 1971; Rae, 1971). The *Threshold of Representation* involves a hypothetical best case scenario in terms of the distribution of votes among the other parties that will maximize the given party's seat share.

proportionality of party representation (cont.)

The calculation of TE for virtually all the usual list PR rules, as well as for plurality bloc voting, and ranked methods like the single transferable vote, is simplified by the fact that the strategy specified by maximizing the likelihood that Party A will win a seat is a *pure strategy*, i.e., one which contains no probabilistic elements or randomization across different options. The strategy of those who wish to prevent Party A from winning even as much as one seat is likewise a *pure strategy*: those who wish to prevent Party A from gaining any parliamentary representation, and are prepared to dispense with all other objectives, should pool all their votes and put them behind a single joint candidate or list. In other words, we find TE by acting as if we were in a situation of polarized two party politics. This makes for a *zero-sum game* and so, to find the *Threshold of Exclusion* for the more common electoral rules, we solve the game by finding the *minmax strategy* (Owen, 1975) which optimizes against the worst case scenario for the opposition.

As a result of this simplification to pure strategies, the algebra in calculating a threshold of exclusion is made easy. For example, to find the *Threshold of Exclusion* for the D'Hondt form of list PR we recognize that, in an M seat district, for a party with a share x of the vote ($0 < x < 1$) to win at least one seat, the bloc with a vote share of $1-x$ must not be large enough to win all M seats. But for D'Hondt, since the D'Hondt divisors are 1, 2, 3, ..., M, to win M seats with a vote share of $1-x$, it is necessary that $(1-x)/M > x$. After straightforward algebra this simplifies to $x > 1/(M+1)$.

proportionality of party representation (cont.)

	Threshold of exclusion – maximum vote share with which it is possible not to win a seat	Threshold of representation – minimum vote share with which it is possible to win a seat
	If $s > (p - 1)$	
Imperiali highest averages	$2/(s + 3)$	$2/(s + 2p - 1)$
D'Hondt	$1/(s + 1)$	$1/(s + p - 1)$
STV	$1/(s + 1)$	0
Modified Sainte-Laguë	$1.4/(2s - p + 2.4)$	$1.4/(2s + 1.4p - 2.4)$
Pure Sainte-Laguë	$1/(2s - p + 2)$	$1/(2s + p - 2)$
Danish	$1/(3s - 2p + 3)$	$1/(3s + p - 3)$
LR-Imperiali	$1/(s + 1)$	$3/(p(s + 2))$
LR-Droop	$1/(s + 1)$	$2/(p(s + 1))$
LR-Hare	$(p - 1)/ps$	$1/ps$

Fig. 2. Thresholds of exclusion and representation under seat allocation methods

Source for d'Hondt, pure and modified Sainte-Laguë and LR-Hare thresholds: Lijphart and Gibberd, 'Thresholds and Payoffs', p. 225.

Notes: p denotes number of parties, s number of seats.

When $(p - 1) \geq s$, the threshold of exclusion is $1/(s + 1)$ for all methods except Imperiali highest averages, where it remains at $2/(s + 3)$.

When $s \geq (p - 1) \geq s/2$, the modified Sainte-Laguë threshold of exclusion is $1.4/(1.6s - 0.2p + 1.6)$.

Under equal proportions and Adams, winning just one vote guarantees representation, provided there are as many seats as parties. Under these conditions each has a threshold of exclusion of zero and a threshold of representation of one vote.

For STV, 'vote' refers to first preferences only. We are no longer making the assumption that all transfers remain within the party fold.

proportionality of party representation (cont.)

If TE is $\frac{1}{2}$ we have a majoritarian system; when TE declines with district magnitude M, then electoral rules are more proportional in their effects. However, as Rein Taagepera (personal communication, June 4, 2004) observes: “The same electoral rules can lead to vastly different disproportionality, even in the same country and even in consecutive elections,” so a purely theoretically derived index of disproportionality such as the threshold of exclusion may be misleading. To deal with this problem, scholars commonly calculate empirical indices of disproportionality over several different elections held under a given set of electoral rules. For partisan *elections*, i.e., elections involving competition where all or most politically viable candidates run on a party label, the two most common measures of overall proportionality are the *Loosemore-Hanby Index of Distortion* (Loosemore and Hanby, 1971).^[1]

$$D = \frac{1}{2} \sum |v_i - s_i|,$$

with v_i the vote share of the i th party and s_i the seat share of that same party; and the *Gallagher Index* (Gallagher, 1991),

$$Gh = [\frac{1}{2} \sum (v_i - s_i)^2]^{0.5}.$$

^[1] The usual citation to this index is Loosemore and Hanby (1971) but the same idea is found in other contexts in earlier work (see Taagepera and Grofman, 2003).

proportionality of party representation (cont.)

Based on the formal (mechanical) properties of electoral systems, using some straightforward algebra, we would expect that, *ceteris paribus*, the closer the threshold of exclusion of the electoral rule is to zero, the more disproportional will be the results of elections under that rule. In other words, for electoral rules that involve proportionality, the larger the district size more proportional the expected results. In contrast, if we had two-party plurality competition, the theoretically worst case would give us a disproportionality of nearly one-half. But we also expect that, the closer the threshold of exclusion is to zero, the more parties there are that will contest the election, since the incentives are for smaller parties to contest if there is a chance they might be successful

impact on number of candidates/parties who compete/win

Duverger (1955) hypothesized that single member district plurality will tend to generate two-party competition at the level of individual districts, and Duverger also proposed that PR systems would generate multiparty competition, as would two round ballots (majority rule runoffs). We can synthesize these results by proposing that (except possibly for runoff systems) the lower the *threshold of exclusion*, i.e., the minimum vote share that will guarantee a party at least one seat regardless of the distribution of votes among its opponents, the greater the number of parties we can expect to compete in a given district. The key reason we expect such a result is that when parties (and their candidates) are instrumental in seeking office in order to win (and not just, say, to “send a message”), then only parties that have some reasonable prospect of achieving electoral success should enter political competition. What Duverger refers to as the *psychological effect* of electoral rules. For Duverger the *mechanical effect* of electoral rules is the simple mathematical fact that in a district of size M , no more than M parties can be elected.

The Plurality systems have the highest threshold of exclusion of any electoral system, while among PR systems, the higher the district magnitude, the lower the threshold of exclusion (or of representation), and thus the easier it is for parties to achieve representation with only relatively limited electoral support. Thus, for any electoral rule (with the exception of plurality bloc voting and party slate bloc voting), expectations of possible electoral success should increase with district magnitude, and thus more parties should be expected to compete at the district level.

proportionality of party representation (cont)

The existence of both a mechanical and an incentive effect (psychological effect) means that differences in disproportionality as we increase district magnitude are not as large as we might first think based on the purely mechanical effects of district magnitude. The reason is that PR systems with high district magnitude tend to be contested by more parties than PR systems with a lower district magnitude, and the fact that, even with a highly proportional system, some of these parties will still not achieve representation. Thus, the incentive effect of district magnitude, which acts to increase disproportionality by increasing the number of parties, operates in an opposite direction to the mechanical effect of district magnitude in reducing disproportionality. In other words, there is reciprocal causality between number of parties and disproportionality.

Taagepera and Shugart (1989) were apparently the first to call attention to the phenomenon of the countervailing incentive effects of increased district magnitude on disproportionality.

V(b). RESPONSIVENESS

responsiveness

For two-party competition (or two bloc competition treated as “ins” versus “outs”), yet another approach to measuring disproportionality empirically is in terms of the *swing ratio*. There are a number of different ways to estimate this ratio. The most common approach is to follow Tufte (1973) in stating seats-votes relationship in log odds form.^[1] Tufte (1973) proposed that, in two party legislative competition,^[2] a party can expect to be receive a share of seats such that

$$\log (s/(1 - s)) = k \log (v/(1 - v)) + \beta. \quad (1)$$

Here, the closer k is to 1 the closer we are, empirically, to proportionality. When the swing ratio is high then the vote shares of the largest party is magnified.

If we disregard partisan bias, the β term, then, roughly speaking for every one percentage point over 50% in vote share the larger party (larger of the two blocs) has, it will gain k percentage points of seat share. Thus, with no partisan bias, if the swing ratio were 3 and the more successful of the two parties got 54% of the votes, it would expect to get 62% of the seats. If the swing ratio were 5 it would expect to get 70% of the seats with 54% of the votes.

Responsiveness (cont.)

[1] Other approaches include a simple linear representation, which can be taken to approximate a more complex non-linear function for two party competition with parties relatively even in strength (Dahl, 1957), the log odds approach of Taagepera (see e.g, Taagepera and Shugart, 1989), which differs from that of Tufte in not having an explicit term for partisan bias (see below), and the bi-logit approach of King and Browning (1987).

[2] In order to minimize the complexities of the discussion and formalization we will limit our examples to two party competition.

Responsiveness (cont.)

There is theoretical statistical work, involving an assumption of normality of the partisan vote distribution, that generates the so-called “cube law” for two-party competition involving single seat districts electing under plurality, i.e., an expected swing ratio of 3 (see discussion in Tufte, 1973). In real world settings using plurality elections in single seat constituencies, the swing ratio tends to be under 3, often relatively close to 2 (CITES).

V(c). BIAS

partisan bias

For two-party competition (or two bloc competition treated as “ins” versus “outs”), in the Tufte (1973) model of two party legislative competition, the last term in the equation we previously presented is commonly taken as our measure of partisan bias

$$\log (s/(1 - s)) = k \log (v/(1 - v)) + \beta. \quad (1)$$

We can think of *partisan bias* as the difference in seat share between a party (or party bloc) and a seat share of fifty percent when that party (bloc) has achieved exactly fifty percent of the votes. If there were no partisan bias, i.e., $\beta = 0$, then, when $v = .5$, $v/(1-v) = 1$. But $\log 1 = 0$, so it must be the case that, under these assumptions, $\log (s/(1 - s)) = 0$, which can only happen if $s = 1 - s = .5$. When there is no partisan bias, then the electoral rules treat both parties (blocs) symmetrically in terms of translating votes into seats.

partisan bias (cont.)

In situations where voting rules and the structure of party competition are both essentially fixed, k and β can be estimated by fitting equation (1) – or similar specifications -- to data about aggregate election results over a series of elections.

However, the preferred method to estimate these parameters in two-party (two-bloc) competition is via a simulation done with aggregate data at the constituency level in which we begin with actual election results and then vary the vote share received by one party (treating the other party's vote share as its complement), and plot the relationship between vote share change and the magnitude of the change in seats, and then use this plot to estimate the two parameters of interest (see e.g., Campagna and Grofman, 1990). ^[1]

^[1] In the more sophisticated versions of such simulations, such as those that can be done using Gary King's program *Judgelt* <http://gking.harvard.edu/Judgelt> , other parameters, such as incumbency can be factored in. See also Grofman and King (2007). For a more technical discussion of *swing ratio* and *bias* in two party competition see Grofman (1983). For a discussion of how various factors interact to determine seats-votes relationships see e.g., Grofman, Koetzle, and Brunell (1997), Johnston (2002). For generalization to multi-party competition see Brookes (1960) and Johnston et al. (2002).

partisan bias (cont.)

Using constituency level data to generate hypothetical seat vote relationships will generally yield the best estimates of both *bias* and *swing ratio* --- factors which are difficult to separate out (Grofman and King, 2007). But, when constituency level data is not available, and when we are more interested in just tracing trends than in being precise about parameter measurement, a quick and dirty way to proceed is to find the aggregate vote share for the dominant party bloc at the national level V_D , and to find the national seat share for that party, S_D , and then calculate

$$(S_D - .5) / (V_D - .5) \quad (2)$$

If both S_D and V_D are above .5, Eq. (2) gives us an approximation for the *aggregate level swing ratio*.

However, this approximation does not take partisan bias into account, and it is also sensitive to the voting share of the ruling party in that a party that wins overwhelmingly is thereby limited in its maximum feasible swing ratio as calculated using Eq. (2).¹

¹Note, too, that, if V_D is below .5, but S_D is above .5, we will get negative values, suggestive of a strong partisan bias in favor of the ruling party.

4. SOME PECULIAR PR RULES CAN ENCOURAGE “PHONY” PARTIES

The *uberhang* rules in mixed (MMP) systems -- encourages insincere voting and the creation of “phony parties,” because it allows for violation of the social choice criterion (Arrow, 1962) of *positive responsiveness* of voting (e.g.. Germany)

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X. Rules to Achieve Gender or other Forms of Group Representation

- 1. Various forms of gender quotas**
 - a. Suggested proportions backed by mere exhortation**
 - b. Suggested proportions backed by weak laws**
 - c. Enforced reserved seats, e.g, zipper quotes.**
- 2. Unusual forms of quota**
- 3. Separate voting rolls**

X(C). SEPARATE ROLLS

TBA

XI. Five Approaches to the Study of Electoral Systems

- 1. mainstream empirical research using standard statistical tools,**
- 2. rational choice and game-theoretic models**
- 3. the embedded systems approach**
- 4. the social physics perspective of Rein Taagepera**
- 5. social choice theory**

1. Mainstream Approaches

Mainstream empirical research

- (a) seeks to measure the effects of particular electoral rules, cross-nationally or across different units in the same polity, by techniques such as regressing an outcome variable (e.g., party variables such as the (effective number) of political parties or measures of proportionality of seats-votes relationships, measures of descriptive representation of racial/ethnic/ religious minorities, policy variables such as degree of tax progressiveness) against electoral system features and some set of control variables.**
- (b) There are three key questions which have dominated the mainstream empirical literature:**
 - i. “How proportional are different voting methods in translating party vote share into party seat share?”**
 - ii. “How many parties can we expect?”**
 - iii. “How does electoral system choice impact on governability?”**

2. Rational Choice Approaches

Downs (1957) is the *locus classicus* for this approach; while Cox (1997) is, perhaps, the most important contemporary exemplar.

(a) A key feature of this approach is a concern for strategic behavior on the part of voters and candidates/parties. Much of this work has modeled party platforms as points in a multidimensional issue space, and focused on how parties would locate themselves in terms of announced platforms in seeking to maximize their vote share or accomplish other objectives

(b) Customarily results are in the form of *theorems* about how electoral system effects are determined by the incentives different rules provide for the behavior of voters and parties/candidates under different assumptions about the utility functions (proximity versus directional, or some combination thereof) we ascribe to voters, and the utility functions (office seeking, policy seeking, or some combination thereof) we ascribe to parties/candidates. However, soft rational choice approaches may look at incentive structures without trying to deduce/claim the existence of equilibria.

2. Rational Choice Approaches (cont.)

(d) To understand electoral system effects we must understand both the formal properties of electoral rules (including the prosaic fact that the maximum number of parties elected in a constituency is capped by the number of seats that are up for election) and the (short run and long run) incentives for voters, candidates and parties created by those rules. While the formal properties of electoral rules determine how “inputs,” i.e., completed ballots, will be converted into electoral outcomes, it is the structure of electoral incentives that helps determine both what options will actually be available to the voters on the ballot and how voters will decide among those options. In particular, when there is *strategic voting* such that votes do not always support the candidate/party they most prefer if they do not believe that this candidate/party has a realistic chance to be elected, then the nature of the relationship between underlying voter preferences, electoral rules, and electoral outcomes may be significantly affected. Electoral incentives -- in conjunction with beliefs about likely outcomes under different scenarios -- affect not just voter choice but also how many parties or candidates we can expect and also which candidates/parties might choose to run. Electoral incentives affect as well how those candidates/parties will position themselves, and how they can be expected to behave if elected to office.

3. Embedded Systems Ideas

The hallmark of this style of work is concern for the impact of electoral rules in the context of the overall constitutional, social, and party systems in which they are embedded, Of special concern are

- (a) how similar systems can yield different outcomes in different contexts,
- (b) the need for care in attributing causality to electoral system effects when the choice of electoral rules may be endogenously determined, which leads to an interest in experiments and natural experiments
- (c) attention to how seemingly trivial differences in electoral rules, e.g., different rules for nominating candidates, can have major consequences.
- (d) The term '*embedded systems*' is introduced in Grofman (1999a, b, c) and used in subsequent work by Grofman and co-authors (see e.g., Bowler and Grofman, 2000a, b; Fraenkel and Grofman, 2006) but many others use this approach without calling it by that name.

4. Social Physics Approach

The social physics approach is inspired by statistical thermodynamics ideas in physics.

- (a) It makes use of only a handful of key variables,**
- (b) uses functional forms which must yield results consistent with the boundary conditions determining the range of feasible outcomes,**
- (c) does not attempt to predict the effects of electoral rules in individual political units, but seeks instead to precisely predict effects on average, and**
- (d) requires that the left hand (dependent) and right hand (independent) variables be stated in a fashion that yields dimensionally comparability**
- (e) This approach is uniquely characteristic of the work of Rein Taagepera and some of his students (see e.g., Taagepera and Shugart, 1989; 1993).**

5. Social Choice Approaches

Social choice theoretic approaches are ones which

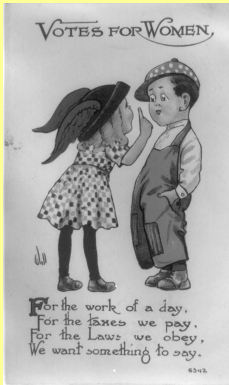
(a) look at axiomatic representations or properties of voting rules in the spirit of Arrow (1951, 1963), with conditions that usually have a normative bite to them (e.g., Young, 1974);

(b) are concerned about the structure of individual preferences, e.g., the extent to which preferences are *single-peaked* (Black, 1958; Arrow, 1963) or satisfy other domain restrictions; and

(c) may focus on comparing voting rules in terms of the probability of achieving certain kinds of normatively desirable results, e.g., choosing a Condorcet winner (Merrill, 1984; Vandercruyssen, 1999), or simply in terms of the probability that different methods will yield the same outcome for a fixed set of voter preferences

XII. Electoral System Origins

- a. Strategic calculation of short run or long term party advantage (Benoit)**
- b. Diffusion effects (Elklit)**
- c. Inheritance effects (Mozaffer)**
- d. Congruence between new electoral rules and the past structure of party systems (Colomer)**



Suffrage



Political Parties

Candidates



Etc.

I. Ten Key Elements of Elections for Political Office



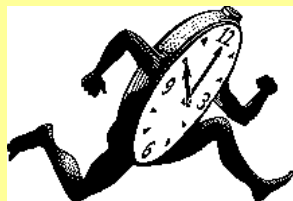
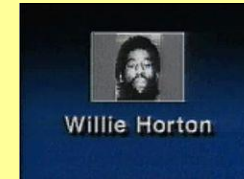
Districts

Campaign



Finance

Campaigns



Election Timing

**Voter
Cognitions
And
Evaluations**



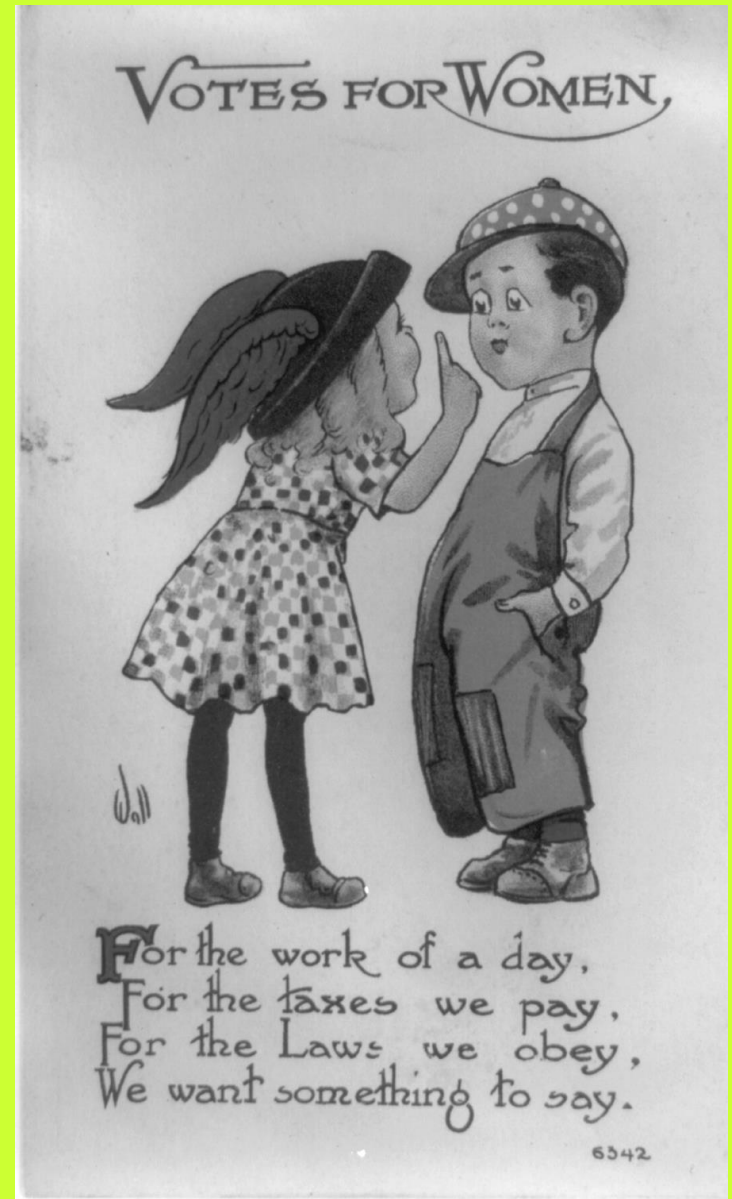
Ballots



**Ballot Aggregation
Mechanism**

Suffrage

age
income/property ownership
gender
religion
race/ethnicity
citizenship



Electoral Authoritarianism

In Egypt, in 2011, when asked if they were voting in the upcoming presidential elections, women in a lower-class market said that they were not voting for president.

Shaking their heads when informed they could vote, they insisted that the military would determine the president. They believed there were elections for parliament, but not for the presidency.

Lust, Ellen 2012. “Voting For Change: The Pitfalls And Possibilities Of First Elections In Arab Transitions.” Program On Arab Reform and Democracy, CDDRL, Stanford University and the Brookings Institution.

Political Parties



**Political parties created democracy,
and modern democracy is unthinkable
save in terms of the parties.**

E. E. Schattschneider, ca. 1940

Empirical work supports the theoretical expectations that both the (effective) number of parties competing for office and the (effective) number of parties represented in parliament increases monotonically with m (see e.g., Taagepera and Shugart, 1989; Lijphart, 1992). Cox (1997) provides a game-theoretic argument that the number of viable parties who compete in a constituency will be bounded by $m + 1$. Taagepera and Shugart (1989) provide empirical evidence to show that, in general, the average *effective* number of parties elected to office in a constituency [\[iv\]](#) is roughly the square root of m , and thus increases (but not in a linear fashion) with m . Their argument is a statistical one about bounded variables and the principle of insufficient information. In a nutshell, since the number of parties elected from a district of magnitude m must be between 1 and m , they take the *geometric mean* of these bounds as their best *a priori* estimate of the (effective) number of parties represented in a given constituency of size m .

Party Role in Designating Candidates

In elections for local or national governmental bodies, while there can be nonpartisan elections and, often candidates will be allowed to run without a party label, most candidates run under a party label -- and it is the parties which designate the candidates entitled to appear on the ballot under that party's label



Parties choose candidates

- i. by mechanisms purely internal to the party's formal organization
- ii. by "primary" elections with voting restricted to party members/those registered as party affiliates,
- iii. in so-called "open primaries" where voters can choose the party primary in which they participate

Thus, we may distinguish

- i. electoral rules for a general election,
- ii. electoral rules for party nominations

with this distinction especially important if different parties handle nominations in different ways.

An electoral system feature that substantially affects the degree of party fragmentation is the set of rules governing ballot access. Many non-democratic nations have stringent legal restrictions on party competition, or in practice make it impossible for other parties to compete successfully with the ruling party. But even in some democratic nations with genuine political competition, such as the U.S. we can find a fairly drastic form of cartelized politics, in which existing major parties seek to restrict the domain of competition to bar further entrants by raising substantial legal barriers to new parties (or independents) qualifying for a listing on the ballot.

Candidates

Candidate qualifications

- i. age
- ii. signature requirements for nomination
- iii. party designation

Also we may have

- iv. term limits
- v. special requirements and quota rules (e.g., gender, race/ethnicity occupation– in Egypt half the legislators have to be either workers or farmers; In India 15 5% of the parliaments has to come scheduled castes and 7.5% from “tribes,” with designated seats for each and , for local election, there are rotating seats (1/3rd of all seats)in which only women can run; many countries that use PR have gender quotas for party lists; in U.S., usually only lawyers may run for elected judgeships.

Districts and Other Voter Grouping Mechanisms

There are many different ways to group voters, but the first listed of these, by geography, has become the dominant mode for elections to political office in the modern world.



i. Geographically based districts

Homogenous vs. Heterogeneous Constituencies (CPD)

District magnitude

Uniformly single seat districts

Multiple seat districts with all
districts of the same size

Mix of smds and mmds

Multiple seat districts of varying size
with no smds

Polity-wide electorate

Degree of malapportionment

i. Racial or religious or ethnic rolls

ii. Occupational voting/workplace voting

QUOTAS for workers and farmers

Egypt's candidates are classified either as workers (i.e., registered with a labor union), or farmers(dependent on agriculture for main source of income, but owning less than 10 feddans of land, which is equivalent to 10.4 acres,), or professionals (all others).

In each district, at least one half of seats must go to a worker or farmer, even if he or she is not one of the top two vote-getters. Candidates in ICs [single seat constituencies] are required to win at least 50 percent+ 1 vote to win the race, entering run-offs if they do not succeed in round one. If a worker or farmer fails to win in round one, the top two worker/farmer candidates advance to a run-off.

**Lust, Ellen 2012. "Voting For Change: The Pitfalls And Possibilities Of First Elections In Arab Transitions."
Program On Arab Reform and Democracy, CDDRL, Stanford University and the Brookings Institution.**

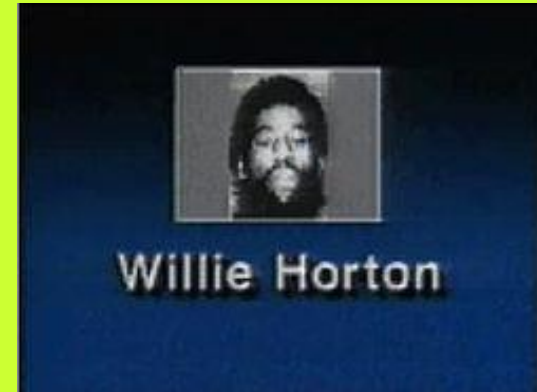
Campaign Finance



There are five key issues vis-à-vis campaign finance:

- i. Are there restrictions on campaign contributions?**
- ii. Are there restrictions on campaign spending?**
- iii. Are there rules that require disclosure of the sources of all (or perhaps only large) campaign donations?**
- iv. Is there public financing of campaigns (in whole or in part). And, If there is public campaign funding, are there rules that limit other fund-raising for those who accept public funds?**
- ii. Are the rules for campaign finance regulation different for parties and candidates than they are so called “independent” groups?**

Campaigning



There are at least three key issues vis-à-vis campaigning:

- i. Are there restrictions on the time period during which campaigns can be conducted?
- ii. Are there restrictions on negative or misleading campaign ads?
- iii. Are there rules requiring candidate access to the media?

Election Timing



There are three key issues vis-à-vis election timing:

- i. **Who decides when an election is held (fixed versus discretionary/vote of no confidence timing)?**
- ii. **Average time between elections**
- iii. **Concurrent or non-concurrent timing of elections for different offices**

Voter Cognitions and Evaluations



There are six standard models of voter choice in the political science literature:

- i. **social characteristics voting , e.g., racial bloc voting, class voting**
- ii. **issue voting/ideological voting (unidimensional or multidimensional)**
- iii. **candidate characteristics voting (trust in, perceived competence of)**
- iv. **party-line voting (party ID)**
- v. **retrospective (past performance-based) voting**
- vi. **Intimidation and bribery**

Ballot Structure

A. Ballot format

- i. Single X's
- ii. Multiple X's (subset choice)
- iii. Rankings
- iv. Point allocation

B. Votes for parties vs. votes for candidates vs. some of each

C. Single round versus multi-round

D. Ballot recording technology

- i. Paper
- ii. Lever
- iii. Punch
- iv. Optical scan
- v. Etc



SECRET BALLOTS?

In Tunisia, in 2011, Ellen Lust witnessed voters , particularly older ones, holding their ballots face-up, entirely exposed as they took them up to the ballot-box--reportedly a typical procedure in the Ben Ali regime.

Lust, Ellen 2012. “Voting For Change: The Pitfalls And Possibilities Of First Elections In Arab Transitions.” Program On Arab Reform and Democracy, CDDRL, Stanford University and the Brookings Institution.

Aggregation Rule

- in smds
 - simple plurality
 - Ranking method (Alternative vote/STV in a single seat, Coombs, Borda, Balinski and Laraki methode majoritaire, other)
 - Other voting methods (approval voting, vote for k)
- in mmds
 - list PR (Quota variants of PR vs. Greatest remainder variant of PR)
 - STV and other ranking methods
 - cumulative voting
 - SNTV
 - semi-PR (limited voting other than SNTV)
 - Plurality Bloc Voting/Party Slate Bloc Voting
- in mixed system (smds for some, mmds for others) with PR or semi-PR in mmds
 - with or without compensatory seats
 - with single vote or double vote structure
- in PR or mixed
 - Geographic tiers?
 - Thresholds?
 - national
 - local
 - Bonus rules?



SOME KEY QUESTIONS ABOUT CHOICE OF ELECTORAL RULES

- 1. Do you redistrict solely on the basis of geography or you mix in other consideration, e.g., gender quotas, ethnic rolls, racially targeted district boundary drawing?**
- 2. Do you use a plurality or majoritarian type of electoral rule or do you use some form of proportional representation, or do you adopt a mixed system?**
- 3. If you opt for plurality/majoritarian rules, do you go with first-past-the post in SMDs (Britain, Canada, and other former British colonies), the two round ballot or some other form of runoff (France and many former French colonies); first-past-post in multi-seat constituencies with simple plurality with or without numbered places (U.S. local elections); first past the post in multi-seat constituencies with plurality list bloc voting (Singapore); the alternative vote (Australia, Fiji), or some type of scoring rule that allows voters to input a ranking of alternatives, with alternatives lower down in the ranking not counted as highly as those more highly ranked (Nauru)?**
- 4. If you opt for PR do you use STV (as in Ireland), or a list form of PR (as in most of the Western world that is not English speaking?**
- 5. If you use list PR do you use open or closed lists?**
- 6. If you use list PR what form do you use (e.g., largest remainder, or one of the quota rules such as D'Hondt or Sainte Lagüe)?**
- 7. If a mixed rule, is it MMM or MMP; is it one ballot or two?**
- 8. Do you have threshold for representation, do you have a bonus rule for either parties or blocs?**



**The Devil is in the Details
(and/or in the Political Context)**

Types of Choices

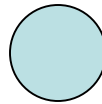
How many candidates are chosen? //How many rounds of balloting are needed?	Exactly 1	1 or 2	1, 2, , up to k (many)
Exactly 1	<p>simple plurality (U.S.)</p> <p>alternative vote (Australia)</p> <p>Borda rule (CNRS)</p>	<p>former British 2 seat constituencies (using limited voting)</p> <p>first round of French presidential elections</p>	<p>list PR</p> <p>single non-transferable vote</p> <p>first round of French legislative election (up to 8)</p> <p>limited voting in Spain</p>
Between 1 and 2	<p>double ballot (France)</p> <p>Non-partisan double ballot (Louisiana)</p> <p>Various forms of presidential elections (Latin America)</p>		
Between 1 and k (many)	<p>MRSE elections (leadership choice in U.S. and Canadian parties)</p>		

List PR Variants

- Quota Rules



d'hondt, Victor, 1841-1901
and
Eduard Hagenbach-Bischoff, 1833-1910

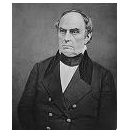


= Jefferson, Thomas, 1743-1826

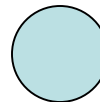


Sainte-Laguë, Andre, 1882-1950

= Webster, Daniel, 1782-1852



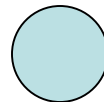
= Hill, Joseph Adna., 1860-1938
and
Huntington, Edward V., 1874-1952
(method of equal proportions)



= John Adams, 1735-1826



= James Dean (at U. Vermont 1806-182_)



- Non-quota Rules

Largest Remainder

= Hamilton, Alexander, 1755-1804



Political Parties



Candidates



Ballots



THE ELEVENTH ELEMENT IN U.S. ELECTIONS



TBA

XIII A. Measurement Tools

1. proportionality and bias measures

- a. Loosemore-Hanby Index of Disproportionality**
- b. Gallagher Index**
- c. swing ratio**
- d. threshold of exclusion**
- e. threshold of representation**
- f. symmetry index of partisan bias**

2. Number of Parties

- a. Laakso-Taagepera Index**
- b. Laakso-Taagepera-Banzhaf Index**

TBA

XIII . Graphical Tools

1. proportionality graphics

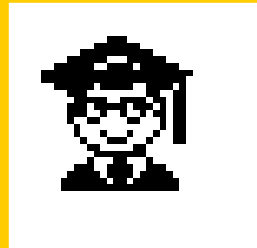
- a. Proportionality profile/index of advantage**
- b. Seats-votes curves**

2. Number of Parties/Blocs

- a. Simplex representations**
- b. Nagayama triangles**

TBA

XIV. SOME FINAL THOUGHTS ABOUT ELECTORAL SYSTEM CONSEQUENCES



Figg-Newton's

Three Laws of Electoral Systems

1. An electoral system once in place tends to stay in place.

There arise around it vested interests (most notably those who were elected under it) which are supportive of it, and suspicious of any change that may have consequences for them

2. No electoral system exists in a political vacuum. Its effects are a product of the electoral rules themselves (e.g., features such as the *threshold of exclusion*) and the specific socio-political context and political history in which the electoral system is embedded: $e=rc$

Relatedly, no electoral system works exactly the same way twice, since history matters; nor do electoral system effects duplicate on export.

3. For every reason to like an electoral system, there is a (near) equal, and mostly opposite, reason not to like it.

Because there are multiple criteria we use to assess theoretical properties and probable effects, no electoral system is uniformly best.



On the Joys and Flaws of the Push Toward Endogenizing Everything and Looking for Equilibria

The structure of electoral incentives involves a complex interplay between the incentives for voters and those for candidates and parties. Ideally, we seek to endogenize all relevant factors in a model of dynamic equilibrium -- which requires a game-theoretic perspective. But I wouldn't hold my breath waiting for that full story. Endogenizing is not only hard, for technical reasons, especially because there are all kinds of complicated interaction effects. but it may not really capture how actors think. I am skeptical that anybody really chooses based on a game theoretic as opposed to a decision theoretic model.

In Trying to Make Sense of Electoral System Effects It Quickly Becomes Apparent that Lots of Things Interact with Lots of Other Things

For example, in systems where there are separate presidential elections, the nature of the linkage between presidential and legislative elections can significantly affect the number of political parties. Summarizing past empirical work, Geddes (2003: 208) observes: “Where presidential and legislative elections occur at the same time ... two-party systems tend to emerge” even if legislative elections are held under PR.

The essential idea behind this result is that competition for the single office of president generates pressure for parties to coalesce behind a presidential candidate who has a chance of winning. But if they do that, they begin to lose their separate identities; while, on the other hand, parties that are not associated with a viable presidential candidate come to be seen as irrelevant and lose support. It’s easier for parties to resist such pressures for coalescing when elections for different offices occur on different schedules, since parties that have no hope of winning presidential office can, nonetheless, hope to continue to do well in legislative and municipal elections.

In Trying to Make Sense of Electoral System Effects It Quickly Becomes Apparent that Lots of Things Interact with Lots of Other Things (cont.)

But even the previous slide does not do justice to the complexity of the issue. In particular, the generalization given above must be qualified by the observation that, in presidential systems which use PR for legislative elections, “[p]residential runoffs encourage the formation of small parties” (Geddes, 2003: 208). This effect is expected to be strongest when a victory on the first round is scored only if a candidate receives an absolute majority of the votes cast. When there are runoffs, “rather than forming pre-election coalitions, small parties enter the first round in order to establish their bargaining power as coalition partners for the second round. Thus, for presidential systems with legislative elections held under PR, “party fragmentation tends to be greater in countries with presidential runoffs” than in countries where simple plurality determines the presidential winner (Geddes, 2003: 208).

The End

Notation

Let n be the number of units (or parties) being allocated seats (assume n fixed).

Let p_i be the population (or vote) share of the i th unit.

Let p be the total population

Let $P =$ the vector (p_1, p_2, \dots, p_n)

Let a_i be the integer allocation of seats to the i th unit, where $\sum a_i = h$.

Let $A =$ the vector (a_1, a_2, \dots, a_n)

Let h be the size of the legislature (assume h fixed).

Let λ be a (not necessarily integer) divisor, chosen so that, when we use some particular rule to "round" each of the components p_i/λ , the sum of these "rounded" values equals h .

Let $d(s)$ be a "divisor criterion," a monotonic function of s , defined for integer values of $s \geq 0$, which satisfies the property that

$$s \leq d(s) \leq s + 1.$$

Let D be a vector of (not necessarily integer) divisors, (d_1, d_2, \dots, d_n) , arrayed in order of increasing size.

Let j be the lower integer bound of p_i/λ .

Let $j + 1$ be the upper integer bound of p_i/λ .

Let q_i be set equal to hp_i , which we shall call the *quota* of the i th unit, i.e., the proportional share of seats that unit would be allocated if integer allocations were not required.

Adams sets $a_i =$ upper integer bound of p_i/λ ,
i.e., *the always round upwards rule.*

Dean sets $a_i =$ so as to round upward the ratio p_i/λ
above its
lower integer bound j to achieve a $(j+1)$ th seat if the remainder is at or
above
the harmonic mean of j and $j + 1$, where the harmonic mean of the two
values j and $j + 1$ is defined as $2/(1/j + 1/(j + 1)) = 2j(j + 1)/(2j + 1)$.

Hill/Huntington sets $a_i =$ so as to round upward the ratio p_i/λ
above its
lower integer bound j to achieve a $(j+1)$ th seat if the remainder is at or
above
the geometric mean of j and $j + 1$, where the geometric mean of the two
values j and $j + 1$ is defined as $(j(j + 1))^{.5}$.

Webster sets $a_i =$ closest integer to p_i/λ , i.e., the "normal"
rounding procedure in which we round upward the ratio p_i/λ above its lower
integer bound j to achieve a $(j+1)$ th seat if the remainder is at or above .5.

Jefferson sets $a_i =$ lower integer bound of p_i/λ , i.e., *the
always round downwards rule.*

Adams	set $d_j = (0, 1, 2, 3, \dots, n-1)$
Dean	set $d_j = (0, 1.333, 2.400, 3.429\dots, 2n(n+1)/(2n+1))$
Hill/Huntington ($n(n+1)/2$)	set $d_j = (0, 1.414, 2.449, 3.464\dots,$
Webster (Ste. Laguë)	set $d_j = (1, 3, 5, 7, \dots, 2n-1),$
or alternatively,	set $d_j = (.5, 1.500, 2.500, 3.500\dots, n-.5)$
Jefferson (d'Hondt) [1]	set $d_j = (1, 2, 3, 4, \dots, n)$

[\[1\]](#) The term d'Hondt is commonly applied in the electoral systems literature when the rule is defined in terms of division by the set of integers, as above; while it is often called the Hagenbach-Bischoff method when the rule is defined in terms of a largest λ -based division involving rounding up to the nearest integer, as defined earlier.

Balinski and Young (1980, 1982) offer another way to define the various divisor rules, now in terms of a divisor criterion $d(s)$, where the s_i are the integer values from 0 to h , and where we use the convention that, if $p_i > p_j$, then we treat $p_i/0 > p_j/0$. They observe that every divisor rule can be represented by an allocation function based on $p/d(s)$. At each stage of the allocation process, where we have already allocated h' seats, $0 \leq h' < h$, we may imagine that we have achieved a seat allocation of the form $A' = (a_1, a_2, \dots, a_n)$, such that $\sum a_i = h'$. Now we must decide how to allocate the $(h' + 1)$ th seat. Under this rule, we add the additional seat to unit i if and only if

$$p_i/d(a_i + 1) > \max_{j \neq i} p_j/d(a_j + 1).$$

For this method of defining divisor rules, for the five most commonly studied divisor procedures, we have:

Adams

$$\text{set } d(a) = a$$

Dean

$$\text{set } d(a) = 2a(a + 1) / (2a + 1)$$

Hill/Huntington

$$\text{set } d(a) = (a(a+1)).5$$

Webster (Sainte Laguë)

$$\text{set } d(a) = a + .5$$

Jefferson (d'Hondt)

$$\text{set } d(a) = a + 1$$

(a1) Adams minimizes

max (pi/ai)

or

(a2) Adams minimizes maximum over i, j of

$\{(a_i p_j - a_j p_i) / p_j\}$

(b) Dean minimizes

$\{\max (p_i/a_i) - \min (p_i/a_i)\}$

(c1) Hill/Huntington minimizes

max a_i/p_i

$\frac{\max a_i/p_i}{\min a_i/p_i} - 1$

d1) Webster (Ste. Laguë) minimizes

$\{\max a_i/p_i - \min a_i/p_i\}$

(e1) Jefferson (d'Hondt) minimizes

max (a_i/p_i)

The sixth rounding method rounds by looking at the greatest fractional remainders.

Hamilton look at the quotients, $q_i (= h/p_i)$ that we obtain by multiplying state population proportions by the size of the legislature, and first allocate seats according to the integer values of these quotients, then use the k *greatest fractional remainders* to fill out the remaining k seats in the chamber when the integer portions of the quotients give rise to a legislature of only size $h - k$.

To call someone a representative is usually to make a claim about how they are chosen and to whom they are accountable.

paraphrased from Hannah Pitkin, *The Concept of Representation*, 1967

The aim of every political constitution is, or ought to be, first to obtain for rulers men who possess most wisdom to discern, and most virtue to pursue, the common good of the society; and in the next place, to take the most effectual precautions for keeping them virtuous whilst they continue to hold their public trust.

James Madison (*Federalist #10*; quoted in Manin, Przeworski, and Stokes 1999, 46).

Thinking About Voting and Elections

- I. Elements of the Election Process**
- II. Typologies of Electoral Rules**
- III. Potential Consequences**
- IV. Electoral Engineering**
- V. Five Approaches to Electoral Systems**
- VI. Theories of Electoral Rule Origins**
- VII. Measurement Issues and Graphical Display**

Two Key Loci of Voting

- I. Voting to elect representatives to executive positions or to deliberative bodies*
- II. Voting within deliberative bodies

*By a deliberative body I mean private groups such as PTAs, corporate boards, church groups, other NGOs; governmental bodies such as city councils, state/regional and national parliaments; international governmental organizations such as the UN or the World Bank, and INGOs such as the Catholic Church or Greenpeace.

Two Continua of Voting

- A continuum from votes whose passage requires less than a majority (e.g., *certiorari* in the U.S. Supreme Court), to simple majority, to constitutional majority (i.e., where abstentions/no shows count as votes against) to super-majority requirements, to unanimity.
- A continuum from “one entity, one vote” to unequal weighting, to weighting so unequal that (in conjunction with the number of votes needed for passage) it privileges a single actors (or a few actors) with *veto power*.



A Useful Clue in Thinking about Typologies of Electoral Rules

Constituency Characteristics

- **District magnitude**
 - **Uniformly single seat districts**
 - **Multiple seat districts with all districts of the same size**
 - **Mix of smds and mmds**
 - **Multiple seat districts of varying size with no smds**
 - **Polity-wide electorate**
- **Bases for composing constituencies**
- **Voter homogeneity/ Constituency Partisan Distribution (CPD)**
- **Degree of malapportionment**

IV. Electoral Engineering

[I]. Duverger also hypothesized that there are strong incentives for party proliferation in two-stage run-off systems in which only candidates who received some specified level of support in the first round are allowed to compete in the second and final round.

ii See further discussion of runoff rules later in the text.

iii In general, for systems using PR for legislative elections, Jones (1995) argues that, while district magnitude is the most important single determinant of party fragmentation in parliamentary systems, its effects are overshadowed in presidential systems by the presence or absence of runoffs and by the nature of the election calendar.

It is common to view electoral systems along a continuum from *majoritarian* to *proportional*. List PR and plurality methods may be used to exemplify the poles of this continuum.

One standard way to define the proportionality continuum is to take an *a priori* approach in which proportionality is defined in terms of *the threshold of exclusion*, the maximum support that can be attained by a party while still failing to win even one seat in a district (Rae, Hanby, and Loosemore, 1971). Defining the low proportionality end of this continuum are plurality and majoritarian systems where the threshold of exclusion is $\frac{1}{2}$. In a given district of size m , the party which captures a plurality of the votes in that district gains all m seats; thus, the threshold of exclusion for that district is $\frac{1}{2}$ since a majority party *ipso facto* must have a plurality of the votes. Defining the high proportionality end of the continuum are systems involving proportional representation in nation-wide districts, where the threshold of exclusion is roughly $1/S$, where S is the size of the legislature.^[i] In between are multimember districts using proportional representation in districts of size less than S .^[ii] For example, in a district that elects nine members, the threshold of exclusion would be roughly 10%+ under most proportional voting rules because, no matter how votes were divided among the remaining parties, any party with 10%+ share of the vote cannot be denied representation (at least one of nine seats) in that district.^[iii]

Why should we care?

- 3. Some rules may lead to party proliferation that may make it difficult to form stable governments.**

4. **Scoring Rules and the Coombs rule can make it easier to get a Condorcet winner, and the same is true for approval voting with fewer than 4 parties**

Achieving Seats-Votes Discrepancy by Manipulating District Magnitude: Singapore

Table 4: Aggregate Level Calculations of Swing Ratio in Singapore, 1968-2011

	PAP Vote Shares	PAP Seat Shares	PAP Swing Ratio
1968	86.7	100.0	1.4
1972	70.4	100.0	2.4
1976	74.1	100.0	2.1
1980	77.7	100.0	1.8
1984	64.8	97.5	3.2
Average Swing Ratio pre- GRC			2.2
1988	63.2	98.8	3.7
1991	61.0	95.1	4.1
1997	65.0	97.6	3.2
2001	75.3	97.6	1.9
2006	66.6	97.6	2.9
2011	60.1	93.1	4.3
Average Swing Ratio post- GRC			3.3

Source: Calculated based on data from *Singapore Elections Department* website, available here: http://www.eld.gov.sg/elections_past_parliamentary.html