UK OC OK?

A Note on Interpreting Optimal Classification Scoring for the United Kingdom[*]

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Abstract

Recent technical innovations allow political scientists to run Optimal Classification (OC) programs for British parliamentary data. The resulting one dimensional rank orderings are incorrectly interpreted as ideological continuums with MPs' scores denoting positions between liberal and conservative. This *specific* problem is not simply the product of whipping, but rather arises from the government versus opposition nature of a Westminster-style parliament. Moreover, the goodness of fit statistics for a one dimensional model of Commons voting are highly misleading. More *generally*, analysts must be wary of these techniques if sophisticated voting in a parliament is suspected.

1 Introduction

Recent technical innovations by Firth [1] and Firth and Spirling [2] allow political scientists to use Poole and Rosenthal's [13] NOMINATE and Optimal Classification software for the British House of Commons. Now the "industry standard" for both use and critical comment in the political science community, NOMINATE and its relatives were designed for "[f]inding a liberal/conservative structure of roll call voting at any moment in time" and the dynamics of this structure for the US Congress ([14]:7).

Optimal Classification (OC), the primary subject of this note, actually predates NOMINATE and has some minor technical differences. These dissimilarities concern the number of dimensions in which the program operates and the treatment of voting "errors" (see Section 3). In fact, the measures produced by the methods are tightly correlated[1] and much of this note will also typically apply to NOMINATE.

Under certain assumptions, the OC scaling will yield a rank ordering of Members of Parliament along a single dimension from liberal to conservative, left to right [12]. In their preliminary empirical analysis, Firth and Spirling [2] noted a problem, however. The rank ordering for the parliamentary session between the general elections of 1997 and 2001 did not accord to common understandings and anecdotal knowledge of which MPs should be properly considered of the left and those that should be properly considered of the right. Particularly, several left-wing Labour MPs are given scores placing them to the *right* (i.e. more conservative than) the bulk of the Labour party.

This article explains this statistical problem. We proceed as follows: Section 2 details the counter-intuitive results uncovered. Section 3 describes the technical underpinnings of the Optimal Classification scaling process, and outlines the theoretical assumptions under which it operates. Section 4 argues that the British parliamentary structure (and by conjecture, Westminster systems more generally), with clear opposition parties and 'oppositional motivations' is the cause of this problem. Party vote whipping, contrary to several commentators' assertions, is not alone responsible for this situation. Moreover, the goodness of fit statistics for the fitting of OC scalings overestimate the usefulness of the techniques as currently employed. In Section 5, we show that the problem identified in this note is more *general*: the Guttman family of scaling techniques cannot correctly classify sophisticated voting. Hence, it should be used with caution in legislatures where sophisticated voting is known or suspected. We illustrate this claim with two cautionary tales, one from British politics and one from US politics. Section 6 concludes, and suggests further avenues of research that might prove more fecund for uncovering the ideological continuum underpinning Commons politics.

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[1]0.96 for the 105th House of Representatives [11]

2 Empirical Oddities

A sample of the rank ordering that the Optimal Classification procedure yields for the period after the General election of 1997, until the General election of 2001, is given in *Appendix A*[2]. This rank ordering is constructed from the 1279 divisions that took place in the relevant time period. Some MPs, those that did not vote *at least once* during the 5 years, do not appear. Some 668 do appear in total and we note that MPs vote with varying frequency[3]. The OC scaling is based on those votes that each MP actually casts[4]. So Appendix A is, theoretically, an edited list of MPs from the most liberal parliamentarian in the Commons to the least liberal; from the least conservative to the most conservative.

2.1 Overview: Party Groupings

Dealing first with the big party groupings, we note the following from the data. The first 421 MPs in the Commons (counting in from the left) are Labour MPs. The last Labour MP appears in position 428, the intervening members being variously "independent" and one from Northern Ireland's nationalist SDLP[5]. The other SDLP MPs occur to the right of this position. The Scottish Nationalists and the Welsh Nationalists are to their right, with the Liberal Democrats holding the middle ground before the smattering of Ulster Unionists and Democratic Unionist MPs appear. The Conservative party dominates the right: from position 502 (with the exception of an independent and a Democratic Unionist) to position 665. The remaining 3 places are filled by, in theory, the most right-wing members of the Commons. Respectively they are a Democratic Unionist, United Kingdom Unionist and an Ulster Unionist.

Thus far, we could speculate that the OC mechanism has caught much of our intuitive understanding of Commons' ideologies. Labour is a party with socialist, unionist origins, and we might expect its MPs to lie to the left of the Liberal Democrats. It does not seem outlandish that the Liberals Democrats inhabit the 'middle ground' of British politics—certainly, commentators have suggested this positioning yields much of their appeal in the electorate. Similarly, there seems little to object to the notion that the Conservative party is of the right. The other parties, including the Scottish, Welsh and Northern Irish nationalists seem uncontroversially placed close to the centre. Indeed the latter is a sister organization of the British Labour party. The Ulster unionists (of varying varieties) are also plausibly placed close to, amongst and beyond the Conservative

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[2]The full list is available on application from the authors

[3]The range of division attendance was 18 to 1143. Note that MPs who leave the Commons mid-term (or who join through by-election) are treated in the same way as all other MPs in the analysis

[4]That is, abstentions are treated as indifference.

[5]Shaun Woodward is classified as a Labour MP, since this was his status in 2001 (following his December 1999 defection). He spent half of the parliament voting with the Tory frontbench however, so he is dropped from our descriptive statistics here

ranks–in recent parliamentary history the main party's name reflected their synonymity.

Of course, this party alignment should not be accepted without critical comment. We might expect *inter alia* objections to the assumption that the Liberal Democrats really continue to function in the centre area of the political spectrum. Policy pronouncements on the Euro, public spending and taxation and the Second Gulf War suggest an ongoing move left towards—or perhaps even 'leapfrogging'—Labour's traditional platform. Similarly, some Scottish and Welsh nationalist policies seem opposed to Labour's insofar as they are more left-wing than the governing party's. Nonetheless, even if the ordering of the parties is not *entirely* persuasive here, the veracity and validity of the implied relative positions seems a plausible representation of reality.

2.2 MPs at the Group Margins

The deficiencies of the OC approach to British politics are most obviously borne out by an examination of members of parliament scaled at the margins of the parliamentary party groups. This is particularly true for those—ostensibly— placed to the right of the body of the Labour party.

Recall that the Labour party MPs count in from the 'left' to position 428. The last 30 scaled positions[6] include MPs such as Tam Dalyell (position 404), Robert Marshall-Andrews (405), Dennis Skinner (411), Jeremy Corbyn (416), Diane Abbott (420), Tony Benn (421), Ken Livingstone (422) and Bernie Grant (427). To be clear, OC classifies these MPs as some of the most *right-wing* of the Labour party. Ideologically then, they are the closest to the Conservatives. This seems odd. Commentators have not been slow to cite some or all of these individuals as Labour rebels, but not for the reason suggested by the attendant analysis. Rather, these members are widely accepted as ideologically *left-wing*– disagreeing with the government on foundation-hospital NHS reform, the Iraq war and social-security/disability benefits to name but three policy areas. Yet here we observe them being placed *right* of their Prime Minister and, in fact, the entire Cabinet.

Who then were the most left wing members of the Commons (1997-2001) if it is not these individuals? Apparantly, MPs Galbraith and Radice, with members Morris, Stevenson, Maxton and Ashton not far to their right.

As suggested above, the Liberal Democrats are a left of centre party. Problematically, every single Liberal member has a higher ('more right') scaling score than any Labour MP. In fact, their scores place them right of centre in parliamentary terms. For example, Paddy Ashdown, leader of the Lib Dems between

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[6]Some of which have identical scalings– a property of OC under whipping which is discussed in Section 4

1997 and 2001, scores 459. The most right wing members of the Commons, including the Rev Ian Paisley of the DUP, score 667. Hence, Ashdown—and all his MPs—lies well beyond the Commons' half-way point in terms of relative scaling.

Clearly, OC classifies in some unappealing ways that clash with our intuition. In fact, the results of the analysis are so discordant with our expectations that aspersions are inevitably cast over the use of the method at all. In the next section we explain the workings of OC, before moving to an explanation of the aberrations we noted above.

3 The Methodology of Optimal Classification

3.1 Theory

The underlying algorithm that allows Optimal Classification to function is *Edith*, a simple Guttman-like scaling of parliamentary divisions ("roll calls" in the US context). The logic runs as follows[7]. Suppose that all voting in the Commons is driven by a left-right dimension. An MP's degree of 'leftness' then determines her position on any particular matter.

We can imagine a continuum of MPs from left to right, all with symmetric, bell-shaped utility curves being asked to choose between two alternatives, 'aye'(A) or 'no' (N). They choose the one that is spatially closest to their own ideal point. Hence, a division will look something similar to this:

AAAAAAAAAAAAAAAAAAAAA | NNNNNNNNNNNNN

NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN | AAAAAA

NN | AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

The vertical separators are the "cutting point" for the divisions. Each "A" or "N" represents at MP relative to that midpoint between the sides. An MP positioned at the cut point would be indifferent between voting aye or no.

The *Edith* algorithm takes the whole division matrix (for 1997-2001 this contained some 800,000 cells) and finds the rank ordering of members for each division. The algorithm also finds the correct "polarity" for each division; this means that it analyses each vote (by those who voted) on a particular issue and either assigns the ayes to the left or the right of the cut point.

If all MPs always vote sincerely according to their spatial preference, and voting is indeed governed by a single ideological dimension, voting is described as 'perfect'. If MPs diverge from this perfection, the data is said to contain 'errors'. When the data is error-free, *Edith* easily uncovers the correct rank-ordering. It

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[7]The discussion of the methodology here is primarily derived from Keith Poole [10]

is important to note that this ordering may run left to right, or right to left and yet contain the *same* information. The OC program is not conditioned to recognise a particular decision (aye or no) on a particular division as an implication of the legislator's absolute political position. Upon completing the algorithm computation, it is the analyst's task to select 'which end' of the order is left or right.

3.2 A worked example of OC

If there are errors in the data, *Edith* employs a search heuristic to maximise the correct classification of ayes and noes. Since the nature of the procedure is not of theoretical interest here, and is not directly the cause of the statistical problem, interested readers are referred to [10] and [12]. The following very simple example demonstrates the OC process, when there are no errors. Suppose we have the following erroneous ordering of 4 MPs from left to right:

<div align="center">Blair   Paisley   Benn   Hague</div>

We observe that the splits were Paisley against the others on RUC reform; Paisley and Hague against Blair and Benn on the New Deal youth employment scheme; Benn against the others on radical constitutional reform. The (non-unique) placement of cut points below minimises classification errors to 4:

<div align="center">

New Deal

Blair   Paisley   Benn   Hague   *RUC*

Constitution

</div>

The errors are: Paisley who is misclassified on RUC reform (1); Paisley who is misclassified on the New Deal (1); Paisley and Blair who as misclassified on radical constitutional reform (2).

Note that this placement only minimises error if we assume that the 'left-wing' outcome on each issue is supported by those on the left of the order. Hence Paisley is predicted to oppose the radical constitutional reform—since he is conservative—and yet he is initially placed on the left of the cut point.

Now, holding the cut points constant we move the MPs, one by one, and reduce the classification errors. Paisley moves out to the right on the *RUC* issue. We then only have one classification error – Blair, who appears in favour of radical constitutional reform:

<div align="center">

New Deal

Blair   Benn   Hague   *RUC*   Paisley

Constitution

</div>

Note that switching Blair and Benn keeps the number of errors at one. Crucially though, when we now shift the cut points, we can place radical constitutional reform between them, and all errors are eliminated.

<div align="center">6</div>

| Benn | *Constitution* | Blair | *New Deal* | Hague | *RUC* | Paisley |

The order is now correct; 100 percent of the MPs are now classified correctly in one dimension. This data set was "error-free" insofar as these MPs, using our method, could all be arranged from left to right, given how they voted, without ambiguity. An example of an error would be observing that Paisley favoured the New Deal (alongside his previous preferences on the constitution and the RUC). In that case, performing the above iterated procedure would reduce errors to one, but could never be reduced below that number.

4   A Paradox of Accuracy

The OC procedure for 1997-2001 parliament has some contradictory results. The empirical problem we observed is noted in section 2. Yet, in terms of accuracy, a one-dimensional rank ordering reported correct classification of 99.1 percent of MPs. This somewhat paradoxical outcome is explained by reference to two empirical realities of Commons voting. First, the presence of well-organised, institutionalised, opposition parties—with 'opposition mentalities'—ensure that *perfect* (sincere) voting, the core assumption of the statistical model, is not the case on most bills. When government MPs rebel and vote *sincerely* against the government they align with this *non-sincere* opposition. Second, the huge number of very tightly whipped votes relative to the tiny number of non-whipped votes yields an accuracy statistic that is utterly misleading in this context. That is, the vastly different numbers of these types of divisions make the OC scalings hyper-sensitive to small numbers of defections—and thus MPs are misclassified when they (coincidentally, not ideologically) align with the opposition.

4.1   The Politics of Opposition

In Section 2, we noted that several left-wing members appeared on the right-wing of the Labour party for an OC one-dimensional analysis. We argued that on (some) Government bills seeking to alter the status quo 'rightwards' in an ideological sense, these MPs rebelled against their own party in government. This was consistent with a spatial model of preferences over a policy space. By similar logic we should typically expect the Conservatives (approximately two-thirds of the Opposition) to vote in favour of government proposals delivering outcomes to the right of the status quo, and against those that result in a move left. If Conservatives (and other Opposition members) do indeed consistently vote in this sincere sense, we can be confident that the left-wing Labour members will appear left of the bulk of the Labour party.[8]

This doesn't occur because Conservatives frequently vote *non-sincerely*[9]. That

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[8]Note that we require Labour rebels to the left of their party exist for this problem to arise. If the Government were made up of left wing MPs, then any right-wing rebels in the party would be correctly placed.

[9]Alternatively, vote "sophisticatedly" or "strategically".

is, they vote *against* the Government even though the Government's proposals are *closer* to their ideal points than the status quo. Technically speaking, preferences over the policy space exhibit *non-single peakedness*: the Conservatives utility functions are increasing in the 'right wingness' of bills and declining in their 'left-wingness', except when the Government is proposing the bill. Essentially, there is a non-linearity in the cut points (and the utility functions of the Opposition).

This situation arises because the 'culture of opposition' in Westminster systems compels Opposition parties to attempt to defeat the Government as a first preference, (usually) irrespective of the bill at stake[10]. Hence, a scenario in which left-wing Labour MPs vote the in the same way as Conservatives (or other Opposition members) arises with sufficient frequency that these Labour member appear to the right of their own party. The Opposition and left-leaning Labour members appear in agreement – though this accord is spurious in ideological terms.

The OC-scaling derived from this data simply reports maximal to minimal agreement with the majority of the Commons—the majority that introduces bills (through its executive). Hence, the Conservatives disagree with the Government almost always and appear on the right. Rebel Labour MPs do so similarly, and also appear to the right of their own party. Lib Dems vote with the Government half the time, and against them the other half. They thus appear between Labour and the Conservatives and so on *mutandis mutatis* for the other groups.

It is salient that this peculiarity is not *simply* the product of whipped voting. Commentators such as Londregan [4] have warned analysts about interpreting OC-like results for Britain viz misleading ideal points of MPs. However, in the OC case, tight whipping (such that parties all consistently vote one way in a division) and sincere voting (in a unitary actor sense) would yield results congruent with intuition. These results would not be interesting or informative (since the number of *different* scores in the Commons would—at maximum—be equal to the number of different parties), but they would see Labour on the left and the Conservatives on the right (with the other parties distributed amongst them). The problem of Westminster-style data is that parties *do not vote sincerely* and this sophistication is *then* whipped through the party blocs.

4.2   Misleading Accuracy

Appendix B gives the iterations report from the OC rank order for 1997 to 2001. From the first iteration there are practically no errors of the sort alluded to in Section 3 (just 1 percent by the 8th iteration). The proportion of those correctly

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[10]Obviously, there are exceptions here: the Conservatives typically back the Government on Northern Irish and Defence policy

classified by the simple rearranging of cut points and then legislators is some 99.1 percent. By contrast, for the US 107th Senate the comparable figure was 91.9 percent. Our data set seems perfect. Yet, as we know, this accuracy report is misleading.

The overestimation of precision is a product of the high number of votes that are whipped along party lines relative to those that are either 'free' or, despite being whipped, have a substantial proportion of rebels (on either side of the House). Less than 1 percent of all the votes in the 1997 to 2001 parliament were 'free' in the sense that there were no party guidelines on how to vote. Moreover, even when votes are purportedly 'free', they may not be in practice—the House of Lords reform packages considered in February 2003 are an example of this phenomenon [8].

Consequently, the great majority of divisions will be 'perfect'. Even the rebels—in terms of their actions—support their own party on almost all issues. Thus it is hardly surprising that the correct classification levels are so high. In fact, the left-wingers deviant behaviour on a (relatively) tiny number of votes is sufficient to place them (score them) differently to the majority of their party. We have high accuracy, but an extremely sensitive measure.

To be clearer here, if we observed another 1000 party whipped votes in the Commons, the correct classification statistic would climb even higher and would approach 100 percent in the (not too distant) limit as the number of free (or quasi-free votes) becomes a vanishingly small proportion of all votes cast. With this ersatz exactness would come a measure so sensitive to 'unusual' divisions (and such an estimator bias) that serious doubts would be cast on the very *use* of the technique at all.

5   Generalising the Guttman Problem

The Guttman family includes Guttman scaling itself, OC, as described in this paper, and the NOMINATE family. Poole and Rosenthal have acknowledged that their NOMINATE family is a descendant of the venerable technique of Guttman scaling [11]. The difference between Guttmanoid single-dimensional scaling programmes like Edith and NOMINATE is that the former tend to place mavericks at the extremes while NOMINATE places them at the center of two-dimensional space. We argue that that corrects one error but creates another.

W. O. Aydelotte spent over twenty years in the heroic collection and classification of rollcalls in the UK Parliament of 1841-47. He was the founder of the Iowa school of legislative studies. The Aydelotte dataset has been described elsewhere [7] and has been used for secondary analysis [7][6][15]. When first supplied to one of the present authors, it arrived in 80-column punched cards. A file of the Aydelotte database set-up for current versions of SPSS, with some additional vari-

ables, is freely available to download at http://www.nuff.ox.ac.uk/users/mclean.

The Parliament of 1841-47 was the best one that Aydelotte could have chosen, for both substantive and methodological reasons. It laid the foundations for modern British society with bank, railway, and factory regulation that remain recognisable today. It broke away from earlier sterile Ultra-Protestantism by funding the Catholic seminary in Maynooth, Co. Kildare, Ireland. It responded (albeit inadequately) to the Irish famine. And it produced the biggest upset in British Parliamentary history, when Prime Minister Sir Robert Peel and leader of the House of Lords the Duke of Wellington forced through Repeal of the Corn Laws, an action which countered the material interest of the ruling Conservatives and heralded the era of Victorian free-trade imperialism [6].

Party discipline was much weaker than in modern times. On some matters, e.g., factory regulation, the winning coalition was unpredictable and cross-party. The great revolts on Maynooth and the Corn Laws split the governing Tories into those who followed their ideology (Ultra Protestant, rural, protectionist) and those who followed their Prime Minister. Peel carried Repeal of the Corn Laws in the Commons with the support of almost the whole Opposition and only a third of his own party. Those who wrongly call the two Labour Iraq rebellions of 2003 'the biggest Commons revolt against a government by its own supporters' have forgotten (if they ever knew) 1846.

By Guttman scaling of 186 divisions, Aydelotte derived 21 scales. He showed that 101 divisions lay on what he called the Big Scale, which linked voting patterns on Ireland, free trade, and established church issues. Others of his scales were harder to interpret, and neither he nor any secondary analyst has succeeded in doing so. One of these was the 'Miles motion scale'. Philip Miles was a protectionist Tory who periodically moved to reduce sugar duties. Miles was, in Rikerian terms, a heresthetician [17][6]. He saw an opportunity to embarrass the government by finding a motion on which protectionist Tories to its right would vote on the same side as anti-slavery radicals on its left. Miles' motions were actually spot on the main ideological issue dimension of the day. But Guttman scaling failed to classify them into the Big Scale where they should have been, because it failed to recognise the sophisticated voting of some MPs.

The Peel government was brought down a month after the enactment of Repeal by another heresthetician, Benjamin Disraeli. Disraeli moved to oppose the government's Irish Coercion Bill and won. He formed an alliance of Ultra, protectionist Tories (who approved of Irish coercion and had always voted for it before, but who now detested Peel with every fibre of their bodies) and Whigs and Radicals (who had always opposed Irish coercion before). Again, one of the most important votes in the 1841-47 Parliament fails to scale.

Poole and Rosenthal have acknowledged their debt to Riker; Poole holds a Ph.D from Riker's department at the University of Rochester. But they use

their analysis of all rollcalls since the First Congress [14][9] to attack a central claim of Riker's. Riker claims that politics is potentially in multidimensional chaos, and that at key moments it may be radically restructured. He identifies key moments in 1787, 1820, the 1840s, and the 1850s, in which C. C. Pinckey, James Tallmadge, David Wilmot, Abraham Lincoln, and other heresheticians arranged votes on the dimension-busting issue of slavery to their political advantage [16][17]. Riker's claims have always been controversial (see [5] and sources cited there). The critics object that only a few canonical cases of cycling have ever been found, and that most of those dissolve on closer inspection. Poole and Rosenthal have lined up with the critics. They claim that the dimensionality of opinion has always been low and that chaotic outcomes have been observed only a small number of times in Congressional history.

But their method is biased against the Riker hypothesis, and therefore cannot be a fair test of it. A legislative cycle can arise in either sincere or sophisticated voting. Let us concede that Riker exaggerated the probability of cycles in sincere voting. But whenever a killer amendment succeeds, there must have been a cycle, at least in sophisticated voting:

> For an amendment to qualify as a killer . . . the following conditions must be met:
> C1: It is believed that the bill under consideration, if unamended, would beat the current status quo.
> C2: It is believed that this bill would lose to at least one amended form of the same bill.
> C3: It is believed that the amended bill (the bill containing the killer amendment) would lose to the status quo ([3]:500)

And where there is sophisticated voting, the Guttman family of methods, even when they try to correct for the errors of Edith, throw up the nonsense results analysed in this Note.

Therefore the jury remains out on Riker's central claims. And the Guttman family of methods should be applied only with caution to legislatures in which there is sophisticated voting.

6   Discussion

This note observes two *specific* and interrelated problems with Optimal Classification (OC) procedures for the British parliamentary data. First, the one dimensional, supposed rank orders of MPs from left to right—liberal to conservative— are misleading. Left-wing Labour rebels line up to the *right* of their own party. This is because they ostensibly 'agree' with HM Opposition in divisions where they attempt to defeat the Government. But this congruence is specious insofar as the left-wing Labour members reject the Government's proposals on a (spatial) ideological basis, whilst the Opposition (particularly the Conservatives)

reject them as part of their 'opposing' constitutional role. Since OC scalings simply place legislators in a list broken by cut points, it is hardly surprising that these two observationally equivalent causes of dissent are not distinguished by the procedure.

A second problem concerns the accuracy reports of the procedure. We argued that the scalings, which are lumpy in distribution, are highly sensitive to very infrequent breaches of party whipping arrangements by rebel members. As a result, some 99 percent of legislators are 'correctly classified' in one dimension, but this precision simply reflects the huge relative numbers of (uninteresting, uninformative, generally predictable) whipped votes compared to handfuls of (quasi-)free votes. Yet it is these latter that 'do all the work' of differentiating the scores of sub-party groups of MPs.

This note also alluded to a *general* problem of Guttman-like scaling: that sophisticated voting will lead to misclassification of parliaments. Two empirical examples were given and, in conjunction with the evidence we noted in Section 2, they suggest that analysts may have difficulties in using such scaling methods.

These problems should not *entirely* discourage professional students of British politics from using Optimal Classification procedures (or their close relatives) though. Rather, political scientists must be ready to make alterations and adjustments to the scope and nature of their analysis.

One possibility is to use only 'informative' data. Particularly, (quasi-)free votes, and votes with large amounts (say 10 percent) of rebellion from majority party decision might be used. This data is informative insofar as it meaningfully reveals legislator's ideal points since whipping and 'opposition for oppositions' sake' tends to be muted. Further, a database of substantively *classified* divisions would allow finer grained policy-preference interpretations of the derived results. The technical innovations by Firth [1] and Firth and Spirling [2] make such approaches possible

It might be that different time periods will not suffer the drawbacks of OC in the current context. That said, we do not imagine that the data set we chose is unusual in any important respect. In this case it was the 1279 divisions that took place between the Opening of Parliament in November 1997 and the dissolution for the 2001 General election, in which Tony Blair presided over a landslide Labour majority. In Conservative administrations, it might be that there are no Tory rebels, and, since the left-wing and centrist Labour MPs should *ideologically unite* to vote against such a government's policy proposals, our first problem may not arise. But the second will.

For those studying the British parliament, or indeed any Westminster-style system, these are exciting times. Recent progress in Britain enables such scholars to use the techniques with which America's political scientists have transformed

12

their discipline. Non-Americanists should be cautious and consider carefully the drawbacks above, but should nonetheless embrace this latest development as a harbinger of progress.

A   Rank Ordered Sample of MPs from 'left' to 'right' 1997-2001

Case number	Name	Party	Score
1	Galbraith, Sam	Lab	1.5
2	Radice, Giles	Lab	1.5
3	Morris, John (Abe)	Lab	3.5
4	Stevenson, George	Lab	3.5
5	Maxton, John	Lab	5.5
6	Ashton, Joseph	Lab	5.5
249	Blair, Tony	Lab	232
340	Prescott, John	Lab	343
404	Dalyell, Tam	Lab	404.5
405	Marshall-Andrews, Robert	Lab	404.5
411	Skinner, Dennis	Lab	411
416	Corbyn, Jeremy	Lab	416
420	Abbott, Diane	Lab	421
421	Benn, Tony (Che)	Lab	421
422	Livingstone, Ken	Independent*	421
426	McGrady, Eddie	SDLP	427
427	Grant, Bernie	Lab	427
429	Jones, Ieuan Wyn (Yny)	Plaid Cymru	430
430	Hume, John	SDLP	430
431	Salmond, Alex	SNP	430
433	Bell, Martin (Tat)	Independent	433
434	Mallon, Seamus	SDLP	434
456	Ashdown, Paddy	LD	459
463	Kennedy, Charles (Ros)	LD	459
490	Woodward, Shaun	Lab*	490
491	Trimble, David	UUP	493
495	Heath, Edward	Con	493
603	Hague, William	Con	604.5
645	Widdecombe, Ann	Con	644
666	Paisley, Ian	DUP	667
667	McCartney, Robert	UKUP	667
668	Ross, William	UUP	667

*Note that MPs are classified according to their party affiliation at the end of the parliament, before the general election of 2001. Thus, Ken Livingstone is classed as an Independent after being expelled from Labour in April 2001. See also footnote 5.

B Goodness of fit statistics for OC analysis of 1997-01

Iteration	A	B	C	D	E	F
1	ROLL CALLS	1	5895	516264	0.01142	0.98858
2	LEGISLATORS	1	4928	516264	0.00955	0.99045
3	ROLL CALLS	1	4643	516264	0.00899	0.99101
4	LEGISLATORS	1	4527	516264	0.00877	0.99123
5	ROLL CALLS	1	4494	516264	0.0087	0.9913
6	LEGISLATORS	1	4469	516264	0.00866	0.99134
7	ROLL CALLS	1	4467	516264	0.00865	0.99135
8	LEGISLATORS	1	4452	516264	0.00862	0.99138

Column A gives the subject of movement in the iteration.

Column B gives the number of dimensions of the analysis.

Column C gives the number of classification errors.

Column D gives the number of choices.

Column E gives the error proportion.

Column F gives the correct classification proportion after the respective iteration of the OC procedure is complete.

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