One woman, one vote. Though not in the USA, UK and France

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Subtitles:
- Correcting a fundamental confusion in political science on electoral systems.
- Deconstructing the Carey & Hix 2011 analysis on an "electoral sweet spot".
- Re-engineering the analysis of the design of electoral systems.
- Political science on electoral systems appears to be still in the humanities as a pre-science like homeopathy, astrology or alchemy.
- Alarm to the world ! Use the emergency brake ! *Madmen in authority* wearing the cloak of science are destroying democracy !

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Abstract

This paper gives an economic analysis of the design of electoral systems. In particular it evaluates how political science has been dealing with this issue. The main choice is between either district representation (DR) or equal or proportional representation (EPR). It appears that DR obliterates votes so that the principle of *One woman, one vote* and also article 21 in the *Universal Declaration of Human Rights* are violated. Holland in 1917 switched from DR to EPR but countries like the USA, UK and France still adopt DR. Brexit can be diagnosed as a result of the UK system of DR and the build-up of frustration on democracy within the UK itself. It appears that the advisory role of political scientists cannot be overlooked. Political science started in the humanities and only gradually adopted the methods of science, e.g. with the foundation of APSA in 1903. However, political science on the particular topic of electoral systems apparently still remains with its tradition in the humanities, in which assumptions are more important than analytical models and hard data. Political science on electoral systems is no experimental science, since one cannot experiment with nations and their elections. The situation is similar as for macro-economics or astronomy that also are observational sciences, yet the latter fields have managed better in adopting the methods of science. A new development uses laboratory experiments, but these obviously cannot replace actual elections for the US House of Representatives or the UK House of Commons. This paper focuses on a deconstruction of a study by Carey & Hix (2011) (C&H) on an "electoral sweet spot", that favours DR and that would mean the end of EPR. Other evidence on other studies is given in appendices. The deconstruction of the C&H study is sufficient evidence though, since it constitutes the culmination of a particular branch in political science. This branch appears to contain fundamental confusion and bias. Political science might regard this deconstruction as mere opinion but for science an empirical observation constitutes a fact. C&H also take 'the most frequent of good outcomes' as 'thus the best overall', which confuses frequency with optimality. This is more particular to their study, though other political scientists are already copying this confusion instead of criticising it. Proper science should step in and assist political science to become a real science.

Keywords

General Economics, Social Choice, Social Welfare, Election, Majority Rule, Parliament, Legislative, Party System, Representation, Proportion, District, Voting, Seat, Equity, Inequality, Lorenz, Gini coefficient, Voting Paradox, Arrow's Impossibility Theorem, Accountability, Interest congruence, Brexit, Disproportionality, SDID

1. General introduction

1.1. *One woman, one vote*

The *Universal Declaration of Human Rights* (UDHR) [1] states in Article 21:

> (1) Everyone has the right to take part in the government of his country, directly or through freely chosen representatives.
> (...)
> (3) The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which shall be by universal and equal suffrage and shall be held by secret vote or by equivalent free voting procedures.

A key distinction is between *District Representation* (DR) and *Equal or Proportional Representation* (EPR). Economics uses the term "equality" (share of income equals the share of effort) and political science uses the term "proportionality" (share of seats equals the shares of votes). The common term "equality" is to be preferred, for proper communication with the general public. [2] The general public better understands *inequality* than *disproportionality,* even when the words are intended to mean the same. See Colignatus (2017f) and **Section** 3.14 below for a measure of equality of shares or proportions, which measure is better than political scientists have been using till now.

If the principle of *One woman, one vote* [3] is adhered to, then logic leads to the conclusion that EPR is its proper translation for the representative body. 1 + 1 = 2, thus 1 + ... + 1 = *V,* and when *V* votes must be distributed over *S* seats, then *Q* = *V* / *S* is a proper quota for a seat. If a party has *w* % of the votes *V* then we expect to see *w* % of the seats *S.* This is fairly nearly the case in Holland, with some problems about rounding and such, see Colignatus (2017f).

The USA and UK use Plurality also known as *First Past The Post* (FPTP) [4] and France requires *Majority* or 50% of the district and has a second run-off round to cause this. **Table 1** contains an example of Single Member Districts (SMD). With 10 districts and seats and 100 voters, a minority of 36 votes for party *A* can still generate 60% of the seats in the House of Commons. This can happen even with the stronger criterion that a seat requires at least 50% of the votes in a district, as in **Table 1**.

Table 1. Example of 10 Single Member Districts (SMD) with 1000 votes

District	1	2	3	4	5	6	7	8	9	10
For *A*	6	6	6	6	6	6	0	0	0	0
For *B*	4	4	4	4	4	4	10	10	10	10
Wins	*A*	*A*	*A*	*A*	*A*	*A*	*B*	*B*	*B*	*B*

Even with a 50% criterion, the crucial question remains what happens with the votes that did not support the winner. When these votes are *obliterated* then there is no longer *One woman, one vote.* This obliteration of votes means a violation of the UDHR. We can conclude that DR

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[1] http://www.un.org/en/universal-declaration-human-rights/
[2] With *n* persons, an equal share of a cake would be 1 / *n.* With *n* parties, an equal share would not be 1 / *n* but the share would keep account of the numbers of votes for each party. This is often called "proportional". This can be a confusing term, as a line *y* = ½ *x* is called proportional too. It is clearer to refer to *equality* of the shares, rather than to the phenomenon that one looks at shares or proportions by themselves. See Colignatus (2017f).
[3] https://en.wikipedia.org/wiki/One_man,_one_vote
PM 1. Wikipedia is a portal and no source. This paper may refer to such pages to allow easier access to terms.
PM 2. Obviously, "person" is better than "man", but I use "woman" to indicate that there still is an inequality to resolve.
[4] A curious label, since there is no "post". One just needs *most* votes.

does not have genuine elections but "half-elections". The woman may mark a ballot but subsequently it may be obliterated.

- The reader is invited to take a few moments of consideration, and then observe for DR that the votes that did not support the winner are obliterated indeed.
- The woman may vote, but the vote does not receive its proper weight. The *one* is no longer *one*. Don't call it an "electoral system" but a "system to obliterate votes".
- DR is like a Volkswagen with software that changes the meaning of a vote, from testing ("people mark ballots") to actual use ("weight in parliament").
- There are two types of wasted votes. One statistical variable is the sum of the wasted vote per district. Another variable assumes that a vote for a party in a district is not wasted for the whole country *provided that* the same party gets a seat in another district. In **Table 1** the votes for *B* are not wasted in this sense since *B* got some seats. The discrepancy between votes and seats then shows up in a disproportionality measure, see Colignatus (2017bf). However, if DR systematically creates disproportionality, then it is not reasonable to argue that, like in the example above, the votes for *B* in districts 1-6 would not be obliterated, merely because *B* got seats in districts 7-10. For DR, the application of a disproportionality measure is a technical feasibility, but not really meaningful on content since proper proportionality can only be attained by chance.
- Observe the subtle psychology: While the proper expression is that *the system obliterates votes,* the political science literature uses the expression "wasted vote", which comes with the suggestion that a voter can blame herself for wasting her vote.
- Remarkably, the UDHR was supported by the USA with DR. While the UDHR implies EPR, the USA still sticks to DR and has no intention to change to EPR.

The topic and conclusion of this paper is that:

- EPR fits with *One woman, one vote* and the UDHR
- DR violates *One woman, one vote* and the UDHR.

We will investigate causes and reasons why countries with DR do not change to EPR. Obviously, political science on electoral systems has a key role in advising nations about their systems. It appears that there are some fundamental confusions and bias in that area of political science. Thus, the intent of this paper is to highlight confusion and enhance clarity.

1.2. Readership and structure of the paper

This paper is intended for my fellow economists, but with the hope that researchers from the other sciences can understand the main result too (though lacking a training in and perspective from economic theory). This text provides a re-engineering of the topic of electoral systems, so that scientists can better deal with the confusion and bias in current "political science on electoral systems". We do not look at all political science, only at that particular branch. This branch still appears to remain in the Humanities and pre-science.

I am no political scientist, and I look at the present issue from the angle of *Public Choice,* as defined by Tullock (2008) as *"the use of economic tools to deal with traditional problems of political science".* I will use more extensive quotes from the political science literature, just to eliminate uncertainty about what is claimed. Hopefully the reader understands that it is not lightly that I arrive at the conclusion that "political science on electoral systems" is still pre-science. Such a finding requires a look at various angles. In this way, the normal length of an article is quickly exceeded, and I am actually thinking about a book, in combination with Colignatus (2010) and (2017bf), about *multiple seat elections*, as a companion to *Voting Theory for Democracy* (VTFD) (2001, 2014a) that is about *single seat elections*. [5]

Obviously I hope that political scientists understand the main result too, yet if they would read this text then they would have to suffer much repetition of a subject they are familiar with. For

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[5] VTFD regretfully hasn't received the attention that it apparently deserves. This paper uses the definitions used in VTFD. If these had been adhered to then this literature on congruence & accountability would have been stopped in its tracks sooner.

them there may be little news, and only a fundamental reorientation. It may well be that political scientists on electoral systems may not appreciate a re-engineering of their field when they still suffer confusion and bias. If political scientists on electoral systems would be willing to consider this text and reconsider their views then they deserve many compliments. [6]

In itself, the finding in this paper is rather crucial, and we should hope that political scientists will consider the analysis indeed. Perhaps they might start with **Section** 3.6 that could be crucial for them. I already debunked the confusion on DR within the Dutch context, see Colignatus (2012) in Dutch, yet it was a surprising insight in the Summer of 2017 that actually a problem resides with the political science on electoral systems. Political scientists will not quickly see their own failure. This "science" allows terms and a use of words that breed confusion. Compare the phenomenon that ice, steam and fluid water are all water, that Holland was flooded by water, and that someone might make the inference that Holland was flooded by ice. It is this kind of reasoning that causes that *One woman, one vote* is violated.

I may alert political scientists also to **Section** 8.6 where Carey & Hix (2011) appear to base their supposed "sweet spot" on a confusion of frequency (*most* of some "good" outcomes) with optimality (*best* overall). This confusion is repeated by Labbé St-Vincent et al. (2015) in laboratory experiments and by Raabe & Linhart (2016, 2017), see **Chapter** 10. Thus, the confusion is deconstructed already by this simple diagnosis. Yet, the main argument is that there is fundamental confusion and bias. To get rid of this, we need to do much more.

With another figure of speech: there appears to be an onion with layers of confusion and bias in the political science on electoral systems. Countries need to peel that onion before they reach clarity. It might cause some tears about lost illusions, but the world would become a better place.

Chapters 2 - 4 provide an introduction into our subject. **Chapter** 3 gives definitions, with some repeat of **Chapter** 2 but with the advantage of having categories. **Chapter** 4 gives an introduction into confusion and bias in the literature. For proper political science it is required that "(interest-) representation" [7] and "accountability" [8] [9] are operationalised with proper measurement. However, political science on electoral systems has problematic measurement on interest-representation (either an inequality / disproportionality measure or a special measure as in **Appendix J**) and only recently a measure about accountability that still must show its adequacy. [10] Thus this is "science" with a problematic relation with proper measurement. We are forced to discuss issues at the cost of repetition, since it would not be acceptable to overlook key aspects. For an operational hypothesis, see **Section** 3.16.

Subsequently our main focus is on the Carey & Hix (2011) paper, in **Chapters** 5-9. Their paper is the culimination of a particular line of work, and thus the deconstruction of their paper is sufficient evidence for the conclusion that political science on electoral systems still is at a pre-science level in the Humanities. Their paper got through "peer review" despite its plethora of confusion and bias. Since 2011 we can see other political scientists refer to it without key criticism (**Chapter** 10). NB. A legacy comment is: more important insights on the paper have been discussed in the **Chapters** 2-4, still leaving them also in the detailed comments.

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[6] I thank an anonymous political scientist for reading a draft and giving feedback with useful overview comments.

[7] Representation = interest-representation & accountability, see **Section** 4.4.

[8] Htun & Powell (2013:4): "Accountability of government: Are voters able to identify policy makers and remove them at [half] election time if they fail to fulfill their mandates or achieve generally popular goals? Accountability of individual politicians: Are representatives responsive to the voters who [half] elected them, and are these voters able to reward or punish individuals at [half] election time?"

[9] Accountability emphasizes the dynamics of representation, and thus presumes adequate representation in the first place. Who votes for party *A* wants to hold *A* accountable and not some party *B*. For EPR, Andeweg & Thomassen (2005) provide a useful discussion.

[10] https://www.v-dem.net/en/news/v-dems-new-accountability-index/

Appendices A - K provide supplementary evidence. There are some distractions that better be identified as distractions, see **Appendix F**. **Appendices G-I** concern Kam (2015) (2016ab). He discussed "representation and accountability" on a weblog for a wider audience, and this provides a more accessible framework to deconstruct confusion and bias. Referring to a single author comes with the risk that this might seem to concern a particular or anecdotal case, but the discussion should clarify that it concerns our fundamental problem. NB. A legacy comment is: drafts of this present paper discussed Kam (2015) (2016ab) before Carey & Hix (2009) (2011), because of the idea that weblog texts for a more general audience would provide for easier access to the subject. Eventually, however, it appeared wiser to put this discussion into appendices, so that this paper has the strong core of a focus on the academic study by C&H. Still, there are arguments in **Appendices G-I** that also apply to C&H, and that may not have been moved up into the body of the text.

While composing this paper, it appeared necessary to give a closer look at apportionment of seats and disproportionality measures of seats and votes, and this has been put in Colignatus (2017f), with a non-technical overview in (2017n). Such measurement appears to be one of the layers of the onion that countries with DR need to peel. When political scientists were unable to develop a proper index for inequality / disproportionality, then perhaps it is understandable that they got confused on EPR versus DR. In this case, political scientists apparently have relied upon mathematicians, but this created another problem. Mathematicians are trained for abstract thought while democracy and elections are real world phenomena. It requires a solid foundation in empirical science to be able to debunk the abstract assumptions of mathematicians. Since political scientists lacked such a solid foundation in empirics, they apparently were not able to debunk the abstract assumptions of the mathematicians whom they relied upon.

1.3. A metaphor for the nooks and crannies of tradition

A metaphor may be used to highlight how convoluted reasoning can be, and how traditions and conventions might block clarity. Let us look at mathematics, that is supposed to be a hallmark of clarity.

In mathematics, $x + y$ means addition, and $x * y$ or $x y$ means multiplication. We say "2 of 3" for multiplication and "2 off 3" for division. When we translate 2 km into 2 * 1000 m then it is rather natural that putting two symbols next to each other represents a multiplication. In mathematics it is allowed to write $2x$ without an intermediate space as well, as e.g. $2x + 3x = 5x$. Now compare these two possible deductions:

$$(1) \qquad \sqrt{2\frac{2}{3}} = 2\sqrt{\frac{2}{3}}$$

$$(2) \qquad \sqrt{2\frac{2}{3}} = \sqrt{2*2*\frac{1}{3}} = 2\sqrt{\frac{1}{3}}$$

Which statement / calculation do you think is correct ? It appears that mathematics has fallen into the historical trap – when notation developed by chance rather than by deliberate and balanced design – to express mixed numbers like 2 + ½ or "two and a half" as 2½, which reads as "two times a half". The traditional notation of mixed numbers forms an *exception* to above natural rule on expressing multiplication. It causes a learning overload for pupils in elementary school to learn about the exception (especially when it is not explained to them explicitly).

There really is no need to adhere to this tradition and exception, since it only complicates matters and education needlessly. Thus above formats are confusing, and it is better to write:

$$(3) \qquad \sqrt{2+\frac{2}{3}} = 2\sqrt{\frac{2}{3}}$$

I thank Van der Roest (2017) for this example and refer to Colignatus (2009, 2015) for a discussion of mathematics and its education.

Subsequently, mathematics has two ways to denote fractions, namely y / x and $y\, x^{-1}$. The latter can be pronounced as "y per x". Thus kids have to learn fractions twice, first under the heading of "division" and subsequently under the heading of "powers and exponents". One can imagine that the notion with the exponent of -1 might be confusing to kids because they might think that they must subtract something. The didactic solution is to use the mathematical constant $H = -1$, which is an operator like the imaginary number $i = \sqrt{H}$. While i is a quarter turn of the circle, H is a half turn. Pronounce H as "eta", for in German it might otherwise be "ha", and combinations like $H\, H$ for a full turn around might conflict with the German sense of humour. Kids learning fractions then start learning $x\, x^{H} = 1$ and $(x^{H})^{H} = x$ instead of the division bar. In this format, divisions are replaced by multiplications (with an inverse) and multiplications generally work better. Kids would also start working algebraically which is a great advantage. Thus we get, and all confusion evaporates:

$$(4) \qquad \sqrt{2 + 2\ 3^{H}} = 2\sqrt{2\ 3^{H}}$$

This metaphor of fractions clarifies that one must run through the nooks and crannies of a discussion and its tradition, in order to spot where some confusion can originate. For example it is advised to write y / x rather than x / y because of the order and location of the associated axes in a diagram as well. It is amazing how large the literature is about teaching kids fractions in traditional manner, and what the complexities are in terms of didactics and the psychology of number sense, while a sizeable portion of all this is only created by a fluke in notation. (This however still must be tested in randomized controlled trials.) The discussion of these nooks and crannies can be tortuous, but the result should be rewarding, since kids now have a better chance at fractions.

Another metaphor is that some people see that roads are getting jammed and that a solution is to return to horse-back riding. Their argument contains distorted definitions and biased statistics. A key argument is accountability, in this context defined as the love of the driver for his mode of transport. An innocent listener might easily understand that a rider will relate to his or her horse by e.g. giving him or her a name, like drivers are less likely to call their car by a nickname (though "iron horse" is not uncommon). Overall, the meaning of an aggregate love for the mode of transport escapes relevance for the argument, but supporters for the horse solution still use that kind of argumentation.

Before I read Carey & Hix (2011) in July 2017, I innocently and perhaps naively thought that countries with DR simply hadn't thought much about EPR, so that it would suffice to encourage them to look into it. My assumption was that winning political parties benefitted from DR, and thus were unwilling to change. Now I have observed that researchers in countries with DR have developed a conceptual system of denial on it, so that it may require an effort at *deprogramming* like for drug addicts or for math teachers and their division.

My point is that we are dealing with bizarre confusion, with distorted words, irrelevant angles, fabricated problems and neglect of logic and common sense. A dissection of this bias in favour of DR is rather tortuous. One has to follow the nooks and crannies and try to discover what particular madness causes each particular step in de argument. The following discussion tries to do so. We can be grateful to Carey & Hix (2011) for at least putting their reasoning in writing, so that we may try to perform this dissection.

1.4. Explaining inoptimal policy making and (secular) stagnation

The confusion and bias by researchers from countries with DR is not without consequences. They advise their governments and citizens about the optimal electoral design. Confusion and bias in research and advice may cause wrong decisions on electoral design. When countries remain with the lesser democractic design of DR of the 1850s, they tend to adopt policies that the majority of their electorate might not prefer.

This is not an argument to look at measures for the incongruence between views of the electorate versus views of the government. Such a distance measure is discussed in **Appendix J**. A discussion on such a measure is a distraction though. The topic of this paper is that *One woman, one vote* is violated, and the topic is not how to measure kinds and degrees of violation.

Public Choice, as a line of research within economics, had a beginning in explaining the behaviour of bureaucrats as budget-maximising for reasons of personal income and prestige within the bureaucracy, rather than for increasing the general welfare. This kind of explanation need not be so useful in many cases, notably when the focus of government ministries would be on general welfare anyhow. Yet Public Choice provides a critical look on the factors that may be relevant. Now, we investigate the *Academy-Politics Complex*, in which academics allow to cushion the arguments. Politicians may invoke ideology and they can refer to the (masked) ballot box for electoral support. For the Academy, the advantage is that the arguments are put down in writing, so that we can trace the steps to identify where the wrong turn is taken, and where homeopathy, astrology or alchemy take the guise of science.

We might wonder how the world might have looked today when the *English Speaking World* had adopted EPR early on. Perhaps much would not have been so different, because of the popularity of the two-party system anyway (though we don't know the first preferences). [11] Yet the two editions of Dahl & Lindblom (1953, 1976) indicate that their expectations were more in line with EPR than the reality in the USA with DR and the development of the "imperial presidency". The USA and UK might have looked more like Sweden and Holland, but they refer to Vietnam and we can also refer also to the invasion in Iraq. See **Appendix A**.

In my analysis, Brexit has been caused by the UK system of DR. UKIP was threatening marginal seats of the Conservative Party. Prime Minister Cameron, not in favour of Brexit, called the 2016 referendum in the hope that this would silence the Brexiteers. A referendum looks like bringing some proportionality within a DR system, but actually it is an aspect of populism, and far removed from the notion of *representative democracy*. Subsequently, the referendum question was flawed in design, see Colignatus (2017g). For the legal situation, it is a binary choice whether one does or doesn't invoke article 50 for leaving the EU. To put such a binary legal choice before the electorate confuses this legal clarity with the complexity of policy, with many more than two options of how to Remain in or Leave the EU. The voters were assumed to do the bargaining each by himself or herself in the ballot box, compared to the many years of bargaining that professional representatives require. Curiously, many in the UK presently see Brexit as a democratically warranted outcome rather than as proof that their system of DR produces outcomes that a better system with EPR likely would not produce. Colignatus (2017m) gives the evidence on this diagnosis. Colignatus (2017k) dissects Great Britain's views on Brexit options given a YouGov poll of June 12-13 2017. (GB = UK minus Northern Ireland) Colignatus (2017o) reviews the cause and cure of Brexit.

PM. During writing this, there is the "referendum" on the independence of Catalunya. [12] Spain has DR with medium sized districts, as C&H indicate in **Figure 1**, see also Riera & Montero (2017). [13] The regional council of Catalunya has districts. The "referendum" then again is an instrument of populism. One may be in favour of a "Europe of the Regions", [14] and one may agree that the Spanish government reacted with remarkably dumb force against human rights, but at the same time it remains a diagnosis that referenda are instruments of populism and do not belong to representative democracy. There is a risk of a major political and human catastrophe, but the move by regional president Carles Puigdemont to declare independence and "suspend its effects" is high comedy. Rajoy's letter with the dates of October 16 and 19 offered perhaps some time but no solution perspective. [15] My suggestion would be that Spain

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[11] The curious argument that Hitler came to power because of EPR neglects true causality. https://www.theguardian.com/politics/2016/sep/23/pr-not-to-blame-for-the-rise-of-hitler
[12] https://en.wikipedia.org/wiki/Catalonia
[13] https://www.thespainreport.com/articles/533-151220135803-this-is-how-spain-s-electoral-system-works
[14] https://en.wikipedia.org/wiki/The_United_States_of_Europe,_A_Eurotopia%3F
[15] https://elpais.com/elpais/2017/10/11/inenglish/1507740006_918152.html?rel=lom

accepts a constitution that allows a region to leave, compare the Scottish referendum, and that Spain and the (new) regional government agree to a 15 year period of tranquility and talks, for the purpose of joint negotiations with the EU that a EU region that opts for independence may join the EU in an easier manner. It may also help to make a tally of what it costs to run a modern state (with economies of scale and scope). The December "elections" in Catalunya show the effect of DR: the parties for independence got less than 50% of the votes but more than 50% of the seats, see Colignatus (2018a:Appendix C).

In this paper we will not (further) look at the policy consequences of EPR or DR, and focus on our topic only. Even if EPR would have worse outcomes than DR, then this could be seen as the price of democracy. EPR is supposed to be embedded in a larger structure of democracy.

2. Introduction into the subject matter

2.1. IDEA (2005) on *One woman, one vote*

The international *Institute for Democracy and Electoral Assistance* (IDEA) supports the development of democracy from the bottom up, and assists in the consolidation of democratic institutions. Its current secretary-general is Yves Leterme, the former prime minister of Belgium, who has a BSc in political science, an LLM and MPA.

Reynolds et al. (2005:14) in the IDEA Handbook on electoral systems:

> "45. Finally, the design of electoral systems today takes place in the context of a number of international covenants, treaties and other kinds of legal instruments affecting political issues. While there is no single complete set of universally agreed international standards for elections, there is consensus that such standards include the principles of free, fair and periodic elections that guarantee universal adult suffrage, the secrecy of the ballot and freedom from coercion, and a commitment to the principle of **one person, one vote** [my emphasis]. Moreover, while there is no legal stipulation that a particular kind of electoral system is preferable to another, there is an increasing recognition of the importance of issues that are affected by electoral systems, such as the fair representation of all citizens, the equality of women and men, the rights of minorities, special considerations for the disabled, and so on. These are formalized in international legal instruments such as the 1948 Universal Declaration of Human Rights and the 1966 International Covenant on Civil and Political Rights, and in the various conventions and commitments concerning democratic elections made by regional organizations such as the European Union (EU) and the Organization for Security and Co-operation in Europe (OSCE)."

This paper adopts the principle of *One woman, one vote* and leaves much else untouched, as a *ceteris paribus* analysis, or like taking partial derivatives.

I actually got the reference to article 21 of UDHR from the foreword of the IDEA Handbook. My suggestion to IDEA is to support a procedure at the US Supreme Court, that the US system of DR is in violation of the UDHR and potentially also the US Constitution itself.

There also appears to be a slogan "one person, one vote, [thus also ?] one value". [16] It originated already in 1892. [17] For example, the European Parliament gives Germany less seats than in proportion to their population. The EU is not unwise here, yet this is another topic. This paper deals with EPR and DR. Actually, the addition of "one value" is dubious, as if *One woman, one vote* would need another qualifier to specify what it actually means.

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[16] https://en.wikipedia.org/wiki/One_vote,_one_value
[17] http://archive.spectator.co.uk/article/21st-may-1892/4/one-vote-one-value

I am reminded of my earlier discussion of how mankind slowly evolves into the direction of a world government and world parliament, see Colignatus (2005). [18] If so, we should better make sure that at least our concepts are clearly defined.

2.2. Rae (1995) in the *Journal of Economic Perspectives*

Rae (1995:66) in the *Journal of Economic Perspectives* gives our present topic of discussion, such, that Carey & Hix (2011) is only the elaboration with more regression analysis, more data, and more references to a larger literature, yet with essentially the same analysis.

Electoral systems clearly affect the shape of political party systems and the rhythms of governmental change. But how can such systems be evaluated? While a virtually unlimited range of goals can be found in the dustbin of political history, two partly conflicting aims are at the center of most electoral engineering projects. The first is minority representation, by which I mean providing representation to groups whose members articulate important shared interests, even if they command a relatively small fraction of a national electorate. The second aim is perhaps best called "defractionalization." Defractionalization simply entails the provision of incentives for the formation of major parties and broad-based electoral campaigns that produce governing majorities without reliance upon fragile interparty coalitions, put together after the election itself fails to pick a majority winner. It is believed, with some reason, that some sort of defractionalizing effect is required to promote stable and effective governance in any but the most homogeneous and docile societies.

These two goals are often thought of less as the achievement of something good than as the avoidance of something bad. For example, it is widely agreed that it would be less than optimal to have a single party (like Mexico's PRI) or two parties (like America's Republicans and Democrats) sweep away all other contestants. But on the reverse side, it is also unattractive to have no truly major parties, so that very small parties bargain endlessly in the formation of coalitions (as in Italy, at almost any moment since 1945). Given the evident partisan implications of minority representation and defractionalization, and a strong tension between them, there can be no perfect agreement on such goals. But students of electoral engineering are asked from time to time to plot out an electoral system capable of achieving one of the two without gutting the other.

2.3. Public choice on the topic of *One woman, one vote*

It would be rather difficult to try to define democracy. Democratic nations have their own constitutions, and they thus entertain their own definitions of democracy. For academic discussion, points of reference are Dahl & Lindblom (1953, 1976) and Mueller (1989) (say its chapter 12). **Sectio**ns 2.9 and 2.10 below discuss the "democracy index".

Economic science investigates choice under scarcity, and economists are aware of costs and benefits, and they emphasize trade-offs and unintended consequences. There is a distinction between morals and mere preferences. Colignatus (2007, 2011:168):

> "Morals are preferences in a strong form, such that people are unwilling to consider other aspects before some principles have been accepted first. Such an ordering is also called *lexicographic* - taken from the analogy of a dictionary where words are ordered such that for example a [principle] p is always before a [utility] u."

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[18] A useful perspective for the UN and IDEA too.

Our present topic *One woman, one vote* is a *principle,* and if there would be negative consequences (like social strife) then one would not sacrifice the principle, but look at other means (free press, law, police) to deal with those consequences.

We regard the principle of *One woman, one vote* as *defining* for *representative* democracy, although we will not try to define democracy and accept that nations have their own definitions / constitutions. Obviously there is a logical tension between these points, but it remains sound that we compare a principle with reality.

We discuss what is wrong w.r.t. the treatment of the principle of *One woman, one vote* by both current democracies themselves and academic discussion about democracy. When there is a democracy that does not implement *One woman, one vote* then we investigate what the cause of the confusion and bias might be. With a figure of speech: this might be seen as taking the partial derivative and investigating causes for negative outcomes.

We find that there is a fundamental confusion on *One woman, one vote.* Political scientists discuss how to sacrifice the principle of *One woman, one vote* in order to compromise with other objectives. This is no mere policy advice that originates from that policy makers themselves wish such compromise, but political science itself appears to be fundamentally confused about the distinction between morals and mere preferences. In above quote of Rae (1995:66) he looks for an "optimal" compromise, instead of clarifying that *One woman, one vote* is the *sine qua non* condition of democracy. Subsequently, we find that more is amiss.

The first step is to re-engineer the current analysis in political science on electoral systems. Our major findings are:

- Nations decide for themselves but they may be subject to common misconceptions.
- The role of political scientists is important since they advise nations. They currently cause confusion and bias, and their current analyis better is re-engineered.

The strong findng is: Democracies in the USA, UK and France are seriously affected. "Political science" on electoral systems appears to be pre-scientific like homeopathy, astrology or alchemy. Political science started in the Humanities and it gradually adopted the tools and aura of Science, but it still lacks the mentality and methodology of science. When nations receive advice from professors with the aura of the academia while there actually is no science but basically confusion and bias, then the public and policy makers are led astray in a manner that is rather mind-boggling. Votes are obliterated, voices silenced, and policies enacted that the true majorities would not want.

2.4. District Representation (DR) and Equal or Proportional Representation (EPR)

This paper does not look into direct democracy, like townhall meetings in small communities or what the Swiss have. For democracy, bargaining is important. This is different than simply expressing an opinion by casting a ballot. For larger communities one tends to delegate the bargaining capacities. For the selection of the delegation a voter can merely express an opinion by casting a ballot, because the real bargaining is done by the delegation. Thus voting in *direct democracy* and in *representative democracy* have fundamentally different meanings, and should not be compared on a par.

The present focus is on *representative democracy* and the election of the House of Representatives. Voters may have – or think that they have – some control over their representatives, by first selecting them and then judging about re-election. Representation (a mandate) has the ambiguity of both a mission (following) and an authorisation (leading). Professional politicians are no automata and have pride in their profession. Joseph Alois Schumpeter (1883-1950) already observed that parties have agenda's of their own. For politicians, as political entrepeneurs, their party is their instrument, and there is the risk of ancient Athens that democracy develops into dictatorship, when a majority party or its dominant leader does not enhance freedom but claims to know what is good for all.

- See the bullits in **Section** 1.1.
- See Colignatus (2017bf) for graphs of the 2017 elections in Holland, France and the UK.
- A "political science" that does not protest against this obliteration of votes is not a real science but something like homeopathy, astrology or alchemy.
- The academica fail when they allow "political science on electoral systems" to entertain the partial rationality that all this would be "democracy", only because "people mark ballots". The universities are advised to set up committees of investigation from the empirical sciences [19] [20] on the functioning of their Political Science Departments, verify that these researchers on electoral systems are confused and biased, abolish professorships, and set up adequate training of students with respect for logic and the scientific method. Advisably, the Political Science Departments take the initiative themselves, inform their university government about the issue, and urge to such an investigation. Even when the Political Science Departments feel that there is no problem and that they have nothing to hide, the diagnosis in this paper is of such seriousness that they should not wish to run the risk of ignoring it.
- Advisably, citizens of the USA, US and France are called back to highschool to retake a revised *government class*.

There are four other main deficiencies of Plurality (FPTP) compared to EPR.

(1) Voters within a system of District Representation (DR) may vote strategically for a second best candidate out of fear that a lower preferred candidate is elected. Perhaps in **Table 1** there was a party *C* in the first six districts with 25% of the vote, which voters however switched to *A* out of fear of *B*. The key point to observe for countries with DR is that exit polls should also record the first preferences of voters, to track the amount of strategic voting. It is remarkable that such exit polls hardly exist. [21] A disproportionality index that is not corrected for strategic voting in DR is called "*masked*". Under EPR there can be strategic voting for the preferred coalition, but this is less relevant, since a voter here chooses from freedom and not from necessity.

(2) Above property of districts does not just exist but can be deliberately abused by a party in power, a phenomenon called gerrymandering. [22]

(3) DR has a high barrier to new competition while PR has a low barrier. Economists tend to be much in favour of this aspect of competition. See Colignatus (2017d) for a reference to an interview with Kenneth Arrow in which this is mentioned.

(4) The principle of *One woman, one vote* is closely related to *Free speech.* A system with DR tends to block minority views, so that their voice is no longer heard in the House of Representatives.

- When nothing is said then others may think that they have less reason to listen.
- A system of EPR allows better expression of minority views, with greater chance that this is listened to.

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[19] With a fair degree of members from countries with EPR.

[20] The emphasis is on *empirical* science. One is warned about the role of mathematicians, who are trained on abstract thought, and who may propound on empirical matters without adequate training, see Colignatus (2009, 2015).

[21] The CSES questionnaire for the 5th module has two questions that can be used, however, see http://www.cses.org/collabs/CSES_Module5_Questionnaire.txt. Q10b asks what party expresses the views best, and thus would be the first choice. Q12LH-c asks for the vote for the district candidate, and thus would include tactical voting.

[22] https://en.wikipedia.org/wiki/Gerrymandering. Curtice (2009): "(...) the English Boundary Commission systematically favoured the creation of smaller constituencies in rural areas where the Conservatives were relatively strong. But during the post-war period Britain's population has gradually been moving out of the (increasingly) Labour voting cities and into rural areas, with the result that Labour constituencies have gradually become smaller than their Conservative counterparts."

- Curiously, some "political scientists" call it a positive aspect that DR blocks extremist parties, while the proper response under EPR is to refute the arguments. It is better that arguments are in the open, while non-discussed extremism may create a bubble and then result into sectarian behaviour or worse.

The above tends to focus on the relation between votes and seats, but obviously there is also the impact on the supply of political parties. These differences all combine into that the social dynamics of political processes can be quite different for DR or EPR. Words like "democracy", "election", "party", "district" and so on may be the same but the meanings would be quite different.

A major insight is that:

- EPR focuses truly on *representation for bargaining*
- DR comes with the ideology but falsehood that it would focus on *government without bargaining.* In DR, voters are supposed to skip the bargaining phase and decide whether an incumbent government should be continued or replaced. In reality, DR doesn't work like that. DR only obliterates votes.

Budge & McDonald (undated p7) state: "General Elections put voters in the position of having to express both policy preferences and choose a government at the same time." This is too vague and too distortive of true meanings to make any sense. In EPR in a parliamentarian system, voters select the representatives in the Legislative, and the latter bargain for the Executive. Some voters might vote for responsible parties willing to compromise for a coalition in the Executive, and some might vote strategically to enhance the likelihood of a particular majority coalition, but that is all. It is remarkable that these political scientist use the vague expression that "voters choose a government" while the specialisation of tasks is quite different, with also the separation of powers of the Legislative and Executive. It is only by such vagueness that authors coming from countries with DR can create some seeming justification for DR. There is no justification for DR but only a historical origin. Applying logic to the UDHR implies EPR.

2.5. A matter of mere logic: *One woman, one vote* implies EPR

Apparently, countries with DR and their researchers either do not adhere to the principle of *One woman, one vote,* or they do not follow logic, and thus are confused and suffer a bias.

- At the US election of November 8 2016, the Republicans got 49.1% of the votes and 55.4% of the seats, while the Democrats got 48% of the votes and 44.6% of the seats.
- At the UK general election of June 8 2017, the Conservatives got 42.2% of the votes and 48.8% of the seats while Labour got 39.9% of the votes and 40.3% of the seats. [23]
- In France 2017, voters had to vote four times, in two run-off balloting-rounds for both the president and the legislative: and still the French managed to create a disproportional result, see Colignatus (2017b), with a EPR Gini coefficient of 41.6% while Holland has 3.6% on a scale of 100%. There is still something that the French do not understand about *égalité.*

The UK has the parliamentarian system and its House of Commons elects a Prime Minister, in outward appearance similar to Holland. The UK in 2017 has a EPR Gini of 15.6%, but mostly because voters returned to the bipartisan model, with likely a lot of strategic voting, so that the votes do not express the first preferences, and so that the disproportionality measure is masked. Why does the UK still use DR and what keeps the UK from adopting EPR ? [24]

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[23] The wikipedia data of October 16 2017 are inaccurate.

[24] There are some cultural aspects on this. In Holland, the mathematical operation of division is called "delen", which means sharing, while "verdelen" is to create divisiveness. The operation has two sides of the coin, both partaking in the joint enterprise and each his own share, yet it depends upon culture where the psychological emphasis lies. Anglo-Saxon-Viking culture
(http://www.bbc.co.uk/history/trail/conquest/after_viking/legacy_vikings_01.shtml) seems to

In the discussion about DR versus EPR, countries with DR apparently lost focus.

There are two elements:

- There is popular activism, with the old British "*Electoral Reform Society*" (ERS) [25] and upstart "*Make votes matter*" [26] and the USA "*FairVote*" project. [27] See **Section** 17.1.
- There is academic research about the democratic optimality of DR versus EPR, mostly by researchers coming from countries with DR. There is nothing wrong with academic research that pushes the boundary and that puts question marks on all kinds of aspects of democracy, yet, there is something seriously amiss when the academia forget about *One woman, one vote,* and when they create confusion and bias.

We look at the issue on content, and not historically, as this is not my area. This paper deals with research, but it is useful to say a bit about the activism (**Appendix F**) since it gets input from the academia.

2.6. The word "election" does not always mean an election

The main message of this paper might be that the definition of "election" is too flexible. The English language uses the term "election" for both "District Representation" (DR) and "Equal or Proportional Representation" (EPR), while these situations are dramatically different, so that also the meaning of "election" is dramatically different. Language should rather not use the same word for such widely different cases.

- When a representative really is concerned with the district then there is a valid perspective for using the word "election" in a proper sense, namely the context of a *single seat* election.
- When the district representative however also has some link to a particular ideology or political party at the national level then the situation changes. In that case only the votes for the winning party actually elect someone, while the votes for the other parties are obliterated. This is the context of *multiple seats* election.

The two situation have in common that voters mark ballots, but there is a dramatically different meaning w.r.t. how those votes are processed. When votes are obliterated then there is no proper election, and perhaps a better word is "half-election". Only with EPR all votes are used in a propor fashion to elect representatives for all, and then there are elections in the proper sense of the word. It is like one would still speak about a "car" while the tires are removed and while it is a defining aspect of a car that it should be able to drive. For this "car" there may be little confusion because everyone may observe that the tires are removed. For an "election" there is apparently less transparancy. Given the dominance of parties at the national level, our language better uses "half-election" for countries with DR. We actually should also speak about partial representation, partial electoral system, and even partial

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emphasis sport and the winner-takes-all, though with fair play to the loser, while an alternative is co-operation and deliberation for the common good. The Anglo-Saxon-Viking culture may be seen as a culture of fear, with the constant calculation whether one might lose, and then lose all. Obviously there is psychology. There is the distinction between risk prone behaviour (maximising profit) and risk averseness (minimising loss). Some types of persons may take an election as an endorsement for their own views and continue self-servingly with increased power. Other types of persons may take an election as being given a responsibility to look after a larger group, and then would take more time to listen to different views. It remains important to avoid the category mistake to confuse politics with sports, as happens in the Anglo-Saxon-Viking culture of the debating societies, in which winning a debate differs from the scientific search for truth. Geert Hofstede studied these cultural differences. https://en.wikipedia.org/wiki/Hofstede%27s_cultural_dimensions_theory

[25] https://www.electoral-reform.org.uk/who-we-are/what-we-stand-for/
[26] https://www.makevotesmatter.org.uk/
[27] http://www.fairvote.org/rcv#how_rcv_works

democracy, but it may be hoped that it might be sufficiently clear to focus on the proper use of *election* and *half-election*.

2.7. Nations decide for themselves

Before 1917 Holland had the system of District Representation (DR) and the experience caused in 1917 a switch to Equal or Proportional Representation (EPR). [28] [29] [30] A question is why other countries did not arrive at the same inference. Not everything that Holland did in 1917 was so wise, but the reasoning on EPR is straightforward. One way to answer that question is to look at the historical processes but this is beyond my capacity and doesn't answer the question on content. Thus this paper looks at the issue on content, though with a few links to history for a minimum of perspective.

Nations decide for themselves but also meet with the Baron Munchausen problem, that one must lift oneself from the morass of history by pulling one's own hair. For example, a choice for EPR may be made under rules of EPR, and a choice for DR may be made under rules of DR. Researchers cannot resolve this Baron Munchausen problem for nations, and nations must resolve this for themselves, with their own histories and role in the history of mankind. The task for researchers is to assist, by clarity and soundness of arguments and data.

The USA and France changed from monarchy into democracy in violent revolutions – US independence in 1776 [31] and the French Revolution in 1789. [32] One can imagine that their constitutions have a focus on the selection of the chief executive other than the monarch. In their desire to deal with this, the revolutionaries first diagnosed that the Executive and Legislative branches of government have different roles (Montesquieu, Trias Politica), and secondly they "inferred" that these different functions should also have different electoral bases. This "inference" is a logical fallacy. On content, the choice for a parliamentarian system remains more rational, in which the president has a cerimonial role (expressing the unity of the nation) and in which the chief executive (Prime Minister) is chosen by the House of Representatives (Legislative, House of Commons). In Holland and the UK the parliamentarian system developed with the monarch for the cerimonial role. We cannot exclude that the Dutch and British monarchs conceded power because they had the USA and France as examples. See **Table 2** for some different turns of history in these countries.

Table 2. Types of democracies

	Presidential	*Parliamentarian*
District representation (DR)	USA, France	UK
Equal or proportional representation (EPR)		Holland France 4th republic 1946-1958 [33]

The parliamentarian system is more rational than the presidential system, because:

(1) The separation of powers between Executive and Legislative is a separation by function, but not necessarily one by electoral base. It would be a fallacy to maintain that it should also be designed with a difference in electoral base. Adopting different bases is a choice, and a unwise choice too, for the following reasons.

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[28] There are now 100 years of EPR in Holland 1917-2017. This paper is not on occasion of this centennial.

[29] In 1919 women too, https://en.wikipedia.org/wiki/Women%27s_suffrage#Netherlands

[30] **Appendix D** contains an abstract of Dutch history to put the 1917 decision into perspective, for readers who know the history of their own country but little about Holland.

[31] https://en.wikipedia.org/wiki/American_Revolutionary_War

[32] https://en.wikipedia.org/wiki/French_Revolution

[33] France shows flip-flop behaviour. The 4th republic had a parliamentarian system with EPR, but there was a major problem with the (plurality) rules between parliament and prime minister and cabinet. France tackled that problem by creating the 5th republic, by abolishing EPR and switching to a presidential system. Apparently De Gaulle wanted more power. https://en.wikipedia.org/wiki/French_Fourth_Republic

(2) Single seat elections are subject to voting paradoxes, see Arrow's Impossibility Theorem, as discussed in **Section 2.16**. A parliament can use more advanced selection methods, like bargaining.

(3) A presidential (single seat) election has the risk of being divisive, with 50% of the voters disappointed, while a parliamentarian election with EPR would mostly give the satisfaction of elected seats (except for the wasted vote of fringe parties that get votes but no seats), and potentially a result at the bargaining table.

(4) With different electoral bases, the mandates of President and House of Representatives clash. It is more logical to see the House as representing the people, so that the House appoints and checks the chief executive. For example, in a parliamentarian system, a ruling coalition can change midterm, while a presidential system may be stuck with a president till the end of term. [34]

(5) The US system has given rise to what is called the "imperial presidency". Horrible results have been the Vietnam War and the Invasion of Iraq under false pretenses.

If the US wishes to change to a parliamentarian set-up, then it does not require a constitutional change, since the president may decide to adopt a cerimonial role, and appoint a prime minister that is elected by the House of Representatives. Candidates running for president may state that they will adopt such a role.

Thus, in the figure of speech of the onion with layers of confusion, one confusing factor in France and the USA is their presidential system, with separate election of the President and the Legislative (with districts too). This aspect is further put into **Appendix A**.

This paper focuses on the election of the House of Representatives.

2.8. Proto-democracy, current democracy and high-definition democracy

An embryo and an adult are both called "human" but we would not equate them. From the viewpoint of EPR, the system of DR can be seen as proto-democratic.

As said, we do not define democracy here, as nations have their own definitions. We accept *historical* differences. Obviously the USA, UK and France are democratic nations in terms of their histories. There is a difference between history and analysis.

The term "type of democracy" suggests analytical distinctions, as if DR and EPR both qualify for "democracy" and then would be on a par. DR and EPR are on a par on the criterion of "people mark ballots", but these systems differ in the manner how votes are treated. Thus, DR (half-elections) and EPR (elections) are not quite on a par.

Creating a typology and speak about "types of democracies" may create seeming analytical equality where none exists, like comparing embryos and adults.

Systems of EPR are not all alike either. A key distinction is between a cabinet with a minimal majority coalition and a cabinet with a maximally feasible majority coalition that tries to mirror the parties in the House and that only blocks unworkable extremism. Thus there are two stages of EPR: the first stage between voters and representatives, and the second stage between House and cabinet. See below for a discussion of the principle of majority.

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[34] One should not want to run a country like a company, but a little bit of comparison can be enlightening. For a company, the shareholders appoint the CEO. Few companies appoint the CEO for a fixed term of four years with huge barriers on impeachment. Most companies allow the shareholders to change the CEO at will. What would be the reason why a nation would adopt the US and French approach on its president ? The only explanation can be found in the history of US independence and the French revolution. The turmoil confronted the writers of the constitutions with the problem of finding some rules for the chief executive. A major consideration is that the system should not allow the devolution into a new monarchy. The years of turmoil gave a local optimum but not a global optimum.

Important is the frequency of elections. US House elections are every two years, and it would be advisable that EPR countries adopt e.g. annual elections with annual terms or a biennial cycle with still four year terms. In the latter, biennially half of the seats are subject to elections. Preferably such a House has at least 200 seats so that the natural quota still can be at the low level of at most 1%.

When a Trias Politica accepts a constitutional amendment to create an Economic Supreme Court (ESC), then there arises a Tessera Politica, see Colignatus (2000, 2005, 2011) (2014b). This can be done under both DR and EPR.

Having both EPR and ESC gives a high-definition democracy.

2.9. Political science indices on democracy

Carey & Hix (2011): "As our observations we take all [half] elections since 1945 in all democratic countries with a population of more than one million. We follow standard practice of counting a country as democratic if it rates a Polity IV political freedom score of greater than or equal to +6 in the year of the [half] election (cf. Przeworski et al. 2000; Boix 2003). This leads to 610 [half] elections in 81 countries."

Remarkably, Polity IV scores the USA and UK with 10 and France with 9 on {-10, 10} range, [35] calling them "full democracy", while we have established that these countries obliterate the votes of huge sections of their population. For evaluating the C&H study this does not matter, since they select all democracies that score 6-10. For C&H we must look at the inequality / disproportionality measure.

Nevertheless, the blindness in political science on these "democracy indices" is striking. Even critics don't see the problem that DR obliterates votes. Munck & Verkuilen (2002):

> "The Polity IV index, in turn, is based on an explicit but nonetheless quite convoluted aggregation rule (Marshall & Jaggers, 2001a, pp. 11- 14). First, the index's five attributes are weighted differently by using different scales and assigning a different number of points for each attribute. Although weighted scores provide a legitimate way of acknowledging the greater or lesser theoretical import of different attributes, a problem already crops up at this step in that no justification is provided for the weighting scheme. Second, the scores assigned to the five attributes are added to generate either two scores (a democracy and an autocracy score) or a single score (a Polity score), giving rise to yet more problems. Not only is virtually no theoretical justification for this operation provided, but it also is open to criticism due to the index's problems of conceptual logic. Indeed, as discussed above, Polity IV includes a pair of redundant attributes, which leads to a fair amount of double counting that is never acknowledged or explained. A redeeming quality of the Polity IV index, however, is that the disaggregate data are publicly available, thus ensuring that independent scholars can assess the implications of different aggregation rules and potentially suggest more appropriate aggregation rules."

Gunitsky (2015) in the Washington Post is advised reading.

> "One of the great challenges for policymakers is taking abstract concepts like "power" or "democracy" and using them to measure concrete policies. Each year, for example, the United States spends several billion dollars on democracy promotion. It would be great to know – not just for government officials, but for all of us – whether this money actually helps to nudge countries toward democracy. The problem is figuring out what we mean by democracy. (...) Measures of democracy can mislead as much as they clarify (...)."

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[35] https://en.wikipedia.org/wiki/Polity_data_series

A sobering observation is that also the Economist Intelligence Unit EIU (2013) apparently does not see how votes are obliterated in their very own country, like the votes for UKIP in the UK 2010 general half-election. [36]

2.10.　　　Robert A. Dahl, polyarchy and V-Dem

My key reference remains Dahl & Lindblom (1953, 1976) *PEW*. Blokland (2011) provides an overview of their "pluralist conception of politics and democracy". The book has been recommended by Robert E. Lane (1917-2017). From the book "blurb":

> "This [concept] was formulated by, above all, Robert A. Dahl, one of the most important political scholars and democratic theorists of the last half century. Taking his work as the point of reference, this book not only provides an illuminating history of political science, told via Dahl and his critics. It also offers a revealing analysis as to what progress we have made in our thinking on pluralism and democracy, and what progress we could make, given the epistemological constraints of the social sciences. Above and beyond this, the development and the problems of pluralism and democracy are explored in the context of the process of modernization. The author specifically discusses the extent to which individualization, differentiation and rationalization contribute to the current political malaise in those countries which adhere to a pluralist political system."

Bernard Mandeville and Adam Smith suggested that, while the market allows for individual utility maximisation, competition still generated an optimal outcome. This view generated the welfare theorems of Walras, Arrow and Debreu. Schumpeter, following the methodological individualism in economics, suggested that politicians, whatever their statements on the general good, also maximise their own utility, but that competition would still generate a social optimal outcome. Downs developed this into models. Political scientists might interpret this as a transfer from economics towards political science, economists would see this as widening the application of the paradigm.

Blokland (Dutch edition p310) argues that the transfer from Schumpeter to Dahl & Lindblom was limited. Dahl looks at more issues than elections and Schumpeter's analysis. Blokland alerts us to Dahl & Lindblom p283 n15:

> "Schumpeter argued that political competition guaranteed only a choice among leaders, not among policies. Thus in his view the significance of polical competition for translating citizen preferences into public policy was negligible. This assumption is false unless one can show that choice among rival leaders is completely divorced from preferences as to policy. Schumpeter did not show this, nor in our view could he."

D&L are too demaning here, require a "complete divorce" while such is not the issue. The reader is referred to Budge & McDonald (undated), quoted below in **Section** 21.2: "The premisses the median mandate thesis rests on are however very strong and probably unrealistic. In particular it assumes that all voters decide between parties on policy grounds. This surely flies in the face of evidence from voting studies from all over the world (...)" The point remains that the "election process" involves the choice of representatives. Methodological individualism links all properties to the individuals involved.

Dahl apparently was influenced by behaviorism and Arrow's axiomatic approach, and wondered whether a definition of democracy was possible. The *Preface* starts with the limitations of basing a definition on Maddison's views. Eventually Dahl concluded that a definition of democracy wasn't feasible, so that it only was some "undefined ideal", though he rejected the practical relevance of Arrow's Theorem. My own take of this is, that Dahl thought that the term "democracy" was too much burdened by all kinds of connotations in history, so that he decided to start afresh with a new term "polyarchy". My suggestion is that D&L were too strong in the rejection of methodological individualism, in the wake of this rejection of Schumpeter, and that they overlooked this approach to defining democracy.

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[36] https://en.wikipedia.org/wiki/Democracy_Index

The above is an introduction to the "Varieties of Democracy" (V-Dem) project, who follow Dahl in the rejection of a unique definition of "democracy" and the acceptance of the term "polyarchy" as something that is fresh and is open to exact definition. An overview publication is by Coppedge et al. (2016).

> "Varieties of Democracy (V-Dem) is a new approach to conceptualizing and measuring democracy. We provide a multidimensional and disaggregated dataset that reflects the complexity of the concept of democracy as a system of rule that goes beyond the simple presence of elections. The V-Dem project distinguishes between seven high-level principles of democracy: electoral, liberal, participatory, deliberative, egalitarian, majoritarian and consensual, and collects data to measure these principles." [37]

Obviously, people will become rather bewildered by all such concepts. There is apple pie, chocolate pie, lemon cake, ... but which would be the optimal choice ? The V-Dem group thus recognises the need for some overall index, and thus Teorell et al. (2016) constructed the "polyarchy index". Apparently it doesn't receive as much attention in the public media since it is not a "democracy index". Nevertheless, the V-Dem group focuses on *representative* democracy, that uses *"elections".*

> "Democracy may mean many things, but in this paper we shall only concern ourselves with the concept used as an empirical yardstick by which countries, or national political systems, may be compared. More specifically, we shall concentrate on a particular way of understanding democracy as a yardstick, one that has dominated the empirical social sciences since at least the second world war. Through the seminal work of Schumpeter (1942), Downs (1957) and Dahl (1956, 1971), a relative consensus has evolved that views [half] elections – together with the institutions that uphold the democratic qualities of [half] elections – as the core of the concept. We will call this the electoral [representative ?] conception of democracy, to distinguish it from other, more idealized , conceptions – such as liberal, participatory, deliberative, or egalitarian democracy (see Coppedge et al. 2015a , 2016, Lin dberg et al. 2014) – that do not stress [half] elections as democracy's core institutional pillar." (Teorell et al. (2016:3).)

The situation is quite unfortunate. The issue obviously concerns *representative* democracy and not *direct* democracy (or what Switzerland would have) and such. I find Dahl & Lindblom confused on this issue. Dahl & Lindblom refused to draw the conclusion that the US presidential system *and* system of DR are less democratic than the parliamentarian system *and* EPR. Logic however allows us to recognise "stages / levels in democracy". Presumably the experience with the Weimar republic wasn't inviting, but when this is seen as a failure on democracy, then at least as a failure w.r.t. human rights. Accepting such stages / levels, then the V-Dem "polyarchy index" (properly redesigned) can be recognised as a "democracy index" again, and we should rather be speaking about "varieties in polyarchy".

Teorell et al. (2016:4) also refer to a Schumpeter-Dahl distinction. Schumpeter looked at how an electorate choses an executive, and Dahl also worried about Maddison's minority rights (and actually the rule of law). It was only later that Dahl became sensitive to minorities that were excluded from the electorate. Teorell et al.: "(...) Schumpeter thus stresses competition or contestation at the expense of inclusiveness or participation." Perhaps this was Schumpeter's view too, but I would rather see it as the particular economic model that he looked at, and not as sufficient for a ("minimalist") definition of representative democracy. Dahl's rejection of Schumpeter was based upon another confusion, see the above (and Blokland wonders how much he actually read him). Obviously V-Dem "maximalist" concept of democracy is a minimal one. Without freedom of speech the formally democratic rules of Russia do not create a democracy. Having a full definition of democracy, one can always look at the partial derivatives on the Schumpeterian topic of analysis.

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[37] https://www.v-dem.net/en/about/

There are obvious conceptual challenges. The USA in 1776 started a "democracy" but with the exclusion of women and slaves. In Holland, voters are automatically registered at city hall, and criminal offenses do not automatically discard voting rights, while the USA has such barriers that work out against minorities. China 2017 has a dictatorship by a party that claims to care for the people and that now targets economic growth, which might be interpreted as that economic policy suits the wishes of the median citizen. A "democracy index" is not a Social Welfare Function (SWF) though. China is so complex that it might require its own index for development - though always in comparison with the intended intersubjective indices. My suggestion is to target the definition of "democracy' to the political system and representative democracy, so that the USA 1776 only is proto-democratic and China 2017 still is undemocratic.

The V-Dem "polyarchy index", that thus is better seen as a "(representative) democracy index", still has some drawbacks:

(1) p10: "A "popular election" is thus minimally defined and also includes sham elections with limited suffrage and no competition. Similarly, "appointment" by legislature only implies selection and/or approval, not the power to dismiss. The rationale for this is that counting dismissal powers would introduce a systematic "bias" in favor of parliamentary systems, which typically are the only systems relying on institutionalized powers of dismissal over and above the power to appoint or elect the chief executive. In presidential systems, for example, there typically is no recall vote at the national level." V-Dem thus deliberately cripples the accountability in the notion of democracy. It would be better to recognise that a presidential system is proto-democratic and that a parliamentarian system is more democratic. It is curious to call this a "bias" when it pertains to the core of the notion of democracy.

(2) p13: In the definition of "clean" or "free, fair and frequent" (half) "elections", V-Dem still shows a confused notion of "election", that doesn't distinguish between EPR and DR, and that neglects that DR discards the votes that aren't for the district winners.

Unsurprisingly, also the V-Dem index (p36) has the USA, UK and France at the top positions, while these countries obliterate the votes of large sections of their populations. It is bizarre beyond words.

PM. The V-Dem approach to aggregation (e.g. choose between averaging, maximum, or multiplication) seems quite sensible (and is similar to considerations on a Social Welfare Function).

NB. Remarkably, while Carey & Hix (2011) used proxies for "accountability", V-Dem also developed an "accountability index". [38]

2.11. Confusion at the academia on DR and EPR

Thus there is a loss of focus at the academia that now requires attention.

- The principle of *One woman, one vote* got lost in the USA, UK and France. The woman may vote, but the vote does not receive its proper weight. The *one* is no longer *one*.
- The decision on what is best for their country must be taken by the people in the country themselves. If the country adopts *One woman, one vote,* then the decision requires EPR, and perhaps a country with EPR may decide to have DR or dictatorship. (It cannot really be decided by referendum, since a referendum is an instrument of populism, and not an instrument of representative democracy (involving bargaining).) [39]
- In countries with DR, parties that gain a majority of seats under a system of DR (or expect to at some nearby half-election) have little inclination to change if they would lose that

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[38] https://www.v-dem.net/en/news/v-dems-new-accountability-index/
[39] The major case would be the French 4th republic that had EPR but abolished it by creating the (current) 5th republic. It would require historical analysis to see what went wrong. However, we first must have our analytical framework in order, before such historical analysis can be made.

majority under EPR. They would tend to misinform the public and set the public up against contradicting scientists. [40] They would encourage scientists that praise the proporties of DR and that highlight potential disadvantages of EPR.

- Political scientists only have an advisory role. Instead of giving proper advice, i.e. that a design decision on EPR best be taken under EPR, the political scientists shifted attention to what they found interesting as academics, and then apparently got lost.
- The idea of academic discussion is that one academic finds some new criticisms about what another academic has stated. Thus, while the UK and USA could have changed to EPR in 1918, following the example of Holland 1917, we now have a cathedral of literature about all kinds of aspects of DR and EPR, but we are still far removed from the possibility that the UK or USA would adopt EPR. Supposedly, a voter in the UK or USA must digest this huge literature before this voter might make an informed decision ? The logic from *One woman, one vote* to EPR however is straightforward, and a degree in political science is apparently worthless or counterproductive with regards to this logic. Why are intellectuals in the UK not outraged that the Conservative Party got 48.8% of the seats while it got only 42.4% of the votes ? There must be some distraction.

We must make a selection of this huge literature. Some other distractions like Arend Lijphart's typology and John Curtice on bias are discussed in **Appendix F**. The body of the paper will focus on John Carey & Simon Hix (2011) on "representation and accountability".

A key "argument" appears to be, what is actually a confusion and bias, that DR would be more *accountable* than EPR. In the political science literature it has been accepted that equal representation or proportionality (EPR) is a recommendable aim. [41] The main argument in favour of DR has been: at least it would enhance accountability. This is a curious argument, since EPR is also most accountable, in proper *definition*. Yet researchers from countries with DR entertain *interpretations* of "accountability" that fitted their confusion and bias. This caused that the discussion about DR versus EPR shifted to a discussion about "(interest) representation versus accountability". This actually is a distraction, and one point where confusion and bias apply. By reframing the issue as something else, the main distinction between DR and EPR needed no longer be mentioned – the principle of *One woman, one vote* – and the researchers with DR bias would entertain an academic excuse to focus on "accountability" using one's confused *interpretation*. Remarkably, researchers from countries with EPR have started to join this confusion, see **Appendix E** and **Section** 10.6. Apparently my comparative advantage is that I have not been indoctrinated as a student in political science on electoral systems. [42]

This shift to "compromise" apparently was facilitated by a lack of awareness in political science on the fundamental distinction between morals and mere preferences. Remarkably, this field originated in the Humanities, but forget about true insights from the Humanities, and, when trying to become a science, it continued like homeopathy, astrology and alchemy.

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[40] I am rather shocked about the misrepresentation of elementary democracy by UK MP Jacob Rees-Mogg (North East Somerset) – a debater with an education in history rather than science: https://boycottholland.wordpress.com/2017/09/20/jacob-rees-moggs-fear-of-the-maltese-spectre/

[41] See the APSA survey, Htun & Powell (2013).

[42] This paper refers to my books VTFD and DRGTPE. With my degrees on econometrics (Groningen 1982) and teacher of mathematics (Leiden 2008) I am a relative outsider to political science. However, I read parts of Robert Dahl (1956) *"A preface to democratic theory"* when I was a foreign exchange student in California in 1972-1973 (the years of Watergate), and these topics have gotten my attention for a longer while. Colignatus (2000, 2005, 2011) (DRGTPE) is in Political Economy, and also relevant for political science.

2.12.   Curtice (2009) on accountability

The "exaggerative" effect of DR would be something like the "cube rule", [43] that when the top party gains 1% of the votes then it gains 3% of the seats. Curtice has shown that this requires a particular geography, i.e. distribution of votes over the districts.

Curtice (2009) [44] interpretes "accountable" as:

> "One party alone is responsible for what happens in government and so voters know whom to blame when things go wrong. And if voters decide at the next [half] election that they do not like what the government has done, their verdict cannot be negated by unseemly post-electoral coalition deals."

This interpretation contains some confusions.

(i)   Voters in EPR would not be able to determine who is responsible in ruling coalition ? In fact voters know that *all* parties in a coalition are responsible. Parties might try to claim success and to shift blame but this should not distract us.

(ii)   If a party still gains seats so that it can partake in a coalition, then the voters who voted for that party (still) support the party. Only the voters who stopped voting for that party actually stopped voting for that party, and that is all. Those who stopped might regret that other voters continued to vote for the party, but we are far removed from Curtice's view that if some voters stop voting for a party then it should lose the opportunity to still join a coalition.

This view on "accountability" thus is deficient. EPR has been around for some 100 years and it is amazing that we still see this incomprehension, on an issue deemed so important.

Curtice (2009) has this conclusion:

> "This chapter has demonstrated that there have been important and profound changes in the way in which the single-member plurality electoral system has operated in the post-war period in the UK. In the early 1950s the system could be defended on the grounds that it ensured that governments were accountable to the electorate. The exaggerative quality of the system largely conformed to the expectations of the cube law while the system clearly discriminated against third parties. The only mild problem was that it appeared to treat the Conservatives a little more favourably than Labour.
>   This picture has now been eroded in virtually all respects (see also Blau, 2004). First, the exaggerative quality of the system has declined significantly. True, the decline has been stemmed and reversed somewhat at recent [half] elections, but the exaggerative quality of the system is still well below that which pertained in the 1950s. Second, the system now exhibits a major bias in favour of Labour such that there is no guarantee that the party with most votes will secure most seats. Third, not only have small nationalist parties been regularly represented in the House of Commons since the 1970s, but now the system has become less effective at discriminating against the Liberal Democrats.
>   Each of these developments has occurred because of changes in the electoral geography of party support. They have demonstrated that the characteristics of the single member system that are meant to ensure that it enables governments are held accountable to the electorate are not inherent features of the system at all. They are contingent on geography. The system thus clearly fails Plant's test that it should exhibit a 'predictable relationship between votes and seats'. As a result not only does the system not generate a representative legislature, it also cannot be relied upon to help keep governments accountable to their voters."

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[43] https://en.wikipedia.org/wiki/Cube_rule

[44] He also is well-known in the UK for voting outcome at half-election nights and speeching occasions on such outcomes: https://www.youtube.com/watch?v=sHQBfgvclnM

Curtice (2009) claims that he provided adequate empirical backup for his statement: "In the early 1950s the system could be defended on the grounds that it ensured that governments were accountable to the electorate." However, under a system of DR, the first preferences of voters are *masked* and we really do not know what voters really thought. Thus, Curtice not only has a deficient view on "accountability" but also has an invalid take on the data. Please notice that we do not focus on Curtice himself. It would seem that other work by him on other areas would be quite relevant, yet, on the *political science on electoral systems* and the choice between EPR or DR, he appears to be no exception to the general confusion and bias in that field. The approach is like homeopathy, astrology or alchemy, with an accurate execution of the rules of the game, but no science.

PM 1. This "Plant's test" is not a valid criterion. There was an internal Labour "Plant Commission" that apparently entertained confusion and bias against *One woman, one vote.* It is curious that Curtice does not expose it as such. This Plant Commission apparently assumed that DR / Plurality and a particular geographical distribution of votes would hold under any circumstance. It is more likely that this assumption was only an excuse, so that the bias got the appearance of a serious consideration. On content, neither DR nor geography are relevant for the choice for EPR.

PM 2. Defenders of DR in the UK meet with the problem that Curtice poses. The argument for "accountability" according to the interpretation by Curtice no longer applies empirically. It is an inadequate interpretation, but who adopts it has an empirical problem. However, the defenders of DR are not swayed by considerations of consistency. Apparently this observation in 2009 (or even Blau 2004) has had no consequences in the UK for the defence of DR as accountable. We can still read in all kinds of texts in the UK that DR would be more accountable than EPR, while the converse is true – not only with Curtice's approach but obviously so with a proper definition of accountability.

PM 3. The discussion in the UK caused the 2011 referendum on "Alternative Vote" (AV). [45] AV is not EPR. Thus this was not a choice between DR and EPR. Referenda are instruments of populism, and the UK political class used this instrument to avoid the introduction of EPR. Defenders of DR might argue that UK voters got an opportunity for change but preferred the present system of DR.

2.13.   Culmination of research in Carey & Hix (2011)

Useful are Andeweg & Andriessen (2005):

> "The mandate-independence controversy still features prominently in studies of political representation even though the problems with its theoretical foundation and empirical operationalization have long been recognized. (...) By combining type of control (ex ante or ex post) with direction of the interactions (bottom-up or top-down), our study captures the most important aspects of the relationship between voters and representatives."

This type of research by Andeweg & Andriessen presumes a context of EPR. It can be contrasted with Carey & Hix (2011) (C&H) that presume a context of DR.

In the distractive line of research on "(interest-) representation and accountability", Carey & Hix (2011) (C&H) put a finishing touch on this line of research by identifying the district magnitude (number of seats) for an optimal trade-off.

Figure 1 quotes Carey & Hix (2011)'s figure 1 that depicts their presumed trade-off between (interest) representation and accountability. They allow for a linear or a curved concave frontier. I refer to them or Kam (2016a) for the explanation.

Carey & Hix (2011) is not just a single paper, but:

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[45] https://en.wikipedia.org/wiki/United_Kingdom_Alternative_Vote_referendum,_2011

(i)   it forms the culmination of a particular line of research on DR versus EPR, and

(ii)   it provides the groomed argument why one might be justified in adopting DR. Carey & Hix (2011) suggest for DR with Plurality a.k.a. *First Past The Post* (FPTP) that a district magnitude of 3-8 seats would allow for an *optimal trade-off* of (interest) *representation* versus *accountability*.

(iii)   The C&H study includes Holland with its EPR with 150 seats. Their finding is not that other countries are advised to adopt EPR like Holland did in 1917. Apparently EPR is substandard w.r.t. accountability. This present paper will show that such a conclusion can only be maintained by confusion and bias and adopting invalid notions of both "representation" and "accountability".

Figure 1. Quote of Figure 1 in Carey & Hix (2011): Two versions of the Trade-Off between Accountability and Representation in the Design of Electoral Systems
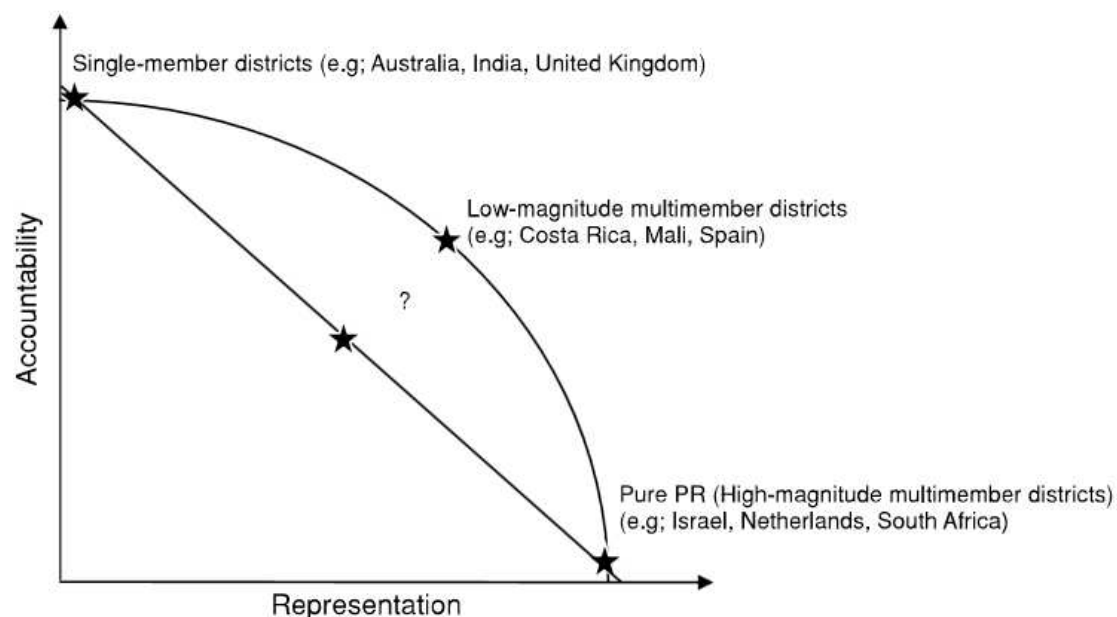
Carey & Hix (2011) – with colour graphs in Carey & Hix (2009) – will be my key reference, while Kam (2016a) provides an accessible summary of the issue. This paper may spend many pages to the latter in the Appendices because of Kam's effort at explaining the issue at an accessible weblog level, yet the main discussion concerns the argument provided by Carey & Hix (2011) as the latter is a proper academic study.

2.14.   A conclusion that is unwarranted

Carey & Hix (2011) advise:

> "(....) our results suggest that practitioners who seek to design an electoral system that maximizes these competing objectives are best served by choosing multimember districts of moderate magnitudes."

They do not include the condition that the aggregate representation must remain proportional. This advice thus implies a *farewell to EPR*. Farewell to *One woman, one vote.* Given the observed bias and other problems that we find in the reasoning, their conclusion doesn't hold. (This is apart from that they maximise and do not optimise with a Social Welfare Function.)

The main point of critique is that the approach by C&H is internally inconsistent:

- DR with Plurality causes that parties tend to be elected by a minority of voters. Thus, a majority of voters *who did not vote for the representatives* would hold them accountable for policies *that they did not vote for* or *that the elected candidates did not run for* ?

- A key aspect of economic competition is the easy entry of new competitors to a market. The same would hold for political competition. In EPR, the barrier to entry is low, and in DR the barrier to entry tends to be much higher. The notion of "accountability" used by C&H apparently concerns established parties that cannot be replaced easily by entry of new competition. This is not freedom but some controlled stagnation.

We might regard accountability rather simple as "people mark ballots", such that one doesn't have to vote for the dictator, and such that a change of a majority in the voters also has an effect on policy. EPR then is most accountable, since it better tracks what the majority is. In this definition there is no real difference between this simple concept of accountability and *One woman, one vote,* or EPR, and it is only a different word because of a different perspective on the same phenomenon. (It also means that when voters elect their representatives, that there is the option of recall, or a *term* with the option of no re-election.)

Preferably, though, we can enrich the study of these phenomena by introducing more details. The notions of "(interest) representation" and "accountability" might be multidimensional concepts and not easy to measure. Thus we may accept that C&H for their study might use something like a "principle component analysis" (PCA), [46] that might cover only part of the complex conceptual reasoning, but that still might show some fundamentals.

Instead, C&H apparently over-simplify by using only some indicators. In a sense we might be grateful for such oversimplification, since it makes it easier to identify the confusion and bias, which might have been harder to spot in a large PCA with more variables. Thus, a subsequent critique is that C&H, in the statistical part of the study, which is also the main part of their study anyhow, use inadequate data:

- They replace "(interest) representation" by the Euclid / Gallagher Inequality / Disproportionality (EGID) measure for the distance between vote shares and seat shares.
  (i) This changes the subject, or, perhaps the true subject is proportionality anyhow, and the texts about "(interest) representation" are distractive,
  (ii) The measure is not corrected for strategic voting in systems of DR: the EGID measure is "masked" since in DR we do not know what the true first preferences of voters are.
- C&H might adopt APSA's definition of accountability, but in their regression they replace "accountability" by the statistic of the *concentrated number of parties, measured by seats* (CNPs). [47] This is the inverse of the Hirschman-Herfindahl concentration index of the seat shares (see also Rae (1995)). The reasoning is that a dispersion of parties would cause an uncertainty who to hold accountable. This is a curious argument, since voters would tend to hold a governing coalition accountable *as a whole*, i.e. *all* parties in the coalition. There is no logic in this approach by C&H. In itself, having more parties may allow a better reflection of the diverse interests amongst voters, which is the very objective of democracy. Having a concentration in a few parties does not imply more accountability either, see **Section** 3.6.
- There is a contingent and not-strict-mathematical relationship between the number of seats in a district in DR ("district magnitude") *M* and both disproportionality (EGID) and the number of parties (CNP). [48] When *M* rises this would tend to reduce the disproportionality. When *M* rises then there are more opportunities for parties to gain seats, and the number of contenders tends to rise. These relationship depend upon the local history on parties and preferences and conventions, but there can still be general tendencies. [49] [50] [51] This relationship should not be abused by first using EGID and CNP

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[46] https://en.wikipedia.org/wiki/Principal_component_analysis
[47] We use "concentrated" rather than "effective", see **Section** 4.12
https://en.wikipedia.org/wiki/Effective_number_of_parties
[48] Carey & Hix (2011) use the *median* district magnitude, since it appears that countries can have a wide variety of district magnitudes. When all districts have the same size *M*, then the *Median* is equal to *M,* and for analysis we will assume this. In Holland with EPR: *M* = 150. The Dutch CNP ranges quite a bit over time while *M* = 150 remains constant, see **Section** 4.12.
[49] See also Rae (1995:72) figure 1.

as *indicators* of representation and accountability, and subsequently claim a relation on *the latter*. Perhaps C&H do not intend this abuse, but they actually do so.

In itself, the approach by C&H has the ingenuity of using the inverse of *M* to allow for nonlinear effects. When *M* is in [1, infinity] then 1 / *M* is in [1, 0]. Dropping the constant, we look at differences from a base level rather than at absolute values:

EGID[*M*] = α *M* + β / *M* with the net effect that EGID drops when *M* rises
CNP[*M*] = γ *M* + δ / *M* with the net effect that CNP rises when *M* rises

We can combine these into a parametric plot for the {EGID[*M*], CNP[*M*]} space. **Figure 2** plots some cases, with *M* in [1, 30] and apparently EGID in [0, 3.5] and CNP in [-0.5, 0.2].

Figure 2. Parametric plot of {EGID[*M*], CNP[*M*]} as functions of *M* over [1, 30]. [52]
Blue = Carey & Hix (2011) estimate with country fixed effects,
Yellow = insignificant values of α and γ set to zero,
Green = sign reversal of γ = -.007 to γ = +.007
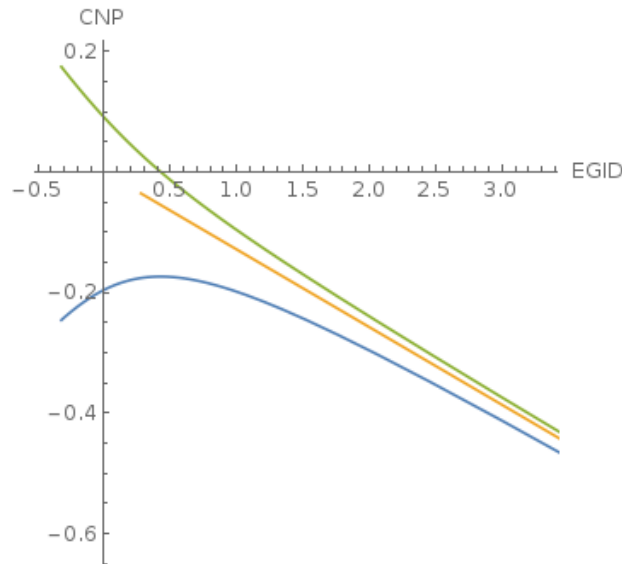
NB. When EGID and CNP are indicators for interest representation and accountability, then one should evaluate the axes in **Figure 2** in reverse manner. Thus the green line would be the frontier that C&H hypothesized. Alternatively, flip to {1 – EGID, -CNP}. Yet the green line would only fall in the confidence region. The statistically significant parameters give the yellow line.

Curiously, C&H do not actually plot their outcome in this manner but switch to another presentation using a logit / probit analysis (see below). As they suggest that **Figure 1** would be the true model then we would expect that they would produce **Figure 2** with bands of confidence, but perhaps they did not think about this option of a parametric plot.

The point remains:

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[50] A complication is that a rising CNP might first increase the disproportionality by giving more district wasted votes, but this would later be corrected again when *M* rises even more. As said, we are discussing statistical possibilities and no strict relationships.
[51] A strong nonlinear effect is the shift from SMD with *M* = 1 to *M* = 2, for it means a drastic reduction of the natural quota, and thus more scope for more parties, see **Section** 3.4.
[52] Wolfram Alpha: ParametricPlot[{{ -.02 M + 8.38/M, -.007 M - 1.08 /M}, {
  0 M + 8.38/M,   0 M - 1.08 /M}, { -.02 M + 8.38/M, +.007 M - 1.08 /M}}, {M, 1, 30},
AxesLabel -> {EGID, CNP}, AspectRatio -> 1, BaseStyle -> {FontSize -> 12}]

- It is *one thing* to perform a statistical analysis and recover above contingent relationship {EGID[*M*], CNP[*M*]}, and subsequently argue that EGID relates to (interest) representation and CNP to accountability, and
- it is *quite another thing* to indicate / equalise / identify EGID and CNP as veritable expressions for (interest) representation and accountability, and subsequently claim that you have found a relationship between (interest) representation and accountability.
- The approach by C&H does not follow the proper order.

C&H also look at the *voter-government distance* for (interest) representation (**Appendix J**) and the *number of parties in government* for accountability, yet there are various problems with this too, e.g. that the coefficients for the latter appear indistinguishable from zero – see below.

The general half-election in the UK 2017 generated for the Conservative Party 42.4% of the votes and 48.8% of the seats. Their coalition partner DUP from Northern Ireland had 36% of the votes and 55.6% of the seats. The first preferences of voters in Plurality are "masked" by strategic voting, because voters may fear that their vote otherwise is "wasted". Voting outcomes in DR do not reflect the true first preferences like we tend to see in EPR. The UK has single member districts (SMD), [53] and the results of C&H would suggest for the UK House of Commons of 650 districts and seats to rearrange into e.g. some 108 districts of size 6. This would indeed redraw the political landscape (increasing turnout too, that now is 69%, compared to Holland 82%). This could be considered a step forward. Still. A seat would still require 1/6 ≈ 16.7% of a single district. In Holland with 150 seats, the natural quota is 1/150 ≈ 0.67%, and, crucially, *collected over the whole country*. Thus the C&H analysis still allows a huge gap of voters who are *not* represented, and for who political competition is blocked. The line of research, of which C&H is a culmination, would hold that these voters are better served by improved accountability about policies they did not vote for and for which they have no means to express disagreement ? We must conclude that this line of research ends in intellectual derailment and no longer constitutes science but forms an exercise in confusion and bias, comparable to homeopathy, astrology or alchemy. (**Table 9** gives results from the regression coefficients, if these would matter, and these results are not encouraging.)

This present discussion and paper thus is not restricted to this particular paper of Carey & Hix (2011) but we do have the luxury that we can focus on it. The C&H paper forms a culmination of a strong research line in "(interest) representation and accountability". If this culmination leaves much to question, *then the whole research line is found to be dubious*. Thus, the present paper calls this whole research line into question. The existence of Carey & Hix (2011) provides *empirical evidence* that researchers from countries with DR have a *bias in favour of DR*, to the extent that they are not aware of inconsistency and inadequate empirical modeling. The C&H paper gives *empirical evidence* how researchers coming from countries with DR have been building a cathedral of confusion and bias.

2.15. Returning to Rae (1995) in the *Journal of Economic Perspectives*

Returning to Rae (1995), we can now look at the decades 1995-2017 lost to the confusion and bias in the political science on electoral systems. Yet, also, economists reading Rae (1995) apparently were seduced by his phrases and were not alarmed by the implications. It would be important that economics grows aware of this.

Page 70 on EPR:

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[53] https://en.wikipedia.org/wiki/List_of_United_Kingdom_Parliament_constituencies

> Full proportionality flattens all incentives for aggregation of factions into large parties (at least unless party organizing and campaigning are subject to important economies of scale), leading to legislatures that are highly fractionalized and governance that is consequently unstable. This general pattern has been documented across a fairly wide class of nations (Powell, 1982). This brings us to the second goal.

This is false. Politicians under EPR always have a strong incentive to form a party. Namely, in the apportionment of seats, parties can collect the fractional remainders of vote shares to gain more seats. Single candidates and smaller parties are at a disadvantage here. See Colignatus (2017f).

It is not clear whether Rae distinguishes *government* and *governance* here. Since *government* = Legislative & Executive, I presume that Rae means *governance* = *executive.* The stability of governance is a vague and dubious argument. If a majority changes, one would want to see reponsiveness, and this might mean a replacement of the prime minister. It is not clear why having more parties that serve voter preferences would cause instability. Instability might mean the collapse of the whole system and the rise of dictatorship. We should look closer at the reference to Powell 1982, but this now distracts from our subject.

Page 72 on DR:

> The defractionalizing shift works in three ways: 1) in the direct mechanism of an electoral system, giving more than proportional rewards to large parties and less than proportionate rewards to small parties; 2) in the alteration of expectations among politicians, leading to differential recruitment in favor of larger blocs; and 3) in the psychology of voting, leading especially to the abandonment of first-choice parties thought to be below the threshold of electability in favor of second-choice parties thought to have a better chance.[8]
> District magnitude is a predictable determinant of the strength of the defractionalizing shift, with higher *m* leading to weaker defractionalizing shifts.

Professor Rae thus clearly is aware of the infringement upon *One woman, one vote* and the obliteration of votes. Apparently he does not see it as part of morals or a *sine qua non* condition for democracy.

Page 74 on his final advice:

> benefit of political engineering. Proportional representation in multimember districts is a political option that the United States should consider seriously at both the state and federal level. One may, of course, shudder at its impact on an already complex political order, but simplicity has never been a central virtue of American politics.

(1) This has the confusion between (i) EPR & EPR-districts and (ii) DR. Having multimember districts by itself does not make the system EPR. See **Section** 3.11 on so-called "mixed systems" (misnomer).
(2) Why should the USA "shudder" for the prospect of EPR ? This is scare-mongering. Apparently Rae does not fully appreciate the role of bargaining in democracy.
(3) It can be appreciated that Rae finds the "courage" to propose an improvement by going from single member districts to multimember districts. Yet this "courage" comes with so much confusion and bias that one may also see it as a poison pill to the discussion. It does not surprise that there has been no progess since 1995, and that now Carey & Hix (2011) uncritically repeat the mantra, with an invalid regression analysis to cement it.

2.16. Re-engineering the analysis of a subject when needed

Re-engineering a subject means building it from the bottom up while avoiding (common) misunderstandings. An author always works towards avoiding misunderstandings, but textbooks have the purpose to introduce into accepted views, and thus might also introduce into common misconceptions. When much is amiss, we need to start afresh.

(1) We can re-engineer single seat elections, like for President by the people or a Prime Minister by a House of Representatives. This is done by Colignatus (2001, 2014a), *Voting Theory for Democracy*. [54] Colignatus (2017a) is an example application given the Dutch 2017 election.

(2) We can re-engineer multiple seats elections. Colignatus (2010) gives a didactic introduction to *District Representation* (DR) and *Equal or Proportional Representation* (EPR). A major issue are the wasted vote – votes that do not get seats. Wasted votes are a major issue for DR and still important for EPR. [55] This 2010 discussion is not critical about conventional measures of disproportionality, which is corrected in Colignatus (2017f). The advice is for EPR-districts, **Section** 3.11. This 2010 paper is aware but does not explicitly state that DR obliterates votes, which is corrected now. (This 2010 paper has a bias that I discuss in **Section** 4.6.)

(3) There is a connection between the latter two cases of re-engineering. Given the paradoxes of single seat elections that require more complicated election methods, it would suffice that these more complicated methods (like bargaining) are used by the professional politicians in a House of Representatives, and that the electorate uses *Equal or Proportional Representation* to establish the weights of parties for that process.

(4) A bit of re-engineering concerns the very terms of *District Representation* (DR) and *Equal or Proportional Representation* (EPR). The term ER is preferable above PR, since the key requirement is that the *share of seats* is equal to the *share of votes*. By a fluke of history, the term *"equal proportions"* got popular under *"proportionality"* and not under *"equality"*, and it is better to redress this (since $y = ½ x$ is proportional too). We already mentioned the distinction between *election* and *half-election.*

(5) We can reconsider how we measure inequality (disproportionality) of votes and seats. Colignatus (2017f) suggests to use SDID = *sign* 10 $\sqrt{Sin[v, s]}$, or *sign* 10 times the square root of the sine of the angle between the vectors of votes and seats, with *sign* based upon the covariance to identify majority switches. This *Sine Diagonal Inequality / Disproportionaliy* (SDID) has clear advantages over the current indices of Absolute difference / Loosemore-Hanby (ALHID), [56] Euclid / Gallagher (EGID) [57] or Webster / Sainte-Laguë (WSL). [58] The EPR Gini is a good measure too, if calculated properly, see Colignatus (2017b), but it is not symmetric like SDID.

(6) We can re-engineer the topic of "(interest) representation versus accountability" for multiple seats elections. This is the purpose of the present paper.

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[54] For single seat elections VTFD first observes that mathematician Kenneth Arrow in his 1951 *Impossibility Theorem* confused vote counts and decisions. Vote counts can cause intransitive "majorities" and cycles. A decision about a cycle is that it gives a collective indifference or a deadlock that must be resolved by a tie-breaking rule. There is nothing impossible about a tie-breaking rule. Who argues that there is no universally accepted tie-breaking rule, overlooks that democracies can each adopt a particular one, so that there is one available anyway. Secondly, VTFD develops the single seat voting scheme of the Borda Fixed Point method.

[55] The didactic exposition in 2010 highlighted the issues: (i) that commonly the wasted vote are neglected, i.e. the votes on parties that got no seats, while one might also use either empty seats or a qualified majority, (ii) that a minority in the votes might be apportioned a false majority in the seats, and (iii) that the allocation of remainder seats to elected parties might conflict with the wishes of wasted vote indeed. (Turnout = Wasted Vote + Elected, while the wasted vote includes the invalid votes.)

[56] https://en.wikipedia.org/wiki/Loosemore%E2%80%93Hanby_index

[57] https://en.wikipedia.org/wiki/Gallagher_index

[58] https://en.wikipedia.org/wiki/Webster/Sainte-Lagu%C3%AB_method

The connection between (1) and (2), mentioned under (3), surfaces again in (6). Arrow's Impossibility Theorem provides support for EPR, since both it and its deconstruction clarify that it is better to shift the use of the more complex methods (like bargaining) to the professionals in the House of Representatives, so that it suffices that the voters determine the weights of the parties (in open party list elections).

Instead, we find that Kam (2015)(2016ab) refers to Arrow's Theorem to argue in favour of DR and against EPR. I don't know whether Kam is an exception or whether this is more common for researchers coming from countries with DR. He translates the supposed impossibility of a social optimum (for single seats) into a distinction between researchers who know that a social optimum is impossible and common folk who do not know about this but who still have a need of an illusion of such an optimum. Subsequently he sees the choice between DR and EPR as determined by the run of history, and he tends to prefer that DR reduces information about different views in society (reducing *free speech*) so that voters may entertain said illusion, like dinosaurs didn't worry about meteorites and sheep don't worry about the slaughterhouse. See **Table 3**.

Table 3. Arrow's Theorem and DR vs EPR

Arrow's Theorem is used to support DR	*Arrow's Theorem actually supports EPR*
• The area of application is glossed over	• The theorem applies to single seat elections and not to multiple seats elections. Each district in DR has the single seat voting paradoxes
• The theorem and confusion are maintained and not deconstructed	• The theorem is deconstructed, for confusing vote counts and decisions
• The theorem is abused by suggesting that the approach on the right would not bring about a social optimum, as it supposedly would fall under the theorem and hence fall under the impossibility	• EPR brings differences in views into the open, and encourages parties to bargain about solutions (and if they don't bargain then one can investigate why)
• It is thought that the choice between DR and EPR can't be based upon principles • DR reduces information about differences in views, and this may contribute to a sense of social order	• There is a clear division of labour between voters, who establish party weights with EPR, and professionals in the House of Representatives who bargain about solutions (also using more complex voting schemes)

2.17. Engineering / The financial and economic crisis of 2007+

In 2007+ the world has a financial and economic crisis that hardly is over. Steinsaltz (2011) reviews a book called *The Quants,* that describes how rocket engineers entered financial modeling. Apparently *real* engineers have a moral tradition e.g. w.r.t. the construction of bridges, that better not collapse, but such tradition was lacking amongst the financial quants who developed products that could collapse.

We can currently observe how political scientists on electoral systems start calling themselves "electoral engineers". We see this in our quotes from Rae (1995). APSA had a taskforce on electoral rules and democratic governance. The editors Htun & Powell (2013:13) state:

> "In this report, the APSA Presidential Task Force on Electoral Rules and Democratic Governance examines the relationship between political science and [half] electoral institutions. We show that political science interacts with the world of [half] electoral rules in two ways. One way is through political science as science, developing and testing theories about the consequences of different [half] election rules and regulations for [half] electoral outcomes of general interest, such as vote-seat

disproportionality and the number of political parties. Political scientists use such theories to explain patterns of politics within and across countries. Most political scientists spend most of their time conducting research and disseminating its results to other scholars and to the general public, especially through education."

"The second way political science interacts with the world of [half] electoral rules is through engineering. Scores of political scientists have worked as consultants for international, regional, and national organizations, helping to design institutions in aspiring democracies and reform rules in established ones. They have offered "crash courses" on [half] electoral design to help policy makers and other stakeholders make informed decisions. By writing policy reports and lecturing at regional and international meetings, political scientists have educated policy makers, political parties, civic groups, and other stakeholders about general trends in [half] electoral reform, the expected consequences of particular configurations of [half] electoral rules and regulations, and the options available for institutional design."

Unfortunately, political science on electoral systems appears neither science nor engineering, but comparable to homeopathy, astrology or alchemy. One would tend to use quotation marks, as "political science", but that would assume a problem for the whole field, while this paper only identifies a problem on electoral systems.

Grofman (2016:27.2) however suggests that if political science fails on electoral systems, then the whole field fails.

"For [half] elections, we have quantifiable data over a multitude of cases, with substantial variation in both dependent and independent variables of interest, as well as some long-run time-series data with many observations. These data allow us to test our theories. We can make before-and-after comparisons to study the consequences of changes in [half] electoral laws in real-world settings, and we can do experiments to examine [half] electoral law effects. For these reasons, [half] electoral systems research has been a showcase for the best of political science. Indeed, [half] electoral systems research is probably the subfield with the greatest immediate potential to justify calling the study of politics a science; it shows that political scientists can establish useful empirical generalizations and theories that are not time and country bound. [Half] Electoral systems research is the converse of New York City as described in the song "New York, New York": If political science can't make it there, it can't make it anywhere."

However, I have only looked at political science on electoral systems and not at other areas in political science, and for me it isn't warranted to follow Grofman on this.

We observe not only a grand failure on grasping the key difference between a principle as *One woman, one vote* and mere preferences on which one might compromise, but we also see a string of confusion and bias that one would not expect from engineering. The APSA Report's Appendix C of *"Case studies: political scientists as electoral engineers"* reads like a horror story. PM. Professors Carey and Hix were members of the task force. The Report apparently does not criticize the Carey & Hix (2009) (2011) analysis, while this present paper shows that it obviously fails.

The specialisation is that science tries to discover general laws and that engineering focuses on applications that are subject to local conditions. [59] For example, Newton's theory of gravity

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[59] http://www.me.utexas.edu/~koen/OUP/HeuristicHistory.html Remarkably Koen refers to Gödel for the incompleteness of arithmetic, as an inspiration for a search for more certainty by developing a heuristics approach for engineering. See Colignatus (2007, 2011) (ALOE) for a debunking of Gödel's misconception. Gödel's result relies on a weak system that cannot express self-reference, and that relies on the interpreter to recognise such self-reference. When we require an adequately strong system that can express self-reference, then the Gödeliar expression reduces to the Liar. Instead, Koen might rather refer to the certainty of

would be part of science and the construction of a bridge depends upon strengths of materials and their connections. For political science, it is a grand theory that *One woman, one vote* translates into EPR, and that supposed negative aspects of EPR (such as social strife in transitional periods when voters and representatives are not used to EPR yet) are dealt with in other ways without compromising EPR. It is not engineering but homeopathy, astrology or alchemy to neglect Newton's theory of gravity or the principle of *One woman, one vote.*

3. Introduction to definitions

It appears fruitful to first arrive at clear definitions of terms. There is some repeat from the above, but this serves categorisation. This section does not aspire at strict definitions. It suffices to indicate the categories.

3.1. Representative democracy

There is a distinction between *direct* democracy as in small town assemblies of the whole electorate and *representative* democracy as in the US House of Representatives. The key factor is bargaining, which might be done only in smaller assemblies. For larger groups, referenda are no substitute for bargaining. We look into representative democracy. When issues cannot be settled in the market place with money, then one must use words. When not all citizens can partake in the national assembly, then one needs representatives.

The representatives meet in the House of Representatives (UK: House of Commons) that often combines with the Senate (UK: House of Lords) into Parliament. Voters cannot fully control such representatives, if only out or respect for human dignity that representatives are no automata. There is the principal-agent problem, [60] and representatives may have a different role, e.g. like political entrepreneurs. This relates to Joseph Alois Schumpeter's early observation that political parties are not merely following the will of their voters but have agenda's of their own. Important is the rule of law. Elections and courts supervise the adherence to the constitutional rules on democracy as well. Parliaments essentially operate via bargaining, and such outcomes can be supported by Parliamentarian votes. Registration by the Speaker makes decisions official.

Representative democracy has created two main types – not suggesting that these have the same degree of democracy:

- District Representation (DR) means that representatives have a mandate to represent their district, which also includes those who did not vote for them. The system originated in a period (supposedly) without parties, say around 1800. Presently, candidates often stand for parties, and then there may arise confusion whether the mandate is for the district or for the party.
- Equal or Proportional Representation (EPR) means that representatives have a mandate of the voters who voted for them. In a closed party list the vote is for a party, and the votes are distributed over the party candidates to reduce the power of the leader. In an open party list, this is basically the same, but there is more room for party candidates to have votes for themselves that allow more independence w.r.t. the party line.

DR used to be the common model in 1787 when the US Constitution was written. [61] Counts, earls and barons had their lands, and gradually the nobility was collected into the House of Lords and the popular vote collected in the House of Commons, perhaps using the same districts. In some countries like Holland in 1917 the view developed that geography was no longer the most relevant denominator. When a representative is elected by 50% + 1 of a district, the other half is disappointed. A discussion of history is beyond my capacity though.

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mathematics and the uncertainty of reality, as an inspiration for a search for more certainty in engineering by developing that very same heuristics approach.

[60] https://en.wikipedia.org/wiki/Principal%E2%80%93agent_problem
[61] https://en.wikipedia.org/wiki/United_States_Constitution

Subsequently, there is the distinction between:

- the Parliamentarian system: Executive or Prime Minister elected by the House of Representatives, thus indirectly, and
- the Presidential system: Executive or President elected by a direct vote.

This distinction appears to be distractive for our main line of reasoning, and comments have been put into **Appendix A**. However, the presidential system in the USA is a major layer in the onion of confusion for the USA.

There exist approaches that presume (i) either a binary choice (ii) or a trade-off, between *(Interest) Representation versus Accountability* in the design of electoral systems.

Colignatus (2010) (2017bf) have been first steps in comparing *Equal or Proportional Representation* (EPR) and *District Representation* (DR). We now try to integrate our analysis with Carey & Hix (2011) on the topic of *(Interest) Representation versus Accountability.*

3.2. Technique of apportionment and measure of inequality / disproportionality

When an electorate of a larger number of voters (e.g. millions) is represented by few representatives (e.g. 100 or 500), there arises the mathematical problem of *apportionment*. Numbers and fractions must be rounded to integers. A simple solution would be to assign each representative the exact number of votes received. To prevent that a party leader gets all votes, the votes for a party may be be distributed over its elected candidates. In practice, representative bodies prefer the *One woman, one vote* principle also for their own benches, and thus there must be rounding. The literature on methods of apportionment is huge, and a discussion of confusion and bias there has been split off as a separate paper, Colignatus (2017f).

For single member districts (SMD) the apportionment problem still exists but in hidden form. Each district selects a single representative, and this would seem to provide a solution to apportionment. Yet it only shifts the problem (peeling the onion) to the choice of the districts (gerrymandering) [62] and the (half-) election rule (often Plurality a.k.a. *First Past The Post* (FPTP)). Having a criterion like 50% + 1 e.g. with a run-off is not enough, for what to do with the 49%, and why would a run-off be a good method ?

There is a distinction between (i) *apportionment*, that decisively allocates seats to candidates for a particular parliament, and (ii) descriptive *measurement* of the result, that may compare situations over different parliaments. The techniques may have the same mathematical core, but their purposes are different. Gallagher (1991:38):

> "A key point (...) is that measures of proportionality and allocation formulae are inextricably bound up with each other. Every method of seat allocation generates its own measure of disproportionality, and many measures of disproportionality implicitly endorse a method of seat allocation."

If ID[*v, s*] is a measure of disproportionality of votes *v* and seats *s*, then an apportionment might use "minimize ID[*v, s* ; *S*]", with *S* the total number of seats, and the semicolon indicating a condition. Each parliament has its own *S* and particular rules on apportionment. The disproportionality measures tend to standardise *S* to 1 or 100 for purposes of comparison. See Colignatus (2017f) for a critical review of the literature and the proposal of the "sine diagonal inequality / disproportionality" (SDID) measure. The EGID (Gallagher index) is the current standard in the voting literature but it has some drawbacks and SDID would be better overall.

With *V* the number of votes and *S* the number of seats, then *Q = V / S* is the natural quota, or number of votes to cover a seat. With vote vector *v* and seat vector *s,* there are shares or

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[62] https://en.wikipedia.org/wiki/Gerrymandering

party weights $w = v / V$ and $z = s / S$, normalised to 1 or sometimes 100. The length of v is the number of parties n. In the DR-literature n is frequently called "fragmentation" though under EPR it is rather seen as the accommodation to voter preferences. Some contestants may fail to meet the (natural) electoral quota or the threshold in the electoral system, and give rise to the phenomenon of the "wasted vote".

- The unrounded proportional allocation is $a = S * v / V$ which thus has fractional seats.
- The allocation to seats excludes parties that did not meet the threshold in the system. Often this threshold is the natural quota.
- The *wasted vote* is defined as the votes for parties that did not get seats, including the invalid votes. [63]
- The relevant equation is that Turnout = Wasted Vote + Elected or $V = W + Ve$.
- When Elected Ve is the base for apportionment: $ae = S * ve / Ve$.
- For creating integer seat values s, the locus of selection is Floor[a] ≤ s ≤ Ceiling[a] or Floor[ae] ≤ s ≤ Ceiling[ae], depending upon the system, in which Floor rounds down to the nearest integer and Ceiling rounds up.
- Floor[a] would be the minimal number of seats that the party already has won.
- Remainder seats are S – Sum[Floor[a]] which still need to be allocated.
- Rules of apportionment might use Ve as the base while measures of disproportionality would use V as the base, since exclusion of the wasted vote (via a threshold) would be a major element in disproportionality. This is taken up in **Section** 3.9 below.

3.3. Equal or proportional representation (EPR)

Equal or Proportional Representation (EPR) is that representatives have a mandate of the voters who voted for them. There may however also be a sense in that one represents the general electorate, with only some emphasis on the particular party.

Like any system, EPR has a technical aspect of calculation. The political principle of EPR implies the technical requirement that the seat shares are equal to the vote shares, at least as much as possible, given the difficulties of integer approximations. A key point is that one should not confuse the decision on principle on EPR (mandate) with the calculation (technique). A measure on inequality / disproportionality is not a measure on whether EPR exists or not. When there is a case that happens to score well on an index on inequality / disproportionality, then it still need not be EPR in terms of mandate and other EPR properties.

Some observations on EPR are:

- For example, Holland has a House of Commons (2nd chamber) of 150 seats so that the natural threshold is 1/150 = 0.67% of the turnout. In 2017 28 parties participated in the elections and 13 got seats. The wasted vote was 2%.
- For political dynamics, a key property of EPR is that it better allows small start-up parties to challenge the establishment.
- A system with a different quota, or artificial threshold, like e.g. Germany's threshold of 5% of the votes, cannot really be called proportional - but perhaps "proportional after a threshold" (EPR-T).
- There is the paradox that a lower threshold might attract more startup parties who each might collect not enough votes for the threshold, but who jointly cause so much of the vote to be wasted that it might perhaps be better to have a threshold anyway. A solution is *apparentement* (forming a coalition during election) rather than raising the threshold.
- In the discussion of multiple seats elections it is common to use preference rankings over parties but this should not cause us to forget that parties stand for rankings over policies.

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[63] One might calculate the wasted vote per district and sum this. However, when a vote is wasted in one district but the same party gets a seat in another district, then this might no longer counted as a wasted vote, but as disproportionality. The notion of a wasted vote is defined for the overall outcome. However, if one would feel that districts matter, then it would be consistent to consider a statistic of the "locally wasted vote" (and sum this nationally).

- Conversely, in multiple seats elections, the emphasis is rather on the whole preference ranking (the party provides the ranking) and less on the first positions only. (See also **Section** 3.8.)
- It is a common misconception that the parliamentarian system should focus on a ruling majority of minimal size. The latter is a current pattern but no logical necessity. It is wiser to target for a much larger and inclusive majority in the Executive. The Prime Minister can appoint cabinet members from various parties. An inclusive majority can have a wider scope for policy than a minimal majority coalition, and the Legislative then has more scope to concentrate on the role of checking and balancing the Executive (with less party discipline to support the ruling coalition and be silent on criticism).
- Ganghof (2014) discusses Powell's distinction between "weak" and "strong" proportionality. Again, it is only proper that academic research pushes the boundary. However, Powell's distinction is distractive for the focus of *One woman, one vote,* see **Appendix F**. This present paper opposes the existing system of EPR like in Holland with the existing systems of DR like in the USA, UK and France. The technical condition is that vote and seat shares should be as equal as feasible.
- Colignatus (2017f, Appendix L) suggests a new optimal apportionment method baptised *Representative Largest Remainders.*
- This paper finds that EPR has higher scores for both interest congruence and accountability compared to district representation (DR), to be discussed next.

Comparing the parliamentarian system with EPR and the Presidential system (**Appendix A**):

- In France it is more common that the President appoints a Prime Minister who has the backing of the majority in the Legislative. The USA might adopt this practice too, and thus only requires a change in political practice and not a change in the Constitution.
- In a parliamentarian system, a ruling coalition might lose a majority also midterm if policies or situation are affected such that some members of the coalition change their mind. A presidential system has the flexibility of the President's mind, and the phenomenon of a limit to two terms, so that re-election is no longer an incentive for a president in a second term (only the election of someone of the same party).

3.4. District representation (DR)

District Representation (DR) means that the electorate is divided into districts or constituencies, and that voters in those disticts elect representatives to represent them in the House of Commons.

In terms of mandate, the representatives are often thought to represent the interests of the district (e.g. its agriculture or industry). When (national political) *parties* support or present candidates then the mandate of DR might become blurred with that of EPR.

The introduction **Section** 2.4 contains aspects that matter here too.

With S the number of seats, and M the district magnitude (number of seats per district [64]) then the number of districts is given as $nd = S / M.$ For the SMD obviously $M = 1$ and the number of districts equals the number of seats. The *number of voters per district* is $nvd = V / nd.$ We may also write $V = nd * nvd.$ [65] The relation with the natural quota is:

$$nvd = V / nd = V / (S / M) = M Q$$

Both M and nvd may be seen as measures of district size, and they are related via $Q.$ To reduce confusion about these two measures, M is called "district magnitude". M is also the number of times of Q in the number of voters in the district, $M = nvd / Q.$ A rule might be that a candidate is elected when he or she gets $Q,$ or thus a share Q / nvd of the district. Increasing the number of seats per district would make it easier for smaller parties to be elected.

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[64] Here we assume that this is uniform, so that M is also the median district magnitude.
[65] For the elected $Ve = nd * nved.$

For $M = 1$ candidates only satisfy Q when they win the whole district *nvd*. Plurality then implies that representatives will have much less support than is required under EPR.

Gallagher (1991:48) on measuring disproportionality: "(...) district magnitude emerges clearly as the main determinant of a country's ranking [in disproportionality]." This is also the finding by Carey & Hix (2011).

Lundell (2012:9) gives this example on M to indicate the effect of district magnitude, see also **Table 4**:

"50 seats are allocated by a proportional formula in 25 two-member districts. The legislature decides to improve the chances of representation for small parties by increasing the number of two-member districts from 25 to 50. Hence there are now 100 seats in the legislature. (...) Small parties would succeed much better, if the district magnitude was increased from two to four in each of the 25 original districts. (...) What is more, one nationwide 100-member district would guarantee, to all intents and purposes, a proportional seat allocation between a large number of parties. All other things being equal, the degree of disproportionality directly varies with district magnitude."

Table 4. Relation of district magnitude *M* and natural quota *Q*

S	50	100	100
M	2	2	4
$nd = S / M$	25	50	25
V	1,000,000	1,000,000	1,000,000
Natural quota $Q = V / S$	20,000	10,000	10,000
$nvd = V / nd$	40,000	20,000	40,000
Natural quota district ratio $= Q / nvd = 1 / M$	0.5	0.5	0.25

Another case is this. Assume that there are 9 parties and a district has a distribution of {40, 30, 15, 5, 5, 2, 1, 1, 1}. With $M = 2$ the two biggest parties might be elected, and with $M = 4$ the third enters too. If the rule is that all district seats must be used, then one might allow a party that doesn't reach the quota. M might have to rise much more to allow a chance for the smallest parties. Or, geography might have it that a small party is concentrated in a particular district. Given the existence of small parties and the incongruence of having so many district representatives while the House itself is limited, the logical step would be to adopt EPR.

One should be warned about such examples with few voters and few seats. They are useful for didactics, yet, for proper evaluation one should look at real nations and Houses. Namely, the size S is an important parameter to find a good fit, see below.

The crucial question is what happens with votes that were not for the winner. When these are not transferred to some EPR correction, then:

(1) these votes are only represented via the official philosophy that the elected MP represents the whole district,
(2) these votes are not represented in terms of their party,
(3) these votes would show up in a measure for disproportionality, but this outcome might be masked because of the strategic vote (for which there might be no observation).

3.5. Some statements by some UK MPs

The new UK lobby group for EPR *"Make votes matter"* has a map that allows one to find views of the UK district representatives elected on June 8 2017. [66] The UK has 650 MPs but fortunately there is some uniformity in views. Correcting some typing errors:

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[66] https://www.makevotesmatter.org.uk/ge-2017-candidates-on-pr/

- Jason McCarthney (Con) of Colne Valley states: "More often than not, First Past the Post results in a Government with a working majority in Parliament, making decisive government possible. It allows the formation of a clear opposition that can provide an alternative to, and a check on, the Government of the day."
- Karen Bradley (Con) of Staffordshire Moorlands states: "While no electoral system is perfect, I support the First Past the Post system because I believe it is simple, fair and effective. It has worked for our country for many years and has very positive aspects, including the fact that we vote for an individual who has to present themselves as a person as well as representing a party, and it enables the country to remove an unpopular government more easily. As you can see I do not support any changes to the way we hold General [Half] Elections."
- Richard Benyon (Con) of Newbury states: "First Past the Post ensures that each MP represents a recognisable constituency and usually ensures that there is a single party in government which can be judged on its record and ejected from office if it fails."

These representatives will have views on district representation as well, but these (*selected*) quotes focus on the *national* and not *district* mandate, [67] and suggest that Plurality might make it easier to get rid of a government when voters think that it fails.

The MPs do not provide a statistical backup how this worked out in the past in the UK - perhaps also because the UK system only generates the (strategic) vote, and doesn't generate information about first preferences, so that we really don't know what UK voters think for their first preferences. As discussed in **Section** 2.12 Curtice (2009) debunked the views of the MPs with statistics. Their suggested accountability does not apply empirically, so that the MPs refer to some rosy wish. We also debunked Curtice's view, because his interpretation of accountability appears invalid and he does not take into account strategic voting and lack of information about first preferences. UK politicians and their advisors are in disarray.

3.6. Accountability: for the district or at the national level

Accountability (footnote 8) concerns the dynamics of representation. There is a difference between accountability at the district level involving the *potential* replacement of a district representative and the accountability at the national level involving the *potential* replacement of legislative and executive. With Plurality it seems theoretically easier to replace a district representative, since it doesn't require the 50%. Yet, there are safe seats (perhaps like in **Table 1**) that show that this theoretical possibility may meet with a practical impossibility. Still, the more relevant topic of discussion concerns the national level, and we should not confuse the ease of replacement in districts with the ease of replacement at the national level.

While **Section** 2.12 looked at Curtice's approach on *geography,* let us now look closer at the *calculus* of the argument. Is it based on sound reasoning on shares of votes and seats ?

Let us consider the main theoretical cases. Let us consider (half) elections in Period 1 and Period 2, under either EPR or DR-with-Plurality, for parties *A* and *B*. See **Table 5** for relevant situations, not for a district but for the aggregate.

- We assume for both cases that *A* is in the ruling coalition in Period 1 and that after four years a majority of voters wants to switch to *B.*
- The situation under EPR is clear. In the first year *A* must have more than 50% to govern, and it loses its mandate when the majority switches to *B.*
- Under DR, we might assume that *A* also got more than 50% of the vote, but to make it more critical, let us assume that *A* in Period 1 got less than 50% of the vote under DR, so that only a smaller margin might be needed for a swing. We also assume that there now will be a (larger) majority for *B* in Period 2 again.

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[67] MP Bradley puts more emphasis on representing a party than a constituency, but might want to reformulate this.

- We can only conclude that *we don't know* what will happen in Period 2 under DR. The DR system might still allow that the minority vote is sufficient to support the coalition *A*, while an electoral majority supports *B* (like already was the case in Period 1).

Table 5. Executive accountability under EPR or DR

	EPR	DR with Plurality
Period 1	*A* > 50% (rule), *B* < 50%	*A* < 50% (rule), *B* > 50%
Period 2	*A* < 50% *B* > 50% (rule)	*A* < 50% (?), *B* > 50% (?)
Period 2 PM 1a. Anti-EPR		*A* < 50% (rule), *B* > 50%
Period 2 PM 1b. Pro-EPR		*A* < 50%, *B* > 50% (rule)
Per. 2 PM 2. Inverse-EPR		*A* > 50%, *B* < 50% (rule)

- PM 1. The two subcases can be qualified. (a) If the ruling coalition continues, then the result is *anti-EPR* for two consecutive periods (because *B* has more than 50% in both). (b) Otherwise one might as well adopt EPR (or *Pro-EPR* because *B* has more than 50%).
- PM 2. In *inverse-EPR*, *A* < 50% governs the first period, and the "failing and unpopular" government gains *A* > 50%, but now *B* < 50% governs the next period.
- PM 3. (Not shown.) One may also think about the scenario under DR that *A* has more than 50% in both periods, governs in period 1, yet still loses the seats and ruling majority in period 2. In this case the electoral majority doesn't think that the coalition fails or is unpopular, only the electoral system produces that outcome.

Table 5 uses only two parties. It has been claimed that DR worked in the past for only two parties, but broke down in the UK when LibDem became a factor. The above shows that this claim would only be true if the swings were fairly uniform across the country. With dispersion, it doesn't even work for two parties. Having more parties worsens the outcome, since the opposition to the ruling coalition is more divided, and an electoral minority has greater opportunity to still collect a majority of seats in the House of Commons. The facts in the UK support this. For EPR, having more parties and coalitions only allows for a better fit to voter preferences and does not change the earlier point on a switch.

Thus, for the nation as a whole EPR is accountable and DR is not.

The three Conservative MPs quoted above may have thought only about a single district, in which a swing of a few percentages might be enough to replace a district representative. This is the only case that makes sense for what they say. Given their statements they apparently did not think about the effect on the whole system for the whole country, even though the question was about this. Something prevented them to listen to the question. Or, they understood the question, and gave an answer that is not supported by the logic of the argument or the facts given by Curtice (2009).

The only argument for DR that remains is that it might generate a random element, such that swings in the Executive work against locked-in power and abuse of power. This however neglects the problem of safe seats, with gerrymandering and favouring districts.

In both DR and EPR it may happen that a particular party is in power for generations. In Holland the Christian Democrats were in power for some 70 years, in various denominations (Protestant, Catholic, combined). The advice from supporters of DR to cripple elections to prevent abuse of power is no acceptable method when such constellations happen. This means that democracy must use more tools, like a free press. The Dutch Christian Democrats did not maintain the same view for 70 years but adapted to the times. A key point is to use an inclusive government, so that the House can better control the Executive. The argument for DR, that this would give more accountability than EPR, and thus also be a tool in such cases of power stability in EPR, is a fallacy, and creates noise.

3.7. The Status Quo and the meaning of the majority rule

It appears necessary here to restate a key aspect that is also highlighted in Colignatus (2014a), *Voting Theory for Democracy* (VTFD). This is the role of the Status Quo.

The basic situation in voting has a Status Quo. The vote is about the Status Quo and its alternatives. Only those options are relevant that are Pareto Improving w.r.t. the Status Quo, i.e. that some advance while none lose. The Pareto condition thus gives a minority veto rights against being plundered. Commonly there are more Pareto options, whence there is a deadlock in terms of the Pareto rule, that this rule itself cannot resolve. Then majority voting might be used to break this Pareto-deadlock. Many people tend to forget that majority voting is mainly a deadlock breaking rule.

A political body that would use a majority rule without such protection of the Status Quo and minority rights would hardly be called a democracy. It might be a feature of populism. See Colignatus (2017c) that the UK referendum on Brexit likely neglected the rights of citizens under the status quo of EU membership.

When a new House of Commons must be elected then it is generally considered no option to leave the seats empty. A situation without a status quo tends to be rather exceptional. National elections however have a high profile, and their lack of a status quo might cause people to forget about the role of the status quo for voting situations in general.

3.8. Single seat elections and multiple seats elections

There are:

- Single seat elections: for President by an electorate or for a Prime Minister by the House of Representatives, see **Appendix A** and Colignatus (2014a) (2017a)
- Multiple seats elections: for a representive body by an electorate, see Colignatus (2010) (2017bf)

Multiple seats elections are not a sequence of single seat elections. For multiple seats elections the choice between DR and EPR is the key issue.

(One might look for a method to resolve multiple seats elections as a string of single seat elections, like creating a rank order of the candidates, but there is no need to do so. Ranking methods are subject to voting paradoxes and can best be used by the professionals in the House of Commons. It suffices that voters provide the voting weights that are used for such methods.)

The House of Commons would be elected by the electorate in a multiple seats election. The Prime Minister is elected by the House of Commons in a single seat election (using the seats as weights). Current systems may deviate from this:

- It makes less sense to have separate elections for a President, since the electoral mandates clash. France and the USA have the latter approach, emphasizing the difference between Executive and Legislative via vote rather than by constitutional law itself. Voters in France had to vote four times in 2017, with runoff elections of both president and legislative.
- For single seat elections it is not sensible to have districts, though the US system for the election of the president has such (the Electoral College [68]), apparently since horse-back riding was still an issue in 1776.

Within this clear conceptual framework, the districts may be a confusing factor caused by history. In the Middle Ages the three chambers of Parliament took care of the three estates (Knights, Clergy and Commons) and districts took care of geography. For the Commons the districts can be abolished or made harmless by using sub-EPR-districts (see **Section** 3.11).

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[68] https://en.wikipedia.org/wiki/Electoral_College_(United_States)

For the Senate or House of Lords the notion of EPR might not be relevant (like in the USA) or perhaps it is (like in Holland), but that is another issue. The chamber for the Clergy was abolished in the French Revolution but they should have evolved into scientists, like astrologers developed into astronomers. Politicians currently have too much room to manipulate (scientific) information. This causes the need for an Economic Supreme Court to control the quality of information for policy making, see Colignatus (2014a) for a summary and Colignatus (2000, 2005, 2011) for a formal proof with a stylized model. Now we focus on the House of Commons, but the design of democracy obviously involves more issues.

3.9. To compare or not to compare

Methods of apportionment and measuring (dis-) proportionality are discussed in **Section** 3.14. A discussion of these techniques would be distractive at this stage of the discussion.

It is rather relevant for us to look into the fundamental question *what* we want to compare *what for.* We may want to compare DR and EPR, but to some extent we do not need to compare them, since we already know key differences because of their definitions. **Table 6** should prevent some confusion.

Apart from the two contexts of EPR and DR, a key question is whether we include the wasted vote, or, technically, whether the vector of seats *s* contains 0. An assumption that the wasted vote can be distributed (proportionally) over the other parties cannot really be maintained. We know that those wasted votes did not vote for parties that got seats. (The non-voters would neither be distributed (proportionally) over the parties that got seats, because we don't know what they would have voted.)

Table 6. Which cases would we compare ?

Turnout = Wasted + Elected	EPR	DR
Apportionment: s tends not to have a 0	(a) The wasted vote are generally not translated into empty seats.	(b) SMD has a hidden manner of apportionment. In multi-member districts apportionment comes *partly* into the open. Proportionality is rough and "no goal".
Measurement of disproportionality: the wasted vote are a relevant aspect, and s has a 0	(c) The wasted vote would be excluded in apportionment but would be included in the measure, e.g. to measure the impact of thresholds.	(d) The wasted vote is a distorted statistic too. A disproportionality index is masked, unless corrected for strategy.

Ad (a) and (b): There is little sense in comparing EPR and DR in terms of apportionment. The methods differ too much. EPR works with rules on votes, and DR creates a historically contingent and geographically dependent outcome. One can discuss the *why* of each method but there is little sense in comparing the *how.*

Ad (a) and (b): Cases for which *s* has no 0 would only apply to (a) or (b). (If *s* has a zero because the wasted vote is zero then the wasted vote is removed as a category in the vector of votes, since one cannot divide by 0.)

Ad (a): (i) Current rules for most parliaments tend to apportion all seats only to candidates who meet the quota. They thus create and further neglect the wasted vote. (ii) Researchers on (a) might check whether the national officials have applied the rules correctly or not (malapportionment), or whether results would be different under different rules.

Ad (a) and (c): This comparison has limited value. (i) One might study the effect of thresholds. (ii) Colignatus (2010) discusses the option to leave seats empty or use a qualified majority, so

that the wasted vote do not create a false majority. (iii) If the seats have been apportioned with Hamilton / Largest Remainder (HLR) then an evaluation with a Webster / Sainte-Laguë (WSL) disproportionality measure might be dubious. (iv) There is no commonly accepted standard yet, thus each comparison is relative to the methods used. However, Colignatus (2017f: Appendix L) suggests the "Representative Largest Remainder" (RLR) method for apportionment and the SDID method for measuring inequality / disproportionality.

Ad (b) and (d): For DR, also the wasted vote is a distorted statistic. Without information about strategic voting, the measure would be masked.

Ad (c) and (d): This is the main situation that would be interesting for research. However, such comparison has limited value, because EPR and DR are quite different situations. Saying that these are "both democracy" might be too simple. For a comparison between EPR and DR, the EPR Lorenz and EPR Gini seem adequate, see Colignatus (2017b). Much discussion in voting theory about other disproportionality measures seems overdone, though Colignatus (2017f) suggests a new and better measure.

Gallagher [1991:50]: "The ranking order each [disproportionality] index produces suggests that distict magnitude is a more important determinant of proportionality than formula. Formula matters only within a certain range of district magnitude." In this case, however, it is more straightforward to clarity that DR with a district magnitude of say 6 still is *far away* from EPR, also conceptually with all the properties of EPR. It is better to clarify this rather than calculate some disproportionality index value *as if* such would convery really relevant information (even when it is unmasked).

Colignatus (2017b) calculates for the 2017 general election in Holland and the half-election in the UK that Holland has a EPR Gini of 3.6% and the UK 15.6%. This outcome does not transmit the message that Holland allows more competition from new parties for example, or that the results in the UK are masked because of strategic voting in systems of DR.

3.10. Mandate. EPR is a power preserving rule. DR has false majorities

While the representatives under EPR or DR have different mandates (voters for a party or voters in the whole district [69]), a government tends to require a majority in both cases. The different mandates allow representatives to support a coalition for a government for that mandate. What can be said about the formation of majority coalitions ? For example, if EPR generates three parties with seats {40, 40, 20} then a majority can be formed by at least 2 out of 3 parties. In DR with 100 seats for 100 SMDs, any group of 51 representatives gives a majority, and it would be curious when no parties would be formed by like-minded representatives.

The use of majorities implies the notion of (coalition-) power. Measures are the indices by Shapley-Shubik (pivotal) or Penrose-Banzhaf ("critical"). The measures have different values but work out the same, though see Laakso (1980) quoted below. The main thing to consider is to use the same measure consistently. The approach of ordering is also used for the Shapley value, and thus one tends to choose for the SS score, though PB tends to be mentioned more often in the voting literature perhaps because it originated there.

- The power index would hold for *coalitions amongst the voters*.
- EPR then is a *power preserving rule,* such that the same coalitions from amongst the voters are also possible amongst the representative body.

Voters, divided up along their party vote at the time of the election, can form various coalitions, and these possible coalitions are preserved in EPR by allocating seats to parties in proportion to the vote. The equality / proportionality will not be perfect:

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[69] Though there can be confusion for districts, if the elected candidate stands for a party, and then starts assuming that this implies a mandate for the party rather than for the district.

- There are problems of apportionment, e.g. that some parties may get too few votes to meet the natural quota.
- Within EPR there likely will be strategic voting w.r.t. the hoped-for coalition. This is less relevant here, since it would be part of free choice and not something that the system forces. Voters within EPR do not have a *necessity* for strategy, like voters within DR do.

Though the property of power preservation is imperfect we may still accept that EPR is power preserving in an overall sense.

DR is not power preserving. DR not only eliminates possible coalitions but may also create new ones. It may cause majorities in the House that do not belong to the original coalitions that are possible amongst the voters (when divided up at the time of the election, both in actual strategic vote and in their first preferences). These newly created possibilities for a majority (like giving a majority of seats to a party that hasn't a majority in votes or actually in first preferences) are "false majorities" since they do not originate from the possible coalitions amongst the voters.

DR might have worked somewhat in the past with only two very dominant parties (it created much of our present world), but there it stops. Democracy is much more complex than only EPR, but it seems a fair conclusion that proper democracy presupposes EPR in order to prevent these false majorities.

Some aspects are:

(A) Voting theorists tend to apply a power index to *seats,* and then tend to neglect the notion that these coalitions actually would exist for *voters.*

- Focusing on seats makes a bit more sense in countries with DR, when the seats can differ significantly from the votes.
- However, it is much more likely that researchers in countries with DR simply are not aware that EPR has this property of being a *power preserving rule*.
- A rationalisation of the neglect of coalitions within the electorate would be: to hold that each voter is powerless with only *One woman, one vote*, and that coalitions only arise via the collection into party seats. This rationale is not convincing, however, given the notion of EPR that votes and seats would be equal / proportional.

(B) I thought about the possibility to use the Hirschman-Herfindahl Index on the Penrose-Banzhaf power indices to get the *concentration of power,* and also the inverse value of the *number of decisive parties* (NDP). A google showed this idea also in Laakso (1980), Dumont & Caulier (2003), Robson (2007) and Kline (2009). Robson tends to focus on the concentration and the others on the NDP. See the discussion in **Section** 4.12 below.

I don't have the full article of Laakso (1980), and use only the part of the text that has been made available online. Laakso (1980) comes through a bit mutilated: "Electoral justice [equality] is thus defined as the relation between a party's vote and its power share. We may describe an electoral system as just when it guarantees every party as great a possibility influence decision-making (measured by power indices) as [/s ?] its share of votes." Also: "Perfect justice presupposes that every party has a decisional (measured by the Shapley index) equal to its vote share."

The latter doesn't seem to make sense when one would think that the vote shares and the resulting powers would differ necessarily. Using unitised variables, we can create a $\{w, p\}$ space for a Power Gini, with p the power normalised to 1. The electoral situation is $\{w, p[w]\}$ and after the election we have $\{z, p[z]\}$. The power preservation of EPR causes $z = w$, so that $\{w, p[z]\}$ provides Electoral Equality in the sense that voters get the power that fits them. In practice there will be differences because of the wasted vote and apportionment particulars. Thus we order parties on $p[w] / w$ and create a first Lorenz and Gini for this, and we order the parties on on $p[z] / w$ (indeed w and not z) and create a second Lorenz and Gini on that. The two graphs can be presented in overlap. The horizontal axis will be the w but potentially in

different orders. A third option is to do the same exercise directly with $\{p[w], p[z]\}$. We can also join all the graphs in a larger set of co-ordinates, like in a cobweb.

Laakso (1980): "In an earlier study (Laakso 1978) I have shown that the Banzhaf index gives values against 'common sense' when considering different parties' situation different decision rules. In contrast, the Shapley index does not behave in this paradoxical manner. Because the decision rules are in a very central position when measuring the electoral justice of different systems of P.R., the choice of the Shapley index is meaningful." And: "The results presented above show that the criteria of proportionality and justice are different. Because potential power cumulates to large parties, perfect justice presupposes that $N_v < N_s$ This implies that electoral give a bonus to small and middle-sized parties. The prerequisite electoral justice is thus electoral disproportionality (D>o)." The latter however would be illogical under the power preserving rule. When power cumulates to larger parties in the electorate, then this is preserved in the seats, and that is all. [70]

Power preservation imposes additional conditions on apportionment that Jefferson and Webster might not have taken into account, though, namely the preservation of majorities. If a coalition has 49.9% of the vote in the turnout, one should take care that it doesn't get 50.1% in the seats.

(C) Lijphart used the term "electoral justice", see the reference below. I prefer the term "electoral equality" since this better expresses that seat shares should be equal to vote shares (without the need of courts and judges).

(D) When a stable majority structurally neglects a stable minority then this might cause tensions. This compares to the phenomenon of sharing, e.g. when a favourite child gets structurally all the presents and the unfavoured one gets only a token. We will not consider this aspect now. See **Appendix F**.

3.11.   Definition of mixed systems (contradiction in terms)

The voting literature contains the notion of "mixed systems". This is a contradiction in terms. [71] Something is EPR or it is not. In logic there are circles and squares, and the notion to combine this into a circle-square gives an inconsistency. One might use some metric to draw figures somewhere inbetween, but these lose essential properties and thus no long apply to the original concepts. Instead it is possible to have a measure of inequality / disproportionality of votes and seats, but this only looks at votes and seats, and no more. Thus we should not confuse an *issue of principle* with a *statistic* that measures some property relating to that principle.

The different *mandates* under EPR or DR however provide a valid reason to think about the potentiality of such "mixed systems". This again is a logical distinction on principles of design, and the "mixing" doesn't reflect a choice on a continuous range. However, we again find that "mixing" these mandates actually is inconsistent.

- The basic distinction is whether EPR has been the key principle of design.
- Within EPR we might allow districts, though these would not be key to the design. These can be called sub-EPR-districts, to distinguish them from districts under DR.
- When the designing principle deviates from EPR and has a role for districts, then it would be a DR system. One extreme would indeed be a system with single member districts (SMD), see for example **Table 1** again.
- The idea of "mixing" EPR with districts sounds nice, but the idea can also be abused when districts are suggested that do not enforce overall EPR. Thus one should rather avoid terms like "mixed system" (or the term "additional member system" (AMS)) when there is a proper term "EPR with sub-EPR-districts". Perhaps it would not matter if all involved know what it concerns, but potentially some new readers might miss out on the

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[70] There remains the phenomenon that larger parties tend to get more seats, e.g. because of the wasted vote. This would be solved by the qualified majority.
[71] https://en.wikipedia.org/wiki/Oxymoron

definitions and then be confused or misinformed. For example, speaking about a system of DR, with say a district magnitude of 6 representatives, and then use a statistical measure on disproportionality, might generate a statistic, but the key design point remains that the system is not EPR, regardless how high that statistical value happens to be for that time and place.

Consider this example, using V for the number of votes, S for the number of seats, $Q = V / S$ for the natural quota, often the required number of votes to gain a seat. A rule might be that half of the seats are chosen by sub-EPR-districts of voter size $2Q$, in which a candidate wins at least 50% of the vote. In that case the candidate passes the quota, and $S / 2 * 2Q = V$ and thus still covers all voters V. All votes that do not result into an election of a district candidate can be used without problem for the proportional allocation to parties. (One might compare again with **Table 4** for the number of seats per district under DR, which situation can still create quite some inequality / disproportionality, including strategic voting.)

In Holland there is an open party list system, so that people can vote for particular (e.g. regional) candidates indeed. In the election of 2017 there were 4 of 150 members of Parliament elected with preference votes (not necessarily regional). This doesn't suggest a great relevance of districts. Holland is a small countries but parties still tend to emphasize some local candidates.

3.12.   The role of the assembly size S

Lundell (2012) reviews the role of the assembly size or number of seats in the House of Commons S on the overall proportionality of the system and the number of parties.

> "In *Electoral Systems and Party Systems*, Lijphart (1994) argued that the assumed influence of assembly size foremost concerns EPR systems, and that a possible effect on disproportionality is less plausible in non-EPR systems. The empirical findings here suggest that it is just the opposite. In [false] majoritarian [DR] systems, increasing assembly size results in a lower degree of disproportionality and a higher degree of party system fragmentation. In proportional systems, these tendencies do not exist." (p15)

Lijphart's reasoning for EPR systems was that more seats allow a closer apportionment, while the EPR-type of apportionment has no role for DR systems. Lundell however finds that S tends to be large so that the effect on apportionment is marginal, and so that other factors like the threshold are more important. For DR systems:

> "To be sure, in SMD systems, the size of the legislature is directly related to the number of districts. The chances for small parties to win a seat increase as the number of constituencies increases, particularly if their support is regionally concentrated. Accordingly, on the basis of these results, we might as well conclude that the number of districts is decisive in SMD systems since the number of districts is equal to assembly size."

Lundell is cautious on the latter, and obviously shows awareness of the effect of district magnitude discussed in **Section** 3.4 above.

3.13.   The problem

From these definitions it follows that EPR is more accountable than DR.

Carey & Hix (2011) and Kam (2016a) argue that DR is more accountable than EPR.

Thus we appear to miss something. There must be something very special about DR districts as compared to sub-EPR-districts that we apparently have been overlooking. Or perhaps an important section of the literature on (interest) representation and accountability is confused.

Carey & Hix (2011) contain the data in **Table 7**, that indicated a negative relationship between district magnitude and EGID, averaged over various national (half-) elections. The strategic

voting differs in SMD and EPR, and changes character in-between, though. Would it be possible to relate these data to accountability ? Or is this mainly an obvious effect that more seats allows less disproportionality, that rather stands on itself ?

Table 7. District magnitude and average EGID, Carey & Hix (2009) (2011)

District magnitude	1	4-6	7-10	11-20	21+
Average EGID	11.9	5.3	4.6	3.5	3.0

	Minimum	Maximum	Mean	St. dev.
District magnitude	1	150	14.2	31.5
Average EGID	0.3	34.5	7.1	6.3

A key observation is that the political science literature shows no metric for accountability. We have a definition (footnote 8) but there it stops. Accountability looks at the *dynamics* of representation, but then presupposes proper representation, and then it actually suffices to look at representation itself. Accountability is just the other side of the coin that a candidate might not be (re-) elected or that a party might lose votes. It is remarkable that political scientists on electoral systems have been discussing accountability for several decades but have not succeeded in developing a proper metric.

The reason seems to be that views about accountability are problematic by themselves.

- The notion of accountability for an individual representative rather applies to single seats, like for a presidential election, and it is a category mistake to think that it applies to multiple seats in exactly the same manner.
- For DR one might argue that voters in a single district might hold their representative accountable, but (i) this representation is a problem already in itself, see Plurality and the voting paradoxes of single seats, (ii) then also the dynamics of representation are a problem, (ii) this mess for the districts certainly does not translate into something nice for the aggregate, see **Section** 3.6.
- For EPR-districts, a party might not get votes for an EPR-district candidate, but still nationwide. For EPR with open party lists, voters can only indicate positive values, and a candidate with a low score may still be elected because of the position on the list. For EPR, it is rather the party itself that evaluates the performance of the candidate / representative. It is acceptable and rather logical that this is part of their function.
- Accountability for the aggregate is just an aspect of EPR that there are *genuine* elections (with open party lists) such that parties get feedback on their performances and plans.
- There would be an account on performance, with a free press, so that the body politic is informed about the judgment and the reasons why. Perhaps the former term has affected the views of the representatives, so that the next term will be a new challenge.
- When EPR is accountable and DR is not, there is logically no need for a metric.
- But, crucially, there is no scope for a metric either. Thus, when political scientists from countries with DR try to measure accountability, then they must close their eyes for this logic, and are forced to invent aspects that turn accountability into something that it is not.

3.14. Apportionment and measurement of disproportionality

The more technical discussion of apportionment in EPR and the measurement of inequality / disproportionality has been postponed to this late stage. The discussion so far has been on the more principled comparison of EPR versus DR, and we have been able to avoid technical issues. For the body of the discussion below it remains important however to be aware of the more technical issues in EPR, and some underlying principles on measuring inequality / disproportionality of votes and seats. Explanations are abundantly available in the literature, yet we both put more emphasis on the wasted vote and we should achieve more clarity.

It has appeared useful to split off this discussion as Colignatus (2017f). The abstract reads:

"Let *v* be a vector of votes for parties and *s* a vector of their seats gained in the House of Commons or the House of Representatives. We use a single zero for the lumped category of "Other", of the wasted vote, for parties that got votes but no seats. Let *V* = 1'*v* be total turnout and *S* = 1'*s* the total number of seats, and *w* = *v* / *V* and *z* = *s* / *S* the perunages (often percentages). There are slopes *b* and *p* from the regressions through the origin (RTO) *z* = *b w* + *e* and *w* = *p z* + ε. Then *k* = Cos[*v, s*] = Cos[*w, z*] = Sqrt[*b p*]. The geometric mean slope is a symmetric measure of similarity of the two vectors. *θ* = ArcCos[*k*] is the angle between the vectors. Thus Sin[*v, s*] = Sin[*w, z*] = Sin[*θ*] = Sqrt[1 − *b p*] is [a] metric and a measure of disproportionality in general. Geometry appears to be less sensitive to disproportionalities than voters, representatives and researchers tend to be. This likely relates to the Weber-Fechner law. Covariance gives a sign for majority switches. A disproportionality measure with enhanced sensitivity for human judgement is the *sine diagonal inequality/disproportionality* SDID = *sign* 10 √Sin[*v, s*]. This puts an emphasis on the first digits of a scale of 10, which can be seen as an inverse (Bart Simpson) report card. What does disproportionality measure ? The unit of account can be either the party or the individual representative. This distinguishes between the party average and the party marginal candidate. The difference *z* − *w* is often treated as a level, and Webster / Sainte-Laguë (WSL) uses the relative expression *z* / *w* − 1. For the party marginal candidate *z* − *w* already is relative, with the unit of account of the individual representative in the denominator. The Hamilton Largest Remainder (HLR) apportionment has the representative as the unit of account. The "Representative Largest Remainder" (RLR) uses a 0.5 natural quota. The paper provides (i) theoretical foundations, (ii) evaluation of the relevant literature in voting theory and statistics, (iii) example outcomes of both theoretical cases and the 2017 election in Holland and the half-elections in France and the UK, and (iv) comparison to other disproportionality measures and scores on criteria. Using criteria that are accepted in the voting literature, SDID appears to be better than currently available measures."

3.15.   Formulas for the voter-government distances on preferences

A measure for inequality / disproportionality between votes and seats only uses those (numerical) scores. The analysis can be enriched by also considering the political preferences or policies, thus causing the notion of an ideological distance between voters and government. In government we distinguish the legislative and executive branches. The *voter-legislative* and *voter-executive distances* are said to have a "substantive" dimension, as compared to the mere "numerics" of votes-seats inequality / disproportionality. For the choice between EPR or DR it suffices to look at the votes and seats though. The substantive distances appear to be a distraction for our topic, and then are best discussed separately, in **Appendix J**.

The following becomes relevant only for **Appendix J**, yet it is useful to have the definitions available for general understanding of our topic.

ID[*v, s*] = ID[*w, z*] is the inequality / disproportionality, preferably SDID. Other measures are EGID, ALHID or EPR Gini, see Colignatus (2017f). [72]

To take account of strategic voting, we can imagine that people who would have preferred to vote for a particular party as their first choice, actually fear that their vote will be lost, so that they vote for another party, perhaps trying to block the party that they fear most. This strategic vote will be dispersed over various parties. Thus there is a square matrix Σ, with preferred parties in the rows Fand the actual voted-for parties in the columns. Instead of using *v* we now use *w*. Thus *w* = Σ ' 1 are the actual vote shares, and *w** = Σ 1 are what people would have voted using their true first preferences. For EPR we may assume that *w** = *w* or the actually observed vote shares, for DR we would need exit polls.

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[72] SDID is insensitive to normalisation, but other measures might require this.

Let p be the vector with positions on a Left-to-Right policy scale, scored on a [0, 1] range. PD[$w*$, z, p] is the *voter-legislative* policy distance (**VLPD**). Obviously, the Left-to-Right scale is simplistic, and there are more dimensions that parties can agree upon.

Then $mpw* = p' w*$ is the mean political view of voters and $mpz = p' z$ is the mean political view of the representatives, in which p is weighted by the different weights, here choosing for turnout and not the whole electorate. For majority voting and the power indices, the median is more important, and the appropriate calculations give $medpw*$ and $medpz$. In this case, however, it is less relevant to calculate the median, since the true preferences $w*$ play no role in the allocation of seats. The mean is more informative about the actual weights.

For the ruling coalition we can use the symbol $z*$. Technically there is a distinction between a ruling coalition $z*$ and a cabinet $z**$, since ministers may think a bit differently than their parties. For a presidential system this may be the president. For us it suffices to look only at the ruling coalition $z*$. Let c be a vector of 0 and 1 elements, with 1 for a party that belongs to the ruling coalition and 0 for a party that belongs to the opposition. Then $z* = c\,z\,/\,(1'\,(c\,z))$, so that $1'\,z* = 1$.

ID[$w*$, z] is the voter-legislative distance in terms of votes and seats, thus using the revealed preferences on the policy stances of parties without an additional estimate p. Then ID[$w*$, $c\,z$] is the voter-executive distance, now comparing the voters and the ruling coalition. The value of the latter will be around 50%, and its value derives mainly from comparison over time.

The *voter-executive* policy distance (**VEPD**) is PD[$w*$, $z*$, p], in which the original political positions by the voters are compared to the political positions of the ruling coalition. We use the same function PD for both policy distances though with different inputs.

For the ruling coalition, the mean $mpz* = p' z*$ again is more informative than the median $medpz*$. Thus we have the chain, with differences VLPD and VEPD within it:

$$p'\,w* \rightarrow medpw* \rightarrow medpz \rightarrow p'\,z*$$

For DR and presidential elections there is the *median voter theorem* that $medpw \approx medpz*$, or that the median strategic vote fits the median ruling coalition, see Kam (2016a) in **Appendix H**. Perhaps the party that wins under DR might also look at opinion polls on $v*$, but the strategic votes v determine the voter median position.

For EPR there is proper apportionment and little (or rather less relevant) strategic voting so that $w* \approx w \approx z$. Thus the correlation between ID[$w*$, z], ID[$w*$, $c\,z$], PD[$w*$, z, p] and PD[$w*$, $z*$, p] would seem to be mainly caused by the difference between z and $z*$, or the formation of a ruling coalition.

Carey & Hix (2011) state a low correlation of 0.16 between EGID and "voter-government" distance, say for the executive PD[$w*$, $z*$, p] though they do not use that formula. My impression is that the subsets of EPR and DR might be rather different. This would need a closer look, except that it distracts, and we don't do so here. See **Section** 8.1.

In EPR, it may happen that a ruling coalition has a stable majority that allows a stable deviation from the median voter. In Holland, the Christian Democrats were in the ruling coalition for 70 years. Bormann (2010):

> "While in the German political system compromise is often forced by countervailing political forces on multiple levels of government which possess veto-powers (...) , its score on the executive-parties dimension alone makes it less of a consensus democracy and more of an inbetween type. (...)" (**Section** 4.3).

It might be seen as unfortunate when EPR allows a stable ruling coalition, such that the opposition is only allowed a voice in the House of Representatives without participation in the Executive, yet it can be seen as a result of democratic *One woman, one vote,* and we would look at the whole social system for other ways of power sharing (where the problem is too).

3.16. Hypothesis on a useful space and frontier

Looking at these issues, the following suggestion arises.

For EPR:

- The best indicator for interest-representation is the inequality / disproportionality measure itself (measured by SDID), since this uses *revealed preferences.* For this it suffices to look at SDID[*w, z*] and SDID[*w, c z*], and of course correct DR for strategic voting.
- Accountability is only another side of the coin of EPR, and can best be operationalised by the inequality / disproportionality measure, preferably SDID.
- Thus, for EPR the discussion on interest-representation and accountability only gives cause to look at improving EPR. For example, Holland uses D'Hondt and might switch to RLR.
- Measures on policy distance, as VLPD and VEPD, as discussed in **Appendix J**, needlessly complicate the choice between EPR and DR. They create an {ID[*w, z*], PD[*w, z, p*]} space, for vectors *w* vote shares, *z* seat shares and *p* positions on the policy scale. Countries with the same inequality / disproportionality might still be apart on the incongruence on policy preferences, simply because apportionment looks at seats and not at policy views. If a party has 5% of the votes and 10% of the seats, then it doesn't matter for SDID what party this is, but PD[*w, z, p*] will evaluate on *p*. The space might be relevant for discussing improvements in EPR, but the present topic of this paper is the choice between EPR and DR, and not marginal improvements once we have EPR.

Researchers coming from countries with DR saw that their inequality / disproportionality measures on votes and seats (ALHID, EGID, WSL) were imperfect, and that those measures did not give the required information due to strategic voting too. Instead of advising their countries to switch to EPR, or trying to recover the first preferences to clarify the current inoptimality, some researchers started to measure the policy distance. A good policy distance also requires a correction for strategic voting, but it is not clear to me at this point how they dealt with that.

- For DR, the interest-representation might be operationalised by the interest incongruence measures in **Appendix J**. However, it is still better that this is translated into an estimate of first preferences *w**.
- DR has no scope for accountability, see **Section** 3.6, and thus we should not expect a measure on it.
- For DR there still is a {ID[*w*, z*], PD[*w*, z, p*]} space that would indicate the dismal performance of DR.
- If such information on *w** would also be available for countries with EPR, then this would provide a yardstick for unavoidable distances that also exist in EPR. Constructing this however is distractive and a lot of work without real information. It essentially concerns voters who want to favour a particular coalition.
- A scatter plot for various elections might show quite some dispersion, but perhaps still some tendency and correlation, and help identify cases that are problematic and need to be looked into. A large distance need not mean polarisation and less scope for bargaining.
- Making this space dependent upon other factors obviously must be considered only with care. For example, district magnitude requires a distinction of DR and EPR districts.

This notion of a {ID[*w*(*)*, z*], D[*w*(*)*, z, p*]} space and frontier is perhaps the *true core* that exists in this discussion about interest-representation and accountability. If so, then political scientists did not recognise it as such a *true core* and constructed approaches that only seem like it. Carey & Hix (2011) mention that {EGID, VLPD} has a correlation of only 0.16, see the discussion in **Section** 8.2, and they further focus on {ID[*w, z*], CNP} and at {PD[*w*(*)*, z, p*], number of parties in the ruling coalition}. Golder & Stramski (2010) say more on the regression of {EGID, VLPD}, yet it remains a problem that they have no measure on accountability but still have statements on the supposed trade-off, see **Appendix J**. Overall, the issue remains a distraction from our subject.

4. Introduction to confusion and bias on representation and accountability

4.1. Two types of bias

Let us distinguish two kinds of biases. The first is *obvious* bias, when a researcher arrives at a conclusion that is obviously in direct opposition to logic and facts, so that the "conclusion" can only be explained by that the researcher has blinded himself or herself to science. Examples of such obvious bias are homeopathy, astrology or alchemy. The second is *subtle bias* which consists of the use of rather common notions, and for which the researcher is not accountable that these are common notions. When such commonly entertained notions cause a conflict with logic and data, then it would have been the role of the researcher to question the common notions, and write an enlightening paper on this. The subtlety of the bias however might prevent that the awareness of the conflict rises to a sufficiently high level to be noticed.

4.2. Bolshevik revolution and US Government classes

1917 is also the centennial of the Boshevik or October Revolution in Russia. [73] The advantage of writing this paper at this particular moment of time is that TV documentaries remind me of its relevance for the topic of this paper.

Wikipedia: "Although Alexander II established a system of [half] elected local self-government (Zemstvo) and an independent judicial system, Russia did not have a national-level representative assembly (Duma) or a constitution until the 1905 Revolution.[...] The system was abolished after the Russian Revolution of 1917." [74] When the Tsar had abdicated in the February revolution of 1917, a provisional government led first by Lvov and then Kerensky, decided to general elections. One of the TV documentary commentators remarked: "The introduction of full democracy in such conditions is begging for problems." (paraphrase). Indeed, while Napoleon failed to conquer Moscow and eliminate the aristocratic Tsarist regime, Trotsky and Lenin completed the job for him.

It can be accepted as an empirical observation that the *transition* to EPR must be handled with care. The comparision of DR and EPR should not be confused with the problems of transition, though.

Subsequently, US highschools have US Government classes, since the US attaches great value on that its citizens understand democracy and the content and purpose of the US Constitution. This means that the US also have a system of education for such teachers, and thus also university departments on government and political science.

Matthijs Bogaards (2015) interviews Arend Lijphart, and starts with his latest book "A different democracy" 2104, that apparently was written for such classes in Government:

> "AL— (...) Our aim was to make clear to American students that the US is a democracy, but a very different one from other democracies. (...)
> MB—The book is strong in description, there is a bit of explanation, mostly going back to the founding moment, but what I missed is a strong conclusion.
> AL— That was deliberate. We never meant to have clear policy recommendations, leaving it up to the instructor and the students to talk about that. In that sense the book is different from much of the work that I have done, because I tend to end with a prescription. The main message is that the US is different from other democracies and that it does not work as well as many other democracies. Hopefully this will stimulate discussion about reform, because the book is brimming with implicit recommendations, or at least implicit invitations to think about what could be done."

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[73] https://en.wikipedia.org/wiki/October_Revolution
[74] https://en.wikipedia.org/wiki/Tsarist_autocracy

There is an obvious problem for US Government classes and the books that they use. Their intention is to express the value of the US Constitution, but modern science arrives at the conclusion that the US Founding Fathers did not have the advantage of modern science. Textbooks obviously should provide logic and data, and not indoctrinate. The constitution is not sacred, there have been amendments. Students are served by rationality, and it would be curious to withhold rationality and leave them guess, and create the impression as if the constitution would be sacred. It would be curious not to give advice when it would be obvious. The best approach would seem to be:

- to emphasize the meta-constitutional considerations, so that one can reconstruct what principles of democracy would be, and how the US Founding Fathers found themselves in particular historical circumstances that caused them to translate these principles in the actual US Constitution. With changing circumstances, like having a record since 1776, one may adopt changes to get closer to those principles.
- that the author of a textbook gives his or her own position, and states clearly that this is only a personal opinion, so that students (and the instructor) have a whetstone, perhaps also to check on potential bias. Obviously, one should also avoid speaking with the authority of the author of a textbook, and thus there may be a thin line between transparancy and indoctrination. The general denominator is the quality of the book.

Subsequently, Government classes and courses on *Comparative Political Systems* require textbooks and textbooks require content, and thus one can imagine that there is a force that supports the development of *typology*, so that there is something to teach and to have exam questions about. Such *typology* may however distract from the real issue of *One woman, one vote.* See **Section** 17.4 or continue with the next subsection.

4.3. Confusing terminology (misnomers majoritarian and consensus)

The political science literature contains some confusing terminology.

- DR is labeled as "Majoritarian democracy". This is a misnomer. Indeed, plurality in districts might cause a majority in seats in the House of Representatives, even when such majority in votes is lacking. Why emphasize the nice word "majority" and be silent about the dubious criterion of plurality, that obliterates votes ? A better term would be "False Majoritarian democracy", but this would not be accurate either in cases when the majorities happen to correspond. It is better to simply use "DR".
- EPR is labeled as "Consensus democracy". This is a misnomer. EPR only exposes the forces that exist to form coalitions, and there it stops. Perhaps coalitions only agree about having a coalition and little else. Potentially "consensus" is not a positive word in countries with DR.

The opposing terms "majoritarian" and "consensus" apparently have been supported by Arend Lijphart, [75] a Dutch political scientists who moved to the USA and who wrote influential books on electoral systems and the comparison of DR and EPR. Researchers coming from countries with DR might think that this terminology might be fitting for EPR (as it is supported by such an author), so that it would be fitting to adopt it. Yet, they should not surrender their critical faculties, and they should rather be wary of confusion. The terminology appears to be counterproductive, since it supports confusions for authors coming from countries with DR.

Bormann (2010:4) expresses this criticism:

"(...) The first one to point out Lijphart's misspecification of the majoritarian definition as the opposite to consensus democracy and an end point in the spectrum of democratic system was Nagel (Nagel 2000; Powell 2000, 136/7). While pondering about the question why the 1993 vote of New Zealand's citizens to adopt a mixedmember-proportional voting system did not lead to more consensual outcomes, Nagel detected that Lijphart actually missed an intermediate step, and consequentially, defined majoritarian democracies incorrectly. In most cases

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[75] https://en.wikipedia.org/wiki/Arend_Lijphart

Lijphart's majoritarian democracies are rather pluralities, i.e. the governing party had not received a simple majority but a plurality of votes. Thus, a true majoritarian system is one in which a government actually had a majority while a consensus system is one with an oversized majority. If such definitions were adopted majoritarian systems would rather be at the midpoint of a democratic systems' continuum than at one end (Nagel 2000, 119). Nagel attributes Lijphart's inadvertence to the inductive, misleading equation of the Westminster type with majoritarian government. 11 Since the majoritarian-consensus typology is continuous it can place actual electoral majorities between the two endpoints. However, a country like Germany is then considered as consensual despite its history for small majorities instead of grand coalitions. While in the German political system compromise is often forced by countervailing political forces on multiple levels of government which possess veto-powers 12 , its score on the executive-parties dimension alone makes it less of a consensus democracy and more of an inbetween type. (...)"

4.4. Returning to Carey & Hix (2011)

Let us recall **Figure 1** from the introduction. We first required a section on defintions and then a section on confusions, and gradually we can return to the main issue.

In **Figure 1** we see mention of EPR and DR. Our point of entry thus is: we would like that the definitions in **Section** 2 above fit with Carey & Hix (2011) and this figure.

A 2D graph reads with the horizontal axis as the cause and the vertical axis as the effect. When we apply this convention to **Figure 1** the reader expects a direct regression of accountability (properly measured) given representation (disproportionality ?). Later, C&H however make the variables dependent upon a third factor, district magnitude (measured by seats per district). In that case **Figure 1** becomes a parametric plot, [76] with two variables / axes explained by a common factor. Their approach fits the DR mode of thinking, in which district size is one of the relevant parameters. In the EPR mode of thinking, sub-EPR-districts and their sizes are irrelevant. Though EPR might accommodate for sub-EPR districts, the overall outcome would be EPR, and thus there would be no use of a diagram like **Figure 1**.

(If we consider the sub-EPR-districts on the horizontal axis as the cause, with accountability as an effect, then we would expect a horizontal line, as districts are no relevant variable.)

Helpful was this statement by Kam (2016a):

> "Ideally, government is representative and accountable, representative in the sense that its policies align with citizens' interests, and accountable in the sense that it is answerable to citizens for its conduct and responsive to their demands."

We observe - and the reader now benefits from a struggle that I had to make to discover what is happening:

- It all depends upon what definitions of *representation* and *accountability* are used. The definitions used by Carey & Hicks (2009, 2011) and Kam (2016a) appear to deviate from what would be relevant for the common understanding of EPR versus DR. Their conclusions depend upon (subtle) changes in the meaning of the concepts used.
- It appears that their "representation" on the horizontal axis actually stands for "interest-congruence", or how close policies fit the interests of the voters.
- Thus we actually have *representation = interest-representation & accountabillity.*
- They do not specify whether the mandate concerns the interests of the district or those relating to the winning party. For a single voter there might be an alignment, but there would be differences for groups of voters.
- The large literature on "representation (i.e. interest congruence) versus accountability" thus has a confusing core of terms w.r.t. EPR versus DR.

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[76] http://reference.wolfram.com/language/ref/ParametricPlot.html

- To link up with this literature, we might replace their "representation" and our "interest congruence" at times with "interest-representation".
- **Appendices B and C** contain the abstract and conclusion of Carey and Hix (2011) with their "representation" replaced by "[interest-] representation, so that one can see at this point of the discussion that this interpretation indeed enhances clarity about what this discussion is about. There are more problems with these text, and we might insert more comments, but in these appendices we restrict ourselves to just a few comments.

With this clarity, we can now identify:

- In proper definition, accountability is *part and parcel* of representation, and not a separate dimension.
- The better approach is to conclude that there is no trade-off between representation and accountability.
- One should not confuse principle with a statistic. C&H see degrees of representation on the horizontal axis while in our definitions the choice between EPR and DR is one of principle. The index on (dis-) proportionality is a statistic that must be used with care.
- DR tends to work against competition by new startup parties. Thus, C&H apparently restrict accountability to a choice between established parties. EPR however would generate more accountability because it allows easier entry of competitors.
- There is a potential confusion between the accountability of a single district and the accountability of the system as a whole. C&H record DR as accountable and EPR as less accountable. This is opposite to our finding in **Section** 3.6. Carey & Hix (2011) argue that the top left corner in **Figure 1** applies to SMD *systems.* This should exclude a confusion with the potential accountability of a *single* district, see **Section** 3.6. Yet, given the inconsistency, this potential confusion cannot really be excluded.
- For representation it is important that voters are seen and heard. A voter for a party with no seats is not represented. For such a voter no party is accountable. Accountability *presupposes* and is part & parcel of representation (in EPR or DR). This is not just that there are no relevant values {rep = 0, acc ≠ 0} so that the vertical axis doesn't cut the horizontal axis at rep = 0. This cannot quite be resolved by invoking the philosophy that a district representative also represents, and is accountable to, the non-supporters. The non-supporters might not agree, as they didn't vote for that representative. (Taking part in an election might be construed as accepting responsibility for the outcome though.)
- **Figure 1** thus also makes us wonder why voters would vote for parties that do not fit their interests or are not accountable. More likely, parties are elected under DR that people did not vote for. Accountability, in the definition of the research line of which C&H is a culmination, apparently starts *after* being elected, and doesn't concern (half) election itself, and voters must hold parties accountable that they did not vote for. This notion of accountability doesn't strike one as so useful. **Section** 3.6 already clarified that DR isn't so accountable. It makes more sense that *system-wide* accountability only becomes a relevant notion once there is a system of EPR in place.

We put these findings in **Table 8**.

Having clarified the terms, we can rephrase part of the purpose of this present discussion.

This present paper looks at *One woman, one vote,* and therefor also intends to provide a critical evaluation of the elementary concepts in this literature on *"representation (i.e. interest congruence) versus accountability".* A second aspect is that we may be critical of some steps in the reasoning by these authors. Overall, when we reason with the definitions of EPR versus DR in common understanding, then there appears to be no trade-off on EPR or DR versus accountability, contrary to what these authors suggest. EPR would be better than DR on both (interst) representation and accountability, unless (all) voters actually prefer that a mandate on district interests dominates all other properties.

Table 8. Representation, interest congruence and accountability

	Representation	
	Interest congruence	*Accountability*
Single district	District interest	Plurality has a theoretically low threshold but there may be safe seats. Voters who did not vote for the winner still must hold him or her accountable ?
System with DR	False majorities. MPs represent their district. There likely is no meaningful aggregate district interest other than a social welfare function (SWF) on general interests like under EPR. There is a risk that MPs put their party first.	Difficult entry of new contestants. Haphazard outomes for established parties. Voters who did not vote for winners must hold them accountable ? No task to form a coalition and hence no need for accountability on it.
System with EPR (no special attention for sub-EPR-districts)	Interests are represented by parties with a power preserving rule. A task to make a coalition. There is a meaningful Social Welfare Function (SWF).	Provides the standard on what accountability at the system level means. It is only another perspective on EPR, namely that a ruling coalition might change.

4.5. Bias of researchers from countries with DR

Carey & Hix (2011), as a culmination of a particular line of research, allow the empirical observation (as empirical fact) that researchers coming from countries with DR appear to biased in favour of DR. I already indicated this in Colignatus (2017bf) and this present paper substantiates it.

- The researchers misrepresent EPR by not mentioning its power preserving property (**Section** 3.9 above). They do not give adequate attention to strategic voting and the obliteration of votes.
- The researchers do not clarify that the mandate for a district is ambiguous, as it is both for a district as a whole and for the party of the representative – which ambiguity often amounts to an inconsistency.
- The larger number of parties in EPR is called "fragmentation", instead of emphasizing that this better serves the diverse opinions of voters. The DR-literature reads as if the authors have never been in a supermarket, or only visit restaurants with two options.
- The researchers make DR seem more attractive by calling it "accountable", perhaps confusing a single district with a system that uses districts, or, not seeing the proper argument on that system itself (**Sections** 2.12 and 3.6 above). The researchers do not present a measure for accountability, and only suggest that the CNP would be an indicator for it. (Very likely the cause for this lack of measurement of accountability is that EPR is the most accountable system, and that accountability is just the other side of the same coin of properly *genuine* elections (with EPR).)
- **Section** 4.1 mentioned the misnomers "majoritarian democracy" for DR and "consensus democracy". The terms gained prominence by work by Arend Lijphart, a researcher from Dutch origin, a country with PR. See **Section** 17.4 below. Researchers coming from countries with DR migth show openness of mind by adopting terminology supported by a researcher from a country with EPR or they might show bias by adopting terminology that plays into their bias. Overall, they should have been critical of this terminology anyhow, and then should have rejected it.

- In an interview, Bogaards (2015:87), Lijphart states: "American government experts tend to be very provincial. They know a lot about American Government, they tend not to know that much about other countries. And for this reason the question of presidentialism hasn't been big on the agenda. I am pretty convinced that the basic argument that Juan Linz makes is correct (Linz 1990)." Linz (1990) makes basically the same points as this present article about the choice between a presidential and a parliamentarian system, but does not advise the USA to change. Lijphart: "I used to say that the presidential system is a bad system with one exception, the US. Now we do not have that exception anymore, because it is obvious that the presidential system is no longer working well in the US either." My impression is that Lijphart's observation comes rather late, see Dahl & Lindblom (1953, 1976) and the rise of the "imperial presidency".

The APSA taskforce Htun & Powell (2013:62-73) has a survey on views. This only looked at views and not at bias. When a researcher has a view on what constitutes a major goal and advises to a system that serves this goal, then this is only consistent and academically correct. A survey that would detect bias would have a different design.

Remarkably, though, accountability scored close to 4 and EPR scored an average of 3.3 on a scale of 1-5, meaning that the APSA respondents do not think that *One woman, one vote* is so important by itself. The system with SMD scored a bit better than 3 and EPR scored a bit less than 4, on average, but the vote on DR was split over more categories, and there might be subgroup differences. From the conclusion (p73):

> "Our survey of APSA members revealed that political scientists' preferences about electoral systems were broadly consistent with their normative goals for what electoral systems should aim to achieve, as well as with existing knowledge [confusion and bias] in the discipline. Respondents did not separate cleanly into distinct camps, however—whether [false] majoritarian versus proportional, or governability versus inclusivity, or what have you. Respondents showed an inclination to value multiple goals and to try to balance among these [which one should not try for lexicographic principles]. This is perhaps what is reflected in the substantial support for mixed-member [misnomer] compensatory systems, famously characterized as the "best of both worlds" by Shugart and Wattenberg [which has the confusion that EPR-districts might be compared with DR]. We also found strong support for the open-list form of PR [as used in Holland], perhaps reflecting a growing concern in the discipline that closed-list PR delivers too much power to party leaders as opposed to individual voters."

Relevant is this aspect (p64-65):

> "Beyond these summary statistics, we were interested in whether and how respondents' stated representational goals connected to their preferences over [half] electoral systems. Much of the scholarly literature on [half] electoral systems amounts to an extended debate on whether the design of [half] electoral rules systematically affects representational outcomes: Do proportional systems protect minority interests? Do they produce unstable governments? Do systems in which voters can indicate preferences for specific candidates enhance individual accountability? Does closed-list PR produce disciplined and cohesive parties? Does the alternative vote (also known as instant run-off) find Condorcet winners who represent the elusive median voter? Does SMD-plurality yield decisive outcomes? The APSA-wide survey allowed us to explore whether political scientists' preferences over [half] electoral systems were systematically linked to the values they prioritized. (...) Rather than present a mass of coefficients and diagnostics, we distill the results from all those regressions in Table 7.1 [not shown here]"

> "The results are consistent with many of the expectations inherent in the [half] electoral systems literature in political science. First, the goal that respondents appeared to connect most clearly and consistently with the choice of [half] electoral system was partisan proportionality, which probably reflects how well-developed the scholarly literature on this representational ideal is. [Why would it be an ideal and not

a reality, as e.g. Holland has EPR ?] Caring more about proportionality was strongly associated with favoring MM-compensatory [misnomer], list PR, or single-transferable vote (STV) [no EPR] systems, and just as strongly negatively associated with support for all the single-winner systems—alternative vote, two-round, or plurality—whereas valuing proportionality provided no guidance to a respondent's evaluation of MM-parallel systems [misnomer]."

"It is also worth noting that the most highly valued representational goal overall was individual accountability, and the most favored electoral system was MM-compensatory [misnomer], yet valuing individual accountability was negatively associated with favoring mixed-compensatory [misnomer] systems! Political scientists as a group could connect their goals to [half] electoral systems that would likely advance those goals, and the connections between goals and systems as well to arguments developed in the [half] electoral systems scholarship. There was, however, considerable heterogeneity in both values and system preferences within the profession."

The bias in political science on electoral systems shows not *in* the survey but *from* the kind of survey they conducted. They treat EPR and DR as *on a par*, while proper science shows that EPR scores better than DR on both interest-representation and accountability. The survey doesn't try to recover why APSA members neglect logic and key evidence, but the survey merely repeats the bias that already exists in the same literature that the APSA members have been producing.

Researchers from countries with DR might answer: "We are not biased in favour of DR, and if what we write is interpreted as biased, so be it, and we hope that you don't mind that we further neglect this so-called criticism." This is however not the argument. We observe *empirical evidence*, and scientists are expected to respect empirics. Political science is no experimental science like physics, and thus it might be that political scientists have not developed proper respect for empirics, and regard most as "opinion only". With the empirical data on confusion and bias, the proper response is to test these, and then work towards correction.

This subsection mentioned the bias in general, and then Chapter 5 proceeds with Carey & Hix (2011) to show how it works out in particular, while this C&H article embedded in a larger literature and actually forms a culmination of this literature.

4.6. Bias of researchers from countries with EPR

Potentially there might also be a EPR-bias for researchers coming from countries that use EPR. For example myself, I always assumed that countries in DR were stuck with DR, because of the political interests of the parties winning in it, or hoping to win in the next round. Indeed, I never saw that, or understood why, researchers from countries with DR did not understand the relevance of EPR. Now, however, I identified some confusions in the DR literature, and I better understand that researchers from countries with DR may simply not be aware of some important distinctions. If they apply Penrose-Banzhaf only to seats, then they might tend not to see both the underlying link to the electorate and the power preserving property of EPR (or its electoral equality). For me such was *obvious,* but it might have been a *subtle bias* that I wasn't quite aware that it should be explained to researchers coming from countries with DR.

When Lijphart, coming from Holland, labeled EPR as "consensus democracy", which is a misnomer since a ruling coalition might agree only on ruling and little else, Lijphart nevertheless used a term that is valued in Holland, but he may not have been aware that "consensus" might be regarded pejoratively in countries with DR. Coming from a country with EPR thus might it make more difficult to understand what the DR culture is.

Thus, it is not excluded that researchers from countries with EPR will have some bias towards EPR as well, yet, this bias is less relevant, because the bias that helps block a change from DR to EPR lies with the researchers from countries with DR.

While Lijphart apparently has a *subtle* bias for EPR, would he also have an *obvious* bias towards EPR ? Lijphart has been clear that his analysis supports EPR rather than DR. This interview with Bogaards (2015:84) indicates that this is not because of *obvious* bias, though we cannot exclude the same subtle bias as I observed above for myself:

> "MB—You actually say you want to make the US more democratic, implying that it is not as democratic as it could be, or even should be?
> AL—Exactly! I have chosen to live in this country, but I do not consider the US the most outstanding beacon of democracy. There are too many problems, inequality, inequities in the system, and obviously it is not a wonderful example of efficient government. I completely changed my mind about the American system. Fortunately, I did not write much about it when I was still more favorably inclined, which means that I do not have to take too many of my words back."

The next line in this interview indicates that Lijphart while relocating to the USA still has problems internalising the US culture, because he was *surprised*, while citizens of the USA are indoctrinated in their *government classes* to *no longer notice*:

> "I am very surprised that it was not more of a concern in the US that the Republicans won the 2012 [half] elections for the House of Representatives with a minority of the vote. [ftnt: Despite receiving 1.4 Mio. votes less than the Democrats, the Republicans won 33 seats more.]"

Finally, it would be useful to mention that political parties in Holland have no consensus on EPR. In 1966, lawyer and journalist Hans van Mierlo (1931-2010) founded the party D66 (Democrats '66), and later became Dutch foreign secretary. [77] His objectives were (1) district representation, (2) direct elections for prime minister and city mayors, (3) referenda. In all three points, also called the "D66 crown jewels", he departed from the Dutch model of representative democracy, and he returned to the proto-democracy of the USA. My diagnosis is that Van Mierlo was no scientist, and that he, with his Catholic background, had been charmed by the USA of JFK. D66 does not perform scientific research on its crown jewels, simply repeats the mantra, and does not respond on content when you show that their reasoning is deficient. Other Dutch parties have been rather allergic to these crown jewels, and the largest share of D66 in the Dutch 2nd Chamber of Parliament was 24 of 150 seats. [78] It is a serious observation, see Colignatus (2012), that D66 maltreats science and misinforms its membership and voters, but something is wrong with the Dutch free press, who perhaps only read a book when it is sent for free, and in that sense there is no accountability.

4.7. An inequality / disproportionality measure that doesn't correct for the strategic vote

Carey & Hix (2009) use the EGID data by Gallagher (2007), see also the update in Gallagher (2017). Their reference in the published article (2011) is to Gallagher in 1991.

Gallagher presented the Euclid / Gallagher Inequality / Disproportionality (EGID) measure - apparently without correcting for strategic voting in DR. Voting data in systems with DR are subject to a strong element of strategic voting, because voters with a first preference for a smaller and likely losing party have an incentive to block a candidate that they see as a worst alternative. It is rather difficult to measure in DR what people's first preferences are (e.g. when this question isn't asked in reliable exit polls). The EGID that Carey & Hix use apparently has not been corrected for this strategic voting. Thus their measure is widely off-track, in unknown fashion. Issues with districts, like gerrymandering, would turn up in the EGID too when it has zero's for wasted votes, but this is unclear to me just now.

Colignatus (2017b) presents the EPR Lorenz curve and EPR Gini coefficient to measure electoral inequality / disproportionality. The Gini is asymmetric, which is okay for comparison

[77] https://en.wikipedia.org/wiki/Hans_van_Mierlo
[78] https://boycottholland.wordpress.com/2017/02/08/a-new-low-in-the-low-countries/

of DR and EPR. The UK 2017 general half-election has a EGID of 6.8 and a Gini of 15.6, both on a scale of 100. The Gini is more sensitive than EGID, except that DR still would have masked data.

Colignatus (2017f) presents the symmetric SDID measure. SDID is a function of both EGID and the regression slope between votes and seats, with increased sensitivity. It still relies upon proper data, and is also masked when votes are. The SDID of the UK 2017 half-election has a 3.71 on a scale of 10, or 37.1 on a scale of 100. SDID reacts strong to the inequality between votes and seats. SDID and EGID would be correlated and potentially it might not matter which is used for this C&H kind or rough regression.

Overall: it need not be a problem that C&H use the EGID, but it is a problem that it is not corrected for strategic voting.

4.8. Advice that countries with DR shift to EPR

Recall from **Section** 2.14 that Carey & Hix (2011) advise countries to adopt DR with moderate district magnitudes. This advice derives from confusion and bias.

For countries with DR it would *tend* to be advisable to shift to EPR, e.g. to the system used in Holland or in the election for the EU parliament (though without districts). This present paper doesn't clarify all preconditions. The focus here is on logic, and the need to eliminate confusion and bias by researchers coming from countries with DR.

- The bias by the researchers in DR countries is a major factor that blocks such profitable change to EPR. When voters and members of parliament in countries with DR receive advice from researchers who have a bias in favour of DR, and who suggest that EPR would be less accountable, then voters and member of parliament do not receive the proper information, and thus their views and decisions will also tend to be biased.
- Parliaments in countries with DR are advised to restudy their electoral systems and check for the bias in the advice that they recieve now and have received in the past.
- In 2007+ the world suffered a major financial crisis. The misrepresentation of EPR and the bias in favour of DR by researchers coming from countries with DR can be seen as similarly disastrous.
- The organisation of new elections under EPR might be expensive but the world has also spent much on the Large Hadron Collider and such, and democracy deserves good care as well. (France with its system of DR and separate (half) election of President and Legislative had four elections this year, while Holland managed with a single election.)

4.9. Terminology: representation (EPR and DR) vs interest-representation

The following digs a bit deeper on **Section** 4.4. Kam (2016a):

- states: "Ideally, government is representative and accountable, representative in the sense that its policies align with citizens' interests, and accountable in the sense that it is answerable to citizens for its conduct and responsive to their demands."
- leaves unclear whether these interests concern the district or those expressed by the party that one votes for, which might be aligned for an individual voter but not necessarily for groups of voters
- subsequently defines *representation* and *accountability* but not in the clarity that we need here. He writes "more or less representative electoral outcomes" but then likely refers to a statistical measure, while the choice between EPR and DR is on principle and not *more or less*
- speaks about the "representation-accountability trade-off" (as if this exists).

I find this difficult to follow. We already had *"representation",* defined for EPR and DR (**Section** 2), but now it is *"representation in the sense that policies align with interest".* We have an umbrella word ("representation") and an aspect within it ("interests"). This flexible use of words might cause confusion.

There is this underlying assumption about voting behaviour (for why vote otherwise ? – and we don't second-guess voters here – and we allow that a party can also be a single person):

(1) One would not vote for a party that doesn't represent the interests.
(2) One would not vote for a party that isn't answerable for its conduct.
(3) One would not vote for a party that is not responsive to demands.
(4) Yet DR might frustrate many voters because a party is elected that they did not vote for.

How can Kam square this, and seriously write what he does ?

Our definition of *representation* for EPR and DR already contains these elements. Within our definitions, accountability is part of the notion of representation.

The supposed trade-off is apparently not about "representation" but only about an aspect of this, namely only element (1) on interests. I have considered *"representativeness"* but it is awkward to explain a potential difference between "representation" and "representativeness". Likely the better term is "*interest congruence*" by itself. We might also use *"interest-representation"* as distinct from "answerable-representation" and "responsive-representation".

Thus it is conceivable to split *representation* (1-3) into *interest-represention* (1) and *accountability* (2-3).

- There would be no trade-off however, since parties that fail on one of these criteria would not be voted for.
- Potentially, though, a system as a whole might show some statistical effect that one might mistake for a trade-off. DR causes that parties get more seats that voters voted for, and in a statistical set-up the index on disproportionality might be lower if the number of seats per district rises.

PM. Jan Tinbergen pointed to the match of the number of instruments and the number of goals. Apparently a voter has only one instrument and may have more goals. Yet one might also argue that the elements of accountability form part of the interests. The interests might also be disaggregated further. My conclusion is that voting in EPR is for the selection of representatives so that the weights in the House are establised, and so that the representatives can start the bargaining process. One instrument for one goal.

4.10. Contexts of accountability, no task of creating a coalition

(1) When Carey & Hix (2011) in **Figure 1** and Kam (2016a) argue that the *system* with Single Member Districts (SMD) is most accountable, we observe that they refer to the *system,* yet their conclusion on accountability is so inconsistent w.r.t. the observation in **Section** 3.6 above, that perhaps their thinking is still affected by thoughts about a *single* district.

- Their diagram that the single member district would be the most accountable situation surely does not hold for the whole *system* for the whole country (when the country would use only single member districts).
- It might also be that these authors haven't properly run through the dynamics (and we need to check their regressions, see below).

(2) Also, it is curious that accountability only becomes alive as a concept *after* the (half) election of parties. **Figure 1** makes us wonder why voters would vote for parties that do not fit their interests. More likely, under DR parties are elected that people did not vote for. Accountability according to these authors apparently starts after being elected, and is no consideration for the original (half) election itself. When Plurality creates many (mostly) disappointed voters, for them accountablility then also holds for parties that they did not elect. [79] Perhaps the voters who won under DR are quite happy with the situation, and continue with

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[79] C&H advise moderate district magnitudes, say size 6. Their argument does not hinge upon the SMD. Still, the SMD features in their analysis, and one would require that the reasoning is

winning in a next (half) election (a "safe seat"), so that Plurality is only labeled accountable in a formal sense, but in practice it would not be so. This would suggest that accountability better is corrected, perhaps like a weighted average, such that EPR stands out as most accountable (the majority gets a government that one voted for, and that one might hold effectively responsible in a next election) and that DR is exposed as less accountable.

(3) The phenomenon of a "safe seat" also has another implication. A key notion of the theory of democracy is:

- In EPR voters tend to give a mandate to professional politicians to bargain about political differences. Thus voters can hold politicians accountable for this given task.
- Under DR, voters tend to be left by themselves to figure out themselves what good bargaining outcomes might be and what might be a good vote for a winning coalition. Under DR it is common that there are safe seats with a minority within the district, simply because the opposition doesn't manage to join forces, since voters do neither.
  (a) Politicians who do not get elected might be said to be thus held accountable for failing to create a winning coalition. This is a meagre form of accountability. There might be many local conditions that cause such situations, while the aggregation of all such conditions has nothing to do with the issues at a national level. We might call this the overflow of locality onto the national level.
  (b) Politicians who get elected and who travel to the national level to represent the district interests are not encouraged to bargain about coalitions either.
  (a & b) Thus DR does not use all available methods to arrive at welfare improving coalitions at the national level. Thus, DR does not really hold politicians accountable for bargaining about such improvements, for politicians simply don't get this task.

(4) There is also the entry of new contestants. If a small startup party does not get a chance of winning a seat and then grow (across districts), then accountability would be restricted to the establishment. See Colignatus (2017d) for a quote from an interview with Kenneth Arrow.

(5) One might no longer want to vote for a particular opposition party since it was miserable in its opposition role. For an effect on policy, a strong opposition may be effective too. A larger number of parties would contribute to the options for a vote change.

4.11. Number of parties and cognitive overload

A key question is how much information voters can handle. Having a large number of (contending) parties might cause a cognitive overload, especially when this increases the number of possible coalitions that voters must consider. Subsequently parties themselves have such issues too.

The recent Dutch general election of March 15 2017 produced an open party list ballot with 28 parties and 1116 candidates for a parliament of 150 seats. This doesn't seem to be overly luxurious for a decision that one makes once in four years. Most voters manage information by first selecting a party and then a candidate.

- The information overload for an individual voter is determined by the parties contending and less by the available seats. In the SMD this would mean that each district with 1 seat would also have 28 contenders. The information overload increases, since one must also guess who might win.
- This shows that all is a matter of perspective. For 150 seats, 28 contenders is an indication of freedom and wealth, for 1 seat it *might* seem like information overload.
- For the individual voter in a SMD the information overload of DR is much larger, because of the risk of a wasted vote and the need for strategy.

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consistent for SMD too. For the SMD with FPTP many voters would have to hold the elected candidate accountable whom they did not vote for. This destroys this kind of notion of "accountability". Similarly for the "trade-off" for the larger range when there is no EPR. For their regression, C&H appear to use the number of parties, but then neglect this effect, or use an indicator that does not really indicate accountability.

- However, voters also know that they have limited cognitive capacities, and they optimize what they can do, which might also mean resorting to rules of thumb.
- One doesn't have to rank all options to make some strategy about the options that one has ranked.
- If it is true that voters can oversee a number less than 7, then this might actually remain a constant, whatever system, DR or EPR. The main question is whether the 6 parties that a voter can recognise are sufficiently competitive.
- The (potential) number of seats that parties get do not necessarily reflect the impact on the cognitive overload or the attention given by the voter. If a voter compares the party programs between a larger established party and a small startup contender, then the weights are irrelevant for the amount of attention required. If the voter has rational expectations such that the voter on average looks at parties that will be elected, then it suffices to use the statistic of the number of elected parties (in the district), perhaps with a cap of 6 because of the cognitive restriction.
- Does the availability of more seats attract more contenders ? Larger countries tend to have a somewhat larger House of Commons, but not necessarily a larger number of parties, though we must allow for the fringe that the district system causes. Or we might compare a district with 6 seats with a district with 10 seats. There is no *strict* relation (only a regression) between the available seats and the number of parties contending. Most likely, the number of contending parties depends upon the political situation and the preferences of the voters themselves, so that the number of seats per district is mainly a noise factor in the overall statistics (while some stability in outcomes mainly derives from strategic voting). Electoral design should be on principles and not regression outcomes.

Obviously the numbers change when one scales up from Holland (10 million turnout) to the USA (135 million turnout). My impression is that Holland and the EU parliament have found decent answers on EPR.

A rise of the number of parties is called "fragmentation". Fragmention is supposed to be a technical term but one may still not like the moral tone, when countries with DR misrepresent EPR. An ecology with many species is called "rich" and not fragmented. It would suffice to speak about a large or small number of parties, and provide a rationale why e.g. 6 would be small or large. The criterion cannot be cognitive overload, see the diagnosis above.

Both districts and parties themselves are already ways to reduce the cognitive overload. In a way this very discussion is about whether locality (geography) or policy (party) is the best denominator to link up to voter preferences, while in a two-way table both could matter, but one could always start a local party.

The Foreign Office likely prefers that that districts focus on their district particulars rather than on the Foreign Policy views of the national parties w.r.t. President Putin and the Crimea. Yet once the MPs have been elected perhaps they cannot really avoid to form opinions on such issues, and at some point they might observe a switch about what would be most relevant for the nation as a whole. If they don't have a discussion on this with their district then one starts wondering what *accountability for districts* really means.

4.12.   Effective / Concentrated number of parties (CNP) and power

My inclination is to put this in an Appendix, but it is used in the C&H regression, and thus we must deal with it here in the body of the text.

With this reference to ecology, one can agree that the Laakso & Taagepera statistic for the *"effective number of parties"* (ENP) deserves some attention, though its name remains problematic, as "effective" seems to suggest something which however isn't defined. My suggestion is to use the term "concentrated number of parties" (CNP), to better express what the figure is.

The literature on concentration or diversity (either votes or seats) obviously relates to the literature on inequality measures like the Gini (both votes and seats). With q a vector of shares or proportions, then $\lambda = \sum q^2 = q'q$ or the sum of squares is the Hirschman-Herfindahl

measure of concentration, and in ecology the Simpson index. The inverse $1 / \lambda = 1 / \sum q^2 = {}^2D$ is the "true diversity of order 2" and can seen as a measure of the number of competitors. For proportions q that provide some (bio-) diversity, λ is "the probability that two entities taken at random from the dataset represent the same type" and $1 - \lambda$ is "known in ecology as the probability of interspecific encounter". [80] Laakso & Taagepera take $1 / q'q$ as the "effective number of parties" (ENP) for proportions $q = w$ or $q = z$. However, in what sense, ineffective ? Thus we rather use the term CNP.

Figure 3 gives a graph for Holland 1980-2017. The actual value of parties in the Dutch House of Commons after the election of 2017 is 13 in a House of 150 seats, and the CNP is about 8. What is the meaning of the difference between the real number 13 and this CNP of 8: would this be an ineffectiveness of 5 ? This is undefined. However, it is defined that 8 is a concentration of 13, adjusting for the party weights in terms of votes or seats.

Proportions q rather would be taken from the Penrose-Banzhaf power indices, so that we get an index of power concentration. Then λ is the probability of encountering the same party influence, and $1 / \lambda$ the number of decisive parties (NDP). NDP is more useful than CNP.

See **Section** 3.9 above and Dumont & Caulier (2003), [81] Robson (2007) and Kline (2009) on this application of the Hirschman-Herfindahl Index on the power indices. These authors do not refer to Laakso (1980). Dumont & Caulier propose "effective number of relevant parties" (ENRP) but "number of decisive parties" (NDP) sounds better and allows the abolition of the disinformative "effective" that seems to suggest more than the number actually is.

Figure 3. Holland: TK = House of Commons, EK = Senate, EP = European Parliament [82]
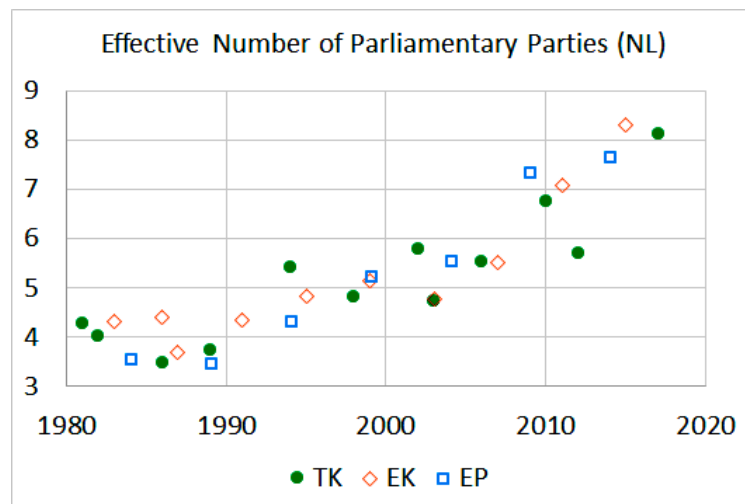
Kline (2009) provides important information about the relation between the CNP and NDP. They are highly correlated (80%) when the numbers are larger than 4. This might save calculation efforts (if you already know the approximate outcome, say from an earlier election). For smaller numbers, that are easier to calculate and understand, there are key differences. Note that Kline's Fig. 1 on p266 states that it is about N_s while the legend says N_v. His empirical dataset might be limited though, and one option is to do Monte Carlo simulations.

Kline also indicates that 28% of his cases have a majority of one party.

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[80] https://en.wikipedia.org/wiki/Diversity_index#Simpson_index (portal, no source)
[81] Dumont & Caulier refer to http://powerslave.val.utu.fi/ for calculations of power indices.
[82] Created by Steven Verbanck (Vereniging van Vlaamse Steden en Gemeenten) at wikipedia https://en.wikipedia.org/wiki/File:Effective_Number_of_Parliamentary_Parties_in_the_Netherlands_(1981-2017).png The graph concurs with Gallagher (2017)

> "Given the high degree of correlation between the two measures, for many party configurations the choice between these two indices may not be terribly important. However, in the three particular configurations (Single-Party Majority, Balanced Tri-Partism, and Unequal Tri-Partism) identified above, the choice may be quite important, and the ultimate choice should depend on the context in which the measure is applied." (p268)

When would we use NDP ? The NDP is useful to evaluate a situation in a House and the diversity or concentration, and potentially the development over time. If we would say that the NDP in Holland is 3 and for the UK 2, then we are not really comparing countries. The figures say something about the local conditions and there it stops. Given that NDP is better than CNP, the use of CNP has little relevance for comparing countries too, even though political scientists may have gotten used to think so.

4.13. Number of parties and their density

When we compare countries with different sizes of the Legislative, e.g. Holland with 150 seats and the UK with 650 seats, then we do want to find a common denominator.

- Above CNP and NDP do not deal with the difference in sizes of the ecological areals. The information for 2017 that Holland has 150 seats and 13 parties in the House of Commons, and the UK has 650 seats and 10 parties in the House of Commons (with the Speaker as a separate party) is better conveyed by simply stating those numbers.
- A direct statistic is to divide the number of parties by the number of available seats, thus $13 / 150 = 9\%$ for Holland and $10 / 650 = 1.5\%$ for the UK. It is an unusual statistic but it works for comparing systems. The statistic can be called the "*party density*" (PD). Namely, the comparison Holland / UK = 9 / 1.5 = 6 tells us that the (elected) party density in Holland is 6 times larger than in the UK. The number might start making sense when we deduce that $(13 / 150) / (10 / 650) = (13 / 10) / (150 / 650)$ too. The relative party density is the ratio of parties normalised by the ratio of seats. (See **Section** 1.3 on fractions for $13\ 150^H\ (10\ 650^H)^H = 13\ 10^H\ (150\ 650^H)^H$.)
- The inverse statistic for the party density is the average number of seats per party, thus $150 / 13 = 11.5$ in Holland and $650 / 10 = 65$ in the UK. We might also say that the UK has 6 times more seats per party as in Holland, but this sounds as if the UK just has a larger number of seats while, with about the same number of voters per seat, the situation actually is that Holland has a higher density of parties.
- The density is also useful when we consider the 28 contending parties in Holland. Its number is a bit more than twice the elected 13 parties. In terms of density we find that $28 / 150 = 19\%$ is a bit more than twice the elected density of 9%.
- PM. Beware of the expression "Concentrated Number of Parties by Seats". One might think about a ratio "parties per seat" (thus the density) while "concentrated ... by seats" means that the seat shares, and not the vote shares, are taken to find the diversity measure.

5. Carey & Hix (2011) on their introduction

The reader is advised to first look at **Appendices B and C** for the abstract and conclusion of Carey & Hix (2011) *with [...] inserts*. Again, I take the liberty to replace PR by EPR.

5.1. EPR doesn't solve every problem

C&H:

> "It is widely argued by social scientists of electoral systems that there is no such thing as the ideal electoral system. Although many scholars harbor strong preferences for one type of system over another, in published work and in the teaching of electoral systems it is standard practice to acknowledge the inevitability of trade-offs."

Comment:

(1) Beware of terminology. Each person may have an ideal, but the authors refer to the phenomenon that people may think differently. It is very curious to say to people that there is no ideal while they might have an ideal.
(2) That said, this is a statement that economists who emphasize trade-offs tend to applaud.
(3) One indeed separates one's own preferences from scientific objectivity.
(4) What countries choose, depends upon their histories and circumstances.
(5) What is at issue here is not that countries "should" adopt EPR as "ideal". At issue is confusion and bias in the line of reseach on "representation and accountability". Governments and citizens should get clear and unbiased information. Our present method is to deconstruct the C&H paper, as a culmination of a line of work.
(6) An argument in favour of EPR should not be construed as an argument that EPR is an ideal that solves every problem. One should not misrepresent the argument.

5.2. The supposed mantra and the hidden mantra

"If a country wants a highly [interest-] representative parliament, where the assembly is a microcosm of the pluralism of opinions in society, a proportional representation (EPR) system is best. Alternatively, if a country wants the party that wins the most votes in an [half] election to form a stable single-party government, a [false-] majoritarian system is best. You have to choose which you care about most: [interest-] representation or accountable government. You cannot have both, so the mantra goes."

Comment:

(1) C&H confirm that their paper fits a line of research associated with this mantra.
(2) While they referred to trade-offs, they indicate that an "old mantra" is that there is *no* trade-off (you cannot have both) while they present a "new mantra" that there would be such a trade-off, while it later appears that this new mantra also is old. This is confused.
(3) The *real mantra* is that argument that EPR would be less accountable. Thus C&H refer to a mantra but hide the real mantra.
(4) Logically, either something is EPR (with sub-EPR-districts) or something is DR (violating EPR). Creating a trade-off between EPR and DR is like creating a trade-off between circles and squares, in the form of a circle-square, which is inconsistent.
(5) DR is linked here to accountability and a stable government. This still is in the introduction, so we cannot expect proof. But why would one introduce this false linkage ?
(6) The last statement of an "accountable government" hides the problem that this government can be based on a false majority, whence it wasn't accountable in the first place to start with.

5.3. Hiding a collusion between legislators and researchers

C&H:

"A glance at the electoral systems of new democracies, or reforms to electoral systems in established democracies, suggests that electoral engineers regularly seek to soften the [interest-] representation-accountability trade-off and achieve both objectives. For example, some electoral systems have small multimember districts, others have high legal thresholds below which parties cannot win seats, while others have "parallel" mixed-member systems, where the EPR seats do not compensate for disproportional outcomes in the single-member seats. These types of systems sacrifice pure proportionality for the specific purpose of increasing accountability."

Comment:

(1) These practitioner "electoral engineers" have often been advised by researchers from countries with DR who have a bias in favour of DR. One should not present this as independent thinking across the board.
(2) C&H now formulate the trade-off as "proportionality vs accountability" rather than "[interest-] representation vs accountability".

(3) It is illogical to reduce EPR to "pure proportionality". The yardstick that one uses defines what is "pure". People might e.g. still vote for a (small) party that will not get a seat. One should not confuse principles with statistics.

(4) It is not impossible that the true discussion is about accepting EPR or not, but that researchers from countries with DR shift the argument form "proportionality" to "(interest) representation", because (i) it might be somewhat vulgar to only discuss proportions, (ii) one might quickly lose the argument when the focus is on the property that "share of seats equals share of votes", for, why should these not be equal ? (iii) speaking about "interest congruence" shifts the focus to something else. [83] The principle is that seat shares should equal vote shares. Why oh why start discuss something else ?

5.4. Not finding anyone who is critical of this supposed trade-off

C&H:

"To what extent can these efforts to provide both [interest-] representation and accountability be realized, and by what sorts of electoral rules? To answer these questions we do the following. In the next section, we discuss three common approaches electoral system designers employ to shape the [interest-] representation versus accountability trade-off, focusing our attention primarily on the number of seats available in each electoral district (or district magnitude). We then introduce our dataset of 609 [half] election outcomes in 81 countries and present some descriptive statistics to illustrate the trade-off at stake.1 Next, we present the variables we use and the statistical models we estimate, followed by our empirical results, and conclude with a discussion of the implications for electoral system design."

Comment: It remains remarkable that they didn't spot anyone who criticises the DR mantra that EPR would be less accountable. 81 countries provide data to serve the mantra but not to provide critical distance.

6. Carey & Hix (2011) on Low-Magnitude EPR (contradiction in terms)

6.1. Terms like "low-magnitude EPR", "fragmentation" and "viable options"

In the following:

- C&H speak about "low-magnitude EPR". This is a contradiction in terms. Colignatus (2017f) discusses measures of disproportionality, that also consider cases with small numbers, say hundred people who select a committee of three. This is not the present topic of interest. With EPR we primarily target the selection of the House of Representatives of a large electorate, say for a nation or states in a federation. In that case "low-magnitude EPR" is not EPR, in the same way as the German system with a threshold of 5% is not really EPR. One can imagine that regression requires flexible categories, but it remains important to be clear about the terms used.
- C&H also use the EGID index that is masked on first preferences and not corrected for strategic voting. When a system with few seats uses the techniques of proportional apportionment rather than Plurality, then there will be strategic voting again, purely because there are few seats, and the method of apportionment then should not be taken as evidence that the system would be "EPR".

C&H:

"We find that, relative to single-member district (SMD) systems, low-magnitude EPR [contradiction in terms] is almost as effective as high-magnitude EPR [pleonasm] at reducing [EGID] disproportionality between parties' shares of votes won and seats won in legislative [half] elections [EPR should generate first preferences, but with low magnitude

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[83] https://en.wikipedia.org/wiki/Distraction

there would still be strategic voting, thus with masked preferences], whereas increases in party system fragmentation [improved voter preference match] at low-magnitude EPR [contradiction in terms] are less pronounced, which in turn simplifies [in terms of numbers only] the coalitional structure of governments [since some parties are excluded from democratic participation by such undemocratic barriers].

Low-magnitude EPR [a contradiction in terms] systems allow a broad range of opinions [but not all available in DR] to be [interest-] represented in a parliament while at the same time provide incentives for voters and elites to coordinate around viable parties [while other parties would be viable too if the system was EPR, thus with a sufficient number of seats]. In fact, our results suggest an optimal district [DR instead of EPR ?] magnitude in the range of three to eight. [It is not clear at this stage in the article whether this also involves EPR with sub-EPR-districts] Put another way, some countries—such as Costa Rica, Hungary, Ireland, Portugal, and Spain—appear to have discovered a "sweet spot" in the design of electoral systems."

Comment:

(1) Reasoning with inconsistent concepts like "low-magnitude EPR" and the use of an uncorrected disproportionality index make Carey & Hix (2011) a torture to read.
(2) The above confuses statistics with design principles, and also is unclear about sub-EPR-districts.
(3) Along the way, C&H introduce labels that are undefined here like "fragmentation" and "viable" with moral subtones that open new horizons for bias. See **Section** 4.11.
(4) Looking at the mentioned countries might cause additional comments, but I skip this.

6.2. Deaf for electoral equality

C&H:

"The central trade-off [mantra: EPR is less accountable] in the design of electoral systems is often characterized as being between the [interest-] representation of voters' preferences and the accountability of governments (cf. Jenkins Commission 1998; Lijphart 1984, 1994; Powell 2000). By this account, the first virtue of [interest-] representation is to allow for inclusion of parties reflecting diverse interests and identities in the legislature. EPR systems accurately translate parties' vote shares into parliamentary seat shares and allow for inclusion of the broadest possible array of partisan views in the legislature [except for voters who still vote for parties that get no seats because of the natural quota]. Arend Lijphart, perhaps the most eloquent advocate of inclusiveness, regards proportionality as "virtually synonymous with electoral justice" (1984, 140). EPR tends to produce inclusive parliaments and a close mapping, on a left-right ideological scale, between the median member of parliament and the median member of the electorate (Colomer 2001; Huber and Powell 1994; Lijphart 2004)."

Comment:

(1) C&H claim a "central trade-off" but none exists. It is a mantra and confusion.
(2) EPR is synonymous with electoral equality (a.k.a. "electoral justice"), not just "virtually".
(3) Lijphart mentions it, C&H record it, but *they remain deaf to it*.
(4) In their view, Lijphart must have mentioned it because he was carried away by his *eloquence*. For them his words were without content. They regard systems as optimal that do not satisfy electoral equality, and advise others to do the same.
(5) *One woman, one vote*, an ideal of Western Civilisation, eliminated by researchers from countries with DR, who can't think straight and who do not respect empirical science.
(6) EPR is a condition of proper representative democracy. The reason is the power preserving property of EPR.
(7) The notion of an "inclusive Parliament" is not defined here, but it seems as if this is another word for "EPR" here.

(8) John: "I don't think that there is a tree behind me." Mary: "If you would turn around then you would see it." John: "But I don't think it is there, so there is no reason for me to turn around and take a look. But I will include a reference to what you said."

6.3. Presenting false majorities as true majorities

C&H:

"In contrast, [false-] majoritarian electoral systems with SMDs—such as a simple-plurality, alternative-vote, or majority-run-off system—tend to produce less inclusive parliaments. Particularly in multiparty systems, first-place parties reap bonuses while others find themselves [interest-] underrepresented or even shut out of parliaments entirely (esp. Duverger [1951] 1964). [False-] Majoritarian systems are far more likely than EPR systems to produce parliamentary [false-] majorities behind governments with less than 50% of the vote and median parliamentary parties ideologically remote from the median voter (Colomer 2001; Lijphart 1994; Powell and Vanberg 2000)."

Comment:

(1) This paragraph says in complex manner how EPR and DR differ, but it doesn't mention the crucial point of the power preserving rule.
(2) Carey & Hix (2011) could not hold that they "do not mention the power preserving rule for the reason that it is as obvious to them (being researchers from countries with DR) as it is obvious to researchers from countries with EPR", since the property uproots the mantra that they are repeating. If the power preserving property and electoral equality would be obvious to them, then they would write another article. We infer that they are oblivious to a key element in the understanding of EPR.
(3) Also two-party systems suffer from the false majorities, see **Section** 3.6, while part of the mantra is that DR "worked well" for two parties.
(4) One tends to regard a "Parliamentarian majority" as something valuable, which indeed is the case in EPR. For DR it is better to call it a "Parliamentarian false majority" if it is one. Whence it is curious why C&H value it so much. The present issue concerns this very phenomenon of representation, and thus one should use the proper terms. One should not call apples and oranges both majorities when this is only the sticker on them. (It would be another setting when the Speaker in the House of Commons asks what side got the majority, because then it is a mere calculation. We are not discussing computation but *one woman, one vote.*)

6.4. Democracy comes with a cost, but would you rather not have democracy then ?

C&H:

"On [interest-] representation grounds, then, the case for proportionality is strong. Yet proportionality attracts some skepticism on the government accountability side of the ledger. EPR systems can produce broad and fractious coalitions. Voters may not know a priori how their votes will determine which party or parties govern and which policies will then result (Strom 1990). Transaction costs of governing may be high in coalition cabinets. Tsebelis (2002) demonstrates that coalition governments tend to be less able to change existing policies than single-party governments. Persson and Tabellini (2003) argue that policy conflicts inside coalition governments are resolved by accommodating the public spending priorities of all the involved parties, leading to higher public spending and higher deficits than would otherwise be preferred by the voters. Empirical studies of electoral accountability indicate that both prospective and retrospective voting are more effective when coalitions include fewer parties (Hellwig and Samuels 2007; Powell 2000, 47–68)."

Comment:

(1) Voters will reason that parties in a coalition are all responsible for the coalition. (Parties can try to shift blame and fame, but it is upon voters whom to believe.)

(2) C&H list papers with criticism about EPR, but why not directly aspire for balance ? C&H have read this literature and at no point it occurred to them that there was some false inference, while we have been stumbling over those.

(3) Many of the properties mentioned are not a product of EPR but a product of representative democracy itself. The phenomena w.r.t representative democracy should be dealt with on their own merits, and it would be an altogether different proposition to *abolish* democracy in order to solve its supposed problems.

(4) It is precisely the property of representative government that voters give a mandate to representatives to bargain for them, which also includes the coalition. In DR, this aspect of representation is frustrated and this mandate corrupted. It is silly to hold e.g. that in a safe seat for party *A,* in which voters will know that they will be represented by party *A,* that it is great for all voters that they know this, even though they vote for party *B.*

(5) Transaction costs might *seem* higher for EPR but you don't get the same product. C&H presume that Holland and the UK have the "same" democracy at different costs, but this is comparing apples and oranges. Voters in the world should get the proper information form researchers in political science, so that voters can make an informed decision whether they are willing to pay the price for proper democracy.

(6) The notion of "effectiveness" needs to be defined, but it seems as if this is another word for "accountability" here.

(7) The phrase "attracts some skepticism on the government accountability side of the ledger" is an understatement. The supposed notion of accountability pops up as a rationale to oppose EPR, without proper research, see **Section** 3.6 on accountability. Potentially someone suggested its relevance for districts themselves, but a moment's study on the system-wide consequences should have shown that it doesn't make sense there. There really is no reason to seriously mention it, other than purely with the confusion or bias and derived objective to block EPR.

6.5. Aspects in a Social Welfare Function (SWF)

C&H:

"Although the trade-off [that doesn't exist] between [interest-] representativeness and accountable government is widely acknowledged [well, it was a mantra that it was a *binary choice*], the specific shape of the trade-off is often left implicit (Lijphart 1984; Persson and Tabellini 2003; Powell 2000). Does this mean that the trade-off is linear, with any gain in [interest-] representativeness exacting an accountability cost, and vice versa, in equal measure? Some scholars have suggested that the trade-off is amenable to maximization (e.g., Grofman and Lijphart 1986; Shugart and Wattenberg 2001; Taagepera and Shugart 1989), and we agree. Why might this be the case? The answer depends in parts on arithmetic, on strategic behavior, and on the cognitive limitations of voters."

Comment:

(1) The opposition between a linear and curved "trade-off" is artificial. If there would be a hard science model, then one might imagine this as a technical question, but the authors haven't presented any (realistic) model yet that warrants such a question.

(2) It is nice that one can draw a curve and find a "sweet spot" in the upper right hand corner, but that is merely a drawing reminiscent of hard science but not really hard science. Homeopathy, astrology or alchemy also use such gimmicks. Perhaps we have only ordinal data, and only a 2x2 table. What is relevant is the Social Welfare Function (SWF) of each particular country. Each country designs its own electoral system. The Dutch SWF might select EPR and the UK SWF might select DR with SMD. It is artificial to present these national histories as if this is choosing along such a "trade-off" and to suggest that it would be a real question whether there is linearity or curvature. This is creative art, not science. C&H tend to suggest that they have located a sweet spot that might be universal for any democracy, but they also will likely reject this very suggestion as it sounds like Masters of the Universe. I do agree with C&H that if you persist in your

confusion and bias, and insist on neglecting definitions and empirical science, then you must continue in your creative art, and produce such diagrams and present them as real arguments.

(3) Aspects like strategic voting and cognitive limitations of voters might be factors in the SWF indeed. Each such factor must be treated with some care.

(4) See **Section** 4.11 for the number of parties and the cognitive overload. One can always complicate the issue by introducing more variables (e.g. gender, age, income). And if one insists that voters in EPR must process all information, then one can invoke information overload, and argue that DR is better.

(5) Colignatus (2017f) discusses disproportionality indices and refers to other papers by Taagepera, Shugart and Grofman with another deconstruction.

6.6. A decision on principle versus a statistic with graded results

Our comments on C&H paragraphs come with some repetition of arguments, but when we are dealing with confusion and bias, then it is better not to assume that all should be clear.

C&H:

"Beginning with the arithmetic of proportionality, this normative ideal is subject to diminishing returns [false category] in the properties of electoral systems that foster it. Moving from a district magnitude of 1 to moderate multimember districts—of magnitude 6, say—will likely allow for [interest-] representation of parties that can win support at around 10% or greater. As long as the preponderance of votes is cast for such parties [begging the question], the increase in proportionality in moving from SMDs to six-member districts will far outpace the increase in moving from six-member districts to much larger districts. As it happens, the bulk of votes in most national [half] elections are cast for parties that win substantial vote shares [in DR because of strategic voting], and the number of viable parties falls well below the upper bound implied by the logic of strategic voting in systems with high district magnitudes (Cox 1997). [also EPR has strategic voting, but from freedom and not from necessity]"

Comment:

(1) What we call the basic issue of EPR vs DR, seems to be presented here as "arithmetic". We should allow that this is tongue-in-cheek. However, this "arithmetic" is closely linked to the power preserving property of EPR. This however isn't mentioned. Thus there seems to be a bias, and the authors apparently see this mainly as arithmetic indeed. (There is also the dynamics of entry of new contestants.)

(2) Let ID[v, s ; S, M] be the disproportionality measure for votes v, seats s, House total number of seats S, and M seats per district. Assuming that $disp$ is also used for apportionment, then with v and S fixed, we have ID[M] = ID[$v, s[M]$; S, M], and we may wonder how $disp$ depends upon M. The EGID index is convex to the origin and SDID is concave. The EGID would show such "diminishing returns" as if a small change from {49, 51} to {51, 49} would matter only 2%, while SDID would regard this as a major shift. Still, we would rather have ID[M] = ID[$v[M], s[M]$; S, M], since voters would adapt to the low district size, especially when there is no correction at the EPR level.

(3) To speak about "diminishing returns" is a category mistake. The choice between EPR and DR is a logical one. C&H confuse a decision for the principle of EPR with the statistics of a (dis-) proportionality index. They look into the dependence of outcomes upon the number of seats per district, as if this would generate valuable information, while it doesn't. Being tortured on weekdays and not in the weekend perhaps makes a difference, but it is no relevant distinction here, since the point is that there should be no torture.

(4) It is begging the question that the "preponderance of votes" neatly follows what they want to see, while the true EPR question for democratic nations is that also 1% of the vote should have 1% of the seats.

(5) Supposed factors that apply here (like the cognitive overload mentioned above) can also be resolved by sub-EPR-districts, but C&H do not discuss this. With sub-EPR-districts there would be no real dependence of the disproportionality index upon districts, whence the C&H issue disappears.

(6) The mention of the 10% is fictional and only serves the purpose of sounding reasonable. Outcomes depend upon time and place.
(7) The notion of a viable party has not been defined here, but it seems that they might mean a party that gets at least one seat. Outcomes depend upon time and place. I don't follow their comment on some bound, but they may mean that S seats might cause S parties.

6.7. As if the degree of strategic voting would matter

C&H:

"Regarding strategic incentives of voters and parties, political scientists of electoral systems have recognized for some time that strategic, or "tactical" voting, diminishes as district size increases, primarily because estimating how marginal votes will affect outcomes is more difficult as the number of seats, and contestants, rises. In higher-magnitude [half] elections, shared expectations about candidate and party viability are less widely held, and therefore voter coordination around such expectations is more rare (e.g., Cox 1997; Taagepera and Shugart 1989)."

Comment:

(1) When there is no EPR but DR, then there will be strategic voting that is caused by DR, and then the statistical measure must be corrected for this. C&H mention strategic voting but do not correct their statistical instrument. However, see below on party manifestos.
(2) Perhaps when the DR district size rises (towards the whole country) then there might seem less scope for strategy, but there still will be strategy, and hence it is irrelevant that there is less strategy. If you are overweight by 200% then this is less than 300% but you are still overweight. When you are overweight by 10% then this is less relevant..
(3) For strategic voting, the key difference is between necessity under DR (for fear that the vote will be wasted) and the luxurious freedom under EPR (affecting the coalition). This crucial distinction is not mentioned, likely because C&H don't see it. For DR the disproportionality measure must be corrected for the proper first preferences, for EPR there is no need for this for voters had freedom.
(4) It is not defined what voter co-ordination is. We might be tolerant to such reasoning but we must also point to the distraction from the key issue by the use of new (vague) notions. Anyway, polls tend to be more reliable for EPR than for DR. It can be observed that the media might report less about parties that lose out on DR, with the invalid inference that these would no longer be relevant. Nigel Farage is still very angry about how he has been treated by the media all those years that UKIP hardly got seats. Brexit is a high price to pay for this maltreatment and not granting the seats that UKIP should have had (perhaps less if they had gotten them). [84]

6.8. Voters with a cognitive capacity of less than seven parties don't deserve EPR for seven or more parties, and hence EPR not at all

C&H:

"The cognitive capacity of voters further suggests that the proportion [part of the population] who are able to coordinate around viable candidacies declines in a nonlinear fashion as district magnitude rises, declining gradually at low magnitudes and then falling more steeply as the number of parties and candidates rises. Cognitive psychology has long posited that humans are capable of distinguishing clearly among a limited set of choices along a single dimension, but that this capacity drops off sharply once the number of options rises to seven or above (Miller 1956).2"

Comment:

(1) "The cognitive capacity of voters further suggests (...)". Yes, it happened to be in the neighbourhood, it knocked on the door, and passed on the message.

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[84] https://www.youtube.com/watch?v=3qPy051z_PE

(2) The earlier introduction of the vague notion of "coordination" comes with a vengeance now, because it provides an argument that EPR imposes impossible demands upon voters. The great wonder of vagueness is that you don't have to specify what it actually is what common folk in Holland since 1917 have been doing, but you can simply neglect this and start scaremongering.

(3) It is always good to keep the cognitive facilities of the voters in mind, but the approach by C&H cannot convince as being relevant. They make it seem as if the information overload under DR is lower while actually it is larger in DR than in EPR (because of the *need* for strategic voting).

(4) One hopes that C&H do not imply: Voters with a cognitive capacity of less than seven don't deserve EPR for seven or more parties, and hence EPR not at all.

(5) See **Section** 4.11. Voters with their limited cognitive capacities may have been doing better than the biased data show. C&H presume that the number of contenders rises with the number of available seats. This may be the case but one wonders whether it is really relevant, since voters restrict themselves to what they can handle anyway. One doesn't restrict bookshops to only six books since potential buyers can oversee only six books.

(6) There is also learning. A voter from age 18-68 might meet with 10 general [half] elections at intervals of 4-5 years, and learn from these. But C&H should be able to locate an academic paper that human learning is not ideal, and have it knock on the door and provide a citation.

C&H:

"Relating to electoral behavior, the strategic calculations for voters in a low-magnitude multimember district—say, with magnitude of two to six—should resemble those for voters in single-member districts. Most should have a relatively clear preference ordering over the candidates or lists, acknowledge a disincentive to support hopeless alternatives to signal future electability, and have sound information about which alternatives are, indeed, hopeless as opposed to viable."

Comment:

(1) Consider that maximal 6 seats can be elected, so that each party also presents 6 candidates. If there are maximal 6 parties (and thus 36 candidates) then the DR districts overlap with the sub-EPR-districts (by sheer limitation of parties). It is not clear whether C&H allow that a party presents a EPR open party list in the district, with both the nationally known leader and a local candidate. Would this really imply cognitive overload? Still, DR with gerrymandering might generate quite a different outcome than EPR.

(2) The bone of contention becomes when more than 6 parties enter the (half-) election while there are only 6 seats. This would be the natural situation. C&H claim that this freedom of participation interferes with the cognitive abilities of voters. Like supermarkets have a maximum of 6 products too. When only 6 seats are allowed and voters have views fitting many more parties, so that the number of contending parties is larger than 6, then some voters will be frustrated and there will be strategic voting not reflecting their first preferences. C&H suggest that voters better accept this, and they can be informed that this electoral design is only caused because of their own lack of cognitive abilities, as established by the experts C&H.

(3) The EPR view on this is that the cognitive problem is rather caused by squeezing more views into only 6 possible seats. By allowing EPR nationwide, voters can vote, with more reliability, for parties that might perhaps not get a seat in the local district but that do succeed at the national level. Obviously EPR has a wasted vote at the national level too. But EPR succeeds in the overall power preservation rule, and that is what is at stake (electoral equality).

(4) At what point would the reader agree that the line of research of which Carey & Hix (2011) is a culmination, is not science but like homeopathy, astrology or alchemy, full with confusion and bias, and a frame of reference with code-words to prevent critical thought ?

C&H:

"By contrast, in a high-magnitude multimember district—say, with magnitude above 10—the proportion of voters who will vote strategically is likely to be close to zero. In this situation, voters are unlikely to have clear preference rankings over all the options, and it would be difficult to evaluate with much accuracy the probability of winning for each candidate, especially for those candidates close to the likely threshold of votes needed to win a seat. In this situation, voters are likely to support their first preferred candidate regardless of her electoral prospects."

(1) If we have DR with districts of 10 seats each, then (a) there can still be a party Number 11 that is needlessly blocked *for the country as a whole* by lack of EPR, (b) even when there are two parties with each 4 to 5 seats, then a third party might need at least 10% in a district, and parties might not start so large, (c) and then there still can be strategic votes on this.
(2) It is bizarre that C&H claim that the number of strategic votes will be close to zero in such cases. Nature is really more varied than that. It depends upon time and place.
(3) We might allow that they would hold that "this hypothesis would follow from our model" but their model is internally inconsistent so anything follows from it.
(4) The C&H argument again is a distraction. We can agree that when the district size moves to the size of the whole country (say by a step function, start by halving the country etcetera) that the strategic vote forced by DR changes, likely over some range, into the strategic vote under EPR (furthering a particular coalition). In itself this is not relevant in any way. The exact trajectory depends upon the preferences of the voters. Some voters may have preferences such that they feel free from the start (they vote for a big party anyway), some voters may still have a problem even in EPR, that they might vote for a party that would not gain a seat. One can imagine such a reasoning, but it is not relevant for the design issue. (i) The distinction is between EPR and DR. (ii) Only the DR type of strategy needs correction in the statistical measure for disproportionality.

6.9. From SMD to sweet spot

C&H:

"In short, we expect that the [interest-] representational gains in moving from SMDs to small multimember districts should outpace the accountability costs because the obstacles to voter coordination at low magnitudes remain navigable, and voter coordination is key to sustaining viable parties near the ideological center of gravity of the electorate while minimizing both disproportionality (generated by wasted votes) and party system fragmentation."

Comment:

(1) This concerns the curve in **Figure 1** from SMD to the sweet spot.
(2) Increasing proportionality *tautologically* reduces disproportionality, in terms of arithmetic, but this misrepresents the argument on EPR in principle.
(3) The disproportionality of DR is not only caused by the wasted vote (parties gaining no seats) but also by the strategic vote forced by DR, since voters want to avoid worse outcomes (a culture of fear). Disproportionality measures are masked when we do not have the first preferences.
(4) The words "costs" and "gains" suggest a cost-benefit analysis (CBA), but we should remember that **Figure 1** is not hard science but a piece of creative art.
(5) It is a figment of imagination that accountability has been well-defined and understood here. The authors merely explain how they want their model to look like, and they don't look at the world. Later they insert an indicator, abusing another statistical regularity.
(6) The vague notion of "coordination" suddenly gains key importance, as if it would really be relevant in this story, and even relevant enough to accept that, if we want to abolish SMDs and no longer see that the UK Conservative Party got 42.4% of the votes and 48.8% of the seats, then we better forget about EPR, and accept a district size of 3 to 8.
(7) Suddenly there is also the new distractor of "ideological center of gravity" as if dispersed interests are electorally irrelevant because they are dispersed.

(8) The word "fragmentation" suggests something that is not whole, and there are subtle moral tones about not being whole. More neutral is to speak about the number of parties.

(9) A large number of parties can be beneficial since there are more opportunities to accomodate voter preferences. For example, when there are 3 options *A, B* and *C,* then there are 6 possible different preference orderings, and thus one can use 6 parties to cover all of these. It is amazing that the world can do with as few political parties as there are.

6.10.   From sweet spot to EPR

C&H:

"By contrast, once district magnitude rises above moderate [moderate is *good,* the size of the Dutch parliament of 150 seats is abominable] levels, a variety of obstacles [though not wild beasts] to coordination present themselves. Too many partisan options within a fixed ideological space present a conceptual obstacle to developing fully ordered preferences. [Logic would attach great value to a counterexample, but the Dutch must be freaked out and thus can be neglected.] The informational costs of determining which among multiple alternatives are viable present another obstacle. [And one cannot trust the opinion polls.] Finally, even where voters can develop preferences over multiple options and discern viability, they face strategic obstacles in identifying and agreeing on which, among multiple competing alternatives, to support. Moving from small to large multimember districts should produce only limited additional gains in [interest-] representation while eliminating the constraints on choice that foster coordination and accountability. [And C&H neglect the option of EPR, in which the information overload is much lower, since the bargaining about policy options is delegated to the representatives.]"

Comment:

(1) Yes, a visit to a supermarket is quite a challenge.

(2) This concerns the curve in **Figure 1** from the sweet spot to EPR.

(3) Most voters are quite used to what party they vote for. Their informational costs are restricted to deciding whether to continue to support their original party or switch to some other one, often in a close ideological neighbourhood. New contestants are important too. To some extent man is a curious animal, and may fall victim to something merely because it is new. The media play into this too, cashing the curiosity dime. It may well be that the amount of disinformation is a rather constant in human life, and independent of the number of parties but rather dependent upon the ability to find a good newspaper. It is dubious that researchers coming from countries with DR in this line of research make the decision about EPR dependent upon this. A major problem in modern society are rather the media than the number of political parties contending at (half) elections.

(4) C&H thus claim that a district size equal to the country itself (EPR) has eliminated "the constraints on choice that foster coordination and accountability". With those constraints gone, coordination and accountability are in shambles. Countries with EPR are doing something wrong. Holland must be hell. [85] *Farewell to EPR*. Voters who can oversee only max 6 options are not fit for democracy with EPR. C&H don't say it in these words but it is the implication. Their bias in favour of DR is so great that EPR for them is only an academic case, and they don't mind what they imply about EPR, since they are not really interested in what EPR really is. They don't know about the power perserving property, they don't know about the key difference in strategic voting, they don't know about the importance of new competition. They don't know, even though it is in the books that they should have studied.

(5) Above, we mentioned that each country has a SWF that selects a point on the supposed trade-off frontier. The factors discussed here would be aspects in that SWF, and would require careful consideration. C&H haven't done so. Not only does the frontier not exist and is only a figment of creative art, but also their indication of the variables of choice fails. But outwardly it looks like a common economic PPC and SWF, that is true.

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[85] https://boycottholland.wordpress.com/2014/05/16/review-and-praise-for-holland-paradise-or-hell-q-by-dewanand-2010/

7. Carey & Hix (2011) on the trade-off

7.1. Logic versus balancing

C&H:

"District magnitude is not the only one manipulated by electoral system designers [in collusion with biased researchers from DR countries] to affect the [interest-] representativeness-accountability trade-off. A legal threshold—say, 5% of national votes—can reduce party system fragmentation [serving voter preferences] considerably by denying any [interest-] representation to parties with vote shares below the threshold. It might also encourage voter coordination, provided that voters can accurately assess [indeed increasing information overload] which parties are likely to fall above and below the mark, and that those voters who prefer below-threshold contestants are willing to cast their ballots for less-preferred-but-viable parties [causing strategic voting so that we don't know the first preferences, and so that we can say little about the relevance of DR except that it doesn't satisfy electoral equality].

Another modification is the use of mixed-member [misnomer] SMD-EPR systems, whereby seats in a given legislative chamber are allocated simultaneously in both SMDs and multimember districts, superimposed upon each other. Mixed-member systems [misnomer] are often introduced as attempts to enhance [interest-] representativeness without sacrificing accountability and thus to approximate "the best of both worlds" in a single electoral system (Shugart and Wattenberg 2001).3 [But these may not be EPR if its requirements aren't satisfied.]

In short, it may be productive to think of the tension between [interest-] representation and accountability as a convex [**Figure 1** is concave] maximization problem [economists think about *optimalisation*, with a SWF] rather than as a straightforward trade-off. These alternative ways of envisioning the problem are illustrated in Figure 1, in which the y axis represents levels of government accountability and the x axis the inclusiveness of [interest-] representation in the parliament party system. The figure portrays two possible accountability-[interest-] representativeness frontiers—one indicating a linear trade-off between these normative ideals, the other convex [concave], suggesting [creative art and not science] that moves away from extreme values on a given ideal [that does not exist, they first claimed] can initially improve values on the other in a disproportionate manner.4 Electoral reformers [in collusion with confused and biased researchers from countries with DR] regularly tout their plans on the grounds that they will strike an improved balance between [interest-] representativeness and accountability (Culver and Ferrufino 2000; Rachadell 1991). We seek to test the validity [not in the proper sense of logic and methodology] of these claims and, in doing so, to offer a preliminary map of the [interest-] representativeness-accountability frontier [imaginative art]."

Comment:

(1) Given the lack of criticism about the 5% threshold and the glossing over of the relevance of the mixed member system *as if* these would satisfy proper EPR, the authors again confirm the observation that they are biased in favour of DR.
(2) There is no such "trade-off", thus neither "a better balance" with respect to it. The choice of EPR versus DR is a logical one, like one cannot compromise between a circle and a square.
(3) Claims on a better balance may rather derive from a SWF (on EPR vs DR) than such a supposed frontier. Rather than a better balance, one would make a better choice.
(4) Arguments about the *logical choice* between EPR and DR should not be presented as trying to find a *better balance* between EPR and DR.
(5) People may be highly frustrated why their fully rational demands for EPR are not understood, and look for ways to deal with the bias in favour on DR. Trying to deal with such bias should not be represented as trying to find a better balance.
(6) Validity comes from logic and methodology. Logically it concerns whether conclusions are valid or not. For statistics, it means that you are on target. An invalid approach is off-

target but might still hit the target purely by chance. [86] A test on validity would first establish proper definitions, and then check whether the reasoning is on target. One would specify a condition that would disprove the theory. (For example, if there would be a country with EPR and accountability, like Holland, then ....) Instead, C&H introduce us into confusion and bias, and we can only expect that regression results will be interpreted in similar manner. We may assume that the authors really intend a test on validity, but they go about it in a wrong manner. Perhaps they also want to show that their concave frontier applies to the real world (cannot be rejected by the data), but we already showed the invalidity.

7.2. Potentially confusing DR-districs and sub-EPR-districts

C&H:

"We examine [half] elections from 1945 to 2006 in all democratic countries with a population of more than one million. We follow standard practice of counting a country as democratic if it rates a Polity IV political freedom score of greater than or equal to +6 in the year of the election (cf. Boix 2003; Przeworski et al. 2000). This leads to 609 [half] elections in 81 countries, described in further detail in the online Supplementary Information (see footnote 1).

We distinguish among [half] electoral systems according to the magnitude of the median district, the use of legal thresholds for representation, and the use of a mixed-member [misnomer] format. Note that we use *median* district magnitude as a defining feature of electoral systems rather than *mean* district magnitude. This is because many countries have a large number of small districts and only a few very large districts. The mean district magnitude in such systems can consequently be quite large relative to the median. In these systems, very small parties might gain a few seats in a couple of very large districts, but the structure of party competition in most districts will be quite different (Monroe and Rose 1999). We regard median district magnitude as a better measure of the overall constraints on party system fragmentation [serving voter tastes] at the national level. We measure the median district magnitude as follows: in non-mixed-member systems, the median district magnitude is the magnitude of the district with an equal number of larger and smaller districts; in compensatory mixed-member systems [misnomer], the median district magnitude is the median size of the EPR districts [districts are not relevant]; and in mixed-member parallel systems [misnomer], the median district magnitude is the median size of all districts.5"

Comment: This is at risk of confusing DR districts and sub-EPR-districts. For a regression we might need to check e.g. whether there is a dummy for EPR or DR.

7.3. A scatter plot as the inverse of Figure 1

C&H:

"One can think of the axes on Figure 2 [our **Figure 4**] as inverted versions of those in Figure 1, where [uncorrected] disproportionality (x axis) is the inverse of inclusiveness [uncorrected proportionality] and party system fragmentation (y axis) is the inverse of accountability."

Comment:

(1) Taking the draft Carey & Hix (2009) and doing the actually flipping and imposing generates **Figure 4**. The reader may mentally shift the frontiers to the upper right corner.
(2) Observe the changes of meanings of the horizontal axis.
    Figure 1 in the draft of 2009 has "Inclusive representation,
    while the publication of 2011 has "Representation",
    and both have for their figure 2 (here **Figure 4**) "Disproportionality".

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[86] Wikipedia records a wider range of new meanings:
https://en.wikipedia.org/wiki/Validity_(disambiguation)

Figure 4. Carey & Hix (2009:37) figure 2 flipped and imposed on figure 1.
Blue = system with single-member districts,
Green = system with a median district magnitude of between 2 and 10,
Red = system with a median district magnitude greater than 10. [87]
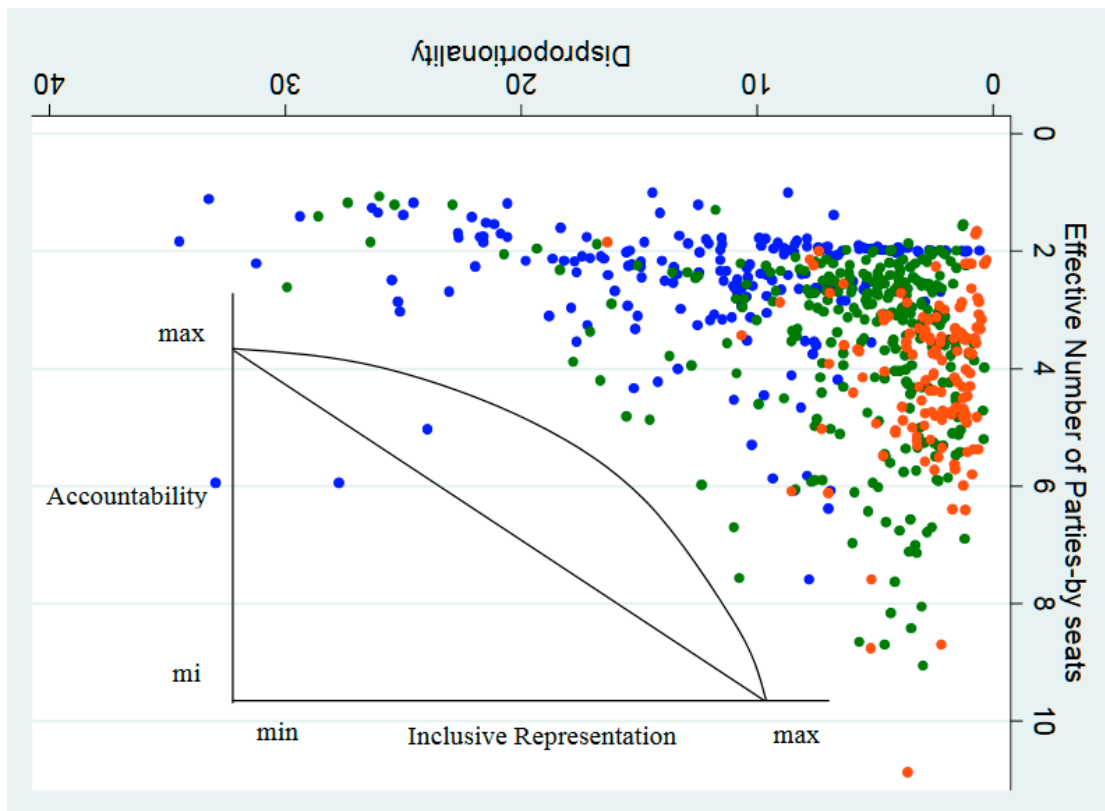
7.4. EGID and Concentrated Number of Parties (CNP)

C&H:

"Figure 2 [here **Figure 4**] presents an initial illustration of the trade-off between inclusive [interest-] representation and accountable government. Each observation in the figure is the outcome of an [half] election in a country in Table 1. The x axis is a standard [uncorrected for strategic voting] disproportionality index [which means that they change the subject from representation to proportionality, while DR systems are not EPR even though you might apply a disproportionality measure to them, which then will be masked], where lower scores mean that partisan [interest-] representation in parliament more closely reflects the partisan distribution of votes (Gallagher 1991).6 In our data, disproportionality ranges from 0.3 to 34.5, with a mean of 7.1 and standard deviation 6.3. The y axis is a standard [but dubious] measure of the effective [concentrated] number of parties represented in the parliament [which again changes the topic of discussion], where a lower number on the scale means a more concentrated party system and a higher number reflects greater fragmentation [accomodation or dispersion of voter preferences] (Laakso and Taagepera 1979; Taagepera and Shugart 1989). In our data, the effective [concentrated] number of parliamentary parties ranges from 1 to 10.9, with a mean of 3.4 and standard deviation 1.5. The figure illustrates that SMDs tend to produce low party system fragmentation [few options for the competition to get elected even when those parties exist] but exhibit high variance on [uncorrected] disproportionality. These systems

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[87] In Carey & Hix (2011) the colours become: "Diamond = system with single-member districts. Circle = system with a median district magnitude between 2 and 10. Cross = system with a median district magnitude greater than 10."

can deliver single-party government and low [uncorrected] disproportionality if the same two parties compete in almost all districts (e.g., the United States). [But this need not happen either, since there may also be is single-party government but high true disproportionality.] Where this is not the case, the result can be either coalition government (e.g., Madagascar), or a highly [uncorrected] [interest-] unrepresentative parliament (e.g., United Kingdom), or both (e.g., Canada). By contrast, EPR tends to produce a strong correspondence between vote shares and seat shares but high variance on number of parties, depending on the variety of societal cleavages [a new undefined, biased term] but also on the ability of voters and elites to coordinate electoral resources around viable parties [which C&H however did not measure]."

Comment:

(1) For the "effective number of parties by seats", we use CNP, see **Sections** 4.11 and 4.12.
(2) Thus, while we supposed that the analysis would concern "(interest) representation and accountability", we are presented with a data analysis on "disproportionality measure and concentration (concentrated number of parties)".
(3) It is a rather great jump from the one to the other. If voters have diverse interests, then one might also take the inverse of concentration or CNP as a measure of "(interest) representation". If seats are disproportional, then one might also regard this as "unaccountable". One might argue for an inversion of the labels. This might still play into the notion of a trade-off, that however does not exist. It remains better that the variables stand for their own, and are no necessary indicators for the other. A statistical regularity on {EGID, CNP} should not be abused for a choice between EPR and DR.
(4) Above classification doesn't fit the distinction elsewhere in the paper of the sweet spot around 6 (or between 4 and 8).
(5) I am amazed that the graph doesn't distinguish between EPR and DR. The assumption that the EGID captures the key distinction between EPR and DR is wrong. The distinction between DR and EPR is a difference in system and doesn't necessarily show in an index.
(6) C&H use Gallagher indices that are not corrected for strategic voting, whence statements about proportionality hang in the air.
(7) The graph actually concerns a description of the data. One should keep track of EPR and DR, strategic vote, wasted vote, and the (dis-) proportionality index, while a neutral term like "concentrated number of parties" is preferable to a morally laden terms like "fragmentation" or "societal cleavage".

7.5. Interpreting the scatter plot
C&H:

"If our idea of a nonlinear trade-off is on target, the empirical pattern should show [half] elections arrayed in a pattern that bows toward the origin of the axes [in the non-flipped original], with an ideal [that does not exist] electoral system minimizing [uncorrected] disproportionality while constraining fragmentation [accomodation of voter preferences] so as to foster clear partisan responsibility [false majorities] in government. The pattern in Figure 2 confirms this intuition [perhaps if you have blurred eye-sight]. The observed data—[half] elections—are concentrated along the axes [in the non-flipped original], indicating that there is more [uncorrected] disproportionality in [half] elections with low fragmentation, and vice versa; but there is also a cluster of observations near the origin, with relatively low scores on both variables."

Comment:

(1) The discussion in **Sections** 4.11 and 4.12 on the "concentrated number of parties" (CNP) gains importance when it is apparently related so closely to C&H's notion of accountability. For this perspective the weights of the parties are relevant indeed. However, the analysis by Dumont & Caulier (2003) and Robson (2007) indicates that the concentrated] number of parties (CNP) is less relevant than the number of decisive parties (NDP), called "effective number of relevant parties" (ENRP) by Dumont & Caulier. However, we should not be dragged into the false approximation of "accountability" by such inverses of concentration. When voters punish a party for not keeping its promises,

then this need not reduce the number of parties but it might also increase the number, and thus the C&H association is *Impressionistic* in their creative art rather than *Photo-Realism*.

(2) There are at least two opposing views on the relevance of the number of parties and power concentration for notions of accountability: One view is that a larger number of parties allows more criticism about policy (freedom of speech), another view is that a larger number of parties reduces an opposition party's chance to pass a motion of no-confidence. None of this seems relevant for the key decision about EPR or DR, and all of this is only distractive, and would be an abuse of academic authority if it were used to give advice to parliaments.

(3) It is awkward that C&H claim that the pattern confirms their intuition. For Red (x), there is a low score on uncorrected disproportionality while the CNP looks independent of this (vertical). For Blue (♦), the CNP is low and the score on uncorrected disproportionality looks independent of this (horizontal). For Green (o), we tend to see a concentration in the upper right hand corner of **Figure 4**, but it also seems as if we are distracted by the Red and Blue for the full dispersion. Overall, this doesn't seem like a trade-off. As we expected, C&H interpret their "test on validity" with bias too.

C&H:

"Figure 2 [**Figure 4**] divides our [half] elections into three groups by district [seat] magnitude: (1) pure SMD systems are represented by solid diamonds [Blue]; (2) systems with moderate median magnitudes, ranging from 2 to 10, with open circles [Green]; and (3) high-magnitude systems, above 10, with Xs [Red]. SMD systems tend toward low fragmentation [accomodation of preferences] but exhibit wide variance on [uncorrected] disproportionality, with highly [uncorrected] disproportional outcomes when voters fail to coordinate expectations on which parties are viable or when winners' bonuses at the district level do not cancel each other out in the aggregate (Powell and Vanberg 2000). High-magnitude systems are inclusive by design [but need not by EPR] and tend toward highly fragmented party systems with correspondingly low [uncorrected] disproportionality. Meanwhile, low- and moderate-magnitude systems are clustered in the bottom left-hand corner [upper right hand corner in **Figure 4**], with relatively [uncorrected] proportional results and a relatively compact party system [less accommodation to voter preferences]."

Comment: C&H fail to observe the independencies that destroy their supposed "trade-off". They also abuse a statistical regularity for an interpretation, to discuss this interpretation as if it were the real thing.

7.6. From graph to regression

C&H:

"To the extent that minimizing some combination of [uncorrected] disproportionality and fragmentation [accommodation of voter preferences] represents a desirable trade-off [that does not exist] between [interest-] representativeness and accountability, Figure 2 [**Figure 4**] suggests that EPR with modest district magnitude [thus sub-EPR !!!] is a good design [meaning that small parties still would collect seats, otherwise it would not really be EPR]. Note that these are just descriptive results, pooled across a wide range of countries and [half] elections, and with no control for other factors that might influence the number of parties in a party system or the [statistical] proportionality of [half] elections. To investigate our conjecture in more detail, we now move to a statistical [regression] analysis of [half] election outcomes in the world's democracies [while statistics is more than regression]."

Comment:

(1) The authors really write EPR here, while their conclusion would be about DR.
(2) Likely C&H confuse DR districts and sub-EPR districts.
(3) There is a confusion with a decision on EPR and DR on principle and a statistical measure on a degree of uncorrected disproportionality.
(4) The figure associates CNP with accountability, which is too simple of course.

7.7. Two dependent variables and one main explainer and its inverse

C&H:

"We look at two sets of dependent variables, to capture [interest-] representativeness and accountability, respectively. The first set includes [uncorrected] *Disproportionality,* which we have already discussed, as well as a measure of *Voter-government distance*. Our measure of voter-government distance is adapted from HeeMin Kim and Richard Fording's data, which locate both parties and voters along a standard left-right ideological scale (Kim, Powell, and Fording 2009).7 We use the Kim and Fording measure of ideological distance between the median voter and median government party when [false-] majority governments form. By contrast, when a [false-] minority government forms, we follow seminal work by Strom (1990) and Powell (2000) on the shift in policymaking power from cabinets to parliaments, and rely on the Kim and Fording data for a measure of ideological distance between the median voter and median parliamentary party."

"The second set of dependent variables, on accountability, includes *Effective [concentrated] number of parties by seats,* which is the Laakso and Taagepera (1979) fragmentation index, also introduced above; and *Parties in government*, which is a simple count of the number of parties in the first cabinet formed after a given [half] election, which serves as an index of how difficult it is for voters to attribute responsibility for government performance and reward or punish governing parties at the next [half] election accordingly.8"

"The principal electoral system factors on which we focus as independent variables are *Median district magnitude*, as described above, and its inverse, *1/(Median district magnitude)*. Our general expectation is that as magnitude rises, [uncorrected] representativeness should improve (i.e., disproportionality and voter-government distance should decline) and accountability should erode (i.e., party system fragmentation and government coalition complexity should increase). But we also expect these relationships to be subject to diminishing returns [as if this were a proper model [88]], such that the estimated effect of the inverse magnitude variable should take the opposite sign from that of the simple (linear) [i.e. original median] magnitude variable. Critically, the sharpness of the diminishing returns effect is reflected by the relative explanatory power [*coefficient* or *coefficient times variable mean* ?] of inverse magnitude relative to that of simple magnitude. If, as we expect, gains in [uncorrected] representation outpace losses in accountability as magnitude rises in the low range, the contrast between the estimated effects of simple versus inverse magnitude should highlight this."

Comment:

(1) C&H also present, not shown here, Table 1 "Effect of district magnitude on [uncorrected] representation" and Table 2 "Effect of district magnitude on accountability".
(2) The word "simple" is introduced in passing without explanation. It would be better to avoid such an unexplained term, and speak about median vs inverse median.
(3) Accountability apparently is related here to the Median Voter theorem, with a majority party / coalition versus an opposition. This originates from the literature on the election of the US President, which is a single seat election. For multiple seats elections, the focus is on the dispersion of voters, and the representation across the spectrum. A party in opposition would not govern but its voters would want to hold it accountable for good opposition. The discussion about accountability looks confused on this too.
(4) I did not delve into data problems.
(5) Since the {EGID[*M*], CNP[*M*]} space and regression is most relevant this has been discussed in **Section** 2.14. The voter-government distance appears to be distractive and is discussed in **Appendix J**.

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[88] The EGID[*v, s*] and CNP[*v or s*] are real-valued variables, and thus there exists a well-defined notion of "returns" of the one upon the other, but it is awkward what this really means, and it is awkward to translate EGID into "(interest) representativeness" and CNP into "accountability", and then argue as if there would exist such "returns" between those.

7.8. Other variables

C&H:

"We also include three other electoral system factors in our models. *Legal threshold* is coded as the percentage of votes a party must win at the national level to be eligible to win seats, and 0 when no legal threshold applies. *Mixed-member parallel* [misnomer] is coded as 1 when members of the lower house are elected from parallel tiers of SMDs and proportional districts and in which allocations of seats in each tier are mutually independent, and 0 otherwise. And, *Mixed-member compensatory* [misnomer] is coded as 1 when members of the lower house are elected from parallel tiers of SMD and proportional districts and in which the formula for allocating seats in the proportional districts offsets disproportionalities at the SMD level, and 0 otherwise."

Comment:

(1) I wonder whether there is such a linear relation between threshold and [uncorrected] EGID, and presume that there have been already other studies on this.
(2) Other phenomena work out like thresholds, and then the same tends to apply. Professor Gallagher has a comment on this on his website [89] and see also Lundell (2012).
(3) Even mixed-member compensatory (misnomer) might not fully compensate to achieve EPR, as Scotland shows, see Colignatus (2017e). Apparently, though, this "compensatory" dummy is as close a dummy to EPR as we are allowed to get.

C&H:

"All models also include a wide range of control variables that may have an effect on the number of parties in a system, the polarization of party systems, and the stability of governments. Specifically, we control for whether a country has a presidential, a parliamentary, or a hybrid regime; the year of the [half] election; the levels of political freedom and economic freedom; population size; GDP per head; economic growth rates; economic inequality (as measured by the [income] GINI index); the age of the democracy; whether the country has a federal system; the level of ethnic fractionalization; the latitude of the capital city of the country; whether the country was a former colony of the United Kingdom, Spain or Portugal, or another country; and whether the country is in the Americas, Western Europe, the Pacific, South Asia, or Africa and Middle East, or is a former Communist country. The online Supplementary Information provides a detailed description of the variables and the data sources."

Comment:

(1) Corrado Gini (1884-1965) was a person and not an abbreviation like GDP. Though perhaps GINI = Gini INcome Inequality (index) ?
(2) I propose the use of "EPR Gini" for application to voting, so that Gini for income is standard. The method can be used in general of course. In voting studies both (income) Gini and EPR Gini might occur.
(3) Allowing for all these other variables does not warrant that one can replace "(interest) representation" with EGID disproportionality, and "accountability" with CNP.

We are still far away from "big data", but C&H:

"We use a large number of control variables for several reasons. First, several of the control variables are political factors which could affect the fractionalization of a party system independently of any direct electoral system effect, such as whether a country has a presidential or parliamentary regime, whether a country has a federal system, the levels of income inequality and ethnic fractionalization, and the size of a country (cf. Taagepera 2007).9 Second, several other controls relate to the general political and economic development of a regime, which may indirectly impact the extent of consolidation and

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[89] http://www.tcd.ie/Political_Science/Staff/michael_gallagher/ElSystems/Docts/effthresh.php

stability of a party system, such as political and economic freedoms, economic growth rates, GDP per head, the age of democracy, and the geographic location of a country (cf. Persson and Tabellini 2003)."

"A third set of controls is included to capture the fact that electoral systems themselves are "institutional choices" resulting from the strategic decisions of political elites when a system is designed or reformed (e.g., Benoit 2007). Major determining factors in the choice of electoral systems are the regional location of a country and a country's colonial origins: hence, almost all Latin American countries have EPR electoral systems while most former British colonies have [false] majoritarian electoral systems. The colonial origin of a country also has a significant impact on a range of political and economic factors that no doubt affect how electoral systems impact the party systems and the stability and performance of government (e.g., Acemoglu, Johnson, and Robinson 2001). Also, one factor widely regarded as causally related to the design of the electoral system when a country extends the franchise is the number of parties in a party system (esp. Colomer 2005; Rokkan 1970; cf. Boix 1999). We consequently include the effective [concentrated] number of parties (by votes) as an independent variable in some models to control for this effect."

Comment:

(1) With EPR and power preservation we have: CNP (by seats) = CNP (by votes), except for problems with the wasted vote and apportionment issues due to methods and rounding. Without EPR we cannot say whether the relation will be random or have some local trend. It has been suggested that $N_s - N_v$ might be a (dis-) proportionality measure, namely a difference of locus of concentration, but the numerical values might be meaningless (i.e. a zero difference with quite different national circumstances). The C&H regression might cause more questions than the approach of "let us include all we have" explains. Yet obviously, if they left out something then they might become subject to criticism that they did not include everything.
(2) In the second regression, accountability is represented by CNP (by seats), which then would be explained by CNP (by votes).
(3) With this onslaught of variables, I might not make the most relevant remark. Though, see **Section** 2.14 that focuses on the suggested trade-off.

C&H:

"Although the choice between a [false-] majoritarian and a EPR system may be endogenous to the number of parties or the colonial origins of a system, however, specific matters of design such as the magnitude of electoral districts or the height of an electoral threshold are unlikely [deus ex machina ?] to be determined by clearly identifiable factors. These more technical aspects of electoral system design are highly context specific and are often dependent on the type of electoral system expertise [or biased advice from researchers from DR countries] received by policymakers when establishing or reforming an electoral system (Benoit 2007). It is reasonable to assume that expertise [confusion and bias] and advice about electoral system design has grown and spread over time [though with stable confusion and bias from researchers from countries with DR]. We consequently include the year of the [half] election as a control variable to remove a potential timing effect. [which will not work because of the stable confusion and bias]"

Comment:

(1) C&H in this article advise that district magnitudes are chosen on the sweet spot. They provide some reasoning for this, relying on the literature, and their own new contribution is this regression. In this paragraph they suggest that advisors in the past were not aware of the same reasoning, and stumbled upon the sweet spot rather by accident – and also rather *massively* given the crowdedness of the sweet spot. This misrepresents the situation. (A positive point is that C&H at least recognise the existence of such advisors.)
(2) Issues like magnitude of electoral districts or the height of an electoral threshold are suddenly called "technical" and "highly context specific" while the very literature on the

design of electoral systems (constitutional law) is quite well aware that these are key factors of deliberation, especially in the choice between EPR and DR (and given the influence from advisors coming from countries with DR). Yet it is true that the actual choice of threshold and magnitude will be contingent.

7.9. Scenarios

C&H:

"We estimate models for each of our dependent variables in a variety of different ways, four of which are presented in the tables below. We first estimate models with the linear *Median district magnitude* term. Then, to test for a nonlinear nature of the relationship between district size and political outcomes, we estimate the same models with an addition inverse term, *1/(Median district magnitude)*. We interpret the shapes of the relationships between district magnitude and our electoral ideals—and more specifically, the relative extent to which they are subject to diminishing returns—as indicative of whether electoral designers might capture some of the benefits of proportionality while bearing relatively fewer of the costs.10"

Comment:

(1) Their footnote 10 explains about other formats for the diminishing returns.
(2) C&H (2009) have a table 1 with: "Electoral Systems in Modern Democracies, Grouped by Median District Magnitude" Unfortunately, this doesn't have this subgroup for the sweet spot of 3-4-8 seats.

C&H:

"We estimate the linear and inverse models first pooling the observations across countries, with country panel-corrected standard errors, and then adding country-specific fixed effects. We fix country effects by using multilevel models with country-specific variable intercepts but constant slopes, so that our electoral system variables pick up only within-country variations in the data, such as the effect of adopting a legal threshold, moving from a pure SMD system to a mixed-member system, or changing the electoral district structure in a way that affects median magnitude. There is far less variance in electoral systems within countries than cross-nationally, but the fixed-effects models isolate the within-country effects of what electoral systems reforms are included in the data.11 Later, to illustrate the effects of district magnitude more intuitively, we also estimate the pooled and fixed-effects models with a series of dummy variables that group [half] elections by median magnitude."

Comment:
(1) Carey & Hix (2009) table 1 states that Holland has a legal threshold, yet Holland uses the natural threshold, or the quota of a seat, in this case 1 / 150 or 150^H.
(2) In my judgment only the regressions with the country fixed effects are relevant. They should pick up country particulars, like on thresholds, that otherwise confuse the analysis.
(3) When the fixed effects for countries are introduced, the coefficient of determination (R2) for within groups drops from originally 43% and 56% to 12% and 16%. Unfortunately, C&H do not mention the adjusted *R*-squared. [90] There is low overall explanatory power. The dataset is large enough to allow a wide range of variables, and the coefficients of interest on the median and median^H are at points statistically significant, but overall explanatory power and relevance are still questionable.

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[90] https://en.wikipedia.org/wiki/Coefficient_of_determination#Adjusted_R2

8. Carey & Hix (2011) on their results

8.1. Results on interest-representation - implemented as EGID

C&H:

"Table 1 [not shown here] shows the results from the models of [interest-] representation. The negative coefficient on the district magnitude variable in the linear specification in Model 1 confirms that larger districts are associated with less [uncorrected] disproportionality. Legal threshold has no measurable effect in this model, while mixed-member parallel systems [misnomer] appear to increase [uncorrected] disproportionality. Model 2, by comparison, estimates a diminishing returns effect by including the inverse magnitude variable. Note that the R-squared improves by about a third, from .43 to .56, and that the scope of the coefficient on the raw magnitude drops when the inverse magnitude term is included. In this specification the estimated effect of legal threshold is also to increase disproportionality, as expected, while the sign on the mixed-member parallel [misnomer] dummy flips, suggesting that these systems mitigate [uncorrected] disproportionality relative to single-tier systems."

Comment:

(1) Observe that the topic has changed from *interest-representation* to an *estimate on EGID*. The measure is uncorrected for strategic voting in DR.
(2) We can write 1/median as $median^H$ conforming to **Section** 1.3 above.
(3) The regression on EGID (models 1 & 2, without country fixed effects) in their table 1 generates coefficients -0.01 for the median and 10.05 for 1/median or $median^H$. The coefficient for the median is so low that one tends to disregard it for median district sizes smaller than 10. At 10 the effect still is -0.1.
(4) C&H: "In our data, disproportionality ranges from 0.3 to 34.5, with a mean of 7.1 and standard deviation 6.3."
(i) The average median district magnitude is 14.2, and its inverse is 0.42, so the average effect of a coefficient of 10.05 is about 4 points of the disproportionality average of 7.1.
(ii) Potentially, the sweet spot has a median of 6, so that its $median^H$ explains 10.05 / 6 = 1.7 of the mean of 7.1.
(iii) $Median^H$ runs from 1 to 0, so that the estimated coefficient might take a high numerical value of 10.05 to compensate for the decreasing values of the variable. For example medians 2 and 5 give ½ or 1/5 (2^H or 5^H). We should not mistake this high coefficient as indicator of relevance.
(iv) There arises the problem that this is hard to interprete, as EGID has quite a range, and is uncorrected too. Let us look at Holland and the UK, and put this into **Table 9**.
(5) Holland 2006 has an EGID of 1.03 and is classified by C&H (2009) in the group with median district greater than 20. It is not stated there what the Dutch value exactly is. An outcome of 10 20^H = ½ would explain ½ of the Dutch EGID. If the Dutch value is the number of seats in the House of Commons, then 10 150^H = 0.07, and then EPR would hardly explain the Dutch EGID. The coefficient of –0.01 cannot be neglected here. The estimate actually gives a negative effect (150 * -0.01 = -1.5), so that other factors can contribute to more disproportionality. This is included in **Table 9.**
(6) The UK 2005 has an uncorrected EGID of 16.73. Its median district size is 1. The median effect thus is -.01 and the $median^H$ effect thus is 10.05 points of the EGID, and some 6.69 points are explained by other factors. We can use this as given for some counterfactuals too. **Table 9** considers counterfactuals, when the UK would adopt the sweet spot of 6 seats or the "oversized" district size 20. The latter would still be a far cry from EPR in Holland (for one would not shrink its House from 150 to 20).
(a) If the UK would switch from district size 1 to the sweet spot of 6, then we keep the influence of the other factors the same, and the new situation would give an EGID of 8.31. This is still far from Dutch 1.03. One would rather see an explanation what is so horrible about accountability in Holland.
(b) An increase from 1 to 20 would generate an outcome of 6.99. This remains rather dismal. If there are two parties, the EGID = LHI, and then there are 7% dislocated seats, and a vote of {47, 54} might translate into seats {54, 47}. NB. One might invoke the

median voter theorem that such outcomes are around 50%, so that such small disproportionalities still would have crucial impact.

(a&b) C&H indeed have formulated a model that allows for such diminishing returns, and apparently the data allow for the estimation of such coefficients.

(7) Comparing these two countries is problematic. Note that the EGID for Holland needs no correction since there is no district strategic voting. In that respect, the EGID for the UK is quite underestimated. There is no need to look at the effect of increase to 150 or 650, since the difference between EPR and DR would likely be caught in the country constant. (The EPR Gini for Holland includes the wasted vote, and it is not clear to me what the EGID does.)

(8) What makes the estimate dubious however is the *cumulated* low effect of the median upon the EGID. Perhaps EPR and DR systems cannot be compared in this manner.

Table 9. Holland 2006, UK 2005, EGID[M] = α M + β / M, for M = 1, 6, 20, 150 (Model 2)

Model 2	Holland	UK				
		Estimate	Counterfactual		Difference	
Median M	150	1	6	20	Dif 1-6	Dif 1-20
Effect M	-1.5	-0.01	-0.06	-0.20		
Effect 1/M	0.067	10.05	1.68	0.50		
Total	-1.43	10.04	1.62	0.30		
Other	2.46	6.69 →	6.69 →	6.69		
EGID[M]	1.03	16.73	8.31	6.99	8.43	9.74

C&H:

"Figure 3 [not shown here] illustrates the effect of district magnitude on the [uncorrected] disproportionality of an [half] election, with predicted values derived from Model 2. [likely typing error: model 1] There is a rapid decline in the level of [uncorrected] disproportionality of an [half] election as the district size increases beyond 1, and then a flattening out of the relationship as the district size increases beyond 5 or 6. For example, the average level of [uncorrected] disproportionality in SMD [half] elections is 11.9, while the average in small multimember districts (with a median magnitude of between four and six) is 5.3. Then, increasing the size of the district beyond this does not improve the [interest-] representativeness [now however the uncorrected proportionality] of a parliament much further: the average score for a median district size of between 7 and 10 is 4.6, for a district size of between 11 and 20 is 3.5, and for a district size of more than 20 is 3.0."

Comment:

(1) The latter data are in **Table 7**. One doubts whether one needs a regression model for such a general impression that may be conveyed by such averages indeed. It seems a rather obvious effect that a larger district magnitude allows for lower disproportionality, though their Figure 3 [not shown here] still shows quite some dispersion, apparently depending upon the availability of national parties. A key point remains that strategic voting changes in character from SMD to EPR.

C&H:

"Models 3 and 4, in Table 1 [not shown here], replicate the pooled results using fixed-effects models, providing a more conservative test of electoral system. The key results from Models 3 and 4 are that the estimated effect of magnitude on [uncorrected] disproportionality is similar in the fixed-effects models, and that the improvement of the diminishing returns model over the simple linear model remains—indeed, when the inverse term is included in the fixed-effects model, the coefficient on the linear term is indistinguishable from zero."

Comment:

(1) I consider Model 4 the only proper one, since one should allow for country effects, and since it includes the suggested nonlinearity. It is not clear why C&H use the term "conservative" while one rather would use "proper" or "adequate".

(2) Median district magnitude has a negative effect on uncorrected disproportionality. One may reformulate this as that Median^H has a positive effect. This does not change the critique on this.

(3) A nonlinear transform like Median^H could be useful indeed since a linear form might generate negative values. However, it is dubious to speak about "diminishing returns" on disproportionality. When Holland would increase the assembly size from 150 to 200 seats, then one might say that there are diminishing returns on its EPR, but this would actually be a change of topic. It would no longer concern a choice on principle between DR and EPR, but it would concern what might be marginal improvements in EPR.

8.2. Results on interest-representation - implemented as VLPD or VEPD

C&H:

"The effect of district magnitude on our second quality-of-representation variable, *Voter-government distance*, is similar to that on disproportionality. Note that distance and disproportionality are correlated at only .16, so these are not merely picking up the same effect. Model 5, the linear specification using pooled data, shows no measurable impact of magnitude, legal threshold, nor mixed parallel systems [misnomer] on *Voter-government distance*. Model 6, however, confirms that there is a strong diminishing returns effect of magnitude on disproportionality [must be this voter-govt distance], and again explains a third more variance in voter-government distance than the linear model. With the improved specification, mixed-member parallel systems [misnomer] are also associated with a stronger mapping between the median voter on a left-right spectrum and the pivotal party in government. Again, Models 7 and 8 replicate the effect (diminishing returns, not linear) of magnitude on voter-government distance in the fixed-effects specifications."

Comment:

(1) This opens the discussion on the median voter theorem and the "voter-government distance" ("locate both parties and voters along a standard left-right ideological scale"). Potentially, C&H might ditch the EGID and CNP indicators and base the argument entirely upon this new measure, but one should not forget about current criticism already. This other indicator would not affect the choice on principle on DR vs EPR either.

(2) The angle on the voter-government distance appears to be a major distraction too. It is proper that political scientists look at such distances, but it is an invalid assumption that it would be relevant for the design question and a justification for the obliteration of votes with DR. A discussion has been put into **Appendix J**.

(3) Powell (2008) and his APSA presidential address (2012, 2013) clarify that the ideological position of voters and parties is contingent, with periods of polarisation and periods of convergence. The immediate inference is that one should not base decisions of design upon such contingency and assumptions that each polarisation would be followed by some new convergence. The principle of *One woman, one vote* is not a principle for stability, and such issue must be discussed on its own. **Figure 5** reproduces Powell's figure 3b in the presidential address. His summary of (2008):

"Ideological congruence between median voter and the government changes substantially from one decade to the next, especially in the SMD systems of Western democracies. These changes are closely linked to changing levels of party system polarization. When the large parties are close to the median voter, any outcome creates congruent governments. When they diverge, governments are usually much further away. In the PR systems, too, depolarization of the party system contributes to greater ideological congruence, although the connections are more complex, and cross-system differences are more diverse than in the SMD systems. This paper describes the changing levels of party system polarization from 1946 through 2003, explicating the positions of political party families and tracing the implications for ideological congruence. Under conditions of

relative ideological consensus, such as the social democratic orientation of 1956-65 or today's center-right orientation, there is little difference in the ideological congruence levels of SMD and PR electoral systems."

Figure 5. Powell (2013) Figure 3b [91]

Figure 3b
Changing polarization in Britain 1983–2001
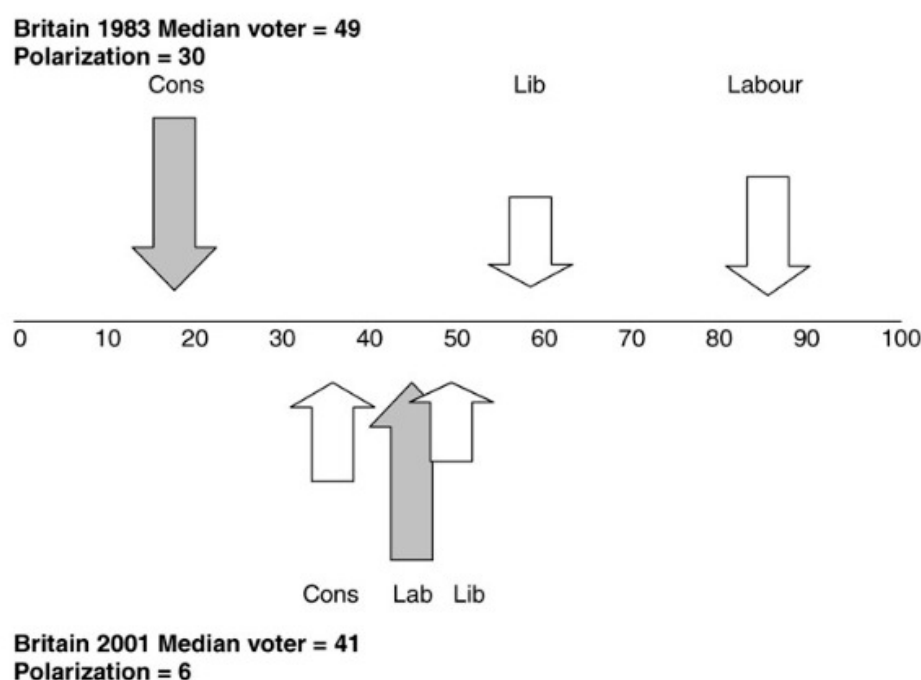
(4) C&H figure 5 (not shown here) shows that EGID and *voter-government distance* have the same general form of dependency on district magnitude, and thus the low correlation of 0.16 is surprising. Kim, Powell & Fording (2010), table 3, present regressions such that EPR and SMD actually form subcategories. Perhaps this might be an explanation ?

(5) The very mathematical form induces the effect of "diminishing returns" and one should be careful with the interpretation and the topic of discussion. The choice on principle between DR and EPR is based upon other considerations. For marginal improvements in EPR there are different considerations.

8.3. Results on accountability – implemented as CNP

C&H:

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[91] A major factor in the shift concerns economic theory. Before 1970 economic theory had a mainstream that allowed for vulgar keynesianism, that government spending would solve unemployment regardless of inflation. This caused stagflation. Subsequently, there developed views like monetarism, supply side economics, Laffer curve and such, resulting into a new mainstream of neoliberal economics. As parties adapted to the times and got economic advisors who were sensitive to the mainstream view in economics, then the convergence of party views is no surprise. See Colignatus (2000, 2005, 2011) (DRGTPE) for a discussion of the Great Stagflation, of which the financial crisis of 2007+ is only a new phase. This aspect however also clarifies that we should judge the functioning of democracy within the wider realms of society. Galbraith (2008) "The predator state" helps to see how "big money" got more grip on the US political process. The present paper still finds, compare the mathematical partial derivative, that *One woman, one vote* can be treated as a principle, within the confines of the present paper, yet, outside of these confines, it is wise to also perform other analyses.

"Table 2 [not shown here] turns to accountability, as reflected first in the fragmentation of the parliamentary party system [replacing "accountability" by "concentrated number of parties" (CNP)]. The linear specification in Model 9 confirms that party system fragmentation increases with district magnitude, although the coefficient is quite small. This suggests that, other things equal, a jump from a median magnitude of 1 to 10 is expected to boost the fragmentation index [more parties suit voter preferences] by one-tenth of a unit. Adding the inverse term, in Model 10, confirms that there are diminishing returns in fragmentation to increasing magnitude, although the linear magnitude term remains significant in this specification. Legal threshold also attains significance in this model, mitigating party system fragmentation, as expected, while mixed-member parallel systems have no measurable impact, and compensatory systems inflate fragmentation by a quarter of an effective [concentrated] party, perhaps by encouraging localist parties in SMD competition.12 Note, however, that the improvement in fit from the diminishing returns model of fragmentation is not as pronounced as with disproportionality or voter-government distance: Model 10 explains just under 3% more of the variance in fragmentation than does Model 9 (the R-squared changes from .31 to .34). With party system fragmentation, again, the fixed effects results closely mirror those from the pooled models, with evidence that higher magnitudes increase fragmentation, although with diminishing effects, legal thresholds reduce fragmentation, and mixed-member systems increase it."

Comment:

(1) The phrase "diminishing returns in fragmentation to increasing magnitude" shows the emptiness of this terminology. (Rising district magnitude comes with relatively less rising number of parties, on average. One might show this with a table too.)
(2) Unfortunately the graph for CNP is not shown. It would range from 1 to 11 with a mean of 3.4. The coefficient of $Median^H$ of Model 12 of –1.08 may be statistically significant at 5%, but the $Median^H$ has an average value of 0.42, thus giving an effect of about –0.5 on CNP. Statistically significant need not mean *significant on content.* CNP is ambiguous too, since it is a concentrated amalgam of both the actual number of parties and their weights.

8.4. Results on accountability – implemented as number of parties in the cabinet

C&H:

"Models 13 through 16 focus attention on another facet of accountability [though not so relevant]: the number of parties holding cabinet portfolios. In the familiar sequence, Model 13 tests a linear specification using pooled data, confirming that coalition complexity rises with median district magnitude. Adding the inverse term, in Model 14, confirms some measure of diminishing returns, but, as with fragmentation, the coefficient on the linear term remains positive and significant, and the improvement in overall explanation of variance is minimal (R-squared nudges from .37 to .39). None of the other electoral system factors has a measurable impact. The fixed-effects models, 15 and 16, show no measurable effect of district magnitude on government coalition complexity, although the adoption of mixed electoral systems appears to cut in opposite directions, depending on whether the reform is to parallel (simpler coalitions) or compensatory (larger coalitions) seat allocation."

"Figure 4 [not shown here] illustrates the relationship between district magnitude and the number of parties in government. The curve is clearly flatter (more linear) in this figure than the analogous graph for *Disproportionality*. An analogous graph for *Voter-government distance* (not shown), like *Disproportionality*, is strikingly curvilinear, whereas that for *Effective [concentrated] number of parties* (also not shown) falls in between, somewhat more curvilinear than *Parties in government*, but less so han *Disproportionality* or *Voter-government distance*. The key point is that the relationships between district magnitude and our two dependent variables reflecting representation [actually: EGID] are distinctly curvilinear, showing sharply diminishing

returns to increases in magnitude above quite moderate levels, whereas the relationships between district magnitude and our dependent variables reflecting accountability [actually: CNP] exhibit more linearity.13

Comment: For the number of parties in the coalition, the conclusion is rather that that Model 16 is most relevant (with country fixed effects), that the line is flat, and thus that there is *no* relationship.

8.5. {EGID, CNP} as parametric function of district magnitude

C&H:

"On the whole, the results suggest that the most consistent and powerful electoral system factor driving the representativeness-accountability trade-off is district magnitude. Various dimensions of this trade-off, and their shapes, are shown in Figure 5 [not shown here], which illustrates the relationships between district magnitude, on the one hand, with the predicted probabilities of good outcomes on our two [interest-] representation dependent variables and the first two of our accountability variables. The predicted values are derived from regressions on the pooled data, with both the linear and inverse district magnitude variables. We define a "good" outcome as any value below the median value in our data, insofar as we hold high *Disproportionality* and high *Voter-government distance* to be representational "bads," and we regard high party system fragmentation and complex government coalitions to pose obstacles to electoral accountability [which is invalid]. A key message from Figure 5 [not shown here] is that increases in district magnitude yield diminishing returns in improving [interest-] representation as well as in compromising accountability, but the diminishing returns effect is stronger in the former than in the latter."

"The key implication of the relationships sketched in Figure 5 is that it is possible to capture many of the [interest] representation gains of increased magnitude while sacrificing relatively less of the accountability ideals."

Comment:

(1) Part of our comments on these findings have been moved up, to **Section** 2.14.
(2) The point on the "most powerful factor" is not substantiated. This would require the decomposition of the regressions in the actual factors. And, obviously, a proper analysis how (uncorrected) EGID relates to (interest) representation and CNP to accountability.
(3) It is a pity that they show the confidence intervals of the pooled data and not the outcomes with the relevant fixed effects.

8.6. Sparsely discussed model, confusing frequency with optimality

C&H:

"This point is distilled most clearly in Figure 6 [not shown here], which shows the combined probability, conditional on district magnitude, of achieving good outcomes [defined in the former subsection] on all four of the dependent variables from Figure 5 simultaneously. The curve rises sharply moving from pure SMDs through the low magnitudes, peaks in the six to eight range, and then declines."

"Note: The figure [6, not shown here. However, see **Figure 6** taken from C&H (2009)] plots the predicted probability that an [half] election produced a lower-than-median outcome in all four of our measures: a disproportionality score less than 5; a voter-government distance score less than 5; less than 3 effective [concentrated] number of parliamentary parties; and 2 or fewer parties in government. The 95% (the outer area) and 50% (inner area) confidence intervals are shaded."

"Not surprisingly, the predicted likelihood of having better-than-median outcomes on all four criteria is relatively low, peaking just above 10%. If we relax our demands, looking for

good outcomes on one representation and accountability ideal each (say, *Disproportionality* and *Effective* [*concentrated*] *number or parties*, or *Voter-government distance* and *Parties in government*), then the predicted likelihood of having one's cake and also eating it rises to around 40%. Importantly, however, the shape of the relationship between district magnitude and realization of combined [interest] representation and accountability ideals is consistent, always rising sharply through the low magnitudes, peaking below a median magnitude of 10, and then declining as magnitude rises further."

"This consistent relationship suggests a magnitude "sweet spot," in the four to eight range, where the most improvements in [interest-] representativeness have already been realized but where the predicted party system fragmentation [voter preference] and government coalition complexity remain limited enough to allow voters to sort out responsibility for government performance and attribute credit and blame accordingly [why not to *all* parties in the coalition ?]. The story that emerges from Figures 5 and 6 in combination is that the vast bulk [???] of improvements [???] in [interest] representativeness can be realized by moving from SMDs to multimember districts of modest magnitudes, and that in doing so, electoral system engineers [who do not maintain engineering standards] might avoid substantial "accountability costs," in terms of party system fragmentation and coalition complexity, which increase at higher magnitudes."

Figure 6. C&H (2009) figure 6

Figure 6. District Magnitude and the Probability of Combined Favourable Outcomes
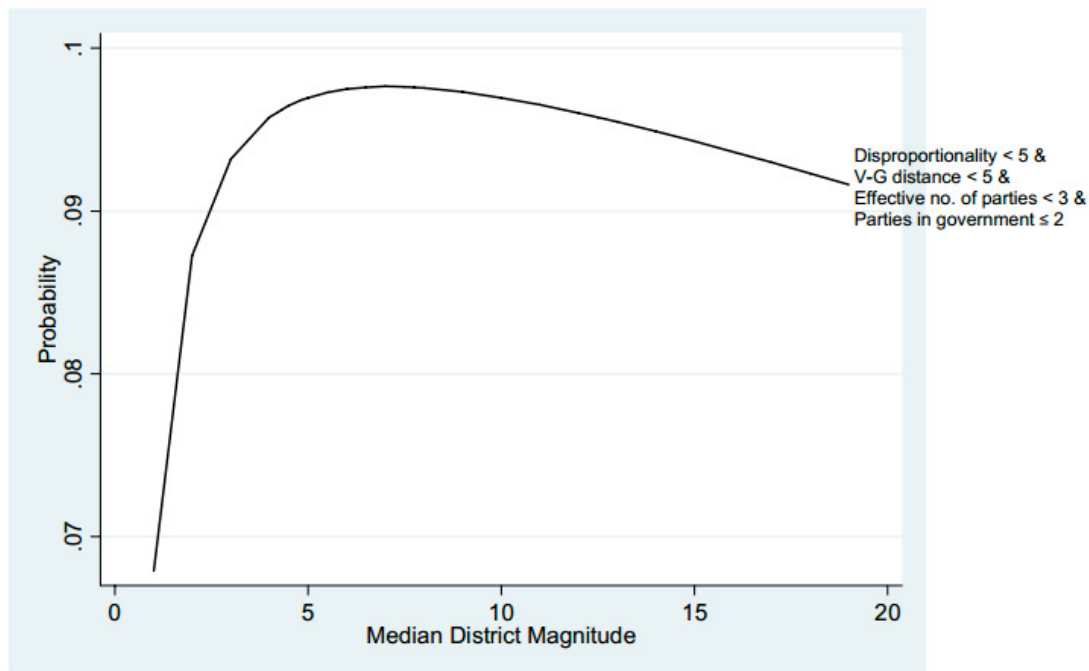
Comment:

(1) C&H might not have seen the possibility of a parametric plot as we did in **Section** 2.14, and then they switched to a logit / probit model to summarise their findings anyway. Thus, the paper actually only presents a graphical display of the "contour with sweet spot" as in **Figure 4**, for which we can see in the scatter plot that the hypothesis is untenable to start with, and then C&H switch for the main argument to a different model, of which the hypothesis and estimation are sparsely discussed.

(2) C&H commit a category mistake here. The "probability" outcome in [0, 0.1] merely means that the data have such a frequency distribution. For such selected data, it would mean that *most* (good) cases occur in the 6-7 range, but *most* is not *better.* It is not shown at all

that the cases with such median districts seats perform *better* than those with a lower frequency. (i) Those in the same category are all in the good category. (ii) Also, there would be cases in the 6-7 range that did not fit the four stated criteria. Thus, being in that so-called "sweet spot" is no guarantee for good performance. It would even be most likely with 90%.

(3) The C&H *interpretation* remains predicated too on indicating, if not *identifying,* "(interest-) representation" by (uncorrected) EGID or "voter-government distance" and on indicating "accountability" by CNP or parties in cabinet. It cannot be excluded that the underlying *true mechanism* is that larger district magnitudes allow for more political parties and better EGID and higher CNP. The story would read differently when such a statistical relationship were shown, and that one *subsequently* must argue *on content* how these relate to "interest-representation" and "accountability".

(4) The classification criterion of "lower than median" sounds objective but is arbirtrary and unsubstantiated, and dubious when looked at on closer inspection. In a two-party system, the EGID is equal to the absolute difference (the Abs / Loosemore-Hanby index (ALHID)) and then gives the percentage of dislocated seats (corrected for double counting). A score of 4.99 or 5 dislocated seats may mean that {47, 53} votes give {52, 48} seats in an important national election. It is remarkable how tolerant C&H are w.r.t. disproportionality.

(5) It is not clarified how lenient we have to be to get to the 40% impact.

8.7. Dummies for district magnitude classes

C&H:

"We acknowledge that when we pile condition upon condition—low disproportionality *and* voter-government distance *and* fragmentation *and* coalition complexity—we pay a price in statistical leverage, as the broad confidence intervals in Figure 6 testify. So, to investigate further whether we can be confident in the relative advantages of low-magnitude districts, Figure 7 [not shown here] revisits our regressions, this time substituting a series of dummy variables to capture the effects of various magnitude intervals on the dependent variables of interest. The models use SMD systems (among which there are 191 elections in our data) as a baseline category. We group multimember district systems by M = 2 or 3 (N = 50), 4 to 6 (N = 160), 7 to 10 (N = 75), 11 to 20 (N = 69), and greater than 20 (N = 64). We chose these intervals according to a couple of guiding principles. The intervals are smaller at the low end of the magnitude scale because we expect the marginal effects to shift most quickly here, and because we are particularly interested in the marginal effects in this neighborhood. We place systems with median magnitudes of two and three into their own category because the electoral systems literature includes skepticism regarding the dynamics of partisan competition at these particular low magnitudes (see Auth 2006 and Nohlen 2006 on magnitude 2; and Taagepera and Shugart 1989 on magnitude 3). Beyond this, we aimed for groups with roughly similar numbers of elections to ensure comparable quality estimates across intervals."

"Note: These figures plot the coefficients and standard errors from a series of regression. The baselines in the model are the outcome of elections with single-member districts. The models that pool observations across countries are estimated with panel-corrected standard errors. See the note to Table 2 [not shown here] for the list of control variables which are included but not reported here. The full results are available on request."

Comment:

(1) It is not clear why the standard confidence interval needs further corroboration, and even in this particular manner. It is not clear how the "baseline" is supposed to work. I did not ask (yet) for the full results since the above showed the indicated bias in the article(s) C&H (2009)(2011) in sufficient manner.

(2) Yet, if one creates such district magnitude dummies / categories, then it would be relevant to provide an explanation why 20+ magnitude shows such a difference between the pooled models and the models with country fixed effects.

C&H:

"The top panel confirms that moving from SMDs to a system with a median district magnitude in the four-to-six range can be expected to reduce disproportionality by almost 8 points, or about three-quarters of the total expected reduction possible by raising district magnitude. Also, the same magnitude four-to-six category also achieves over 80% of the maximum reduction (relative to SMDs) in voter-government distance."

Comment:

(1) This neglects the impact of strategic voting and masked outcomes in systems of DR.
(2) According to **Table 7** the district magnitude of 4-6 has an average EGID of 5.3. If the horizontal axis in C&H figure 7 gives the coefficient (as claimed above), then the –8 would be a *coefficient*, but now they discuss it as *coefficient times magnitude*. The maximum effect would be –10, which is that 80%. Thus the horizontal axis in the diagram does not give the coefficient but the average effect. Still 5.3 – 8 = -2.7 which means that the other variables would contribute to disproportionality.

C&H:

"The second panel shows that the four-to-six range yields only about half the expected increase in party system fragmentation [voter preference] as the highest-magnitude systems, and less than a third the maximum increase in expected number of parties in government (although this result is not significant in a model with country fixed effects)."

"We also ran the same models illustrated in Figure 7 [not shown here], but using the highest-magnitude electoral systems (those with median district magnitude greater than 20) as the baseline category—see the online Supplementary Information. [Statistical] Significance tests in these models determine whether systems in each magnitude interval are statistically discernible from those with the highest magnitudes, rather than from SMD systems. The key result from these specifications is that there is no measurable "cost," in terms of disproportionality or voter-government distance, to moving from high-magnitude systems down even as far as to those with median districts in the four- to six-seat range. That is, the mid-sized districts are either not statistically discernible—or else just barely so—from the highest-magnitude districts. On the accountability variables, by contrast, where the high-magnitude baseline systems perform worst, the mid-sized districts yield measurable improvement on party system fragmentation (in the pooled model) and reduction in government coalition complexity (both models)."

Comment: Mutatis mutandis.

9. Carey & Hix (2011) on their conclusions

Appendix C already had some inserts in the C&H conclusions, and now we include more, and discuss it.

C&H:

"Conclusion: Small Multimember Districts Are Best"

"With the spread of democracy across the world in the last few decades and with more and more established democracies tinkering with their electoral systems, we can identify the nature of the [non-existing] trade-off between inclusive [interest-] representation of citizens' preferences and accountable government more accurately than we have been able to before. With this aim in mind, our results suggest that practitioners who seek to design an electoral system that maximizes [economists use optimisation with a SWF] these competing objectives are best served by choosing multimember districts of moderate magnitudes. Consistent with the traditional view of [half] electoral systems in political science, we find that SMD systems tend to produce a small number of parties and

simpler government coalitions, but also have relatively [interest-] unrepresentative parliaments. On the other side, electoral systems with large multimember districts have highly [interest-] representative parliaments, but also have highly fragmented party systems [serving voter tastes] and unwieldy [?] multiparty coalition governments. In contrast, [half] electoral systems with small multimember districts—with median magnitude between four and eight seats, for example—tend to have highly [interest-] representative parliaments and a moderate number of parties in parliament and in government."

Comment:

(1) There is no such "trade-off". EPR is most interest-representative and accountable. The variables used by C&H have a statistical regularity, and cannot be used in such manner as if they would be indicative of interest representation or accountability.
(2) The conclusion of districts of moderate magnitudes is invalid.
(3) The use of language shows bias: "fragmentation" for "more choice for voters", and "unwieldy multiparty coalition" as if democracy should exclude bargaining.
(4) It is a statistical regularity that increasing district magnitude comes along with a larger number of parties and less extreme disproportionality. What one deems "moderate" is up for discussion, as C&H show great tolerance for majority reversals, as votes {48, 52} and seats {52, 48}. It is important to recognise this as proto-democratic and as a violation of *One woman, one vote.* C&H are like doctors who explain that if your legs are amputated then there are all kinds of benefits, like less need for cutting your toe-nails, and who forget to inform you properly about the cost that you can no longer walk. Moreover, they distort the benefits, for they suggests that DR would be more accountable than EPR, which is like that amputation of your legs helps you run faster.

C&H:

"On the [interest-] representation side, our results suggest that increasing the district size from one to around five reduces the [uncorrectedly measured] disproportionality of representation in parliament by three-quarters and reduces the ideological distance between the median citizen and the median government party even more sharply. This is a result of both the greater opportunities for medium-sized parties to win seats and the new incentives for supporters of small parties, who may simply prefer to "throw away" their votes under SMD [half] elections, to coordinate into medium-sized parties. Increasing the district magnitude beyond six does not improve [uncorrectedly measured] [interest-] representation much further. On the accountability side, meanwhile, increasing the district size from one to around five increases the number of effective [concentrated] parties in parliament by around one, and increases the number of parties in government by about a half. [which may be correct for these numbers but which is something else than accountability] Countries with small multimember districts are more likely to have coalition governments than countries with SMDs, but these coalitions are likely to be between two or a maximum of three parties. Put another way, low-magnitude EPR simultaneously fosters inclusiveness [dubious term] and limits the political unruliness [biased term] high magnitudes invite via party system fragmentation [voter tastes] and coalition complexity [?]."

Comment:

(1) C&H again invalidly indicate / identify interest-representation with EGID and accountability with CNP. The statistical regularity for the {EGID[*M*], CNP[*M*]} space cannot validly be used as evidence for interest-representation and accountability. This is reasoning like: I fit in my coat, my coat fits in my bag, thus I fit in my bag.
(2) C&H again express their bias against a larger number of parties, while the very purpose of democracy is *to deal with* parties. Their reasoning is: If you want to walk, then you should not be distracted by cutting your toe-nails, and therefor we better amputate your legs, and then you can run faster.

C&H:

"In closing, it is also worth noting other research that points to an advantage of low-magnitude districts for the accountability of individual legislators. Carey (2009) describes a trend in electoral reform toward systems that allow voters to cast preference votes for individual candidates, and notes that voters overwhelmingly choose to exercise the preference vote when given the option. Yet the promise such open-list systems hold of individual accountability is conditional on limited district magnitude. In high-magnitude [half] elections, open lists confront voters with a bewildering array of candidates (Samuels 1999), whereas low magnitudes curb both party system fragmentation [voter tastes], keeping a lid on the number of lists, and the number of candidates per list. As a result, voters under low-magnitude open-list systems are better able than those in other systems to identify and hold their representatives accountable [which is a non-sequitur]. Chang and Golden (2007), for example, find that corruption is lower in countries with open-list than with closed-list proportional representation, provided that average district magnitude is below 10, whereas at very high magnitudes (above 20), open-list systems are associated with more corruption. Hence, low magnitudes make it possible to combine candidate preference votes and individual accountability with proportionality and partisan inclusiveness."

Comment:

(1) Holland has an open party list system, and its use is rather limited. One should not confuse the issues of EPR with open lists and DR with open lists.
(2) The supposed relation between EPR and corruption pops up here, and obviously is more complex than causing the conclusion of the abolition of EPR. It is curious that C&H have not been able to find criticism of that Chang & Golden 2007 study yet, or tried this themselves.

C&H:

"In short, legislative [half] elections work best when they offer opportunities for multiple winners, and thus afford voters an array of viable options, but at the same time do not encourage niche parties or overwhelm [bias] voters with a bewildering [bias] menu of alternatives. The evidence from a wide range of indicators [though not corrected for strategic voting] all points toward low-magnitude proportional representation [which however is not really proportional representation since some parties are artificially blocked] as providing a good balance between the ideals [that do not exist, they said] of [interest-] representation and accountability."

(1) C&H thus hold that Dutch voters are overwhelmed by a bewildering menu of alternatives, which might explain why they neglect the counterexample.
(2) C&H suggest that voters in the USA, UK and France would not be able to adopt the pragmatic approach that Dutch voters have been taken in the last century ?
(3) There is no such "balance" as C&H suggest. EPR is best both on interest representation and accountability.

10. Reception of Carey & Hix (2009) (2011)

How do political science researchers react to the analysis by Carey & Hix (2009) (2011) ?

The article already got through "peer review", while we found serious problems in it, and also at a basic level of methodology – using good definitions, operationalise, make a model, maintain commons sense, and obvious distinctions between "most" and "best".

10.1.   APSA task force, Htun & Powell (2013), Htun et al. (2013)

We already mentioned the APSA task force, Htun & Powell (2013), see **Section** 4.5, of which Carey & Hix were members, and that did not find serious problems with their paper.

The report of the symposium, Htun et al. (2013), recycling the report, repeats:

> "Electoral systems constitute one of the oldest and most prolifically studied subjects of our discipline. Hundreds of political scientists dedicate themselves to developing and testing theories about the consequences of electoral rules and regulations for representation, governance, and other aspects of democratic politics. They are currently pushing new frontiers. (...) Political scientists thus relate to the world of election systems in two ways: as *scientists* and as *engineers*." (p808-809)

The symposium didn't deconstruct the Carey & Hix (2011) analysis, though this analysis had been circulating in the political science community since 2009, and drafts even earlier.

> "During multiple trips to Israel, Simon Hix initially proposed a mixed-member electoral system [misnomer, contradiction] and later, based on his scientific research with John Carey, a PR system with multi-member districts of between four and 11 seats [contradiction]. [footnote referring to Carey & Hix (2011)]" (p829)

NB. If the system is EPR then the districts would be EPR-districts. When there are districts with 4-11 seats then it is unlikely that there can be EPR without additional rules. This symposium report is confused, or Hix himself is confused about his paper, or the C&H paper is confused.

10.2.   Libertad y Desarrollo (2013)

LyD is an independent think-tank in Chile, and Libertad y Desarrollo (2013) discusses an electoral reform. Apparently Carey & Hix (2009) had a great impact. They conclude:

> "Based on both theoretical and practical considerations, a reform tending towards the establishment of a strictly proportional electoral system, which includes a district magnitude equal to or higher than 8 for parliamentary elections, such as the one proposed by a group of senators of the Concertación and RN, does not seem a pertinent measure."

> "On the contrary, majority-oriented proposals, such as the one being put on the table by the Executive with the support of different UDI and RN parliament members, seem a reasonable intermediate formula when it comes to conciliate the virtues of a majority system, with a prudent proportionality complement that, respecting our multi-party feature, does not generate a fragmentation in our party system."

One's heart skips a beat when one realises again that the Carey & Hix (2011) *homeopathy, astrology or alchemy* is not just a theoretical exercise, but contributes to false conceptions and decisions by entire nations.

When "political science on electoral systems" is no science but pre-science, then this likely is a global phenomenon. PM. Economists managed to set up National Statistical Bureaux (NSB) for the measurement of national income and price indices. This created an institutional environment with theory and practice and international development of standards. Political scientists are basically at the academia and rely upon Ph. D. students. National Parliaments obviously have tough departments for running elections and the subsequent apportionment. It is not clear to me yet whether a greater involvement of the NSB in the field of electoral systems would generate more professionalism. One would have to start from the basics as in the current re-engineering, otherwise one would repeat the confusion and bias with the added aura of the NSB.

10.3.   Vakmann (2014)

Vakmann (2014) is a master's thesis under the guidance by Rein Taagepera and Mihkel Solvak. The first two chapters give a nice summary review of the political science literature on electoral systems that we have been discussing here, yet, also fully with the confusion and

bias that we have been deconstructing too. The student repeats the C&H assumptions on the "trade-off" rather uncritically, and I tend to think that Taagepera would have advised differently if he had had criticism himself.

The student's main point is to normalise the values in the {EGID[*M*], CNP[*M*]} space and then find a statistical regularity between these normalised values, which appears to be (close to) a quadratic relationship. There is also some ingenuity on the use of the share of votes for the largest party.

One might say that it is only a master's thesis but one should hope that there also should be standards. Political scientists should be deeply ashamed that they can mislead students so much, but, obviously, the training of students in traditional ways is the method to keep a tradition going. I find the following problems with the analysis:

(1) The student uses core data from the CLEA database, [92] but produces additional counterfactuals herself, by assuming the same votes and applying different apportionment rules. However, under different rules, voters would adapt, see also Kam (2015) on counterfactuals in **Section** 18.4. Taagepera should have informed her that this kind of analysis by consequence can have little meaning. (Our own counterfactual w.r.t. **Table 9** only intends to interpret the regression result, and the conclusion is that it cannot be used.)
(2) EGID already is a normalised variable, in the range [0, 100] and it is not clear what the meaning would be of a normalisation that is contingent on a particular outcome.
(3) CNPs also has a range namely [1, *S*], namely for the size of the assembly *S,* when each seat in the House is taken by a separate party. Yet the argument on accountability concerns the absolute number (say the cognitive capacity to recognise less than 7 parties) and not a relative score depending upon the situation.
(4) Instead, the student normalises by comparing CNPs with CNPv, i.e. the concentration based upon seats compared to the concentration based upon votes, using the regularity (no necessity) that CNPs ≤ CNPv. In the past, Taagepera proposed a related measure as an index of disproportionality. It is an inadequate measure, but there are correlations, and the relationship that the student recovers might also be seen as a relationship between two indicators for disproportionality.
(5) PM. There might be a relationship with the math in Colignatus (2017f).
(6) In determining a "sweet spot" for her model, the student assigns both normalised variables equal weight (using maximisation rather than optimisation of a SWF), thus uses a slope of 1, and uses this properly as a tangent to the quadratic relation (as the variables are defined such that maximisation is into the lower right direction). "Our results do not agree with what Carey and Hix (2011) expect – the sweetest region seems to be achieved when district magnitude is one or two, not in the range of 3 - 8. However, our results may be influenced by how we combine Ns and LSq and are possibly slightly different if we normalise Ns and LSq in a different way (e.g. (Nv - Ns)/Nv and LSq/LSq max)." (p54) This is magic. Firstly, there is no reason given why the Social Welfare Function (SWF) would assign both variables equal weight. Secondly, obviously you get different models for different specifications, and thus it is convoluted to first present a model with firm conclusions and then suggest that another model is possible too. Give criteria that generate the most relevant model first. Thirdly, once you are aware of such arbitrariness, you should see that C&H are similarly arbitrary, whence you switch to criticising C&H rather than repeating their assumptions.
(7) The student still suggests: "Nevertheless, it is clear that the "sweetspot" cannot be achieved using magnitudes as high as 6 - 8 (as Carey and Hix suggested), (...)", so that the hesitations are forgotten again and the student effectively abolishes EPR.

10.4.   Labbé St-Vincent, Blais & Pilet (2015)

There is a nice paper by Labbé St-Vincent, Blais & Pilet (2015) that reproduces the C&H analysis using lab-experiments. Thus, **Figure 2** and **Figure 6** can be reproduced in general shape using lab-data rather than real [half] elections. This confirms my impression that there

[92] http://www.electiondataarchive.org/biblio.html

could be a statistical regularity on {EGID[*M*], CNP[*M*]}, quite apart from the interpretation given to this by C&H. Examples of statistical regularities are the "law of large numbers" and "Zipf's law". [93] For example the Lorenz curve for inequality is constructed by a particular method that creates curves that have a general shape. A statistical frequency table on motor vehicles will tend to show that most cars have four wheels. It is not clear to me yet what to think about such statistical regularity on {EGID[*M*], CNP[*M*]}. Perhaps there is a relation to the math shown in Colignatus (2017f).

Nevertheless, Labbé St-Vincent, Blais & Pilet (2015) do not deconstruct the C&H paper on content. They express some criticism but do not see the need for deconstruction:

> "The choice of these indicators is debatable. The number of parties is, at best, an indirect measure of accountability. Nevertheless, we have decided to keep these indicators because our main objective is to see whether we can replicate Carey and Hix's findings in the lab. Furthermore, there is an evidence that the more parties there are in government the more complicated it is for voters to sort out the responsibilities of the various partners (Anderson 2000; Bingham Powell and Whitten 1993)."

As said, voters will tend to hold *all* parties in a coalition government accountable, and there may only be some marginal concern when parties try to convince their voters that they are not to blame for errors by others. This kind of marginal issue can in no way be used as a decisive argument to block a switch from DR to EPR. Yet the fallacy of composition again is used to support the confusion and bias.

From their abstract: "We find that the probability of achieving a "good" outcome on both proportionality and the number of parties is slightly higher at moderate DMs [district magnitude]. We note, however, that this probability remains low." They properly put "good" in quotes, but they still copy C&H in confusing the statistical mode with optimality (most = best).

10.5.   Grofman (2016)

Grofman (2016) properly distinguishes plurality from majority. He refers to the issue of "interest-congruence and accountability" on page 27.12, referring to the median voter theorem, and Powell's 2000 finding, [94] and: "However, some more recent work has found that, in more recent time periods, plurality systems do exhibit greater mean congruence than proportional ones." He ends up in skepticism:

> "Do these contradictory findings give rise to a puzzle that needs to be explained? My answer is probably not. On the one hand, time-bound results should be expected, given our previous discussion of ideological convergence. As noted above, the degree to which parties in the United States converge in ideological terms has varied greatly over the past 100 or so years despite very little change in the formal electoral rules. In almost all PR systems, policy outcomes depend on the coalition structure of the cabinet parties, so in European parliamentary PR systems we should also expect changes over time in the degree to which governments take policy positions congruent with their citizenry. This expectation is reinforced by recognizing that recent decades have seen major changes in party constellations, involving reductions in the strength of mainstream parties and the rise of fringe parties, especially on the right. We should also note, as Golder & Stamski (2010, p. 90) point out, "Although the literature examining the relationship between ideological congruence and electoral rules is quite large, relatively little attention has been paid to how congruence should

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[93] https://en.wikipedia.org/wiki/Zipf%27s_law
[94] https://yalebooks.yale.edu/book/9780300080155/elections-instruments-democracy: "Careful analyses of more than 150 democratic elections show that each vision succeeds fairly well on its own terms in responsively linking election outcomes to policymaker selection, although advantages and limitations must be traded off. However, Powell concludes, the proportional influence vision and its designs enjoy a clear advantage in creating policy congruence between citizens and their policymakers—a finding that should give pause to those who are attracted to the idea of the decisive election as a direct tool for citizen control."

be conceptualized....Results regarding ideological congruence can depend on exactly how scholars conceptualize and measure it." "

However, in his table 1 on page 27.14, he restates that SMD generates greater government accountability. He calls this "alleged" but does not mark it with a question mark, his symbol for "especially skeptical":

"Table 1 identifies some of the trade-offs regarding choice of electoral rule that are alleged in the APSA report. For simplicity, I use the dichotomy of PR rules in multiseat constituencies versus majoritarian/pluralitarian ones in single-seat constituencies, despite my view that this dichotomy is inadequate. Claims about which I am especially skeptical I have marked with a ?"

He does not refer to Carey & Hix (2011) there, while his reference to it is on page 27.9 on another aspect. Thus we observe that he does not deconstruct their analysis - while there is every reason to do so, especially when you are skeptical.

10.6. Raabe & Linhart (2016, 2017)

Raabe & Linhart (2017) repeat the Carey & Hix (2011) analysis, but with a claim of being more systematically. R&L do not deconstruct the C&H analysis, but repeat the misconceptions and introduce some of their own. I will refer to the online conference paper of 2016. Their abstract reads:

"Electoral systems are typically faced with the problem of being asked to provide both proportional representation and party system concentration leading to accountable government. Which electoral system designs are able to successfully deliver on both these challenges and thus optimize the representativeness-accountability trade-off? This paper investigates the performance of different general electoral system designs as well as their specific technical details (such as legal threshold, tier-linkages, and compensation mechanisms) based on a dataset of 590 elections in 56 [57] countries. The key results are that both proportional representation systems with moderate district magnitudes and mixed-member proportional systems [misnomer] are able to optimize performance. Going to the level of details confirms these results and deepens our understanding further: while different technical changes are able to improve the chances of reaching the best of both worlds, some of these (e.g. raising the legal threshold) also increase the risk of ending up with the worst."

Carey & Hix (2011) however had 609 elections in 81 countries, and also included the threshold, so the claim on being more systematic needs closer attention.

"This paper seeks to thoroughly contribute to the research question by investigating all types of electoral systems and by understanding them both as general types as well as the sum of their technical features. This holistic approach allows us to reach very specific conclusions about how the precise institutional setup of an electoral system affects the likelihood of attaining desirable levels of proportionality and concentration."

Raabe & Linhart speak about "proportionality and concentration" (EGID and CNP) and thus seem more accurate than C&H with their "interest-representation and accountability", but they do not see and state that C&H have a wrong use of terms, and subsequently they translate their terms again in the misleading terms (to link up with the literature). They repeat that there would be some trade-off, while there isn't.

Curiously, they seem to use the label "PR" for "system". They state on p2 (& p5) "PR systems with a moderate district magnitude (Carey & Hix, 2011)", and then on p7 "Moderate magnitude PR proposition", as if C&H had an analysis on EPR systems with EPR-districts. For EPR, the existence of EPR-districts is not relevant. The C&H analysis really concerns DR, with districts, even of moderate magnitude, that destroy EPR.

R&L correctly observe that systems with the same district magnitudes may work out differently, depending upon different rules like thresholds. One would think that this would be obvious. C&H used different parameters to catch these different effects. R&L report about an effort to get the correct data, which is still somewhat surprising.

R&L also adopt EGID and CNP as indicators. Unfortunately, R&L do not state where they differ from C&H. It is too much for me as a reader to delve into this.

R&L usefully provide boxplots for the separate dimensions for the five types of their "PR" (system) with large districts, "PR" (system) with less than 10 seats per district, MMP, MMM and SMD. We again must greatly doubt whether their "PR" really is EPR, e.g. because otherwise their dataset would only contain SMD as a case with Plurality.

Subsequently, R&L provide a scatter plot on both dimensions, but unfortunately with CNP on the horizontal axis and EGID on the vertical axis, and also all five types at the same time, so that the distinctions are rather lost (except for who is trained on selecting the plotting symbols). A summary table gives 586 instead of 590 elections.

R&L repeat the C&H error of confusing *frequency* with *optimality,* by judging a particular performance as *good* or *bad*:

> "Figure 4 [not shown here] summarizes the results by presenting predicted probabilities of doubly good performance for all five design types. MMP and PR [system ?] with moderate district magnitude are the two systems most likely to perform well in both dimensions, while plurality/majority, PR [system ?] with large district magnitudes as well as MMM are extremely unlikely to perform well in both dimensions."

The authors effectively say that EPR allows for more parties so that these better fit the preferences of the voters, and subsequently that this would be bad and should be prevented.

Subsequently, R&L present regressions. Instead of the 1 / Median^H they use the square of the median, and they refer to C&H though C&H explicitly use another form. R&L only refer and do not provide any explanation for their format.

Curiously, the different types disappear, and only combined cases are regressed again. Their models do not include the crucially important country fixed effects, so that the coefficients and statistical significance levels are overstated. For completeness, **Figure 7** plots their main result on the {EGID, CNP} frontier, apparently close to a straight line.

R&L p18 state that C&H have a "similar approach" but it would be more correct to say that R&L repeat the analysis without giving clarity about differences in variables and country data.

The only explanation that I can think of is that C&H published in 2011 while Raabe graduated in 2012, so that the research by C&H might be *ancient* for him. Linhart is a bit older and might have accepted Raabe's texts as a first author. Still. I am also looking at the conference paper, and not the version that was accepted after peer review.

I find some of the discussion on page 21 incomprehensible. ("However, if district magnitude was to be lowered so far that a plurality electoral system would have to be used, there would actually be a strong overall decrease of the probability of a doubly good performance due to the related change from zero (or, say, fifty percent) SMDs to a share of one-hundred percent SMDs.")

R&L observe that the electoral threshold has a positive effect, but they do not question this, as they should, and they do not compare this with the (3 out of 4) negative effect (also in the main model) of C&H.

The discussion of the logit regression suffers from the confusion about frequency and optimality.

The R&L conclusions thus evaporate. They did not deconstruct the analysis by C&H and include their own confusions.

We can observe that R&L are from a country with EPR and still copy the confused and biased concepts and analysis by researchers from countries with DR.

Figure 7. Estimate by Raabe & Linhart (2017) apart from constant and other effects [95]
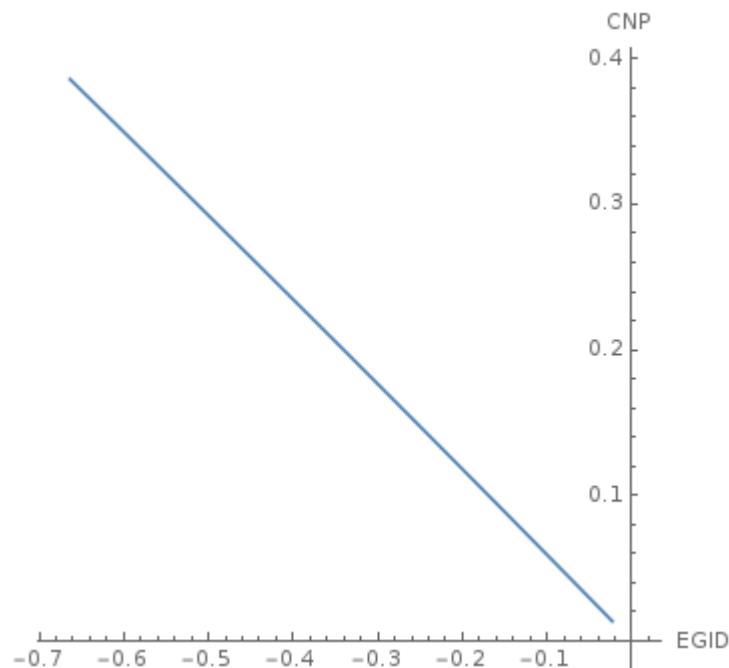
10.7.   Oxford Handbook

Riera (2016) states in the first paragraph: "(...) a broad consensus among political scientists views moderate levels of party system fragmentation as a prerequisite for accountability mechanisms to operate correctly (e.g., Carey and Hix 2011)." This is not quite the same as support for districts of moderate size, since the latter might still cause many parties, e.g. when each district has its own majority party. Still, Riera doesn't debunk the Carey & Hix analysis.

10.8.   Fairvote Canada (2016)

Fairvote Canada (2016) reviews the evidence on why one might want EPR. It remains remarkable how much effort serious people still must take to repeat the clarity that Holland achieved in 1917.

> "This paper summarizes results from comparative research comparing the performance of the two main families of voting systems: winner-take-all and proportional representation (PR). We already know that PR is a way of ensuring that all votes count and delivering more representative election results. The research cited below goes further by demonstrating the impact of PR on the policy choices made by governments. This research shows that PR outperforms winner-take-all systems on measures of democracy, quality of life, income equality, environmental performance, and fiscal policy." (p1)

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[95] Wolfram Alpha. ParametricPlot[{ -.0229 M + 2.62 10^-5 M^2, .0136 M - 2.47 10^-5 M^2}, {M, 1, 30}, AxesLabel -> {EGID, CNP}, AspectRatio -> 1]

(...)

"A question that may be asked is how perfectly proportional an electoral system has to be before its impact is felt. This is a relevant issue for a country such as Canada, which is considering options such as Mixed Member Proportional or other regionally-based options that are highly, but not fully proportional. The issue was the primary research question covered by Carey and Hix (2009 and 2011)." (p8)

"Their results show that moderately proportional systems involving multi-member districts of six to eight seats made it possible to avoid disproportional results to a degree almost matching that of more purely proportional systems (2011: Figure 3). They point to countries such as Costa Rica, Hungary, Ireland, Portugal, and Spain that have settled for a moderate degree of proportionality in the design of their electoral systems (2011: 384)."

Comments:

(1) Fairvote Canada (2016) presents STV as a EPR system, while it is not. When your vote is transferred to someone you didn't vote for in the first place, then something is amiss. See **Section** 17.1.
(2) Fairvote Canada (2016), with all their experience on electoral issues, uncritically restate the false C&H claim on the "sweet spot", apparently trusting upon science that such confusion and bias would not get a chance.
(3) In their conclusions they only mention the positive (social and economic) aspects or consequences of EPR but not the downside of C&H on supposed lesser accountability. This actually is partial reporting, and may come with a later boomerang effect. By being silent on this, Fairvote Canada allows itself room to be uncritical under (2), whence it stops thinking.
(4) Also, it still is unclear what to think about the supposed social and economic aspects or consequences of EPR. There need not be a causal chain. The situation might also be that socially more inclusive countries adopt both EPR and more inclusive policies, and that the Anglo-Saxon-Viking countries adopt DR and less inclusive policies. The choice for EPR is better not made dependent upon subordinate considerations.

10.9.   Shugart & Taagepera "Votes from seats" (2017)

Shugart & Taagepera (2017) present the following abstract:

"Take the number of seats in a representative assembly and the number of seats in districts through which this assembly is elected. From just these two numbers, the authors of Votes from Seats show that it is possible to deduce the number of parties in the assembly and in the electorate, as well as the size of the largest party. Inside parties, the vote distributions of individual candidates likewise follow predictable patterns. Four laws of party seats and votes are constructed by logic and tested, using scientific approaches rare in social sciences. Both complex and simple electoral systems are covered, and the book offers a set of 'best practices' for electoral system design. The ability to predict so much from so little, and to apply to countries worldwide, is an advance in the systematic analysis of a core institutional feature found in any democracy, and points the way towards making social sciences more predictive."

The suggestion of "best practices" is ominous when the advice apparently would not be to switch from DR to EPR.

S&T would provide what science requires: analytical models and hard data. Unfortunately, I have great hesitations to look into it, fearing the same bias as appears to be rife in *political science on electoral systems.* The paywall doesn't help. I did peek using Google Books, and find that S&T support, laudably, what is common in econometrics: first design a model and then collect the appropriate data, and then test the model, setting off another cycle of analysis and testing. This method is in opposition to just running regressions and indicate statistical significance at various levels.

S&T refer to Carey & Hix (2011), apparently without the same criticism as in this paper. Google Books allow us to spot the single uncritical reference on p120:

> "The Duvergerian agenda continues to be salient because of the impact of party fragmentation [voter choice] on the wider pattern of governance, such as the balance [supposed trade-off] between accountable governments and broadly [interest-] representative political inclusion (Cheibub et al. 1996; Carey & Hix 2011; Lijphart 1999), and because political scientists continue to be commissioned for their [unwarranted] advice on electoral-system design (Carey et al. 2013). Although there are still disagreements [which ?] over how much fragmentation [voter choice] is optimal for a party system, no one [?] will deny that we can hardly make any normative judgment on an electoral system without knowing its impact on the distribution of seats among parties."

In reply to this: we obviously know that EPR allows a larger number of parties than DR. S&T even provide the estimate $\sqrt{S}$. But the exact number would not matter, since we know that EPR allows a larger number of parties than DR does, and thus EPR allows more voter choice than DR. Clearly S&T are still caught in the bias also shown by C&H, and they provide uncritical support for this.

Had they formulated the same criticism then I expect that the reactions and reviews would have been different. Here, we criticise Carey & Hix (2011) from abusing statistical regularities for conclusions on content w.r.t. democratic freedoms. My impression is that S&T use the mentioned statistical regularities too. It would be laudable when they highlight such regularities as *statistical regularities* indeed, with grounding in analytical models. Since I haven't read what they actually do, this use need not be abuse.

The mentioning of T&S here thus serves two purposes: (1) The lack of a clear debunking of Carey & Hix makes us wary. (2) The reference to "best practices" without the explicit advice for EPR makes us wary too.

PM. Apparently, part of the analysis was already presented by Taagepera (2007) in the Oxford handbook of comparative politics. A regularity between assembly size and electorate (turnout) is $S \approx V^{(1/3)}$. With assembly size S and district magnitude M, apparently much variability is explained by their product $M S$. The number of elected parties tends to be the square root of the body. For EPR the value is $\sqrt{S}$, for a district $\sqrt{M}$ and for DR the geometric average is $(S M)^{(1/4)}$ (2007:689). The latter is the general formula, since for EPR $M = S$ and we find $\sqrt{S}$ again. There is a suggestion for the size of the largest party, and from there to the Concentrated Number of Parties (CNP). In all, S and M might statistically also explain the inequality / disproportionality EGID (2007:693, figure 28.5). Taagepera suggests that the causality runs backwards, from the system to the voting outcomes. This deserves serious attention, also since it might explain the statistical regularities that Carey & Hix (2011) are abusing. Yet this analysis should not distract from the issue on content on EPR vs DR.

11. Conclusions

Public Choice is the name of the research area that applies economic analysis to topics in political science. Economic analysis shows that political science has created confusion about the principle of *One woman, one vote*.

For the House of Representatives, said principle requires that the shares of seats for parties are equal to the shares of votes. This is called Equal or Proportional Representation (EPR). Holland in 1917 changed from District Representation (DR) to EPR. The USA, UK and France still have DR, and thus *One woman, unknown weight for the vote*.

For example, in the 2017 UK general half-election the Conservative Party got 42.4% of the votes and 48.8% of the seats. A system of DR also causes a high degree of strategic voting, for fear of losing on the Plurality (First Past The Post) method. Thus first preferences for

government policy are unknown, while this is no relevant issue for EPR. DR has a high barrier for electoral competition while EPR has a low barrier.

Lijphart regards EPR as "electoral justice", and developed typologies of democracy to clarify elements for an optimal choice. Doorenspleet & Pellikaan (2013), advised by Lijphart, integrate these typologies into a 2x2x2 cube. EPR may come out best but not necessarily. (This is discussed in **Appendix F**.) Carey & Hix (2011) refer to Lijphart but are not convinced about EPR, and argue that DR with a moderate number (3-8) of seats per district would provide an optimal mix of "(interest) representation and accountability".

Instead, this paper finds:

(1) Principles like *One woman, one vote* are lexicographic and should not be compromised by inserting conditions of lesser importance. It is a fallacy of composition to argue to voters that they can be excluded from seats because of subordinate arguments on typology or some "optimal mix". When there are subordinate problems then those must be dealt with directly by other means than with compromising on *One woman, one vote.*

(2) From the definition of accountability (footnote 8) it directly follows that EPR is the most accountable system. Carey & Hix (2011) do not develop an operational measure for this definition and employ an inadequate interpretation of accountability. What they present as a "trade-off" appears not to exist. Particular to their study is that they also confuse *frequency* and *optimality,* yet the main point is that the whole line of work on electoral systems shows fundamental confusion and bias.

(3) When political scientists claim that it is easier to form coalitions when fewer parties are around, then they focus on outward appearance and neglect basic facts. They seem to suggest that having fewer parties causes that differences in opinion disappear, while actually such differences are only shifted from the transparant level of between-parties to the less transparant level of within-parties. While DR sabotages the democratic process, EPR supports it, by allowing people the option to lift differences of opinion from the less transparant level of within-parties to the more transparant level of between-parties. The bargaining problem remains the same, but there will be more clarity about who says what to whom.

(4) *Public Choice* itself too is somewhat tainted because it still relies somewhat upon the political science literature on electoral systems. Yet, economics provides criticism that political science apparently has been neglecting. Mueller (1989:226-227): "The two-party system is essentially a device for choosing a chief executive, or the executive branch's cabinet. (...) PR is a system for choosing *representatives,* not for picking between final packages of outcomes. (...) One cannot combine both modes [NB. not "models"] of representation into one system, and yet most countries do." Mueller would agree with our observation that the USA, UK and France have a mismatch in their design. Yet on p228: "But most PR systems require that the assembly not only vote upon legislation, but also form the executive branch. This requirement blurs the purely representational role of the parties, as voters must also now consider the executive potential of the leaders of the major parties, and leads to the instability problems that have been PR's Achilles heel since its invention." Just to be sure: (i) The latter "instability" of EPR only concerns the duration of ruling coalitions and cabinets, and doesn't refer to a breakdown to chaos or dictatorship. See **Section** 2.8 for approaches towards solution. (ii) It is not uncommon in Dutch politics that leading candidates do not present themselves as the next prime minister, and that they remain in the House even when their party joins the coalition. The prime minister is only the chairperson of the cabinet, a *primus inter pares,* and does not have the role of the single authority like the US President. (i) – (ii) Mueller points correctly to an issue (with some strategic voting in EPR on furthering a particular coalition), yet it all falls under the free expression of preferences under *genuine elections*, and then cannot be discounted. Mueller does not evaluate whether DR or EPR is best, but the advise that EPR is best still can be given (apart from transitional problems).

(5) Political scientists who included economic performance in the choice between DR or EPR make another category mistake. Who considers economics and the design of democracy,

arrives at the need for a constitutional Economic Supreme Court. This generates the notion of a high-definition democracy, as an improvement upon the Trias Politica.

(6) Our re-engineering of the analysis of the design of electoral systems has resulted in clarity and operational propositions. Colignatus (2017fn) on the measurement of inequality / disproportionality of votes and seats has been split off as a separate text, and similarly for Colignatus (2018b) on the policy distance.

(7) In 2007+ the world suffered a major financial crisis. Economists (except for some like me) can be blamed for not providing adequate advice. The misrepresentation of EPR and the confusion and bias in favour of DR by researchers coming from countries with DR can be seen as similarly disastrous. Political science on this subject of electoral systems still remains in the Humanities and hasn't developed into a proper empirical science yet. It still is pre-science, like homeopathy, astrology or alchemy. Science better steps in to assist political science to become a science. Nations are advised to take stock again.

12. Appendix A. Presidential (single seat) or parliamentarian (multiple seats) system

With the distinction between Executive, Legislative and Judiciary branches, [96] (i) the USA and France have a direct election of the Executive (Presidential system, single seat election) and (ii) the UK, Germany and Holland have an indirect election of the Executive (Prime Minister) (Parliamentarian system, multiple seats election). The UK and Holland have a monarch and Germany has a president elected by its parliament. Some say about "mentality" that Holland is a republic that looks like a monarchy while France is a monarchy that looks like a republic.

12.1.   Potential category mistake

Dahl (1956:121) has grown somewhat skeptical:

> "I am not suggesting that [half] elections and interelection activity are of trivial importance in determining policy. [ftnt] On the contrary, they are crucial processes for insuring that political leaders will be somewhat responsive to the preferences of ordinary citizens. But neither [half] elections nor interelection activity provide much insurance that decisions will accord with the preferences of a majority of adults or voters. Hence we cannot correctly describe the actual operations of democratic societies in terms of the contrasts between majorities and minorities. We can only distinguish groups of various types and sizes, all seeking in various ways to advance their goals, usually at the expense, at least in part, of others."

Dahl already had written Dahl & Lindblom (1953, 1976) on this notion of "groups of various sizes" ("pluralist democracy"), with influence other than via the (half-) election box. Nevertheless, this part of the discussion with the label of *representation and accountability* still looks at (half-) election as an instrument for voters to influence policy making.

At the start it is useful to mention a potential category mistake. Dahl writes from the context of a Presidential system, in which the balancing Legislative is elected from Districts. It seems that *this context* determines his conclusion, and not the *particular argument* that he gives.

Dahl (1956:128) has an example that a presidential candidate *A* wins with 75% of turnout, by collecting votes from 25% who agree with their first preference on foreign policy over other policies, 25% similarly on farm policy, and 25% similarly on fiscal policy, while these supporting groups are disjoint so that their first preferences can be added indeed. The other candidate *B* has 75% of the disagreement on each issue, but their views are dispersed in the

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[96] See DRGTPE for the need for the fourth branch of an Economic Supreme Court.

lower preference positions. Dahl: "This is an instance, not of majority rule or even minority rule, but of *minorities* rule."

Formally, though, such a case would fit with various schemes. Single seat or presidential elections may cause that around 50% of the vote is disappointed about the outcome (which is an argument for the Parliamentarian system), though in Dahl's example 75% is satisfied. To clarify the potential category mistake, let us consider how EPR Parliamentarian elections deal with this situation.

Table 10 takes Dahl's three policy categories and their two options: foreign policy $\{u, v =$ Not[u]$\}$, farm policy $\{w, x =$ Not[w]$\}$ and fiscal policy $\{y, z =$ Not[y]$\}$. His candidate A supports $\{u, w, y\}$ and his candidate B supports $\{v, x, z\}$. One might hold that there are 6 distinct policies and thus 6! = 720 possible rankings. One might also reason that there are $2^3 = 8$ cells, and that the 3 policy areas can be ordered in 3! = 6 ways, so that there are 6 * 8 = 48 relevant rankings, so the more subtle 720 distinctions are exaggerated.

Conceptually, each of such rankings represents a political party. By *voting for a party* voters rather select a whole ranking, *including* the first position. We may commonly dislike ideology, but in this case ideology helps to reduce the policy space and options. Voting for parties helps in turning Dahl's single seat problem into one that is more tractable for multiple seats.

Table 10. Parties representing preference rankings

Votes	Preference rankings (6 of 720)
v1 25%	$u > x > z > w > y > v$
v2 25%	$w > z > v > u > y > x$
v3 25%	$y > v > x > u > w > z$
v4 10%	$v > ....$
v5 10%	$x > ....$
v6 5%	$z > ....$

Thus, Dahl, in his mold of the Presidential system in the USA, points to a problem, that many Parliamentarian systems in Europe already solved. Prime Minister A can form the 75% coalition while B becomes the opposition leader. The lower ranked views are not lost but represented in Parliament too. Dahl missed the chance to advise the USA to switch to a Parliamentarian system. He embarked upon "pluralist democracy" as a solution approach for the American context, but didn't show that this problem of the Presidential system can be resolved in a clear-cut democratic manner.

12.2.   Dahl & Lindblom (1953, 1976)

Dahl & Lindblom (1953, 1976) in the preface of the 2nd edition:

> "In the quarter century since *Politics, Economics, and Welfare* was written, American politico-economic order has displayed its incapacities, even its perversities, more than its merits. It remains both sluggish and feckless in advancing on problems on which it has the advantage of decades of experience in policy making: poverty and maldistribution of income and wealth, racial inequality, health care, public education, inflatoin and unemployment, and industrial relations, for example. Some observers also claim to see strains of malevolence in it. It is more accurate to say that, more than we used to believe, it too often facilitates rather than constrains the indulgence of man's least worthy motives – in Vietnam, [97] in Watergate, and in corruption in business and government, which the overwhelming evidence suggests is more central than peripheral to the system." (p xxi)

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[97] For our times, it would be the example of the invasion of Iraq under false pretense and deliberate confusion about whether Saddam Hussein had anything to do with Al-Qaeda.

The following is the curious argument that two parties cannot resolve bi-partisan problems (like environmental degradation) because they are locked into a party-to-party opposition. Clearly, if at least one party is in power then it should be able to deal with a common goal.

"For these problems something more seems required than a reconciliation of a plurality of interests. A society as a whole, reflecting in its public policies some interests or values shared by a great majority of its citizens, must mobilize intelligence and energy for those common goods whose existence becomes increasingly difficult to deny. But a constitutional structure adapted to a reconciliation of diverse interests may lack mechanisms for articulating common purposes, for mobilizing overwhelming majorities, and for asserting the collectivity's right to act no less than the subcollectivity's right to veto." (p xxii)

"What we did not by any means fully foresee, however, was the development (then in its earlier stages) of what George Reedy has called the American monarchy and Arthur Schlesinger, Jr., the imperial presidency." (p xxiii)

The imperial presidency would be an argument for the USA to adopt a parliamentarian system, in which the president would not claim an independent mandate. The USA would not need to adapt its Constitution when the President would agree to switch to a more cerimonial role and appoint a Prime Minister selected by the House of Representatives.

Curiously, though, Dahl & Lindblom keep thinking in terms of the presidential system. This system causes their problem, and blocks a solution, but they still adopt it as their framework of thinking.

"The second problem revealed by the experiences of the intervening decades is the difficulty in the American system, crisis aside, of arriving at a relationship between the president and the other political institutions, mainly the Congress, that would satisfy two needs. On the one hand, the president needs to be made responsible and accountable to the public in genuine and significant way. The chief means for such responsibility and accountability are [half] elections and the Congress. Neither means has worked satisfactorily. At the same time, the political system needs leaders who will sponsor and help to bring about innovation and change in public policies. So far, the American political system has produced no alternative to the presidency as the main source of such leadership. Meeting this need through enlarging the power and influence of the president is, as we have said, one of the important causes of the imperial presidency." (p xxv)

"That we have such great difficulty in reconciling these two objectives no doubt says something about inherent conflicts between them. Yet it also suggests to us that the American constitutional and political system is more seriously defective than we thought it was when we were writing." (p xxv)

Finally, though, they inch towards an approach that rather could have been stated from the outset:

"Although we do not have solutions to propose, Americans are going to have to consider a variety of possibilities: a parliamentary system, including various approximations to it; changes in party organization; and new relations between the president and Congress, for example." (p xxvi)

For the continuation of their remark, it is useful to also point to my analysis on the need for a constitutional Economic Supreme Court (ESC), see Colignatus (2000, 2005, 2011) (2014b).

"We believe that a search for different political and constitutional arrangements ought to have higher priority than it has had on the agenda of academic and public discussion. In particular, political scientists and other analysts need to devote more attention to the major defects in the political system and search for available solutions. Curiously, professional political scientists have not made that their business, nor did we." (p xxvi)

Eventually they record that Americans show no interest in change, not even small steps. For example, California might experiment with EPR and a parliamentarian system (with the governor apporting a prime minister selected by the state House of Representatives):

> "Given the consequences of bargaining just described, what are the prerequisites of increasing the capacity of Americans for rational social action through their national government? (...) Certainly the adoption of a parliamentary system along British lines, or some version of it, may be ruled out, not only because no one knows enough to predict how it would work in the United States, but also because support for the idea is nonexistent. Although incremental change provides better opportunity for rational calculation than comprehensive alternations like substitution of the British system, there is little evidence even of a desire for incremental change, at least in a direction that would increase opportunities for rational calculation and yet maintain or strengthen polyarchal controls." (p349)

In my diagnosis Dahl & Lindblom fail here. It is one thing to acknowledge that the "support for the idea is nonexistent" but it is another thing to be silent about the point, that logic requires to consider changing to the parliamentarian system with EPR.

13. Appendix B. Abstract of Carey & Hix (2011), with some [...] inserts

QUOTE, with [...] inserts

Can electoral rules be designed to achieve political ideals such as accurate [interest-] representation of voter preferences and accountable governments? The academic literature commonly divides electoral systems into two types, [false-] majoritarian and proportional, and implies a straightforward trade-off by which having more of an ideal that a [false-] majoritarian system provides means giving up an equal measure of what proportional representation (EPR) delivers. We posit that these trade-offs are better characterized as nonlinear and that one can gain most of the advantages attributed to EPR, while sacrificing less of those attributed to [false-] majoritarian [half] elections, by maintaining district magnitudes in the low to moderate range. We test this intuition against data from 609 [half] elections in 81 countries between 1945 and 2006 [with an uncorrected measure for proportionality]. Electoral systems that use low-magnitude multimember districts produce [uncorrected] disproportionality indices almost on par with those of pure EPR systems [that need no correction] while limiting party system fragmentation and producing simpler government coalitions.

UNQUOTE

14. Appendix C. Conclusion of Carey & Hix (2011), with some [...] inserts

QUOTE, with [...] inserts

Conclusion: Small Multimember Districts Are Best

With the spread of democracy across the world in the last few decades and with more and more established democracies tinkering with their electoral systems, we can identify the nature of the trade-off between inclusive [interest-] representation of citizens' preferences and accountable government more accurately than we have been able to before. With this aim in mind, our results suggest that practitioners who seek to design an electoral system that maximizes these competing objectives are best served by choosing multimember districts of moderate magnitudes. Consistent with the traditional view of electoral systems in political science, we find that SMD systems tend to produce a small number of parties and simpler government coalitions, but also have relatively [interest-] unrepresentative parliaments. On the other side, electoral systems with large multimember districts have highly [interest-] representative parliaments, but also have highly fragmented party systems and unwieldy multiparty coalition governments. In contrast, electoral systems with small multimember districts—with median magnitude between four and eight seats, for example—tend to have

highly [interest-] representative parliaments and a moderate number of parties in parliament and in government.

On the [interest-] representation side, our results suggest that increasing the district size from one to around five reduces the [uncorrectedly measured] disproportionality of representation in parliament by three-quarters and reduces the ideological distance between the median citizen and the median government party even more sharply. This is a result of both the greater opportunities for medium-sized parties to win seats and the new incentives for supporters of small parties, who may simply prefer to "throw away" their votes under SMD [half] elections, to coordinate into medium-sized parties. Increasing the district magnitude beyond six does not improve [uncorrectedly measured] [interest-] representation much further. On the accountability side, meanwhile, increasing the district size from one to around five increases the number of effective [concentrated] parties in parliament by around one, and increases the number of parties in government by about a half. Countries with small multimember districts are more likely to have coalition governments than countries with SMDs, but these coalitions are likely to be between two or a maximum of three parties. Put another way, low-magnitude EPR simultaneously fosters inclusiveness and limits the political unruliness high magnitudes invite via party system fragmentation and coalition complexity.

In closing, it is also worth noting other research that points to an advantage of low-magnitude districts for the accountability of individual legislators. Carey (2009) describes a trend in electoral reform toward systems that allow voters to cast preference votes for individual candidates, and notes that voters overwhelmingly choose to exercise the preference vote when given the option. Yet the promise such open-list systems hold of individual accountability is conditional on limited district magnitude. In high-magnitude [half] elections, open lists confront voters with a bewildering array of candidates (Samuels 1999), whereas low magnitudes curb both party system fragmentation, keeping a lid on the number of lists, and the number of candidates per list. As a result, voters under low-magnitude open-list systems are better able than those in other systems to identify and hold their representatives accountable. Chang and Golden (2007), for example, find that corruption is lower in countries with open-list than with closed-list proportional representation, provided that average district magnitude is below 10, whereas at very high magnitudes (above 20), open-list systems are associated with more corruption. Hence, low magnitudes make it possible to combine candidate preference votes and individual accountability with proportionality and partisan inclusiveness.

In short, legislative [half] elections work best when they offer opportunities for multiple winners, and thus afford voters an array of viable options, but at the same time do not encourage niche parties or overwhelm voters with a bewildering menu of alternatives. The evidence from a wide range of indicators [though not corrected for strategic voting] all points toward low-magnitude proportional representation [which however is not really proportional representation since some parties are artificially blocked] as providing a good balance between the ideals of [interest-] representation and accountability.

UNQUOTE

15. Appendix D. Some history about Holland

Officially there now is the Kingdom of the Netherlands. During the Dutch Republic (with Rembrandt, Spinoza and Stevin), the county of Holland dominated, and the country became known internationally with that name rather than as the Dutch Republic. This paper follows that convention.

1568 – 1648	The eighty years' war of independence from Brussels / Spain [98]
1579	Union of Utrecht [99]
1581	Act of Abjuration [100]

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[98] https://en.wikipedia.org/wiki/Eighty_Years%27_War
[99] https://en.wikipedia.org/wiki/Union_of_Utrecht

1581 – 1795	Dutch Republic [101]
1688	stadhouder (lieutenant, emperor's steward) [102] Willem III conquers Britain [103]
1795 – 1806	Batavian Republic, [104] following the French Revolution
1806 – 1810	Kingdom of Holland, [105] puppet kingdom for Napoleon
1810 – 1815	Province of the French empire
1815 – today	Kingdom of the Netherlands, [106] following the Congress of Vienna [107]
1830	Belgium separated in a war of independence [108]
1914 – 1918	Neutral in world war 1, later home of Kaiser Wilhelm in exile
1940 – 1945	occupied by Germany in world war 2
1945	Indonesia separated in a war of independence [109]

16. Appendix E. Summary of Thomassen (ed) "Elections and democracy", some [...] inserts

This concerns: Thomassen, J.J.A. (ed) (2014), "Elections and democracy. Representation and accountability", Oxford, https://global.oup.com/academic/product/elections-and-democracy-9780198716334?lang=en&cc=ie#

The online description shows that political scientists coming from countries with EPR are sensitive to the confusion and bias by political scientists coming from countries with DR. With some comments [...] inserted:

> "[Half] *Elections and Democracy* addresses the contrast between two different views on representative democracy. According to the first view [half] elections are a mechanism to hold government accountable. In the second view [half] elections are primarily a means to ensure that citizens' views and interests are properly represented in the democratic process. [But the opposition of representation and accountability is a false opposition, because these are two sides of the same coin.] The [false] majoritarian and consensus [curious term] models of democracy are the embodiment in institutional structures of these two different views of democracy. In the [false] majoritarian view the single most important function of an [half] election is the selection of a government. The concentration of power in the hands of an [half] elected [false] majority government makes it accountable to the people [who did not vote for that outcome]. In consensus [curious word] models of democracy, or proportional systems [if you have a good word for it, why not use it, and instead use the misnomer "consensus" ?], the major function of [*genuine*] elections is to elect the members of parliament who together should be as representative as possible of the electorate as a whole. The criterion for the democratic quality of the system is how representative parliament really is. The book explores how far these different views [only one reasonable] and their embodiment in institutional structures influence vote choice, political participation and satisfaction with the functioning of democracy. The volume is based on data from the Comparative Study of Electoral Systems (CSES), a comparative study across 36 countries. [This database contains masked data, in which the first preferences of voters under DR are not known.] The general conclusion of the book [based upon false assumptions and masked data] is that formal political institutions are less relevant for people's attitudes and behavior than often presumed. Rather than formal political institutions like the [half] electoral system

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[100] https://en.wikipedia.org/wiki/Act_of_Abjuration

[101] https://en.wikipedia.org/wiki/Dutch_Republic

[102] https://en.wikipedia.org/wiki/Stadtholder

[103] https://en.wikipedia.org/wiki/Glorious_Revolution

[104] https://en.wikipedia.org/wiki/Batavian_Republic

[105] https://en.wikipedia.org/wiki/Kingdom_of_Holland

[106] https://en.wikipedia.org/wiki/History_of_the_Netherlands

[107] https://en.wikipedia.org/wiki/Congress_of_Vienna

[108] https://en.wikipedia.org/wiki/Belgium

[109] https://en.wikipedia.org/wiki/Indonesia

it seems to be characteristics of the party system like polarization and the clarity of responsibility that really matter. [though this cannot be proven with the bad models and data]"

"The Comparative Study of Electoral Systems (CSES) is a collaborative program of research among [half] election study teams from around the world. Participating countries include a common module of survey questions in their post-[half]-election studies. The resulting [masked] data are deposited along with voting, demographic, district, and macro variables. The studies are then merged into a single, free, public dataset for use in comparative study and cross-level analysis. The set of volumes in this series is based on these CSES modules, and the volumes address the key theoretical issues and empirical debates in the study of [half] elections and representative democracy. Some of the volumes will be organized around the theoretical issues raised by a particular module, while others will be thematic in their focus. Taken together, these volumes will provide a rigorous [?] and ongoing contribution to understanding the expansion and consolidation of democracy in the twenty-first century [though still using the medieval standards of homeopathy, astrology and alchemy]. Series editors: Hans-Dieter Klingemann and Ian McAllister."

17. Appendix F. Distraction, typology and confusion about bias

17.1. Confusion in popular activism for EPR in the UK and the USA

It is remarkable that countries with DR had and have such a low impulse towards *"One woman, one vote"* and thus EPR.

The UK Electoral Reform Society (ERS) was founded in 1884 and originated in the same worries that caused Holland to switch from DR to EPR in 1917. However, the ERS did not opt for the clear system of open party lists, but they created the complex approach of "Single Transferable Vote" (STV). They were able to sell the idea to other activists, but not to the general public. Amy (1996/7):

> "The Proportional Representation League of the United States was also instrumental in promoting the use of PR. Founded in 1893, the League soon followed the lead of English electoral reform groups and endorsed the single transferable vote as the most preferable version of PR."

Remarkably, these reform Societies and Leagues regard STV as "the most preferable" version of EPR *while it is not*. How confused can one get ? The size of the onion must be measured in layers, perhaps thin layers but quite elastic.

The crux of the matter is:

- ERS and FairVote want voters to employ complex voting techniques.
- However, there is really no need that voters use a more complex voting scheme. For EPR the open party list suffices. The UK already had experience with EPR elections for the European Parliament, though with closed lists. In that manner voters create the weights in the House of Representatives, and then the political professionals there can use the more complex methods (like bargaining). (Start with this system, build up experience, and then see whether you still want people to use STV. Perhaps you might offer voters the choice.)
- The ERS hangup on STV causes them to be blind to crucial steps in the logical argument.
- For example, the UK referendum of 2011 was on "alternative vote" which is not EPR, and somehow the reformers missed key steps in the reasoning. This closed mind at ERS is one of the layers of the onion to peel.
- The current proposal by ERS actually has a version of STV that still relies on districts. This is not EPR, but they don't mind calling it so.
- This is sectarian behaviour and does not show respect for science. (They associate with "political scientists" coming from countries with DR but not with critics (from elsewhere).)

Amy (1996/7) has an interesting tale about EPR in US municipalities, and how the DR political establishment used "neverendums" to abolish EPR again, with scaremongering about minorities: [110]

> "In Cincinnati, race was the dominant theme in the successful 1957 repeal effort. The single transferable vote had allowed African Americans to be elected for the first time, with two blacks being elected to the city council in the 1950s. The nation was also seeing the first stirrings of the Civil Rights movement and racial tensions were running high. PR opponents shrewdly decided to make race an explicit factor in their repeal campaign. They warned whites that PR was helping to increase black power in the city and asked them whether they wanted a "Negro mayor." Their appeal to white anxieties succeeded, with whites supporting repeal by a two to one margin.
>
> In New York City, fear of communism proved the undoing of proportional representation. Although one or two Communists had served on the PR-elected city council since 1941, it was not until the coming of the Cold War that Democratic party leaders were able to effectively exploit this issue. As historian Robert Kolesar discovered, the Democrats made every effort in their repeal campaign to link PR with Soviet Communism, describing the single transferable vote as "the political importation from the Kremlin," "the first beachhead of Communist infiltration in this country," and "an un-American practice which has helped the cause of communism and does not belong in the American way of life."(3) This "red scare" campaign resulted in the repeal of PR by an overwhelming margin."

The historian does not look into the question whether STV is needlessly complex. One may imagine that a repeal of EPR with open party lists would be more difficult if voters would better understand that EPR is nothing but *One woman, one vote* and that DR is abolition of *One woman, one vote.*

I have emphasized that a decision about EPR best be taken under the conditions of EPR. The repeal of EPR by means of a referendum does not fit that condition. A referendum is an instrument of populism. When parties are elected under EPR and if then a majority elects to abolish EPR because they hope to do better under DR, then one would expect safeguards for a constitutional change, e.g. with a 2/3 majority in the House of Representatives, then general elections, and then a repeat 2/3 majority of the newly elected House for the same constitutional change.

This article is about research and not activism. There is a line of research at the academia about STV that lends some support to the activism about STV. For now, it suffices that we have indicated the major confusion, and there is no real need to look into that similarly confused line of research. However, this section deals with distraction, and thus it may still be a good idea to mention some cases in the next subsection.

For the EPR activists and their reform societies and leagues, it may be advised: (a) develop a keener respect for science, and not just for the academics who support you on STV, (b) grow aware that democracy is about *bargaining* and not just marking ballots, (c) do not call STV "EPR" when it still uses districts, (d) use the term "equal representation" and the principle "One woman, one vote" rather than the tortuous "proportional representation", (e) focus on adoption of the Dutch model of open party lists first (and leave the hobby horse of STV in the garage for home entertainment and perhaps for later). EPR is too important to sacrifice the *One woman, one vote* principle merely because it would look so neat when voters would make lists of preferences.

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[110] A neverendum is a string of referenda till you get the result that you want so that you can claim that your opinion is the *Will of the People*. Referenda are an instrument of populism, and not needed in EPR.

17.2.   Academics in support of the confusion of STV

Rallings, Thrasher and Stoker (2000) wrote a report for the Joseph Rowntree Foundation. They compared Plurality (a.k.a. FPTP), party list systems, additional member systems and STV in municipalities in Europe. These systems are all used in the UK, e.g. party lists for the EU parliament. The report repeats the properties of the systems that are already known. Perhaps the report might be recommended as a fine summary of those. European stories only provide a "couleur locale" but no news on properties. The report is a *run of the mill* kind of argument (no news), and the conclusions depend upon the assumptions.

The report is not as critical on *One woman, one vote* as one would desire, and it paints a too positive picture of STV, with a contamination with *districts*. P37:

> "Voters in each of those countries have little difficulty in understanding how the STV ballot works [but they do have difficulty if there would be many candidates, see below]. The same cannot be said for the operation of the electoral formula [for STV]. Although it is clear that the electoral quota is used to determine the winner, it is the way in which votes are redistributed amongst candidates that to the outside observer appears both tortuous and, on occasion, illogical. Furthermore, the intention that the impact of voter preferences is maximised is sometimes undermined by the critical value of district magnitude. When district magnitude is too small, then STV finds it difficult to produce an equitable outcome. Too many seats and the potential for an extremely long and unmanageable ballot paper is increased. [Which contradicts the point above.] The construction of electoral districts, therefore, is a critical process under STV rules and one where finding the right balance between grouping communities and promoting electoral fairness can prove problematic."

Logic would want that these authors would conclude that STV tries the impossible with combining both EPR and unmanageable ballot papers, but there is something that prevents them to draw this conclusion. The authors adopt the wrong criteria and then feel safe to conclude: "But the choice between competing systems is far from clear. Each has its merits but equally each is flawed as it currently operates at the sub-national level." This conclusion is curious, since the choice is clear if you adopt *One woman, one vote.*

Dunleavy et al. (undated) at the Democractic Audit, affiliated with LSE, state about STV:

> "This is again a fully proportional system that for a country or locality as a whole will match how many representatives a party wins closely to its votes share."

Most certainly *this is not true*. Colignatus (2017je) gives a counterexample that STV applied to districts is not EPR for the whole nation.

17.3.   A plethora of distraction

It would be a confusion to think that there is only one confusion or only one distraction. There is a plethora of them.

The UK has a rich history of research in political science. Butler (2014) is a good read, and poses a final question that seems to go to the heart of the matter: "What do [half] elections decide? We have known six close-run contests since 1945. If any one of those battles had been won by the opposite side, how different would Britain be today?" The proper question however is: *What would have happened under EPR ?* Why ask the wrong question ?

The British wealth of research comes with a rich biotope of all kinds of "reasons" not to look into *One woman, one vote,* or to distort aspects so that the simple reasoning for EPR becomes more opaque.

The general rule is: whenever you observe that the inference from *One woman, one vote* to EPR (with open party list and a threshold of at most the natural quota $Q = V / S$) is not made, run down the chain of arguments, and if you don't find the illogic, start deconstructing the terms in the arguments till you find it. (This is a paraphrase of *Follow the money.*)

17.4.   Lijphart's typology

As with plants (Linnaeus) and the periodic table (Mendeleev), one may have to start with a taxonomy before one can formulate more complex theory. It is dubious whether this is really true for only some 36 Western-style democracies or 195 nations in the world, with their earlier histories. It is dubious whether regression analysis might give some serious results with so few data of such dubious quality. Such approaches should not stop the discussion about the introduction of *One woman, one vote* in the USA, UK and France. Yet, political scientists have creating such typology, and we can record the distraction.

Doorenspleet & Pellikaan (2013) (D&P) focus on Lijphart's typology of electoral designs: "The typology of democracies is rooted in Almond's distinction of fragmented and homogeneous political culture on one hand, and the different types of elite behavior on the other hand (...)" (p5). Subsequently, they, also receiving advice from Lijphart, take old and younger publications by Lijphart, and then they create 2^3 = 8 distinctions (a cube): "Our typology combines three structural components:

* the electoral system (proportional representational vs. majority rule [misnomer: they mean DR often with Plurality]),
* the political system (centralized vs. decentralized) and
* the structure of the society (homogeneous vs. heterogeneous)." (p5, my bullets)

And: "Centralization works best in homogeneous countries, while decentralized systems are the best forms of government in heterogeneous countries." (p24) See **Figure 8**.

**Figure 8. Doorenspleet & Pellikaan (2013:43), fig 3,
"The Cube: Combining the Old and New Typologies"**
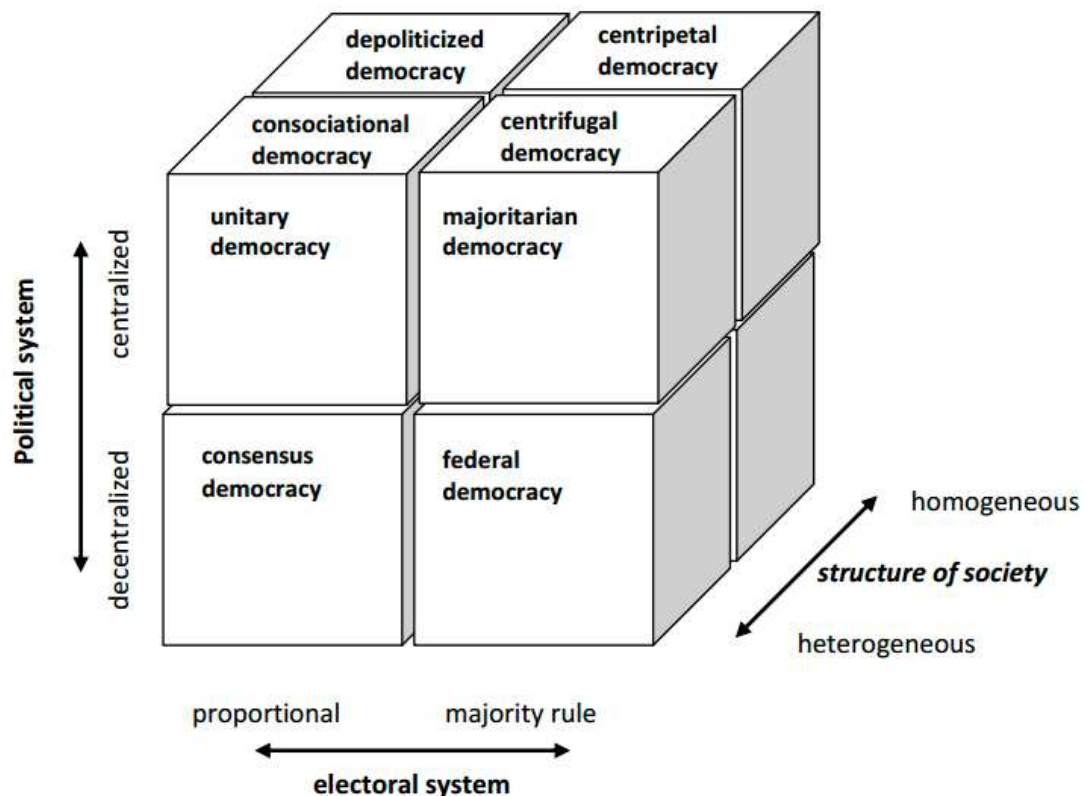
To understand this cube, we must first review and actually revise some of its terminology, as we already did in **Section** 4.1.

- The cube uses the term "majority rule" and "majoritarian" for what commonly is DR with plurality. Plurality a.k.a. FPTP tends to have a majority in seats that commonly is not covered by a majority in votes, see **Table 1**. Thus it is a misnomer.
- The cube uses the term "consensus" for coalition government, while the parties in the coalition may only agree to have a coalition and not much else. Thus it is a misnomer.

Apparently the political science literature has tended to adopt these labels as mere labels, but one cannot avoid the impression that the misnomers had effect upon actual thought.

D&P are a step forward by integrating earlier typologies but still is not convincing, and still suffer the misnomers. Doorenspleet & Pellikaan (2013) do not refer to Bormann (2010) and do not take account of the criticism there. Bormann (2010) advises a deductive rather than an inductive approach, and in fact the above already starts adopting logical categories.

That said, the core criticism is:

- It is a fallacy that other variables should be included for an "optimal" choice. Principles tend to have a lexicographic ordering [111] and are less suitable for compromise. The principle of *One woman, one vote* already is optimal by itself, and must be respected for that. See the comment on the Bolshevik revolution, that care must be taken about the transition to EPR, but this is an argument on transition care and not one on compromise.
- To some extent, above cube merely classifies how different forms may apply to different situations, but this is not the only thing done, for it may encourage the undemocratic suggestion that one might compromise on *One woman, one vote*.
- While nations should decide for themselves, and while the key role for political scientists is to advise politicians and the people that *One woman, one vote* translates in EPR, and that a decision on EPR best be taken from EPR, political scientists turn this into an academic topic. The academia no longer confront society by explaining societal illogic, but retract into their own world, as if academic theory (on typology) would be relevant instead of such a decision.
- They change the subject into the distractive *"Which Type of Democracy Performs Best?"* (also the title of the D&P paper), (i) as if the principle of *One woman, one vote* should not be taken as the key design principle – the *defining notion of democracy* – (ii) as if other aspects are not second-place or derivative. The use of the typology suggests that DR and EPR would somehow be *on a par*, while in reality DR is a proto-democracy from the viewpoint of EPR. (The UK hails itself as the first parliamentarian democracy, with the Magna Carta, but it got stuck on the shift from DR to EPR.)
- The political science literature still isn't further than kicking in open doors. As Bormann (2010:2) states: "In order to gain a deeper understanding of the conclusions reached at the end of *Patterns of Democracy* [1999] it is advisable to start with the publication that brought Lijphart instant recognition in the political science community: *The Politics of Accommodation* (1968a)"

For readers not familiar with this phase in the history of the political science literature, Bormann (2010:2) is enlightening:

"In the late 1960s the standard model of democratic systems was the Anglo-Saxon [-Viking] majoritarian [misnomer] or Westminster type (Andeweg 2000, 514). All other forms of democratic governance were regarded as inferior and less democratic. While the former has been an assumption widely held until the late 1990s, the latter was challenged and eventually refuted by Arend Lijphart in 1968 (cf. Almond 1956, 408) when he showed that the democratic institutions of a country depend on its underlying social structure. Homogeneous and largely peaceful societies – as for example the British – could well afford the confrontational, winner-takes-it-all culture 3 of the Westminster system. In contrast, more heterogeneous and divided societies – as Lijphart's countrymen, the Dutch – needed an institutional arrangement and a political culture that could manage or accommodate inherent tensions and bridge internal cleavages. The Netherlands had a deeply segmented 4 or 'pillarized' society but was, against conventional wisdom, one of

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[111] https://en.wikipedia.org/wiki/Lexicographical_order

Europe's most stable and flourishing democracies in large part due to the absence of Westminster-like rules and norms. Over the course of the 1970s Lijphart expanded his theory which he now called "consociationalism" theoretically as well as empirically. In Democracies in Plural Societies (Lijphart 1977) consociationalism was recommended to fit all segmented societies and defined by four core elements, two institutional and two behavioral: the proportionality principle and segmental autonomy on the one hand along with grand elite coalitions and mutual vetoes on the other."

Holland in the early Middle Ages was a quite violent society. Cities required walls around them for defence. Eventually trade developed to a level that brought awareness that violence was not in the general interest, or, one might say perhaps that some of the more powerful groups won out and no longer tolerated violent opposition. Dikes and polders were no cause of co-operation, but the result of co-operation and their reward. A society keen on co-operation may experience tension sooner when there are slight deviations from this. A heterogeneous society with EPR might cause that fighting in the streets is also copied by fighting in the House. In Holland a form of "living apart together" developed, also called "pillarisation" of society. [112] Lijphart described the phenomenon and reformulated it in both terms and models that the international community of political scientists could understand. The same process seems to happen in the EU, where the world wars eventually gave way to democratic co-operation, with voters still stratefied by nationality. In the D&P cube, this is included now in terms of homogeneity vs heterogeneity. There is tautology as social clashes define these categories. Yet in 2013 this typology is an open door w.r.t. 1986, and definitively also w.r.t. the main stream of Dutch academic awareness on social pacification since the 1850s or perhaps even earlier. The advance may be in empirical regressions (but now we see some abuse of regression analysis).

Thus:

- Lijphart's typology (in different stages, and likely culminating in the D&P paper with his advice) apparently was important in 1970-2000 for researchers *coming from countries with DR* to accept that their world view (as victors of the world wars) was being challenged. While researchers from countries with DR regarded the Dutch historical development as an anomaly, Lijphart's work helped them to grow aware of the general relevance.
- The typology apparently missed the key emphasis that *One woman, one vote* translates into EPR, and that a decision on EPR is best made from EPR. Lijphart wrote about "electoral justice" and apparently his colleagues have been sensitive to this, but the main point did not register. Researchers from countries with DR still entertain confusion and bias, and one aspect is that now some focus on typology and others focus on accountability, rather than all focus on *One woman, one vote.*
- The typology should not be seen as an aim of itself, and not as a major argument in itself.
- A discussion about typology distracts from the main argument and role for political scientists, to explain to politicians and the people that *One woman, one vote* translates into EPR, and that a decision on EPR best be taken from EPR itself.
- If it would happen that voters in the UK or USA, who might consider a change from DR to EPR, express worry that social discontent would translate into political deadlock and divisiveness in the House of Representatives, then one can point to solutions that history has provided to deal with those, while still maintaining EPR. The pillarisation of Dutch society is one historical example. I am no historian and am aware that the world history on EPR is short, but I would hope that there are more examples. When Belgium was confronted with the division between speakers of French and Flemish Dutch, it adopted a federal structure. In the US, cities, counties and states can start "experimenting" with EPR, and build an electorate and political leaders who are attenuated to its properties.
- If it would happen that voters in the UK or USA, who might consider a change from DR to EPR, express worry that the economy might suffer, then the answer would be that one should not mix categories. Political design has its own principles. The principle of *One woman, one vote* translates into EPR, and a choice made on this best be done from EPR. Economics has its own (other) principles. Political scientists have confused the issue by

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[112] https://en.wikipedia.org/wiki/Pillarisation

including economic performance in their regressions. Actually, a major issue for economics is the need for an Economic Supreme Court (ESC), see Colignatus (2000, 2005, 2011) (2014a). This actually is a major conclusion of this paper, though it needs mention only in a few lines. The argument for the ESC is not that voters would not be able to judge economic policy, but that the current setup allows too much room for policy makers to manipulate information about the management of the state.

Thus, typology receives a mixed evaluation. In the course of events it may have had its use, but it ran the risk of any academic discussion. Perhaps there were authors without typology who explained that DR better be replaced by EPR, but got not listened to.

Lijphart's typology helped widen the horizon of political scientists coming from countries with DR, but it distracts from the principle of *One woman, one vote* that is defining for democracy itself. It is a category mistake that inclusion of other variables allows an optimal choice, when the optimal choice already is expressed by *One woman, one vote*. Other variables only have a subordinate role.

Lijphart did not convince all political scientists, and there remained a research line that still regards EPR "as inferior and less democratic". Carey & Hix (2011) challenge the typology, by arguing that EPR would be less accountable, and that it would be optimal to have DR with a moderate number (3-8) of seats per district. They refer to Lijphart but that is all. For them, the typology only provides more ammunition to undermine the *One woman, one vote* principle.

17.5. Consociationalism as a type of power sharing

Lijphart introduced the term "consociationalism" when responding to Almond's typology. [113] [114] See Van Schendelen (1985) for some criticism.

I am not too happy with this term because it is long, complex and not-self-explanatory. In the interview with Bogaards (2015), Lijphart explains that this is on purpose:

> "MB—Stefan Wolff writes about "consociational power sharing". Do you see consociationalism as a subset of a broader range of power-sharing options? AL—I have tended to use them as synonyms, but certainly power sharing has a less precise definition than consociationalism. I started out with the term "the politics of accommodation". Right away, I got the criticism that accommodation happens everywhere, it is compromise, even though, of course, in the book I defined what I mean by politics of accommodation (Lijphart 1968). So then I thought, what I need is a term that people are not familiar with, because then they have to read my definition."

My suggestion is to use the Dutch term "pillarisation" (Dutch "verzuiling"), with the abstract description of "accommodation by managed segmentation but not segregation". My comment here only concerns the label for the phenomenon, and not its relevance.

In Lijphart's approach EPR is only an element in pillarisation. However, in the perspective of democracy, the crux is the introduction of EPR, and pillarisation is only a transitory method to accommodate society to EPR. If voters are unsatisfied with their pillars, EPR will allow them to switch to other parties.

17.6. A misguided FairVote campaign for presidential elections

In the Bogaards (2015:85) interview, Lijphart states:

> "Then there is this plan, the National Popular Vote Plan, that is championed by Fair Vote. The idea is to circumvent the constitution and the electoral college, so that a president would simply be elected by whoever wins the majority of the total national

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[113] https://www.jstor.org/stable/2009820?seq=1#page_scan_tab_contents
[114] https://en.wikipedia.org/wiki/Consociationalism

popular vote. This is a very clever plan. When I first heard about it, I thought, why did I not think of that? The constitution allows states to make compacts with each other, so that they can decide to do certain things together. The idea is to have enough states to agree that they will award their electoral college votes to the winner of the national popular vote. The states would have to pass a law binding themselves to this, but binding only if enough other states go along. So you might have a Democrat candidate win in California, but if a Republican candidate has the majority of the national vote, then California would give its electoral votes to the Republican candidate."

This is untenable.

- Above, it has been explained that Single Seat elections like for the US president are subject to voting paradoxes. FairVote and Lijphart neglect these paradoxes. See **Section 2.16** that Arrow's theorem supports the parliamentarian system. The only good way to handle the US presidential system is to pull the plug and get the president (presidential candidates) to agree to adopt a cerimonial role.
- Most likely US voters will not understand what is happening with the FairVote plan, which would cause a lot of inner strife. It is better to give the full story than meddle with one item only. The story is that the US have created their own elected monarch and thus must get rid of that elected monarch again. The way to do that is to create a parliamentarian system with EPR and a prime minister, and the president in a cerimonial role. Thomas Paine wrote that it was "Common Sense" to break away from the English monarch, and since 1917 it makes perfect common sense to adopt a parliamentarian system and EPR in the USA too.

17.7.   Confusion about weak or strong proportionality

As mentioned in the body of the text, Ganghof (2014) quotes Powell's distinction between weak and strong proportionality.

"The most clearly articulated and defended alternative norm is that all the representative groups in the assembly should have *influence on policy making in proportion to their size*, which itself reflects the proportion of voters who supported them. Thus the *equal opportunities for influence* by each citizen would be carried right through the policy - making process. (p. 92, emphasis added)"

This present paper uses the definition of EPR as given in **Section** 3.3. The clear operationalisation of EPR is the technical requirement that the share of seats should be equal to the share of votes, as much as feasible. Colignatus (2017fn) discusses this.

In Powell's quote, the notion of "influence" is not operational. I did not read his book, and I can only hope that it eventually is operationalised. I doubt it though, given the vagueness and ambiguity of the term "influence".

It is proper that academic research pushes the boundary of knowledge, yet it is distractive when the word "proportionality" is taken away from the practical discussion about *One woman, one vote,* and turned into something else, so that one can no longer say something about *One woman, one vote* without including a footnote on Powell's (vague) distinction and the subsequent political science literature referring to him or on other variants of proportionality.

It cannot be denied that one can apply proportions also in other places. Apparently Powell looks at the cabinet (ministers), and Ganghof extends with: "(...) we can systematically distinguish [four] visions of parliamentary democracy, based on the main stage at which majorities are formed. The four stages are (1) party, (2) alliance, (3) cabinet and (4) law formation." One might continue, say with schools, hospitals and military, and end up in a proportional pillarisation of society. Why don't all Republicans move to the East coast and all Democrats to the West coast, and create their own paradises ?

The main point is: there can be valid aspects, but please respect the meaning of terms, and do not try to show that you are smart by arguing that the same word can also be used for something else, as if other people were not aware about such other valid aspects but use other terms for this.

17.8.   Confusion about bias

In this paper, "bias" means mainly that researchers from countries with DR have a bias against EPR. [115]

This bias should not be confused with the term "electoral bias".

Curtice (2009): "By [electoral] bias we do not mean (as Norris and Crewe misleadingly use the term) that the system gives a party a higher share of seats than it won votes, but rather that it gives one winning party a higher share of the seats for any given share of the vote cast for the top two parties than it would have given the other party if it had won that same share."

Indeed, a difference in shares of votes and seats might be called a "difference" rather than a "bias". However, it is not uncommon to observe that DR has a bias that the larger parties get more seats than equal shares would indicate. Such bias to size is quite a proper use of the word "bias". Thus Curtice creates confusion as if "bias" is only applicable for his intended use of "electoral bias". However, it is true that the voting literature on systems of DR unfortunately also contains a label "electoral bias" that fits Curtice's statement. A consequence of this kind of sloppy use of terminology is that "electoral bias" cannot be used without problem since it has been claimed for a particular distraction. In this NewSpeak by political science on electoral systems even the word *bias* has become a source of confusion.

Borisyuk et al. (2010) and (2015) look at Brookes's 1959 theory of "bias within systems of DR". [116] Rather than polling what first preferences truly are, Brookes suggests to take observed votes, that are contaminated by strategic voting, and try to distill information from there. One can agree that one might try to squeeze as much information from what one has, but at some point there also arises the "garbage in, garbage out" (GIGO) moment of awareness that this is hopeless.

The first thing to do is to use proper terms. Do not call this "bias within systems of DR" because bias is a general term. Researchers looking for bias in the UK system of DR can be very frustrated to discover that a paper promising to discuss bias actually appears to employ a GIGO method to do something quite different. The "Brookes bias" intends to measure asymmetry for outcomes in district voting [masked by strategic voting]. It may be an actual fact that the different parties react differently on changes in popularity. Yet this type of research derives from the context of district voting, while the more relevant discussion from the point of view of democratic theory would be on issues of proportional representation, like the difference between first preferences and the strategic vote.

We may also doubt the internal validity of "Brookes bias" for DR itself. The Brookes bias applies to the two largest parties, and involves a counterfactual. If one party wins, we don't know how things would be if the other party would win. If we would use data from the past when that other party won, then this may invoke some magic. It requires us to equate Labour under Harold Wilson with Labour under Tony Blair, because they are both called "Labour", while there would be changes in views of voters and party. Actually, see **Figure 5**. No doubt one can use statistics for such an exercise, but one can do so much with statistics, and it is better to first ask the question what the exercise is supposed to resolve.

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[115] With some amateur psychology on "cognitive dissonance": They might not accept that their nation and teachers are fundamentally amiss. They might be geared to finding a good excuse why their country remained with the DR of the 1850s and has obliterated *One woman, one vote,* mainly for the purpose to maintain the illusion that their nation and teachers aren't misguided.
[116] https://www.theguardian.com/politics/blog/2009/dec/21/cameron-plan-bias-electoral-system

When Curtice (2009) discusses this "Brookes bias", he seems like married to DR, and his discussion reads like a report of a horse race between the Conservatives and Labour, rather than as a report on social development and changing views amongst voters and parties.

18. Appendix G. Kam (2015), also evaluated on bias in favour of DR

As said, Kam (2016a) is shorter and more accessible than Carey & Hix (2011), whence its discussion might also be more accessible. Kam makes many fine comments but also shows a remarkable incomprehension. The latter can actually best be shown by starting with Kam (2015). One must keep in mind that Kam (2015) is a weblog text, and thus may be somewhat more blunt than a scholarly article. However, the advantage of such exposition is that it highlights the bias in favour of DR that we identified. PM 1. I took the liberty to change his PR in EPR for consistency in this paper. PM 2. Kam uses the MIT convention of have two spaces after a sentence period.

18.1.   Kam (2015) on false majorities

Kam (2015) on false majorities:

"2. *FPTP produces "false majorities."* That's another old chestnut that gets dragged out after the [half] election of every majority government. A less pejorative term is "manufactured majority," but that's actually tangential to a more fundamental point: there are no "true" majorities in the sense that a majority necessarily reflects a transitive social ordering (save in the case of majority rule over 2 alternatives). That's one implication of Arrow's Theorem. What do I mean by that? Well, imagine three options, say, Liberal, Conservative, and NDP. It may well be that if we constructed a pairwise competition we'd have L>C, C>N, and N > L. So each option is majority-preferred at some stage. Which of these majorities is false? Well, in a sense none and all. To even label majorities "true" or "false" is utterly jejune. Look, any time we have more than 2 options and are voting over more than 2 dimensions (e.g., economic and social policy), we cannot rule out that there exists a voting cycle, and that the majority that emerges is pretty much a function of the agenda / voting system. And even if the majority were independent of the electoral system we used, we'd never know it."

Comment:

- Arrow's theorem rather deals with single seat elections rather than multiple seats here.
- The argument on false majorities concerns the EPR power preserving property. Plurality is *not* power preserving but distorting, and the seats have other coalities than the votes. It is amazing that Kam does not see this, even when the issue is pointed out to him. (Not in these explicit terms, but merely that a majority in the House does not reflect a majority in the voters.)
- The discussion about voting cycles and Arrow's Impossibility Theorem is quite another issue. Also, Kam apparently does not see that Arrow confused voting counts and decisions. The majorities in vote counts need not be majorities in decisions, when a cycle actually means a collective indifference in terms of decisions.
- This issue is important enough for the main body of the text, see **Table 3**.

18.2.   Kam (2015) on fairness

Kam (2015) on fairness:

"5. *"Proportional representation is fair."* I guess if you equate fairness to proportionality that's true in a tautological sense. To me proportional representation implies no more or less than proportionality between parties' vote shares and seat shares. Nothing wrong with that. Equally, nothing special about it."

On one hand proportionality is a technical issue. On the other hand, EPR is special, because of the power preserving property, and the easy entry of new competition. Kam fails to recognise that the systems work out differently, even though the fairness has been pointed out. (For consistency: Given his awareness that seat shares would be equal to vote shares, it is remarkable that he does not see that there would be false majorities when the shares are unequal.)

> "Here's my issue with focussing disproportionately (ha!) on votes-seats proportionality: what we actually care about in Parliament are majorities, mainly on the floor – because that determines if the cabinet has the confidence of the House or not – but also in committee where many rules and policies are fine-tuned. Majorities (neither true nor false, note) are constructed by and reflect parties' bargaining power."

Remarkably, Kam (obviously, for a political scientist) is aware of the Penrose-Banzhaf citerion, but he applies it only to seats and not to votes, even though the fairness w.r.t. the votes has been pointed out to him. Apparently he is not aware of the power preserving property of EPR, and the key importance for representative democracy and task for representatives to bargain for their voters. He is a political scientist with a blind spot for what political science is about.

> "So if we have a single-party majority, one party has all the bargaining power; if we have a minority situation, then bargaining power is distributed among the parties – which could construct majority coalitions, allow a minority government to operate, etc. The point being it's all about bargaining power. If you are truly committed to the idea of proportionality, it strikes me that consistency requires you to advocate for proportionality in bargaining power… because that's what really counts."

And that is exactly what EPR does, with its power preserving quality. The *coalitions within the voters* are the same as the *coalitions within the representative body*. It is amazing that Kam doesn't see this, and that he misconstructs this as he continues to do.

> "A few elementary examples show that the mapping from seat shares to bargaining power is incredibly erratic. E.g., let A have 40% of the seats; B have 35%, & C have 25% — and let's assume this is all perfectly proportional to the parties' respective vote shares: all 3 parties have equal (normalized Banzhaf) power of 1/3. Now add a fourth party that draws seats about proportionally from A, B, & C: A=31%, B=28%, C=22%; D=19%: the (normalized Banzhaf) power scores are .417, .25, .25, and .083, respectively. So A lost seats but gained power; whereas C and B lost seats and power, and D's power is nowhere near proportional to its seat share!"

Well, yes, of course, when the coalitions in the electorate shift, because some voters change from A, B and C to some new party D, then all this happens. These are phenomena of power, and not phenomena of (dis-) proportionality.

> "Let's not even discuss parties' ideological positions and how that might compress or expand the uncovered set. No magic here, just some elementary math and game theory, but it suffices to show that votes-seats proportionality doesn't guarantee any sort of proportionality in bargaining power. (I am sure that some crazy mathematician genius has a voting system to ensure bargaining power proportionality. Bring it on, I say.)"

Comment:

- It is obvious that proportionality in votes and seats also means proportionality in power of votes and power of seats (except for apportionment problems, that better keep track of majorities). There is no need to refer to some hypothetical mathematician for this.
- I am not aware of anyone who suggested that EPR should be different from its definition.
- I am not aware of anyone who suggested that EPR is defined as proportionality in power (and it would be silly to say so, given the differences in definitions; such a "genius" would be crazy indeed because of the confusion of terms). Yet alongside the definition of EPR therea is a theorem on the power preserving property.

- Thus Kam creates his own straw man.

Kam:

"You might retort that, regardless of disproportionality in bargaining power, anything is an improvement on concentrating all power in one party. Perhaps, but not only does that exaggerate the situation (...), but it comes at the cost of some obvious off-setting perversities, e.g. non-monotonicity in power (lose votes, lose seats, gain power! I'm looking at you, Party A). (P.S. If A & B formed a coalition, it's no "truer" or "falser" a majority than if B, C, and D got together.)"

Comment:

- Kam refers loosely to "disproportionality in bargaining power" in reference to his earlier paragraph, but he doesn't define it and doesn't try to operationalise it. If he had tried, as a proper scientist would do, he might have seen that he was comparing apples and oranges.
- Indeed both A & B and B & C & D would be majorities: under EPR such majorities within the votes would be reflected in seats, while these could be distorted under DR. And the latter is the topic of discussion, that Kam doesn't deal with.

18.3. Kam (2015) on strategy

"1. *Strategic voting occurs only under FPTP.* Uh… no, that's just not true. All voting systems save majority vote under two alternatives admit strategic behaviour. This is the central message of the Gibbard-Satterthwaite Theorem. This is not merely a theoretical proposition: Gary Cox (1997) demonstrated that desertion from "2nd loser" to the "1st loser" (consistent with people ditching their most preferred but hopeless option to defeat their least preferred option) under a wide variety of electoral formulas. The limiting factor appears to be district magnitude (i.e., seats per district): after M>5 this behaviour becomes harder to effect. BUT there other forms of strategic voting nonetheless emerge under various forms of EPR even when M>5. For example, voters try to gauge if they should stick with their preferred party and risk it falling under the threshold or defecting to a viable coalition partner. Or voters may try to balance coalitional blocs (as Kedar suggested). Why one form of strategic voting (e.g., trying obtain a certain coalition) is normatively better than the sophisticated voting we observe under FPTP is beyond me."

- Obviously all systems have strategic voting. The protest about strategic voting under DR should not be misrepresented as a lack of awareness about strategic voting under EPR. When someone speaks about A then this does not imply that this person would be unaware of B.
- It is curious that Kam doesn't see the differences. He mentions the differences but doesn't recognise what they mean. Apparently he hasn't given it a moment of thought. Why oh why are the difference in type of strategy and the power preserving property in EPR not seen ?
- The voter under Plurality has no guarantee for power preservation, and is minimizing a loss. The voter under EPR has such guarantee, can maximize utility, and has the luxury of trying to influence the kind of coalition. This is the differency between *being forced to strategy with the risk of wasting your vote* and *having the luxury of strategic options.* It is true that there is no established literature about a normative ranking of strategic situations, but is seems rather plausible that EPR generates more freedom and higher social utility than Plurality.

18.4.   Kam (2015) on counterfactuals

"3. *"If we'd held the election under EPR, this is what the result would have been…"*
These sorts of simulations drive me nuts: they are beyond naive. Look, voters'
preferences are endogeneous to the voting system in place; so too are politicians'
actions.   What do I mean by this? If we adopted medium-to-large-M EPR, for example,
our larger existing parties would quickly splinter as ambitious politicians defected to start
their own parties (see New Zealand for a case study).   Then, given the new options and
availability of new voting strategies, people would vote differently. So the idea that you
can hold voters' revealed preferences (i.e., their votes) constant while you simulate
outcomes under different voting systems is naive to the extreme. The confidence bounds
on any such exercise are essentially unbounded, and the assumptions, unfounded."

- Obviously in a different system the behaviour would adapt.
- There still is a serious argument that an exit poll under DR should ask not only what
  people voted but also what their first preference was if they voted strategically. This
  information is important to correct the EPR Lorenz graph and EPR Gini coefficient.
  Without such information the results are masked because of strategy. Such a correction
  must indeed be interpreted with care, for voting might indeed be different under actual
  EPR and voters taking into account how all other voters might react. (Polling under EPR
  is easier though.) Yet it would be relevant information. A corrected Gini gives a better
  description than the Gini that is masked because we have no indication at all about the
  first preferences. (Compare for example the French runoff half-election in 2017, see
  Colignatus 2017i).)

18.5.   Kam (2015) on wasted votes

"4. *"Under FPTP, many people's votes don't count / are wasted".* This is another
bromide. A vote is said to be "wasted" when it does not elect a winner."

This is not the common definition. In the common definition, a vote is wasted if the party did
not get any seats. There are two types. (i) Within a district, there is district waste. (ii) For the
whole system, say if 99% of the votes get 1% of the seats, then the votes are not wasted but
the seat apportionment is disproportional.

It might be that some people expressed themselves as Kam states, but it is more likely that
he quotes out of context. His quotes in italics actually do not refer to an author, but they form
Kam's take of the argument.

"So you'll often hear advocates of electoral reform talk about adopting voting systems
under which all votes count. they'll say. I can only infer from such claims that the speaker
thinks that every vote cast under their preferred system will go toward electing a
candidate, ergo, no votes will be cast for losers."

I don't think that one can infer this. Such statements must be read under the context in which
they have been expressed. Serious proponents of EPR know that votes can be wasted, as
people may vote for parties that get no seats (also called "the fringe"), so that the expression
"all votes count" (as used in political pamphlets) has a definite meaning for this context, and
otherwise is a metaphor.

"But here's the thing: Logically, we could only achieve this if we guaranteed ex ante that
every candidate who ran would win. I can see only two ways to achieve this: a) ensure
that only as many candidates are nominated as there are seats in the House of
Commons, with all candidates elected by acclamation; or b) expand the House of
Commons so that everyone who wants to be an MP gets to be one. (It would be even
better, right, to have winners who did not even need votes?) Seriously, the first option
(dictatorial control of the menu of options) is normatively undesirable, and the second is
infeasible. Any time you have more candidates than seats, it will be that case… hold tight
here… that some candidates will lose! I know, it's shocking, but it gets worse: some
people may actually vote for those losing candidates. This is true under any electoral

system. It's just that by layering on tiers and effecting panachage, various quotas, etc. some electoral systems obscure this fact. But, really, you can't escape the plain fact that if you have more candidates than seats, some candidates will lose…(really, they don't all get seats, no, no, not even in the Netherlands), and that is, in fact, healthy for representative democracy. (Aside: Are these the arguments you get, when people grow up having won participation trophies for everything? No losers here, we're all winners! Even my 6-year old knows this is a charade.)"

A method to reduce wasted votes is that parties running the risk of getting no votes create alliances that collect the quota (*apparentement*). At this point EPR stops and the research problem rather concerns the ability of new parties to collaborate sufficiently and make a dent. This type of collaboration is quite similar as the ability of the opposition to a safe seat in DR to collaborate to evict a minority winner, yet these issues are not entirely the same.

19. Appendix H. Kam (2016a) on interest-congruence and accountability

There is the following vocabulary:

- We use "representation" for EPR *and* DR.
- We use "interest-congruence" for interest-congruence, an element of representation.
- Where Kam writes "representation" we insert prefix "[interest-]" rather than replace fully with "interest-congruence".

We might get lost in a distinction between *representation* and *interest-representation* but confusion should be avoided by using these new labels.

19.1.   Kam (2016a) repeats the mantra

Kam (2016a):

"Ideally, government is [interest-] representative and accountable, [interest-] representative in the sense that its policies align with citizens' interests, and accountable in the sense that it is answerable to citizens for its conduct and responsive to their demands. The electoral system plays an important role in determining how [interest-] representative and accountable a government is in practice. Yet, it is tremendously difficult to identify an optimal electoral system, that is, one that maximizes both [interest-] representation and accountability. This is because much research shows that electoral systems that advance [interest-] representation tend to do so at the expense of accountability, and vice versa (Horowitz 2003)."

Comment: Kam (2016a) repeats the mantra that we have deconstructed in the main body of the text. Accountability is another side of the coin of representation (its dynamics), and EPR is best on both criteria. Researchers coming from countries wit DR can only argue differently by distorting the notion of accountability, by not developing a proper measurement index, and by invalid interpretations of indices on the numbers of parties in legislative and coalition. Scientists would be aware of what they are doing, political scientists on electoral system uncritically follow tradition.

19.2.   Kam (2016a) on interest-representation (congruence)

Kam (2016a):

> "One can appreciate the effect of the electoral system on [interest-] representation by recalling Downs's (1957) model of electoral competition. The two parties in Downs's model appeal to voters by altering their policy positions. The well-known result of the model is that both parties converge on the position of the median voter, who then randomly supports one of the parties to give it a majority. If we take as a metric of [interest-] representation the policy distance between the median voter and the median legislator (this is called congruence), the result is perfectly representative."

Comment: This is a *single-seat election* (like for a President) and not a *multiple-seats election* (like for the House of Representatives). For SMD it *seems* like a single seat election, but the system as a whole or the multiple seats election works differently, and political scientists should see the difference, unless they are confused and biased.

- Congruence measures are discussed in **Section** 3.15 and **Appendix J**.
- Single seat *district* (half) elections should not be confused with single seat elections (like for a President). The first (half-) election namely forms part of a multiple-seat election, for which there are different criteria, like overall proportionality.
- The mentioned metric of congruence makes more sense for single seat elections for the US President than for the EPR Lorenz curve or EPR Gini for multiple seats elections, since about half of the voters in a single seat election will tend to have a "wasted vote" (their party did not get a seat in the White House).
- See Colignatus (2014a) VTFD how a voter can use a utility function over a policy space to create preference rankings for candidates, and how such rankings can be used by various single seat voting routines. This is to be distinguished from the multiple seats discussed by Colignatus (2010) (2017bf) and in this present paper.

Kam's diagram is in our **Figure 9**:

> "Few real-world [half] elections feature exactly two parties, and once more than two parties inhabit Downs's model one or more of the parties may benefit by diverging from the median voter. This has less to do with the electoral formula (plurality or proportional representation (EPR)) than the district magnitude (Cox 1990). Even so, Figures 1a and 1b convey how parties tend to arrange themselves under plurality or EPR, respectively (see, e.g., Powell 2000). In Figure 1a, C takes up a position to the right of the median voter in the hope that A and B will split the vote to the left of the median voter so that C can secure a plurality of votes on the right. In Figure 1b, A, B and C distribute themselves evenly about the median voter's position."

Figure 9. Kam (2016a) figures 1ab

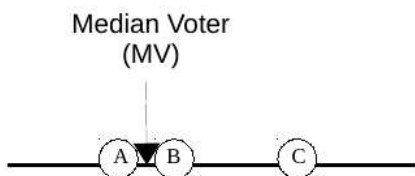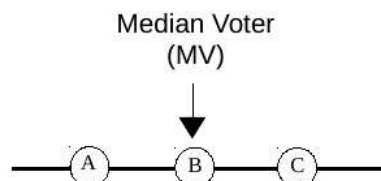"The [interest-] representational consequences of these two stylized [(half)] elections are quite different. If C were to win the plurality election in Figure 1a, there would be a substantial gap between the median voter and the majority party, C. There is no

outright winner in EPR elections, and in theory A, B, and C ought to arrange themselves in Figure 1b such that each obtains an equal share of the vote (else each would have cause to adopt a somewhat different position). This would result in legislature in which A, B and C have equal seat shares, and in which the median party (B) is therefore located exactly at the median voter's position. In terms of congruence, the EPR result is highly representative."

Comment:

- Notwithstanding the distinction between single seat and multiple seats elections, it seems that similar processes would also play around single seat *district* (half) elections. In plurality (a.k.a. FPTP) the votes can indeed split, so that a third party (dark horse) wins with less than 50%. Yet the aggregate might generate a rather contingent outcome.
- For a multiseat election, the Median Voter is less relevant, and there are multiple parties competing about multiple voters across the spectrum. It remains strange, again and again, that Kam doesn't see that EPR is power preserving.

19.3.   Kam (2016a) on accountability

Kam, also referring to a stylized version of **Figure 1** (with transposed axes, and potentially a different causality ?) and we insert "[false]" when he claims a clean majority:

> "Powell (2000) argues that electoral accountability exists when i) there is clarity of responsibility for political outcomes, and ii) voters can effectively sanction those responsible for those outcomes. Plurality electoral systems tend to score highly on these criteria for two reasons:
>
> 1.   Plurality electoral systems tend to produce single-party [false] majority governments, making it obvious which party is responsible for political outcomes.
>
> 2.   The translation of votes to seats under plurality electoral systems tends to be such that a small loss of votes can result in a significant loss of seats. Voters can thus inflict significant punishment on the incumbent merely by withdrawing a few percentage points of the vote. [See **Section** 3.6 that debunks this.]
>
> EPR does not perform as well on these criteria. Firstly, EPR tends to produce coalition governments, and where several parties control government it is more difficult for citizens to apportion credit or blame for political outcomes (Powell and Whitten 1993; Duch and Stevenson 2008). Secondly, the relationship between votes and seats under EPR is neither as steep as under plurality rule nor so determinative of government status. This is because a party's ideological position may grant it legislative bargaining power in excess of its seats share. Parties in this advantaged position are thus somewhat insulated from shifts in their vote shares."

Kam correctly refers to this literature, but these statements show confusion and bias, that can be rejected on good grounds.

(1) See **Section** 3.6 that shows that a Plurality property of SMD doesn't simply transfer to the whole system. It is indeed one of the possibilities that a small change in votes might case a large change in the seats, but it is not guaranteed that this will happen, and there are equally perverse outcomes that actually are counter to accountability.
(2) Voters in a EPR system will reason that parties in a coalition are *all* responsible for the joint result (though parties might try to argue otherwise and find some believers). Apparently Kam hasn't spoken with voters in systems with EPR.
(3) That an ideological position of a party (or also Penrose-Banzhaf power) generates stability in government under EPR, might also be a positive property. Responsiveness is not the same as irrational instability. If EPR shows stability that some regard as stagnation or if the opposition cannot make a dent, then EPR has easy entry of new competition.

19.4. Kam (2016a) on measuring interest-representation (congruence)

Kam:

> "Even were Carey and Hix's optimistic view of the trade-off between [interest-] representation and accountability to obtain, we would have to be able to measure [interest-] representation and accountability accurately to identify an optimal electoral system. This is not a trivial task.
>
> Social choice theory considers how individual preferences combine to form collective choices. A central result in social choice theory is that one cannot assume the transitivity of collective choices (Arrow 1951). "

This is false. Colignatus (2014a) VTFD shows that Arrow confused voting counts and decisions. Voting counts may be intransitive, but a vote count is not yet a decision. In terms of decision-making this intransivity of vote counts may represent a deadlock or indifference, and indifference satisfies transitivity. The House of Representatives might be seen as the arbiter who may resolve the indifference. This might involve voting in the House itself again, but this need not be infeasible.

> "What does this mean? Let's say that three parties (A, B and C) contest a majority run-off [half] election, and further that a majority of voters prefer A to B and B to C. Social choice theory tells us that we cannot subsequently assume that there exists a majority for A over C; order the run-off differently or use a different electoral system (e.g., plurality rule or ranked ballots), and C could come out on top.[1] This is a troubling result because it suggests that we cannot know whether an election result is representative – in the sense that it reflects the "will of the majority" – or due merely to the vagaries of a particular electoral system."

- This is debunked in **Table 3** in the main body of this paper.
- This confuses single seat elections and multiple seats elections.
- There is no such problem for multiseats EPR. Voters can vote for their party and be proportionally represented.
- For single seat elections (like the President) one must make sure that voting paradoxes are adequately dealt with. A good solution is to forget about direct election of the President entirely. The House of Commons can be elected with EPR and then the House selects the Prime Minister by means of bargaining and subsequent voting for confirmation. See Colignatus (2017a). Many voting theorists tend to assume that the more sophisticated voting methods should be used at the level of the voters, but it is not clear why they assume this. With EPR, the general election of parties is only required to establish the weights for the various parties. The professionals in the House can better deal with the complexities of more sophisticated voting rules.

> "Collective choices are almost certainly intransitive whenever voters evaluate more than two ballot options along several dimensions, such as when voters consider not only a party's economic position but also its stance on regional autonomy or the charisma of its leader (McKelvey 1976). In contrast, we can be reasonably sure that collective choices are transitive whenever voters have single-peaked preferences (Sen 1966). This jargon implies that we can order voters in a single line such that all voters strictly prefer options (i.e., parties, candidates) that are closer to their position in the line to options further away."

As said, this confuses vote counts and decisions. Single peakedness of preferences however remains an important criterion, see Colignatus (2017chk) on preferences for Brexit options.

> "Whether or not voters have single-peaked preferences is an empirical question. However, it is difficult to assess [interest-] representation even when voters' preferences are single-peaked. Figure 3 [our **Figure 10**] depicts two stylized electorates, A and B. The shaded blocks represent the ideological range of voters in each electorate.[2] Thus, electorate A is moderate, with most voters just a bit to the left or right of the median voter (MV). In contrast, electorate B is polarized, with many

voters located far to the left or right of the median voter. [Half] Elections place the median legislator (ML) as far away from the median voter in A as in B, and by that metric the electoral outcomes in A and B are equally [interest-] representative.

Figure 10. Kam (2016a) Figure 3

Figure 3. Representation in Two Electorates
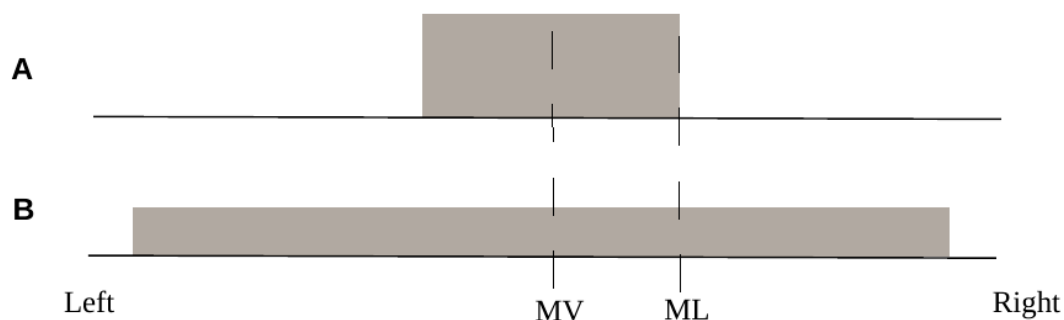
The claim that the electoral outcomes in A and B are equally [interest-] representative comes about because our measure of [interest-] representation (congruence) ignores the variance in voters' preferences. A different view is that the electoral system in B has located the median legislator much closer to the median voter relative to the (wide) range of the electorate's preferences than has the electoral system in A. Indeed, the electoral system in A has located the median legislator at one extreme of voters' preferences. This reasoning suggests that we ought to evaluate congruence relative to the range of voters' preferences. Golder and Stramski (2011) [2010] do this, and find that judgments about the relative capacity of different electoral systems to deliver [interest-] representative outcomes depends on how we measure [interest-] representation. If we measure [interest-] representation in terms of the simple distance between the median voter and median legislator, EPR electoral systems outperform [false] majoritarian systems. However, once we account for the range of voters' preferences this difference disappears."

Put differently: looking at variety itself is not sufficient either. When the range of views is large enough, then the (corrected) congruence doesn't generate much difference between a rather random outcome of Plurality and a more predictable EPR. One cannot infer that there would be no difference between Plurality and EPR, see the power preservation rule.

Overall, this discussion still tends to confuse single seat and multiple seats elections. See **Appendix J** for a discussion, also on Golder & Stramski (2010) that Kam refers to.

19.5.   Kam (2016a) on accountability again

Kam:

"Electoral accountability is often seen to take the form of an implicit contract between voters and incumbents in which voters promise to re-elect incumbents only if their performance exceeds some standard (ill-defined or idiosyncratic as it may be). Of course, voters would also prefer to elect better rather than worse candidates. Fearon (1999) argues that voters are unable to use [half] elections to simultaneously motivate incumbents and select "good" candidates.

Fearon's argument is based on a stylized 3-stage [half] election cycle in which:

1. An incumbent sets a policy, e.g., a target-level of unemployment. Voters want this policy to produce a particular outcome (e.g. zero unemployment), but they cannot

> 2. After observing the policy outcome, voters either re-elect the incumbent or elect a replacement.
>
> 3. The politician elected at Stage 2 sets another policy and the electoral cycle ends in a manner akin to the two-term limit that applies to American presidents.
>
> At issue is how voters can cast their votes at Stage 2 to ensure that they get policy they want given three possible challenges. The first challenge is to differentiate between "competent" politicians who can actually achieve the desired policy outcome and incompetent politicians who cannot. The second challenge is to motivate politicians, all of whom prefer a different outcome than voters (perhaps because it's hard work give voters what they want). The third challenge is a combination of the previous two, i.e., voters must both identify competent politicians and motivate reluctant incumbents.
>
> Fearon shows that voters can meet the first two challenges by setting some standard, and re-electing the incumbent if achieve that standard. For example, the voters say "We prefer zero unemployment, but if you deliver unemployment below 3 percent, we'll re-elect you." This rule is sufficient to meet the first two challenges, that is, it allows voters to distinguish competent from incompetent incumbents in the first case, and to motivate reluctant politicians in the second case.
>
> Surprisingly, however, this voting strategy fails in the third case. The problem is that under such conditions voters cannot stick to their promise of re-electing an incumbent who achieves their standard. To see this, observe that a re-elected incumbent will not work to deliver the policy that voters want at Stage 3 because the reward and motivation of re-election no longer apply. The voters' choice is thus between an incumbent whom they know will ignore their policy preferences, on one hand, and a potentially competent challenger, on the other; voters always prefer the latter and so the incumbent might as well ignore the voters' preferences at the outset. With all incumbents, competent or not, behaving this way, the electorate cannot distinguish which are competent and which are not.[3] [Half] Elections thus fail to motivate incumbents or identify "good" candidates."

Apart from the simplistic argument, I find this reasoning too much predicated on the two term limit for a US President. Even there, a President is part of a political party, and the party as a whole has an objective to look at the next single seat election. This holds a fortiori for parties in a Parliamentarian system.

In the Plurality system, electoral outcomes are more unpredictable than under EPR (as polls show), and this would suggest that governments are less accountable, since they migth easier gamble that they would survive the vagaries of Plurality.

19.6.   Kam (2016a) 's conclusion on interest-representation and accountability

Kam:

> "The fundamental problem in evaluating electoral systems in terms of these criteria is not necessarily that there exists an unyielding trade-off between [interest] representation and accountability. It is that we cannot reliably distinguish [interest-] representative from unrepresentative electoral outcomes, either because these outcomes are products of a voting cycle or because our measures of [interest-] representation are ambiguous. The situation is no better with regard to accountability; even if we can state that the clarity of responsibility and the capacity to sanction incumbents is better under electoral system x than under electoral system y, there is no assurance that such conditions are sufficient to motivate or constrain office-holders. It seems that we lack reliable means to connect electoral systems to two of the key guiding principles of representative government. While this is a pessimistic conclusion, it should encourage citizens to carefully scrutinize

politicians' claims that some electoral systems are inherently "fairer", "more democratic, [interest-] "representative" or "effective" than others."

Comment:

- An academic always has the role to explain that much is uncertain, and that all depends upon assumptions. Even 1 + 1 = 2 only depends upon your assumptions (compare a clock with 12 + 1 = 1). Potentially an academic does a good job when he or she unhinges one of your assumpions. In this case, however, we require advice from a *policy advisor*. This advisor should take into account the common uncertainties and suggest ways to deal with those. Perhaps we were wrong to select Kam's website, as his intention apparently is to unhinge common assumptions. Yet, even as an academic he could do better, not only in avoiding confusion and bias, but also in avoiding the creation of uncertainties that do not really exist.
- The distinction between representation (for EPR and DR) and interest congruence or "interest-representation" helps to clarify Kam's concluding statement.
- Without the distinction his conclusion might read as critical about EPR and EPR's property of a better representation.
- With the distinction it is clear that EPR has a very good method to measure representation. Apparently Kam doesn't see elections as measures themselves. Apparently EPR also contributes to decent "interest-representation". Or, when it is clear that DR doesn't, then a switch to EPR can be advised, since our discussion on accountability shows that EPR outperforms DR on accountability.
- Also with the other critical comments, Kam's conclusive statement hangs in the air.
- It remains true that citizens must scrutinize claims by politicians about fairness and such, but one wonders whether Kam presumes that citizens are more enlightened than political scientists. One would rather see that political scientists provide ample scrutiny, so that all can check this.

20. Appendix I. Kam (2016b) again on a bias in favour of DR

There is no need to belabour the point on the bias against EPR, yet I came across Kam (2016b), and feel that some perspective helps. Proponents of EPR can make unwarranted claims so that Kam indeed has a point that there is cause for reaction.

Kam's local DR representative of Vancouver East apparently is Jenny Kwan, and she apparently prefers EPR while Kam has his doubts.

20.1.   Kam (2016b) on endless elections

Kwan uses the wrong expression "endless elections and instability" and Kam answers (correctly) that he hopes that elections are endless indeed. The point remains that EPR might cause that parties do not succeed in forming a coalition government, and then decide to have another election. To resolve this by using DR has the only rationale that *perhaps* a government might be formed without a coalition. (It is not proven that this would improve social welfare, though this is not our criterion, as we stipulate democracy as a condition.) The use of DR to create artificial (false) majorities merely to have an excuse of a "decisive" government, might play into human psychology on strong government, but in EPR the House might merely decide to have a minority government, if everything else fails, with the benefit of appealing to the rational part of human psychology.

20.2.   Kam (2016b) on the stability within Italian politics

Kwan apparently found a statistic such that EPR in Italy (over 18 federal elections) might look politically more stable than DR in Canada (22 federal (half) elections). Kam produces a statistic (cabinet duration) with the opposite conclusion. Kam argues that the latter statistic would be better because it has been mentioned more often in the political science literature, even though some have expressed their doubts. This strikes me as unwarranted. It is dubious what "stability" would mean, and how either statistic features in this. One might select a

technical criterion, but for what purpose ? When there are political changes, then these might be for the better, and these need not be a sign of "instability". In economic modeling, dynamic models generate stable and instable solutions, but these are technical properties of such models, and not necessarily relevant conclusions about the real economy. Overall, one might have such an (academic) discussion within the realm of a particular field of study, but it would be awkward to use this in a debate on particular countries like the Kwan – Kam case, since neither side can claim any certainty on this. To some extent Kam makes this very argument, and his reference to the other statistic is mainly to show the limited value of Kwan's statistic. But he also needlessly exaggerates. It remains true that stability of government is mentioned as an argument in the discussion about EPR and DR. I don't think that this is a valid argument, since the decision about EPR and DR concerns other criteria, and it is no use to invoke irrelevant criteria. My impression is that Kam shows a bias by defending Canada as more stable democracy and by not making the point that stability is no relevant criterion to decide about EPR or DR.

20.3.   Kam (2016b) on false majorities again

Kwan:

"Proportional elections eliminate "false majorities" by ensuring no party gets a higher percentage of seats than their percentage of votes. That forces political parties to work together and deliver results in a stable coalition government."

Kam:

"Let me move on to the old "false majority" chestnut. (This critique of SMP [Single Member Plurality] just won't go away – sigh.) It is true that plurality electoral systems occasionally produce [half] elections in which the 2nd-place party in terms of vote share wins the plurality of seats. Note that this is a system-level not a district-level phenomenon. In each district, it's the candidate with most votes who wins. However, a party's vote share can be spread in a very inefficient fashion across seats (large majorities in a minority of districts) such that it secures a large vote share but a small seat share."

Comment:

(1) Kwan alerts Kam to the power preserving property of EPR, but not in this literal term, and Kam fails to think about it afresh again, and then doesn't observe the property.
(2) Kwan speaks about Majorities and Kam replies on Pluralities.
(3) There might be a confusion between "most of the votes" (Plurality) versus "at least 50%" (simple majority of the winner against the rest) and "at least the quota required for a seat in the House of Commons". Kam presents it as a positive result that the district seat goes to whom gets most votes, but is biased by downplaying the other two relevant criteria (local majority and overall proportionality).
(4) The problem are not only large majorities in a minority of districts, but also dispersed minorities in more districts.
(5) I am not familiar with Chile's system and skip Kam's comment on that.

Kam:

"Now, on one hand, a coalition of *a* and *b* can claim to enjoy the support of *a* majority because, 2/3 of voters voted for either *a* or *b*. On the other hand, the electorate was not presented with *a* choice over all possible outcomes; they got to vote only for *a* or *b* or *c* – not a coalition of *a* & *b*, *b* & *c*, or *a* & *c*. If voters had been given such *a* choice, *a* majority might well have voted for *a* coalition of *a* & *c* given that all *a*-types prefer *a* and *a* & *c* to *b* and all *c*-types prefer *c* and *c* & *a* to *b*. On this basis, one could argue that the coalition of *a* and *b* reflects *a* "false majority"."

Comment:

(1) Kam refers to Arrow's Theorem, and creates a diversion that doesn't answer to the original point concerning the power preserving property of EPR.
(2) It is remarkable that he indeed considers coalitions, but doesn't yet notice that power preserving property.
(3) Parties *a, b* and *c* will tend to be aware roughly what the rankings will be of their voters. Often party leaders are quite similar to their voters. (Modern parties have focus groups, but some can be off-track of course.) Thus the coalition *a* & *b* would be less likely. It must be bias that Kam presents *a* & *b* as an outcome that is as likely as the others.

Kam:

"There are two points here:

1. "False majorities" do not disappear under EPR; they just take on a different and less obvious form; these "false majorities' are not at all inevitable, but they cannot be ruled out ex ante;
2. Using the concept of a "false majority" to evaluate an electoral system is a dead-end."

Comment:

(1) The term "false majority" in the discussion about EPR vs DR is precisely defined by the phenomenon that EPR is a power preserving rule and DR isn't. In the latter case the coalitions by the seats differ from those that are entertained by the original voters.
(2) The term "false majortity" thus is no "dead end" and actually a crucial criterion to judge electoral systems.
(3) It is no acceptable answer to (1) and (2) but confusion and bias: not understanding it and referring to something else.
(4) Potentially one might define something else that applies to EPR and then use the same label "false majority", but this doesn't make it also the same phenomenon as the one that is clearly defined under (1). For example, apportionment is not perfect, and there would be cases such that a minority of 49.9% of the vote might get more that 50% of the seats. Good apportionment methods prevent that this happens.
(5) What Kam offers as a potential avenue on (4) fails. It is true that voters aren't offered the options on the possible coalitions, but this is not crucial in this case, since under EPR the possible coalitions are under the rule of power preservation, and the politicians have gotten a mandate to work something out. It is true that the politicians might form a coalition that voters would not have selected if offered the chance to vote on possible coalitions, but this is rather a different kind of problem than what falls under the denominator of "false majority". There is nothing distorted here. In a way voters actually have gotten such a chance, since they might set up a party "*a* & *c*" and try force the issue. All of this becomes much murkier when there are more issues and parties involved, when the number of possible coalitions rises exponentially. The current system of voting for parties and not coalitions is to prevent an information overload, and to enable the professionals in the House of Commons to deal with the options. The problem however is that the system in countries with DR doesn't work well because of the historical hangup on DR. It is no proper answer to such problems by trying to sabotage sound arguments for EPR by irrelevant conjectures. Obviously one must respect the role of academics to put question marks on any statement, but one would hope for some balance too.

Kam:

"I can expand on the second point: One of the central messages of social choice theory is that it's almost never possible to identify if there exists a coherent and uncontradicted majority in favour of a particular policy or outcome (save in the case of a majority vote over two alternatives). The problem (as I have written and spoken about again… and again… and again) is that the electorate is better understood as an agglomeration of multiple, partly conflicting majorities. The idea is pretty simple: sure, there may exist a

majority for policy X and also one for policy Y – but it does not follow that there necessarily exists a majority in favour of both X and Y."

Comment:

(1) Kam refers to Arrow's Impossibility Theorem, but this concerns single seat elections, and currently we are discussing multiple seats elections. We already have shown above that he doesn't see that Arrow confused voting counts and decisions.
(2) The fact that there are various majorities in terms of vote counts doesn't imply that a particular coalition government would form a false majority by definition. The proper definition for "false majority" in this discussion was about EPR and DR, and this aspect is not logically related to Arrow's Theorem.

Kam:

"The rest of the claim is no better. The statement that proportional representation "ensur[es] no party gets a higher percentage of seats than their percentage of votes" is not wholly accurate. As Douglas Rae (1967, 134) observed "The prejudice of electoral laws – and here I include even the P.R. systems (my emphasis) – in favor of strong elective parties and against weak ones is very nearly a universal fact of life."(By strong parties, Rae meant those polling more than 20 percent.)

The reason this occurs is due to a variety of factors; the two main ones are a finite, and typically quite low district magnitude in most electoral systems, and electoral thresholds. If the district magnitude is below 5 or 6 and the electoral threshold in the neighborhood of 5 percent, it's quite possible for a EPR system to deviate significantly from proportionality – and this deviation always favours larger parties. (Certain quotas – like the Imperiali quota — also systematically favour larger parties.)"

Comment:

(1) Kwan's statement obviously is imprecise. Unavoidably some parties will be rounded up and some rounded down, merely to get integer seats.
(2) Under EPR there indeed may be this bias for larger parties. The EPR Lorenz curve and EPR Gini coefficient make such observations precise, provided that we have acceptable information about first preferences.
(3) As said, systems with thresholds cannot be called vanilla EPR but "EPR after threshold".
(4) As said, there is a distinction between DR with districts of size 5 or 6 and EPR with sub-EPR-districts of size 5 or 6. Even when DR uses EPR-like methods, the low district size will cause a deviation from proportionality for the whole nation, and thus the method would not be EPR.
(5) We are discussion EPR at the level of nations, with assemblies of size 100 and larger. Examples of smaller assemblies have didactic purpose only.

20.4. Kam (2016b) on forcing parties to form working coalitions

Kam:

"The last part of the claim, that proportionality "forces political parties to work together and deliver results in a stable coalition government" is not so much false as it is contingent. Certainly, cooperative, stable coalition government is one possible outcome of a EPR electoral system; that's largely the German, Austrian, and Dutch experience.Two other alternative outcomes are possible and widely observed, however.

The first alternative is what Giovanni Sartori (1976) termed polarized pluralism: a pattern of party fragmentation, unstable coalition governments, and policy immobility. This is the French 4th Republic, Italian, Belgian and Israeli experience. The second alternative is minority government; this is Swedish, Norwegian and Danish experience (see Strom 1990)."

Comment:

(1) Agreed. (I may agree more with Kam than might seem because I concentrate on the disagreement. I do not aspire at completeness on (dis-) agreement either.)
(2) I wouldn't phrase it as Kwan, but I would still hold (a) that DR doesn't force parties to work together (other than perhaps in trying to beat the minority Plurality winner per district) and (b) that EPR stimulates co-operation (for coalitions at the national level) even when it may not work out.
(3) It is true that the EPR force might not be enough, since there are other forces at work.
(4) The EPR philosophy is that one would rather see those other forces *in the open* and then deal with them, rather than suppress them. Such suppression in a system like DR might cause other kinds of eruptions (like Brexit). The positive results in Europe might derive from lessons learned from an earlier less blessed period.
(5) Minority government might be seen as a DR-like outcome with a false majority, and thus cannot be seen as an argument pro DR contra EPR. But under EPR, one might consider a minority cabinet, such that policies might still require (tacit) majority approval.
(6) Thus there is an argument that EPR forces towards coalitions, only not as Kwan formulates it, and my impression is that Kam takes undue advantage of that imprecision by his Representative of Vancouver East.
(7) It might be that the culture in countries with DR is such (also following the colonial heritage), that one doesn't want to be forced to collaborate and bargain, and that one finds it easier to first try to destroy the opponent and then live with the results, also with pair play respect for a loser under the rule of law (provided that the loser also adopts the behaviour of a loser), so that politics is seen more as sports than as collaborative decision making while giving each his or her share. (In a two-party system with a Median Voter Theorem it wouldn't quite affect the economy either, in the common economic models. Then this requires faith in the model instead of realism.)

20.5.   Kam (2016b) on whether EPR generates stronger economies

Kam:

"I am not sure where Kwan gets the statistics to back this statement up because the debate on the macroeconomic effects of electoral systems is far from settled." (...)
"The reality is that one could line up literature on both sides of the claim that EPR is good / bad for the economy. My own view is that the electoral system probably has only a small effect on economic outcomes. Other, more fundamental institutions – the rule of law, constitutional limitations on government – probably have a greater impact in the sense that for a society that gets these fundamentals right the electoral system probably doesn't really matter much. Conversely, get these fundamentals wrong, and changing the electoral system is unlikely to make a damn bit of difference."

Comment:

(1) Agreed that the relationship has not been settled.
(2) Agreed with the fundamental importance of the rule of law and other institutions.
(3) The electoral system has a huge impact on the economy. Let me refer to Dahl & Lindblom (1953, 1976) as discussed in **Appendix A**. America likely lost a huge chunk of welfare merely because of its electoral system, check the wars on Vietnam and Iraq (financed with national debt), assuming that US economic dynamics and entrepreneurial spirit would flourish under EPR too. The impact of DR can be compared to the financial crisis of 2007+. This argument though depends upon counterfactuals, and there might be little advantage in trying to develop the argument in more detail since anything might be criticised as being counterfactual.
(4) I would rather look at the consequences per country, such that for Country *A* it is better to switch from DR to EPR, for such and such reasons. The decision would be based upon translating the principle of *One woman, one vote* and UDHR article 21 into EPR. There might be sound research indicating how the economy would tend to be affected, but not because it would be a criterion, but only to countermand downturns. It is not likely that one can find a general statement for all countries in any period, given all the differences.

A general statement might be possible in a model, but with uncertainties of applying the model. It remains natural to assume the optimality of EPR whence problems that cause a change likely have other roots.

21. Appendix J. Distances on preferences or policies

21.1.   Another distraction

As we considered the Banzhaf or Shapley-Shubik power indices, then obviously the distances on preferences and policies matter for those. Parties are less likely to forn a coalition when they are far apart. There is no reason to think that this angle would be irrelevant. In Holland, sociologist Frans Stokman has provided systematic tools for the formation of ruling coalitions. [117]

Yet it is a *fallacy of composition* to think that it would be relevant for the design of electoral systems. As discussed in **Sections 3.15, 3.16** and **8.1** this actually is another distraction for the *One woman, one vote* principle. It is only proper that political scientists look at this aspect, but the choice for EPR against DR should not be made dependent upon it. (And one should avoid non-sequiturs that come with the suggestion as if the voter-government policy distance would be relevant for the choice between EPR and DR. [118])

From the viewpoint of EPR, this type of research has some relevance, namely to get information about strategic voting. It would suffice to ask voters in exit polls what they actually voted and what their first voting preference would have been without strategy. Yet, political scientists focus on something else, and there now is this research with a [0, 1] scale on ideology.

Kam (2016a), discussed in **Appendix H** above, apparently gives a nice and accessible overview of the issue of the "median voter theorem" and the distances between preferences or policies, as seen in the current mainstream in the political science literature on electoral systems. My judgement on this is only tentative, as I am an outsider to political science. Kam's main reference though is to Golder & Stramski (2010) that makes (more) sense, was awarded the GESIS Klingemann Prize for the Best CSES Scholarship for 2010 [119] and their (earlier) work is referred to also by the APSA presidential address Powell (2012, 2013).

Let *v* be the votes for parties. The seats *s* only hold for the *House* or *Legislative.* There will also be an *Executive,* sometimes called a "coalition government", which is a misnomer since Legislative and Executive are branches of government. We would like to speak about *Executive,* except that this conflicts with the presidential system, which selects a person from a single party. Though there may also be a minority coalition, the better term is a *ruling coalition.* Let us denote *s** for the parties in that coalition. It might be for the US president too, though. Some authors call the policy distance a "distortion" but this has more connotations (like turning and squeezing and pounding), and "distance" is better.

[117] http://www.stokman.org/

[118] Some statements need not disqualify a whole paper. (i) Budge & McDonald (undated:8): "The distribution of votes emerging from the General (half-) Election is the most authoritative expression of overall policy preferences that we have, even if we have some doubts about it." By such an argument one can also justify a shotgun wedding. (ii) On page 23 in a list of potential arguments: "1. The plurality grouping only failed to become the majority by accident, possibly owing to non-policy based factors affecting voting". Compare: You accidently got too close to the bear so that it mauled you, but the bear actually is a very sweet animal. See, I take proper distance, and it doesn't do anything to me.

[119] http://mattgolder.com/research

21.2. Do ideological positions matter ?

Budge & McDonald (undated) argue, convincingly, that ideological positions are not the only factor:

> "The median mandate approach has a consistent logic behind it, which given its premises seem to provide both the desired unified approach to democracy and a rationale for Lijphart's advocacy of 'consensus democracy' - and incidentally for Powell's findings in favour of proportional democracy. The premises the median mandate thesis rests on are however very strong and probably unrealistic. In particular it assumes that all voters decide between parties on policy grounds. This surely flies in the face of evidence from voting studies from all over the world in the tradition of *The American Voter* (Campbell et al, 1960). Even if we learned nothing else from these, they conclusively demonstrate that party attachments, government competence, candidate appeals and many situational factors apart from issues have a strong – even major – influence on the popular vote."

21.3. Causality

If there is a Left-to-Right scale on policy, then EPR and DR can be scored on this too. McDonald (2006) finds that EPR would be to the left of DR, and he wonders about the causality. We can indeed imagine all kinds of causal arrows, and see Pearl (2000) on causality. I found McDonald (2006) informative, but it forms a distraction on the key choice of EPR or DR for the electoral system.

21.4. Dutch CPB evaluation of party manifestos on the national budget

In Holland, the tradition developed that political parties submit their manifestos to the Dutch Central Planning Bureau (CPB), that subsequently evaluates these on the consequences for the national budget. Over time there developed the convention of more consultation and evaluation on a wider range of effects. See Van de Haar (2015) for a report by a secretary of CPB, and see Colignatus (2017l) for a book review in Dutch of an informative book by Wimar Bolhuis on this issue. One can be critical of many aspects, but overall the CPB exercise is advisable.

21.5. Party manifesto data

Budge & McDonald op. cit. make a nice distinction between only EPR and only SMD, and between plurality and median party only, and surprised me a bit with their Table 2, reproduced here in **Table 11**. Namely, for 2 / 3 of the cases, the *median party = plurality party* and for 57% it is in the ruling coalition, while the distinction between EPR (54%) and SMD (61%, with strategic voting) is marginal. Still, these situations are quite different. SMD has *masked* data, and for EPR there can be more parties and easier competition.

When the *median party = plurality party* and not in the ruling coalition, then the percentages are almost the same again under both systems. For DR it is remarkable that a plurality winner is not in the ruling coalition. For EPR, we may imagine the situation that this party is in the middle, but that the flanks have united against it. Obviously, the Left-to-Right scale is simplistic, and there are more dimensions that parties can agree upon.

Table 11. Budge & McDonald (undated), their Table 2

TABLE 2

In-government Status of Plurality and Median Electoral Party: Overall and by Electoral System Type

ALL Systems
Plurality Party

		Not in Govt	Is in Govt	
Median Party	Not in Govt	10% (22)	25% (54)	35% (76)
	Is in Govt	8% (17)	57% (122)	65% (139)
		18% (39)	82% (176)	N = 215

SMDP Systems
Plurality Party

		Not in Govt	Is in Govt	
Median Party	Not in Govt	11% (9)	25% (20)	35% (29)
	Is in Govt	3% (2)	61% (49)	64% (51)
		15% (11)	85% (69)	N = 80

PR Systems
Plurality Party

		Not in Govt	Is in Govt	
Median Party	Not in Govt	10% (13)	25% (20)	35% (47)
	Is in Govt	11% (15)	54% (73)	65% (88)
		21% (28)	79% (107)	N = 135

Cell percentages are of the total number of elections.

The standard case for criticism is when the *median party ≠ plurality party* and the first is not in the ruling coalition while the second is. Surprisingly, this happens in 25% of the cases for both EPR and DR. For DR it is fairly obvious that a plurality winner is in the coalition, and it was standard criticism that it doesn't reflect the true proportion. For EPR it need not be that the median party is the largest. It certainly doesn't have to make it into the coalition. Again, the Left-to-Right scale is simplistic, and there are more dimensions that parties can agree upon.

Unfortunately, the data might be problematic.

Budge & McDonald (undated) use data from the Comparative Manifesto Project. [120] Golder & Stramski (2010:99) wonder whether parties tell the truth in their manifestos:

> "A second set of scholars uses party manifesto data from the Comparative Manifesto Project (CMP) to obtain voter and party placements on the left-right issue dimension for the postwar period (...). In this approach, party positions are estimated by subtracting the percentage of statements in a manifesto devoted to 13 issues that are construed as "left-wing" from the percentage of statements devoted to 13 issues that are construed as "right-wing" (...). The position of the median voter is estimated by taking account of the estimated party positions and the percentage of votes that these parties win at [half] election time [with strategic voting]. One limitation of this approach is that it can only produce an estimate of the median voter's position—it does not provide accurate information as to the actual distribution of citizen preferences. Moreover, the position of

the median voter can only be estimated under the rather strong assumption that all voters cast ballots for the party closest to them. One consequence is that scholars employing CMP data cannot construct congruence measures that incorporate meaningful information about the distribution of citizen preferences. A second limitation is that by focusing on the percentage of left-right statements, it would seem that CMP scholars are capturing the relative emphasis that a party places on left-right issues rather than a party's substantive left-right policy position (...). A third limitation is that the constituent elements of the CMP measure—the 26 issues that are construed as left- or right-wing— are the same for all countries and time periods. As a result, CMP scholars cannot capture contextual or temporal differences in the meaning of the left-right dimension (...). This is potentially problematic given the relatively large number of countries and the long temporal coverage of the CMP data set. None of these problems exist with the CSES data."

21.6. Data used by Carey & Hix (2011)

Carey & Hix (2011) use the Kim & Fording data, see the update Kim, Powell & Fording (2010). I find the latter text rather impossible to read because of its Asian-English. (E.g. the term "dyad" is not defined and the reader wonders whether this is a particular concept in political science about a particular constellation or whether the authors simply mean "pair". Or "exceptional" isn't idiom "special" but is used as the plain adjective "by exception".) Their table 3 (not shown here) seems to suggest that EPR and SMD are distinct subsets.

Golder & Stramski (2010:98-99) have some criticism of these data, though it is unclear how this would affect the Carey & Hix (2011) regressions.

> "We believe that obtaining estimates of citizen and party positions on the left-right issue dimension by using CSES data has a number of advantages over the data sources employed by previous studies. To illustrate some of these advantages, it is informative to examine the types of data employed by previous studies. Existing studies of congruence can essentially be divided into two types. One set of scholars, namely Powell and his coauthors, have employed a combination of citizen self-placements on the left-right issue dimension and party placements based on expert assessments. For example, Powell (2006) combines citizen self-placements from mass surveys conducted by *Eurobarometer* and the *World Values Survey* with party placements taken from expert surveys conducted by Castles and Mair (1984) and Huber and Inglehart (1995). One problem with this approach is that the use of these two different data sources to estimate citizen and party positions raises a potentially significant differential item functioning (DIF) problem since experts and citizens are unlikely to see the issue space identically. In fact, there is considerable evidence from the CSES data themselves that DIF is a real problem. In addition to asking citizens to place parties on the left-right scale, CSES country experts are also asked to place the parties on the same scale. Of the 217 cases in which experts and citizens are asked to place the same parties on the left-right scale, a difference in means test reveals a statistically significant difference at the 95% [perhaps 5% ?] level or greater in 195 (90%) of the cases. Even if one were to ignore DIF problems of this sort, the fact that these citizen and expert surveys are not conducted at the same point in time and do not necessarily employ the same scales or wording raises significant validity concerns. The CSES data set avoids these problems by having (1) citizens place themselves and the parties on (2) the same 0–10 scale at (3) the same point in time."

21.7. More on Golder & Stramski (2010)

Golder & Stramski (2010) essentially look at the chain $p'w^* \rightarrow medpw \rightarrow medpz \rightarrow p'z^*$ defined in **Section** 3.15.

- While they refer to the mantra of the trade-off of interest-representation and accountability, and have a statement on it, they actually do not analyse accountability.

- Thus what they say on this, also in their (importantly quoted) conclusions, depends upon the assumption of the mantra, and doesn't constitute a test on it.
- One should read carefully what they say. Paraphrased: *if* that trade-off would exist, then their findings on the preference distances affect it in such and such manner.
- Subsequently they however write as if the trade-off exists.

Their data apparently do not correct for strategic voting. Their data sort voters on [0, 1] rather than creating $v*$, which makes it a bit more complex to compare voters and parties (with different kinds of vectors). They define four measures on congruence and we expect a *negative* coefficient between disproportionality and congruence. Technically, though, their measure of "congruence" actually is a measure of *incongruence* (the larger the worse). They define "congruence" as a *difference* such that "best congruence" is 0, so that disproportionality and congruence should show a technically *positive* coefficient. This reversal of meaning and direction is unfortunate, but only a technical point.

They distinguish between more informed judgement of political positions of parties (our p) and voters own perceptions of this (say pv). This is somewhat of a can of worms. Each voter might have his or her own views, and thus the translation of such a pv to $v*$ might require quite some attention to detail, while for us it would not give information, since it would not matter for policy judgment (given strategic vote v) whatever a voter might think about its position on left-to-right scale. As the authors warn themselves: "With this in mind, all scholars should probably be cautious about making claims concerning the level of objective congruence between citizens and their representatives." Why create new "data" that only contribute to confusion ? Obviously it is a valid question to look into differences in perceptions between experts and individual voters on policy distances. In economics, we may also look at differences between "true" preferences following questionnaires and revealed preferences in the market place. But for the choice on electoral systems between DR and EPR it is distractive.

Golder & Stramski (2010:98):

> "In many ways, our new measure is the direct counterpart for ideological congruence of the vote-seat disproportionality measures that are used so frequently in comparative studies of representation. When it comes to evaluating representation, one common criticism of vote-seat disproportionality measures is that they focus entirely on how accurately the votes of citizens are mechanically translated into legislative seats and ignore how the underlying ideological preferences of citizens are strategically translated into votes in the first place (Powell 2004, 282). To the extent that representation refers to citizen preferences rather than votes, this suggests that vote-seat disproportionality scores can be a potentially problematic measure of representation under some circumstances. Votes are only likely to be a good guide to underlying preferences when the electoral institutions and party system in a country provide citizens with a "complete" set of choices and few incentives to vote strategically. An appealing feature of our proposed measure of many-to-many congruence is that it directly captures both the strategic and mechanical aspects of representation by explicitly focusing on how accurately ideological preferences are translated into legislative seats (Clark and Golder 2006; Cox 1997)."

Thus they hold that their new measure can be used for *both EPR and DR alike*, solving the problem of masked data by strategic voting under DR. Perhaps this might be a useful shortcut for some analyses in political science on electoral systems. Yet, there are downsides.

- The true problem is strategic voting under DR, and one should find correction for this, but this does not imply that one should discard with votes under EPR too. These form the gold standard in measurement of inequality / disproportionality.
- My main problem with this is that the authors change the meaning of the term "representation". I would emphasize that representatives and parties are the pivots of the democratic process. Voter preferences in questionnaires might be informative but, as preferences are so difficult to measure, we should not assume that we measured them. This argument is rather the same as Samuelson's argument on "revealed preference".

- The Golder – Stramski *voter-legislative* policy distance (VLPD) measure is not a measure for representation, but might also be applied say by an impartial "Ministry for the Executive" that uses polls to find the median policy. This is no longer democracy but management by polls.
- Thus for representative democracy, also for DR, it would be important to have information about the true votes v^* as compared to the strategic votes v, and one should not skip this step, as Golder & Stramski suggest.
- It remains unclear to me how G&S would recover the voter policy positions, without finding an estimate of the true first preferences v^* anyhow.

In the standard view on democracy, if a voter feels that her or his voter preferences are not properly represented, then the voter can create a political party, find people similarly minded, and partake in the (proper) election to see how many seats the new party gets. A key element in the political process is to find persons who are capable to govern and who can be trusted with the executive power. Or, one can compromise, and vote for an existing party that is closest to one's objectives. The vote-seat inequality / disproportionality measures come with the notion, also for EPR, that some methods provide for a better apportionment for such preferences. Thus an important element in focusing on parties concerns the adequacy of the electoral system. If you don't have EPR, change to EPR..

Golder & Stramski (2010:96) summarise their four measures on congruence. As explained above, these use differences and thus are better called measures for *incongruence.* For the first three measures they look at the executive, and the last ("many-to-many") is for the legislative, though all measures might technically be used for both legislative and executive. When we translate / transform to parties, replacing citizens by voters and thus temporarily focusing on turnout, then we get these *variants,* still adopting their w^* rather than w. However, for EPR it would be less relevant to introduce the uncertainty of an estimate on w^*. Only for DR we would use an estimate w^* to correct for strategic voting.

- *Weighted average policy distance* $a = p'z – p'w^*$. This is the base for various variants.
- *Absolute median voter incongruence* as Abs[$p'z$ - $medpw^*$] or the distance between the median voter and the cabinet mean.
- *Absolute voter incongruence* as Abs[$p'z^*$ - $p'w^*$] or the absolute weighted average.
- *Relative voter incongruence* as 1 – Abs[$p'z^*$ - $medpw^*$] / Abs[$p'z^*$ - $p'w^*$], unfortunately not strictly on [0, 1], and undefined at the interesting value $p'z^* = p'w^*$ (the executive at the citizen mean). If the ruling coalition is at the position of the median voter, or $p'z^* = medpw$, then the denominator equals the numerator and the measure is 0.[121]
- *Many-to-many incongruence*: PD[w^*, z, p] for the legislative and PD[w^*, z^*, p] for the ruling coalition or cabinet. Golder & Stramski (2010:96) propose for PD: the integral of the difference between the distribution of the political positions of voters and legislative or cabinet. This topic caused me to look into the PD[w, z, p] measure. The idea occurred that perhaps ID[$p\,w, p\,z$] might be useful. It turns out, for both ALHID and the angular distance, that ID[$p\,w, p\,z$] has a double face. As a function of w, z given p, it works as inequality / disproportionality. As a function of p given w, z it works as policy congruence. Thus the design of a PD using an ID is not self-evident. Colignatus (2018b) shows how it can be done, with the possibility to avoid the distributions that Golder & Stramski propose.

The bivariate regression by G&S of many-to-many incongruence given EGID, generates a positive and statistically significant coefficient of 2.41 (their table 4, p104, see the correction in the reproduction data [122]). G&S p107 conclude:

"Put differently, the results show that countries where the electoral system accurately translates votes into legislative seats will also be characterized by a more accurate

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[121] G&S use a measure similar to 1 – Abs[$p'w^*$ - $medpw^*$] / Abs[$p'z^*$ - $p'w^*$] calling it congruence, also pointing to $p\,z^* = medpw^*$. This inverts and seems less tractable. There is a bit of a problem when the voters are concentrated at $medpw^*$, but this would be unlikely.
[122] http://mattgolder.com/files/research/ajps2.zip Readme states: "The coefficient on Disproportionality in Table 4 on page 104 should read 2.41 rather than 2.32. The correct p-value is 0.023."

translation of citizen preferences into legislative seats. To our knowledge, this is the first empirical analysis to explicitly demonstrate that PR systems produce legislatures that accurately reflect the ideological preferences of citizens and not just their votes."

However, their table 3 shows that the mean levels of this incongruence do not show a statistically significant different level for EPR and DR. This needs more explanation. (A scatter plot would have been useful.) (A one-dimensional scale might be too simple.) Carey & Hix (2011) mention a correlation of .16.

In their conclusions they refer to the trade-off in the mantra of interest-representation and accountability. They state, actually already on p91 in a succinct summary, that *if* the trade-off would exist for the *legislative*, *then* they don't challenge that. Yet they hold that DR can have both interest-representation and accountability for the *executive*:

"We find that the level of ideological congruence between citizens and their *government* [executive] is not substantively higher in proportional democracies than in majoritarian ones. Proportional democracies are, however, characterized by more congruent *legislatures*."

A problem with this article is that they do not question the notion of accountability in the mantra (p104). They apparently support it, though only by means of assumption:

"To the extent that we ultimately care about how well the preferences of citizens are reflected in the government [executive, VEPD], then the evidence that we present suggests that democracies can adopt majoritarian electoral institutions in the hope of promoting things like government accountability *without* sacrificing citizen representation. On the other hand, to the extent that we care about having substantively representative legislatures [VLPD], then our analysis indicates that a trade-off does seem to exist."

PM 1. Kam (2016a) refers to G&S only w.r.t. interest-representation, and not w.r.t. accountability, but it would have been better that he also would have alerted readers that G&S only have an assumption on the latter, see **Section** 19.4.

PM 2. Lupu et al. (2017) have some technical criticism on the G&S incongruence measures and provide a proposal for improvement. On p107 they reproduce the G&S result. Their new measure needs looking into, and it remains curious that they find no correlation between disproportionality and incongruence.

22. *Appendix K. Ostrogorski paradox and referenda*

Rae & Daudt (1976) take Dahl's paradox for the presidential system, discussed here in **Appendix A**, and turn it into a paradox for the parliamentarian system. They could have called it the "Dahl paradox" but they do not refer to Dahl and baptise it the "Ostrogorski paradox" in honour of the latter.

We can repeat the comment made in **Appendix A**: Under EPR, when "a majority of voters disagrees with the winning majority party on every issue" then there would arise new parties that closer fit the voters' views. The paradox might be a result of DR, when such new parties do not get a chance, though. In that case, the paradox would be an argument for EPR.

Curiously, we see that the paradox is used as an argument in favour of referenda, namely, that the majority of voters would have an instrument to correct the party in power. However, referenda are burdened with paradoxes themselves, see Arrow's Theorem. The Ostrogorski paradox assumes a theoretical setting of clear-cut binary issues, but those seldomly apply in practice. Also, when voters are allowed and would be willing to vote in a referendum, then why not allow them to vote for parties in EPR ? The paradox is an argument for EPR, not for referenda that go against EPR.

In sum, this Ostrogorski paradox confuses issues and contributes to greater confusion.

It may be mentioned that Daudt (1925-2008) was from Holland, a country with EPR, and one would expect that he would see this angle on EPR, and that he would inform co-author Rae on this, who came from the USA, a country with DR. However, it turns out that Daudt was much impressed by the Anglo-Saxon-Viking tradition in political science. In his earlier thesis Daudt had shown much criticism on details but overall he apparently was impressed by it. Thus, alas, this opportunity for knowledge transfer was lost. Colignatus (2018c) discusses, for Dutch readers, how Daudt also enhanced the confrontational and anti-consensus way of thinking by some politicians, to the detriment of productive consensus policy making in Holland. Holland is no untainted example of consensus policy making.

23. Appendix L. Update from the former version

It may be useful to review where this second version of the paper has been updated from the original version, apart from small edits like correcting typing errors.

(1) An error on the policy distance PD[*w, z, p*] and the use of ID[*p w, p z*] was corrected, in **Appendix J** and related sections in the main body of the text. A discussion of the policy distance is in Colignatus (2018b).

(2) There were corrections to Colignatus (2017f), i.e. the supporting analysis on inequality / disproportionality of votes and seats. This paper usefully refers to the updated version.

(3) For the reception of the Carey & Hix (2011) paper, it seems relevant to refer to Shugart & Taagepera (2017) *Votes from seats,* who identify statistical regularities based upon analytical relationships. See **Section** 10.9. This would help identify what statistical regularities Carey & Hix (2011) would be abusing, by assigning wrong and biased interpretations.

(4) For Dutch readers it may be helpful to refer to my advice to the Dutch State Commission on the Parliamentarian System, Colignatus (2017p).

(5) There appear to be confusions about the Ostrogorski paradox. This is discussed in **Appendix K**.

(6) **Section** 2.10 has been included on Dahl, polyarchy and V-Dem.

24. References

Colignatus is the name in science of Thomas Cool, econometrician and teacher of mathematics, Scheveningen, Holland, http://econpapers.repec.org/RAS/pco170.htm

Amy, D.J. (1996/7), "A Brief History of Proportional Representation in the United States", http://www.fairvote.org/a_brief_history_of_proportional_representation_in_the_united_states

Andeweg, R.B. and J.J.A. Thomassen (2005), "Modes of Political Representation: Toward a New Typology", Legislative Studies Quarterly, XXX, 4, 507-528

Blokland, H. (2011), "Pluralism, Democracy and Political Knowledge: Robert A. Dahl and his Critics on Modern Politics", Burlington (VT) and Farnham: Ashgate Publishing, November 2011, 450 pp. ISBN 9781409429319

Bogaards, M. (2015), "Making a difference: an interview with Arend Lijphart", Z Vgl Polit Wiss (2015) 9:83–96

Bogaards, M. (2017), "Comparative Political Regimes: Consensus and Majoritarian Democracy", Oxford Research Encyclopedia of Politics

Borisyuk, G., C. Rallings, M. Thrasher, R. Johnston (2010), "A method for measuring and decomposing electoral bias for the three-party case, illustrated by the British case", Electoral Studies, https://www.researchgate.net/publication/248414938_A_method_for_measuring_and_decomposing_electoral_bias_for_the_three-party_case_illustrated_by_the_British_case

Borisyuk, G., C. Rallings, M. Thrasher, R. Johnston, C. Pattie (2015), "Going Back to the Beginning: Changing Biases in the British Electoral System", paper presented at EPOP 2015, "not for quotation without permission"

Bormann, N.-C. (2010), "Patterns of Democracy and Its Critics", Living Reviews in Democracy, https://www.ethz.ch/content/dam/ethz/special-interest/gess/cis/cis-dam/CIS_DAM_2015/WorkingPapers/Living_Reviews_Democracy/Bormann.pdf

Budge, I. and M.D. McDonald (undated), "Two 'visions', one democracy: do 'majoritarianism' and 'proportionality' simultaneously guide democratic policy-making ?", http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.542.433&rep=rep1&type=pdf

Butler, D. (2014), "The Evolution of British Electoral Studies", lecture, http://www.britishelectionstudy.com/bes-impact/the-evolution-of-british-electoral-studies-bydavid-butler/

Carey, J. M., & Hix, S. (2009), "The Electoral Sweet Spot: Low-Magnitude Proportional Electoral Systems", Working Paper (draft, colour graphs), http://www.lse.ac.uk/government/research/resgroups/PSPE/pdf/PSPE_WP1_09.pdf

Carey, J. M., & Hix, S. (2011), "The Electoral Sweet Spot: Low-Magnitude Proportional Electoral Systems", American Journal of Political Science, 55(2), 383-397, Open Source http://onlinelibrary.wiley.com/doi/10.1111/j.1540-5907.2010.00495.x/full and http://personal.lse.ac.uk/hix/Working_Papers/Carey-Hix-AJPS2011.pdf

Colignatus, Th. (2000, 2005, 2011), "Definition & Reality in the General Theory of Political Economy", Samuel van Houten Genootschap, http://www.thomascool.eu/Papers/Drgtpe/Index.html

Colignatus, Th. (2001, 2014a), "Voting Theory for Democracy", Thomas Cool Consultancy & Econometrics, https://zenodo.org/record/291985

Colignatus, Th. (2005), "On the political economy of world government: a short discussion of the role of the World Economic Forum and the World Social Forum and indicating the possibility of a World Parliament", https://econpapers.repec.org/paper/wpawuwpgt/0501002.htm

Colignatus, Th. (2007, 2011), "A Logic of Exceptions", https://zenodo.org/record/291848

Colignatus, Th. (2009, 2015), "Elegance with Substance", https://zenodo.org/record/291974

Colignatus, Th. (2010), "Single vote multiple seats elections. Didactics of district versus proportional representation, using the examples of the United Kingdom and The Netherlands", https://mpra.ub.uni-muenchen.de/22782/

Colignatus, Th. (2011), "Conquest of the Plane", https://zenodo.org/record/291972

Colignatus, Th. (2012), "Laat D66 zich opheffen", http://thomascool.eu/SvHG/LDZO/Index.html

Colignatus, Th, (2014b), "An Economic Supreme Court", RES Newsletter no 167, October, p20-21, http://www.res.org.uk/view/art7Oct14Features.html

Colignatus, Th. (2017a), "The performance of four possible rules for selecting the Prime Minister after the Dutch Parliamentary elections of March 2017", https://mpra.ub.uni-muenchen.de/77616/

Colignatus, Th. (2017b), "Two conditions for the application of Lorenz curve and Gini coefficient to voting and allocated seats", https://mpra.ub.uni-muenchen.de/80297/

Colignatus, Th. (2017c), "Applying voting philosophies to Brexit data", https://boycottholland.wordpress.com/2017/09/19/applying-voting-philosophies-to-brexit-data/

Colignatus, Th. (2017d), "The dark horse and a 2012 interview with Kenneth Arrow", https://boycottholland.wordpress.com/2017/05/06/the-dark-horse-and-a-2012-interview-with-kenneth-arrow/

Colignatus, Th. (2017e), "Also Scotland doesn't understand democracy", https://boycottholland.wordpress.com/2017/06/21/also-scotland-doesnt-understand-democracy/

Colignatus, Th. (2017f), "Comparing votes and seats with cosine, sine and sign, with attention for the slope and enhanced sensitivity to inequality / disproportionality", https://mpra.ub.uni-muenchen.de/84469 (version February 9 2018)

Colignatus, Th. (2017g), "Voting theory and the Brexit referendum question", RES Newsletter 177, http://www.res.org.uk/view/art4Apr17Features.html

Colignatus, Th. (2017h), 'YouGov Brexit ranking data of June 12-13 2017", https://boycottholland.wordpress.com/2017/09/18/yougov-brexit-ranking-data-of-june-12-13-2017/

Colignatus, Th. (2017i), "Lorenz and Gini for the French elections of 2017", https://boycottholland.wordpress.com/2017/07/19/lorenz-en-gini-for-the-french-elections-of-2017/

Colignatus, Th. (2017j), "The bizarre incomprehension of democracy", https://boycottholland.wordpress.com/2017/06/16/the-bizarre-incomprehension-of-democracy/

Colignatus, Th. (2017k), "Great Britain's June 2017 preferences on Brexit options", RES Newsletter, October, 6-9, http://www.res.org.uk/view/art2Oct17Features.html

Colignatus, Th. (2017l), "Boekbespreking: Wimar Bolhuis, "De rekenmeesters van de politiek"", https://boycotholland.wordpress.com/2017/05/26/boekbespreking-wimar-bolhuis-de-rekenmeesters-van-de-politiek/

Colignatus, Th. (2017m), "Brexit and the weird brew of populism and district representation", https://boycottholland.wordpress.com/2017/06/29/brexit-and-the-weird-brew-of-populism-and-district-representation/

Colignatus, Th. (2017n), "Statistics, slope, cosine, sine, sign, significance and R-squared", https://boycottholland.wordpress.com/2017/10/21/statistics-slope-cosine-sine-sign-significance-and-r-squared/

Colignatus, Th. (2017o), "Dealing with denial: Cause and cure of Brexit", https://boycottholland.wordpress.com/2017/12/01/dealing-with-denial-cause-and-cure-of-brexit/

Colignatus, Th. (2017p), "Aan de Staatscommissie parlementair stelsel", http://thomascool.eu/Thomas/Nederlands/Wetenschap/Advies/2017-12-21-Staatscie-parl-stelsel.pdf

Colignatus, Th. (2018a), "Comparing the Aitchison distance and the angular distance for use as inequality or disproportionality measures for votes and seats", https://mpra.ub.uni-muenchen.de/84387 also at https://www.wolframcloud.com/objects/thomas-cool/Voting/2018-01-18-Aitchison.nb

Colignatus, Th. (2018b), "Measures of policy distance and inequality / disproportionality of votes and seats", https://mpra.ub.uni-muenchen.de/84324/ also at https://www.wolframcloud.com/objects/thomas-cool/Voting/2018-02-02-PolicyDistance.nb

Colignatus (2018c), "Schrikken van de grote negatieve invloed door het wetenschappelijk falen door ook Hans Daudt", https://boycotholland.wordpress.com/2018/01/06/schrikken-van-de-grote-negatieve-invloed-door-het-wetenschappelijk-falen-door-ook-hans-daudt/

Coppedge, M., S. I. Lindberg, S.-E. Skaaning, and J. Teorell (2016), "Measuring High Level Democratic Principles Using the V-Dem Data", International Political Science Review 37(2), preprint https://www.v-dem.net/media/filer_public/b5/b8/b5b8a046-eb68-4a24-8a1f-771c57e34d03/v-dem_working_paper_2015_6.pdf

Curtice, J. (2009), "Neither Representative Nor Accountable: First-Past-The-Post in Britain", p27-46 in Grofman, B. et al (2009), "Duverger's Law of Plurality Voting", Springer

Dahl, R.A. (1956), "A preface to democratic theory", Chicago

Dahl, R.A. and C.E. Lindblom (1953, 1976), "Politics, Economics and Welfare", Chicago

Doorenspleet, R. and H. Pellikaan (2013), "Which type of democracy performs best?", Acta Politica, http://wrap.warwick.ac.uk/52073/1/WRAP_Doorenspleet_Manuscript%20Acta%20Politica.pdf

Dumont, P. & J.-F. Caulier (2003), "The "effective number of relevant parties": How voting power improves Laakso-Taagepera's index", http://centres.fusl.ac.be/CEREC/document/2003/cerec2003_7.pdf

Dunleavy, P., T. Travers and Ch. Gilson (undated), "Guide to electoral systems", Democratic Audit, http://www.democraticaudit.com/resources/guide-to-electoral-systems/, https://web.archive.org/web/20170606123508/http://www.democraticaudit.com/resources/guide-to-electoral-systems/

EIU (2013), "Democracy index 2012: Democracy at a standstill", Economist Intelligence Unit 14 March 2013

Fairvote Canada (2016), "Why Proportional Representation? A look at the evidence", http://www.fairvote.ca/wp-content/uploads/2016/01/Why-PR-Review-of-Evidence-updated-version-2016-01-13.pdf

Galbraith, J. (2008), "The Predator State: How Conservatives Abandoned the Free Market and Why Liberals Should Too", New York: The Free Press, http://www.predatorstate.com/

Gallagher, M. (1991), "Proportionality, disproportionality and electoral systems", Electoral Studies, 10:1, 33-51, https://www.tcd.ie/Political_Science/draft/staff/michael_gallagher/ElectoralStudies1991.pdf

Gallagher, M. (2007), Electoral Systems Web Site, Dublin, Trinity College, http://www.tcd.ie/Political_Science/Staff/Michael.Gallagher/ElSystems/index.php

Gallagher, M. (2017), "Election indices dataset", accessed at 2017-07-31, http://www.tcd.ie/Political_Science/staff/michael_gallagher/ElSystems/Docts/ElectionIndices.pdf

Ganghof. S. (2014), "Four Visions of Democracy. Powell's *Elections as Instruments of Democracy*, And Beyond", Political Studies Review, https://www.uni-potsdam.de/fileadmin01/projects/vergleichende-politikwissenschaft/Literatur/four_visions.pdf

Golder, M., & Stramski, J. (2010), "Ideological congruence and electoral institutions", American Journal of Political Science, 54(1), 90-106

Grofman, B. (2016), "Perspectives on the Comparative Study of Electoral Systems", article in the "Annual review of political science", June, 19:27.1-27.18, https://www.researchgate.net/publication/298429031_Perspectives_on_the_Comparative_Study_of_Electoral_Systems

Gunitsky, S. (2015), "How do you measure 'democracy'?", https://www.washingtonpost.com/news/monkey-cage/wp/2015/06/23/how-do-you-measure-democracy/

Haar, E. van de (2015), "CPB Netherlands Bureau for Economic Policy Analysis: Dutch (economic) policy-making", Contemporary Social Science, Volume 10, 2015 - Issue 2, http://rsa.tandfonline.com/doi/abs/10.1080/21582041.2015.1052540

Htun, M. and G. B. Powell jr. (eds) (2013), "Political science, electoral rules and democratic governance. Report of the Taskforce", APSA, http://www.apsanet.org/electoralrules

Htun, M. et al. (2013), "Between science and engineering: Reflections on the APSA presidential task force on political science, electoral rules, and democratic governance", Perspectives on politics, 808-840, https://liberalarts.utexas.edu/government/_files/moser-web/PoPSept2013.pdf

Kam, Ch. (2015), "Electoral Reform… some logic please!", https://blogs.ubc.ca/unparliamentary/2015/10/20/electoral-reform/ or https://web.archive.org/web/20170704003235/https://blogs.ubc.ca/unparliamentary/2015/10/20/electoral-reform/

Kam, Ch. (2016a), "Representation, Accountability and Electoral Systems", contribution to the Canadian Study of Parliament Group, https://blogs.ubc.ca/unparliamentary/2016/06/28/representation-accountability-and-electoral-systems/ or https://web.archive.org/web/20170613185602/https://blogs.ubc.ca/unparliamentary/2016/06/28/representation-accountability-and-electoral-systems/

Kam, Ch. (2016b), "Proportional Representation cures cancer & wipes out poverty…", https://blogs.ubc.ca/unparliamentary/2016/10/09/proportional-representation-cures-cancer-wipes-out-poverty/ or https://web.archive.org/web/20170606073316/http://blogs.ubc.ca/unparliamentary/2016/10/09/proportional-representation-cures-cancer-wipes-out-poverty/

Kim. H., G.B. Powell, R.C. Fording (2010), "Electoral Systems, Party Systems, and Ideological Representation", Comparative politics https://www.researchgate.net/publication/258446225

Kline, R. (2009), "How we count counts: The empirical effects of using coalitional potential to measure the effective number of parties", Electoral Studies 28 (2009) 261–269, http://www.sciencedirect.com/science/article/pii/S0261379409000067

Laakso, M. (1980), "Electoral Justice as a criterion for different systems of proportional representation", Scandinavian Political Studies, Bind 3 (New Series) (1980) 3, https://tidsskrift.dk/scandinavian_political_studies/article/view/32355/30159

Labbé St-Vincent, S., A. Blais, J.-B. Pilet (2015), "The Electoral Sweet Spot in the Lab", https://www.researchgate.net/publication/316688959_The_Electoral_Sweet_Spot_in_the_Lab

Libertad y Desarrollo (2013), "Reform of the Binominal System: The Importance of the Majority Approach", Public Issues Nr 1,118, http://lyd.org/other/files_mf/pi1118.pdf

Linz, J. (1990), "The perils of presidentialism". Journal of Democracy1 (1): 51–69

Lundell, K. (2012), "Disproportionality and Party System Fragmentation: Does Assembly Size Matter?", OJPS, Vol.2 No.1, April 2012, http://www.scirp.org/journal/PaperInformation.aspx?PaperID=18804

Lupu, N., L. Stelios, Z. Warner (2017), "A New Measure of Congruence: The Earth Mover's Distance", Political Analysis, vol. 25:95–113, http://www.noamlupu.com/EMD.pdf

McDonald, M.D. (2006), "Policy Consequences of SMD versus PR, A Survey", https://www.researchgate.net/publication/242122433_Policy_Consequences_of_SMD_versus _PR_A_Survey

Mueller, D. (1989), "Public Choice II", CUP

Munck, G.L., J. Verkuilen (2002), "Conceptualizing and measuring democracy: Evaluating Alternative Indices". Comparative Political Studies, Sage Publications, 35 (1): 5–34

Pearl, J. (2000), "Causality", Cambridge

Powell, G.B. (2008), "Changing Party System Polarization, Election Rules and Ideological Congruence", https://www.researchgate.net/publication/242075375_Changing_Party_System_Polarization_ Election_Rules_and_Ideological_Congruence

Powerl, G.B. (2012, 2013), "Representation in Context: Election Laws and Ideological Congruence Between Citizens and Governments", presidential address APSA, Perspectives on Politics, Published online: 01 March 2013, pp. 9-21

Raabe, J. and E. Linhart (2017), "Which electoral systems succeed at providing proportionality and concentration? Promising designs and risky tools", EPSR, january 17. https://www.cambridge.org/core/journals/european-political-science-review/article/div-classtitlewhich-electoral-systems-succeed-at-providing-proportionality-and-concentration-promising-designs-and-risky-toolsdiv/35267260CB6F4412CECF8915AA32DABE Version (2016), Paper prepared for the 2016 ECPR General Conference, Prague, https://www.researchgate.net/publication/307994945_Which_electoral_systems_succeed_at_ providing_proportionality_and_concentration_An_investigation_of_promising_mixed_designs _and_risky_tools

Rae, D.W. & H. Daudt (1976), "The Ostrogorski paradox: a peculiarity of compound majority decision", EJPR 4, p391-398

Rae, D.W. (1995), "Using District Magnitude to Regulate Political Party Competition", The Journal of Economic Perspectives, Vol. 9, No. 1 (Winter, 1995), pp. 65-75, http://www.jstor.org/stable/2138355

Rallings, C., M. Thrasher and G. Stoker (2000), "Proportional representation and local government. Lessons from Europe", report for the Joseph Rowntree Foundation, https://www.jrf.org.uk/report/electoral-reform-local-government-lessons-rest-europe

Reynolds, A., B. Reilly and A. Ellis et al. (eds) (2005), "Electoral System Design: The New International IDEA Handbook", IDEA, https://www.idea.int/

Riera. P., J. R. Montero (2017), "Attempts to Reform the Electoral System in Spain: The Role of Experts", Election Law Journal: Rules, Politics, and Policy, 16(3): 367-376

Riera. P. (2016), "Tactical voting", Oxford Handbooks Online,
http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199935307.001.0001/oxfordhb
-9780199935307-e-55

Robson, A. (2007), " Voting Power in the Australian Senate: 1901-2004", Working Paper No.
480, the Australian National University, School of Economics,
https://www.cbe.anu.edu.au/researchpapers/ECON/wp480.pdf

Roest, A. van der (2017), "Vastgeroest. Een Chinese opgave", Euclides 92 / 7, p49

Schendelen, M.P.C.M. van (1985), "Consociational Democracy: The Views of Arend Lijphart
and Collected Criticisms", Political Science Reviewer, Fall, 1985 - Vol. 15, No. 1, p143-183,
https://isistatic.org/journal-archive/pr/15_01/schendelen.pdf

Shugart, M.S. & R. Taagepera (2017), "Votes from seats. Logical models of electoral
systems", CUP, https://doi.org/10.1017/9781108261128

Steinsaltz, D. (2011), "The Value of Nothing: A Review of The Quants",
http://www.ams.org/notices/201105/rtx110500699p.pdf

Taagepera, R. (2007), "Electoral systems", Chapter 28, p678-702, in Boix, C. & S.C. Stokes
(2007), "The Oxford handbook of comparative politics", OUP,
https://global.oup.com/academic/product/the-oxford-handbook-of-comparative-politics-
9780199278480

Tullock, G. (2008), "Public Choice", The New Palgrave Dictionary of Economics, Second
Edition,
http://www.dictionaryofeconomics.com/article?id=pde2008_P000240&q=rational%20choice&t
opicid=&result_number=10

Teorell, J., M. Coppedge, S.-E. Skaaning, and S. I. Lindberg (2016), "Measuring electoral
democracy with V-Dem data: Introducing a new Polyarchy Index", https://www.v-
dem.net/media/filer_public/f1/b7/f1b76fad-5d9b-41e3-b752-07baaba72a8c/v-
dem_working_paper_2016_25.pdf

Vakmann, K. (2014), "Mechanical Effects of Electoral Systems on Proportionality and
Parliament Fragmentation", Master's thesis, University of Tartu, available at the parliament of
Estonia, https://www.riigikogu.ee/wpcms/wp-content/uploads/2014/11/Vakmann.pdf