The Other Side of Urban Reform:
Insurgents and Issues Under City STV, 1930-61

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Abstract

Conventional wisdom holds that Progressive reform was uniformly bad for democracy. This article looks at city council politics under an alternative reform type: proportional representation by the single transferable vote. With novel data from three large cities, I use optimal classification scaling to measure the dimensionality of roll call voting. Qualitative evidence links variation in dimensionality to the success of insurgent candidates. Statistical tests show that the effective number of dimensions varies positively with competition among council winners, measured as the effective number of winning candidates.[1]

Keywords: dimensions, roll call voting, single transferable vote, urban politics.

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1. This version is identical to the MPSA 2016 version except for the addition of Figure 4.

1   Introduction

Was Progressive reform bad for democracy? The balance of evidence suggests it was. Key reforms included nonpartisan ballots, small city councils, city manager government, and at-large elections. Many find that these decrease voter turnout and bias public policy (Hajnal 2010; Trounstine 2010). Others give evidence of reformers' classist and/or racist motives (Banfield and Wilson 1966; Bridges and Kronick 1999; Southern 2005; Trebbi et al. 2008). To dominate reformed governments, reformers formed "good government" political parties. These non-partisan slating groups (NPSG) rationed nominations and organized middle-class voters (Bridges 1997). In the most extreme cases, NPSG controlled local government for decades (Trounstine 2008).

But not all cities combined at-large elections with plurality formulas. In 24 of them, reformers instead opted for the single transferable vote (STV) form of proportional representation (PR) (Childs 1965; Weaver 1986).[2] Narratives suggest these legislatures were uniquely open to enterprising, individual politicians (Hoag and Hallett 1926; Barber 1995, 2000; Amy 1996, 2000, 2002; Alesina and Glaeser 2004). I am not suggesting that self-styled "proportionalists" had lower-class interests at heart. Elsewhere I give evidence that this was far from true. Yet compared to at-large plurality, STV makes it easier for strong individual candidates to win (Carey and Shugart 1995, 425).

The goal of this paper is to characterize the politics of PR city councils. In particular, I want to understand the number and origin of their issue dimensions. When people are liberal

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2. I use the acronyms STV and PR interchangeably. Many treat STV as a form of PR that pre-dates mass parties or, at the least, a "degenerate" form. Examples are every reference in this paragraph, every case study cited in this paper, plus Boix (1999, 2010), Pilon (2006, 2013), Kreuzer (2010), Bormann and Golder (2013), and Farrell and Katz (2014).

or conservative, politics is one-dimensional. When they are socially conservative yet fiscally liberal, politics is two-dimensional. Low dimensionality is evidence that society either has few salient divides, or that various institutions constrain their expression (Arrow 1963). The parties literature makes sharp predictions about dimensionality. When parties are strong, their members suppress dimensions that divide them (T. Schwartz 1989; Aldrich 1995; Cox and McCubbins 2005; Bawn et al. 2012). Were local parties any different? My hunch, consistent with a large literature in comparative politics, is that it depends on the voting rules (Lijphart 1999; Powell 2000; Clark and Golder 2006).

The paper proceeds as follows. First I review approaches to measuring dimensionality. This is necessary for the second section, where I lay out my own measurement of city council dimensionality. A third section describes the relevant part of my municipal STV data set, which covers 5,127 non-unanimous roll call votes in three very different cities over spans of years ranging from 10 to 27. The fourth section discusses each city in depth. The fifth section gives statistical evidence that STV did what the classic studies suggest: permit the expression of new dimensions. In particular, I show across several specifications that an increase in elections' competitiveness is associated with an increase in council dimensionality.

I am not the first to look at roll call votes and election results in American cities with STV. The last comparative work centered on Ohio. It documented rates of council unanimity and variation in the relative strength of winning candidates (Barber 1995). Political science has since evolved, and this paper makes three big advances. First, I compare across states and periods. Second, I bring modern methods to an old set of concerns. Third, I connect election outcomes to council politics. Barber (1995) and coauthors found that unanimity was the norm. My data tell a different story.

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2 Measuring dimensionality

There are two big approaches to measuring legislative dimensionality. One is to assume a fixed set of dimensions, then count the ones that manifest. This is the approach of Lijphart (1999, 78-89), who defines seven issue dimensions and records their salience (high, medium, absent) in 36 nominal democracies, 1945-96. Taagepera and Grofman (1985) use a similar strategy and find that the effective number of parties in any country hovers around one plus the number of salient dimensions.

The other big approach relies on multidimensional scaling (MDS) of roll call votes. Scaling tools are numerous, with recent reviews by Clinton (2012) and Armstrong et al. (2014). In general, MDS begins with an incidence matrix of roll call votes (e.g., $yea = 1$, $nay = 0$, $missing = NA$, and so on). Factor-analytic methods were once popular, but most now rely on some implementation of the Hotelling-Downs spatial model. In the context of the spatial model, legislators are arrayed in a line, and each vote occupies a point in that line. Legislators on one side of the point favor the associated proposal, oppose it on the other side, and are predicted to vote accordingly. The number of lines (i.e., hyperplanes) to construct is up to the MDS user. At the broadest level, we know we have asked the computer for a sufficient number of dimensions when the model accurately predicts legislators' votes with some arbitrary rate of accuracy.

Moving from a sufficiently accurate model to statements about votes' dimensionality is the next step. The output of interest is a set of statistics or estimated parameters for the votes themselves. In a Bayesian item-response-theoretic (IRT) setting, the vote's point is a discrimination parameter, which is analogous to a factor loading (Jackman 2001, 234-5). In

the (D)W-NOMINATE framework, one can consult the votes' estimated midpoints, though Poole and Rosenthal (1997, 24) advise caution in this. Proportional reduction in error (PRE) is probably the most common starting point. PRE is the accuracy of an MDS model in predicting the minority's votes on a given roll call, compared to how it actually voted. The idea is to add dimensions to the model until PRE, aggregated over some theoretically relevant subset of votes to get APRE, reaches some desired level. This is the strategy of Poole and Rosenthal (1997, 48-51), who aggregate PRE by Clausen (1973) codes. When a two-dimensional model returns an increase in APRE of 0.2 or greater for a set of votes, they say that issue loads onto a second dimension. Noel (2013, 80-1) also uses APRE, asking how well a one-dimensional model fits pundits' revealed opinions on subsets of issues. Because doing so is beyond the scope of either project, neither approach asks how many dimensions are actually needed. Whether one uses vote parameters or change in some aggregated PRE measure, the core point is that, if one wants to know the "true" dimensionality of a space, one must compare the output of potentially many MDS models.

Roberts et al. (2015) argue for the use of marginal proportional reduction in error (MPRE), which they have explicitly designed for inter-model comparison. MPRE is a straightforward calculation of the percentage change in vote prediction errors when moving from an N-dimensional to an $(N + 1)$-dimensional model. Model adjudication with MPRE does not remove all subjectivity. Following Netflix, the authors use 10% as a prediction improvement cutoff. Nor does MPRE say which dimension best accounts for voting outcomes on a given roll call. What MPRE does contribute, however, is (1) a basis for comparing many models' predictions and (2) some sense of how many dimensions are manifest for a given roll call.

For those using MDS techniques, a final consideration is the kind of model to use. Like Roberts et al. (2015), this article uses optimal classification (OC). This choice flows from the quantity of interest. IRT and the NOMINATE framework are better for numerically summarizing legislators' revealed preferences. As Poole and Rosenthal (1997, 23) noted in the original work, though, OC is better for telling us how many orderings of votes and legislators we need to accurately predict roll call outcomes. That is, OC is preferable when we care not about ideal points but about dimensionality.

3   Measuring and characterizing council dimensions

My empirical strategy proceeds in two big steps. The first is to numerically estimate the number of dimensions needed to characterize a city's PR politics. The second is to say something about the substantive content of those dimensions.

First I construct a single roll call matrix covering the city's entire span with PR. For reasons discussed in the next section, I code abstentions as nays and absences as missing data.

I construct a single matrix because I am interested in how the content of politics changes over time. With a scaling technique that assumes static legislator preferences, this amounts to letting the agenda "swirl around" the legislators. If a sufficient number of legislators serve multiple, overlapping terms, they will confront different issues over their careers' courses. If these new issues coincide with the arrival of new legislators, I effectively allow new legislators to introduce new dimensions. If the dimensions are truly new, old legislators will not fit them, and the model will construct new dimensions.

Second, I determine a theoretically relevant cutoff (i.e., lop proportion) for votes to exclude. Including many votes in which the size of the minority is small is virtually guaranteed to produce a large number of dimensions. In essence, everybody casting a protest vote has a fair shot at controlling their own dimension.[3] To address this possibility, I omit any vote in which one-quarter or fewer vote in the minority.

Third, I generate one- and two-dimension optimal classification (OC) rankings using the `oc` package for `R`, storing the sum of yea and nay prediction errors for each roll call. In all cases, I use an "extreme" legislator to identify the model, although the directionality of ideal points in a model returning potentially many dimensions is probably not very interesting. Extremism is based on my impression after having manually entered all of the roll calls.

Fourth, I calculate MPRE. If it is less than 10 percent, I stop. Otherwise, I increase the number of dimensions by one, estimate OC again, and store the vote prediction errors. I repeat this process until the number of dimensions equals 10, which is the most `oc()` can estimate, or $MPRE \leq 0.1$.

Finally, to summarize the dimensionality of the matrix, I record the lowest dimension number that minimizes prediction errors for each roll call. This is the dimension loading of the vote. Then I calculate the proportion of votes loading onto each dimension, aggregating by legislative term.[4]

With dimensionality in hand, the next step is to characterize the nature of the "important" dimensions. This a computer cannot do. Availability of information on the substantive and procedural context of roll call votes varies – but is typically poor – both within and across

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3. I use the gender-neutral plural pronoun. See Noel (2013) for a defense.
4. Elsewhere I summarize the resulting table as effective dimensionality (ED), or the effective number of dimensions. That paper is available on request.

cities. In some cases, I can use newspapers to figure out what legislators really meant to accomplish with a particular item of business. In other cases, I have a bill's title.[5] In still other cases, I have nothing but a photograph of the page on which the vote appeared. Judgment calls cannot be avoided.

Which dimensions are important to characterize? This is a matter of informed judgment. For present purposes, I attempt to define the first and second dimension for each council-term. By "first and second dimension," I mean the two dimensions onto which the most and second most votes load for that term. For example, the first dimension in a given year may actually be the third dimension. Further, some dimensions are tied for first or second place in certain council-terms. In this case, instead of breaking the tie, I consider each tied dimension.

4 Data

I apply the procedure above to the roll-call portion of the municipal STV data set.[6] These data cover three cities, 25 council terms, 126 unique legislators, and 5,127 non-unanimous roll call votes. The cities are Cincinnati, Ohio (1930-57); New York City (1938-47); and Worcester, Massachusetts (1950-61).

The primary factor in case selection was representativeness. On the one hand, each of these cities is in one of the three states where PR use predominated (Childs 1965; Weaver 1986). On the other hand, each city differs from the others in important ways. One is region.

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5. No, topic modeling does not help here. The title of legislation is not natural language, and this reality is reflected in the output of topic models run with many specifications.

6. Another portion deals with NPSG and major-party affiliations of candidates, election results, and STV transfers.

Another is the timing of PR adoption: Cincinnati in the late Progressive Era (1924), New York during the New Deal (1936), and Worcester at its bitter end (1947). Each adoption involved a different configuration of national party actors (see the city vignettes below). The importance of civil rights also varied, with detectable conflict absent from Worcester (at the start of the project). Further, PR in each city coincided with a qualitatively different party system: well-documented two-partism in Cincinnati; obscure two-partism in Worcester; and full-blown multipartism in New York.

Critically, New York used PR in a different institutional context than the other two cities. Cincinnati and Worcester added PR to boilerplate council-manager systems: non-partisan, citywide elections with plenary authority in nine-seat councils. In New York, by contrast, each borough was a separate district. The STV quota was fixed at 75,000, apportionment varied with voter turnout, and the size of council fluctuated accordingly (Tanzer 1937). Further, New York retained its strong mayor while creating the Board of Estimate, which exercised veto and initiation authority in many areas (Shaw 1954). Elections were semi-partisan in that ballots included the written names of parties.

Roll call data come from three sources. For Cincinnati, I obtained weekly issues of the *City Bulletin: Official Publication of the City of Cincinnati*, 1930-57. New York roll calls come from semiannual volumes of *Proceedings of the Council of the City of New York*, 1938-1947.[7] Worcester votes are from the original minutes, 1950-61, in the City Clerk's vault.

Care is required in coding absences and abstentions. Substantive legislation in each city variously required majorities or supermajorities of the *entire membership* (Werner 1928;

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7. The City Council unanimously voted to give itself four-year terms in the 1944-45 term. This provision went into effect for the 1946-47 term. Because PR was repealed in 1947, I have not yet collected roll calls for 1948-49.

Tanzer 1937; Binstock 1960). In Cincinnati and Worcester, legislators were not allowed to abstain except with affirmative exemption from the council.[8] For these reasons, I code abstentions and analogous votes (e.g., "present" or "not voting") as "nay" for every city. For Worcester, there is a case to code some absences as "nay" votes. It is a point of local lore that members would exit the room instead of voting "no."[9] The minutes substantiate this lore. Affirmative or negative votes sometimes book-end absences recorded at the same meeting. Yet other absences were certainly sincere, and we cannot know which they were. For this reason, I code absences in all three cities as missing data.[10]

5   City vignettes

Three points are interesting. One is occasional movement of the most important dimension. A second is the coincidence, perhaps intuitive, of high dimensionality with PR repeal attempts. The third is how, especially for Worcester and to a lesser extent for Cincinnati, important people appear to control dimensions. I explain below. To help with interpretation of the figures, I give a brief vignette for each city. Extensive information on each of the cases is in other working papers, available on request.

5.1   Cincinnati, 1924-57

Cincinnati adopted PR in 1924 after a split in the Republican party. Those who broke off joined forces with the county Democrats. This coalition formed an NPSG, the Charter Party.

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8. Inferred from the process of data entry.
9. Casual conversations with city employees who observed me photographing the minutes. Collegiality was the main reason they gave.
10. More precisely, I code them as `notInLegis`.

There were five repeal attempts: 1936, 1939, 1947, 1954, and 1957. The first two coincide with the presence of a minor party, the Progressive Democrats, in council. One of their pet issues was municipal ownership of the gas utility. After 1941, they effectively merged with the Republicans.

African-American representation was initially through the Republican party. The most prominent example was Jesse Locker, who served through the mid-1940s through 1951. By 1951, Charter was led by an African-American Democrat and civil rights leader, Ted Berry. From 1950-1, both men served together.

Another repeal attempt in 1947 coincided with increasing suburban influence over downtown redevelopment issues (Burnham 1990). Immediately after it, Charter returned to power, after having been in the minority since 1939. The final repeal attempts in 1954 and 1957 involved Republicans, as had the previous attempts, but also a group of Democrats opposed to Charter (Reed et al. 1957; Miller and Tucker 1990). The 1954 effort followed a mayoral succession crisis pitting Democrats against Democrats and independent Republicans. A core issue that year was the African-American Democrat's championship of a new, municipal income tax.[11] The 1957 effort was overtly racist (Engstrom 1990; Burnham 1997). Critical to its passage was cooperation between the Republicans, self-described "old-line Democrats," and Congress of Industrial Organizations (CIO) locals.[12] Urban redevelopment issues were contentious in these final years (Gray 1959).

As Figure 1 shows, the first dimension is the most important in all terms except those ending in 1937, 1939, and 1941. These are the years in which Progressive Democrats had

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11. See my working papers on Cincinnati.
12. See working paper on Cincinnati.
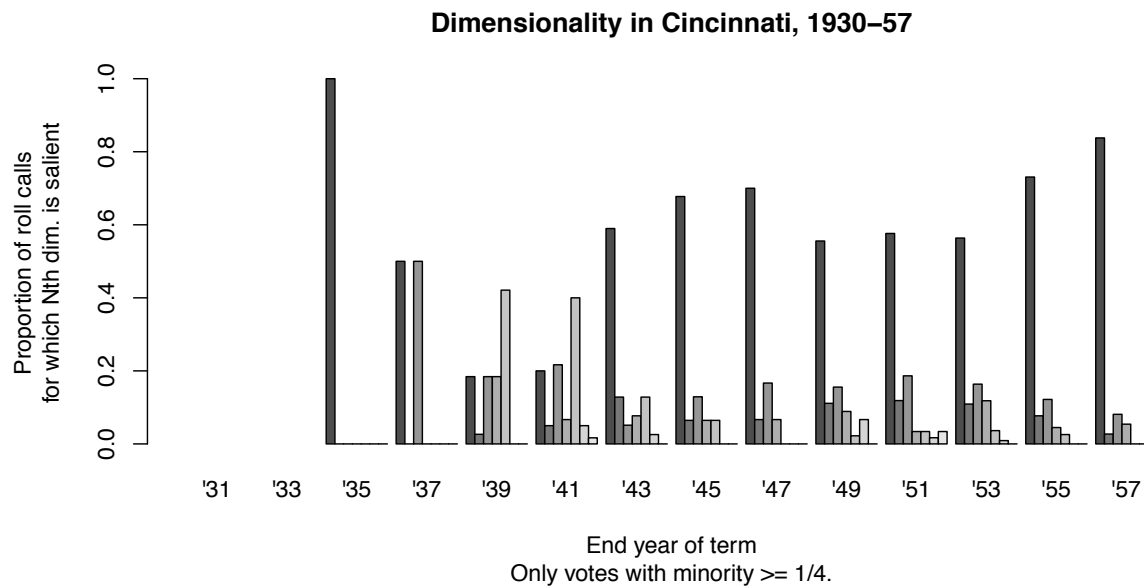
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Dimensionality in Cincinnati, 1930–57

Figure 1: Dimensionality of Cincinnati city council voting, 1930-57. Results are based on OC, all chambers as one matrix.

not yet made accommodation with the Republicans. Also interesting is the third dimension, which first appears in 1936-7, diminishes in importance by 1943, but gradually rises to a peak again in 1951. This is the term in which two African Americans served at once.

Dimension 3, which is the principal second dimension, strikes me as a "race-and-renewal" dimension. It opens dramatically with a resolution of support for the Wagner Housing Act, which launched a national debate on New Deal housing policy (Mollenkopf 1983). Into the late 1940s, it picks up such issues as crime-and-punishment, highway construction, how to charge suburbs for their use of city jails, and the investigation of refusals to grant taxicab permits. Into the 1950s, city employment, "the youth," rent control, Fair Employment Practices, desegregating different realms of public life, and public housing all become issues, among others. One wonders whether a bill to "increase the frequency of trash collection" was also a bill to generate more frequent hourly employment for African Americans (Sugrue

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1996). By the end of 1955, these issues have either collapsed into the first dimension or disappeared altogether. This fact is consistent with the role of "disaffected Democrats" in turning against Charter.

Movement of the principal first dimension to empirical dimension 5 in the late 1930s-1941 is consistent with the kingmaker role of the Progressive Democrats in council. It appears to pick up issues that would have concerned middle-class homeowners (illegal gambling, bike safety, parking meters). Yet it also picks up issues that would have been of concern to a New Dealer: federal grants, land takings, and the Works Progress Administration-funded construction of levees on the Ohio River and its tributaries. If the first dimension did shift to a redistributive-middle class orientation, this would be consistent with the actors at work. The PDs' leader was Herbert Bigelow, who caucused with the Democrats in the 75th House of Representatives. The regular first dimension absorbs many of these issues after his successor, Wiley Craig, joins the Republicans in the early 1940s.

5.2   New York City, 1936-47

A coalition of New Deal Democrats, the American Labor Party (ALP), and the LaGuardia "Fusion" congeries led the campaign for PR in 1936. Their main targets were the Democratic Parties of four of the five boroughs.

When the first council sat in 1938, Tammany Hall had not yet signed onto the New Deal (McCaffrey 1937). Famous city planner Robert Moses was an ally of both LaGuardia and PR. Although the City Council had limited power, it could remove items from the Mayor's budget with a veto-proof three-quarters vote, and it could override vetoes of local laws by

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two-thirds (Shaw 1954, 177, 225). The first PR elections returned a 13-13 "hung" council, and Democrats exploited an opposition absence to organize it (McCaffrey 1939).

Conflict between regular Democrats, on the one side, and LaGuardia-Fusion and "independent" Democrats, on the other, characterized the council's earliest terms. Yet neither side exhibited the cohesion of Cincinnati's early Charter Party. Republicans who had served under Tammany maintained their independence, as did Al Smith, elected as an independent in 1937 and 1939. J. A. Schwartz (1964) argues Smith simultaneously subscribed to Fusion's Progressive reformism and Tammany's opposition to the New Deal. Fusion, meanwhile, divided on the appropriate level of support to give public housing, which made relations with LaGuardia and Moses tenuous (Haygood 1993, 83-4). LaGuardia won re-election to a third term in 1941.

Later councils reflected a sort of *rapprochement* between regular Democrats and left-leaning elements in "the coalition."[13] Beginning in 1943, but especially after the 1945 election of Mayor O'Dwyer, these factions cooperated on issues of relocation housing, rent control, parking regulations, traffic congestion, air pollution, and poor relief. In 1943, in fact, they joined forces to overrule LaGuardia's veto of Council budget amendments. No bill proposed by either of two Communists ever passed. Critically in 1945, the Democratic Majority Leader decentralized the committee system (Shaw 1954, 216-225).

There were other examples of Tammany-Fusion cooperation. One was the return of a Democratic Mayor in 1945, thanks in part to the ALP endorsement.[14] This pattern extended also to the City Council where, in June 1945, members voted unanimously to lengthen their

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13. This was an informal term used in the *New York Times* and *Brooklyn Daily Eagle*.
14. See *Annual Report of the Board of Elections in the City of New York* for 1945 onward.

own term from two to four years.[15] A third was the rising influence of black district leaders in Tammany. Shefter (1986, 86-9) gives evidence that this accommodation was meant to forestall an African-American turn toward the Communists.

Left-liberal cooperation provoked reaction, however. Shaw (1954, 223) calls the final two councils a "three-ring circus." Fusion split into left and right wings, each literally maintaining its own meeting space. Less radical ALP elements split off into the Liberal Party in 1945, which won two seats (but supported PR). Shefter (1986) characterizes the Liberals as a rising middle-class element. A final development was the election in 1945 of freshman Republicans opposed to the ALP-backed O'Dwyer (Zeller and Bone 1948, 1132; Shaw 1954, 207-8).[16]

Voters repealed PR in November 1947 by a two-to-one margin. The initiative came mainly from Democratic borough presidents and county Republican leaders. Governor Thomas Dewey took no position. Reversing his earlier position, Robert Moses joined the attack (Zeller and Bone 1948; Prosterman 2013).

Unlike Cincinnati, New York City reflects no stable, principal second dimension. The empirical third dimension for 1940-1 and 1942-3 appear to share demolition issues (elevated structures, obstructions, elevated railroads). Some of the issues on the empirical fourth dimension for 1944-5 suggest that this was a "Communist Party dimension" (federal rationing, federal rent control, federal price controls). By 1947, the principal second dimension is the empirical second dimension, quite clearly a "redevelopment-education dimension." It includes the consolidation of departments that had administered New Deal-funded projects (Triborough Bridge, tunnels) as well as administrative design and tax incentives for the yet-

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15. See the minutes for June 5, 1945.
16. See also "Edward Rager Is Dead; A Councilman in the 40's," *New York Times*, June 26, 1986.
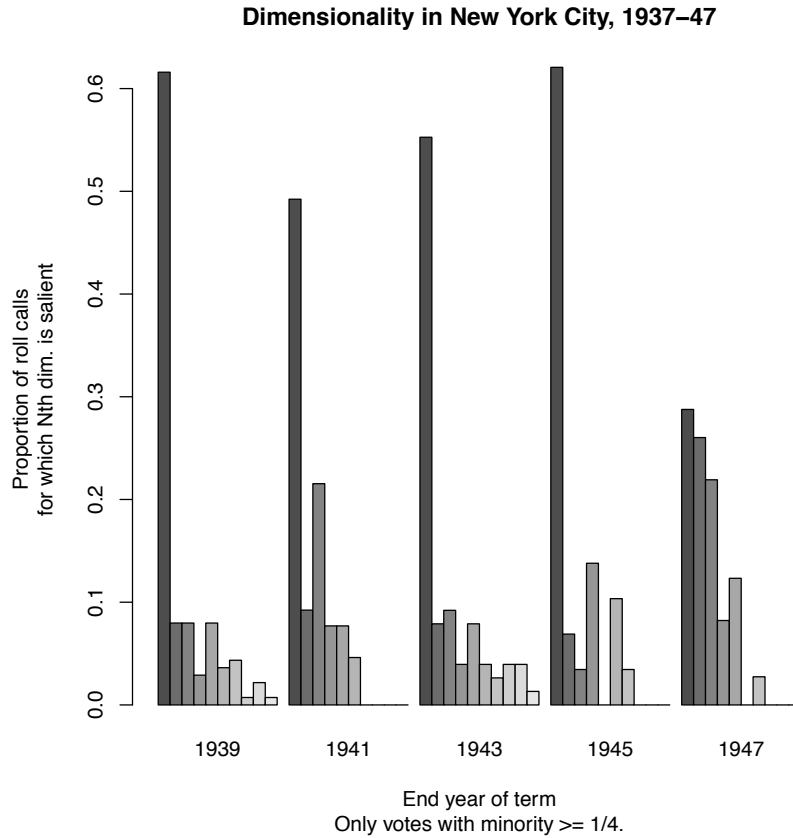
Dimensionality in New York City, 1937–47

Figure 2: Dimensionality of NYC City Council voting, 1938-47. Results are based on OC, all chambers as one matrix.

to-be-built Idlewild Airport (i.e., JFK International). It also includes several votes on the construction and/or improvement of public libraries and schools. One thinks of famed city planner Robert Moses and his reversal of position on PR.

Also unlike Cincinnati, the principal first dimension never migrates. This is consistent with Democrats' control of City Council during the entire PR period. Yet the first dimension should not be over-interpreted for 1946-47. Consistent with Shaw's observations about a "three-ring circus," council politics in this term is distributed very evenly across the first three empirical dimensions (Figure 2). One wonders whether, had the Democratic and Republican borough presidents not colluded to repeal PR, the first dimension might have

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migrated in a later term.

5.3 Worcester, 1947-61

Worcester Republicans and well-to-do Democrats enacted PR by initiative in 1947, against the wishes of the regular Democratic Party. Their version of Charter was CEA, or the Citizens' Plan E Association.[17]

As in Cincinnati, Worcester's coalition party evolved over the PR period. But one difference is that final repeal initiated within the party itself. One repeal attempt occurred in November 1959, at the behest of the regular Democratic party. Yet Council itself petitioned the state to authorize a second referendum in 1960. This vote divided both CEA and Democrats. Three months later, two who had voted to send repeal to referendum reversed their positions in a second, advisory vote.[18]

The best source on Worcester is Binstock (1960), whose report centers on the years 1958-60. Key issues in those years were, as in Cincinnati, expressways, downtown redevelopment, and opposition to relocation housing. Another issue was the apparent refusal of council members to replace a 1924 zoning ordinance, which Binstock (1960) argued was "badly out-of-date." CEA held 5-4 majorities in the final two terms with PR, which would not have been sufficient to amend a zoning ordinance (148). CEA frustration with zoning is reflected in an op-ed on council inaction. A second CEA op-ed claims that "emotions ran high" when some in CEA voted to repeal the very system their party introduced.[19] Mayhew (1986,

17. Plan E was Massachusetts' name for the PR-manager government form. All CEA members are identified from official slate announcements in the *Worcester Telegram*, on microfilm at the Worcester Public Library. All other party affiliations, when not noted in Binstock (1960), come from voter registration cards in a vault at the Worcester Election Commission.

18. Official minutes of Worcester City Council for November 16, 1959 and February 28, 1960.

19. Plan E (Zoning Ordinance) Editorials dated April and March 1960, respectively, in the Edward C.

149) relied heavily on the Binstock report when placing Massachusetts at the bottom of his "traditional party organization" scale. From a bird's-eye view, CEA and regular Democrats were indistinguishable.

Other sources suggest a similar state of flux in earlier years. A 7-2 CEA-led council adopted Worcester's official map on June 9, 1953, but this vote also split the parties.[20] Official platting of this type would have paved the way for redevelopment later in the decade.[21] Elections in November 1953 reduced CEA to 4 of 9 seats, bringing regular Democrat James O'Brien to the mayoralty.

Well-off Democrats apparently joined the regular party in growing opposition to PR after 1955, leaving the Republicans isolated. When several Young Democrats (YDs) landed positions on the CEA board, newspapers reported an "invasion" of "amateurs." O'Brien applauded them, and rumors circulated that the Republicans would run their own slate that year.[22] YDs in 1955 also attacked a CEA rule requiring candidates to support PR in public statements.[23] They gradually dominated its nominating process. In 1957, CEA ran O'Brien and fellow regular Democrat Michael Favulli. Both voted for the final repeal measure. One CEA Republican did not, and the only other Republican abstained.

Three final points are worth note. First, Weaver (1986) records a repeal attempt in 1955, the year Republicans flirted with leaving CEA. Official election returns are complete and

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Banfield Collection, Funk Library, University of Illinois at Urbana-Champaign. Both were once attached to the Binstock (1960) report.

20. Official minutes for June 9, 1953.

21. Local lore connects adoption of the map to a catastrophic tornado occurring the same day.

22. Currier, Charles. "Many Democrats Here Supporters of PR." *Worcester Telegram*, March 15, 1955. And: Currier, Charles. "GOP to Run Council, School Board Ticket In Fall Plan E Election." *Worcester Telegram*, May 15, 1955. Both on file in the Plan E/CEA Collection, unsorted, at the Worcester Historical Museum.

23. Looney, Marguerite. Letter to the editor, *Worcester Telegram*, March 19, 1955. See also meeting minutes of the CEA Board for May 16 and June 20, 1955. All on file in the Plan E/CEA Collection, unsorted, at the Worcester Historical Museum.

reflect no such attempt.[24] Second, it took 318 roll calls and more than three months for Council to pick a mayor in 1958.[25] Third, facing the prospect of a similar deadlock in 1960, three contenders agreed to rotate the mayoralty for the duration of the term.[26]
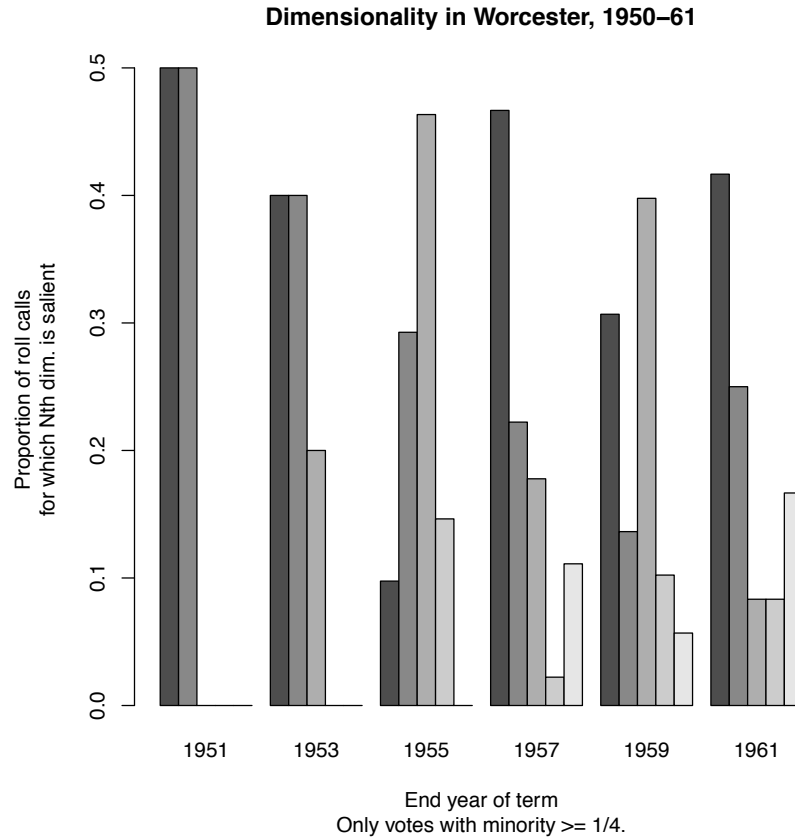
Dimensionality in Worcester, 1950–61

Figure 3: Dimensionality of Worcester City Council voting, 1950-61. Results are based on OC, all chambers as one matrix.

Figure 3 presents dimensionality for Worcester's PR period. Consistent with CEA's loss of council control in 1954-5, the principal first dimension migrates to the empirical third dimension. This looks like a "housing-development" dimension. It picks up conflict over the delayed rezoning, rent control, the eventual Housing Authority, investigations thereof, and federal funding for it. It also picks up issues that would have been related to residents and

24. On file at the Worcester Election Commission.
25. Official minutes for June-March 1958.
26. Interview with Paul V. Mullaney, June 2015.

businesses in the path of expressway construction, which is opposed on the first dimension in 1956-7. These include the ease of transferring liquor licenses between properties and opposition to the purchase of dump trucks (presumably for construction).

The third dimension is most interesting to follow, emerging in 1952-3, dominating the agenda in 1954-5, and fading to last place by 1960-1. When it is second-most salient, it shares many issues with the first dimension. Differences appear to be more about what to do with the same issue, rather than whether to introduce a new issue.[27] For example, the first and third empirical dimensions are virtually tied for first place in 1958-9. Both are concerned with Housing Authority appointments, but the third has a more redistribute flavor. Here, members are dividing on seeking federal funding and whether to investigate the agency. We also get signs that the third dimension involves conflict over whether to curry favor with city employees: a study of their salaries, the extension of seniority to teachers with experience outside the school system. Other potentially redistributive aspects unique to this dimension include welfare spending and lowering the voting age. One guess is that this is party-switcher O'Brien's dimension.

There are important issues, but the politics look more personality-driven, which is consistent with Binstock (1960). Recall that CEA was quite permeable. Young Democrats colonized its Board in 1955, and O'Brien won its nomination in 1957. These developments are reflected in the migration of the principal first dimension from the empirical first dimension to the empirical third dimension for 1958-9. The principal first dimension also becomes the empirical third dimension in 1954-5, the one year that CEA lost council control.[28] Both

27. This raises questions about what constitutes an issue in the first place.
28. These results are slightly sensitive to the particular run of OC iterations. The basic proportions of bills loading onto each dimension do not change, but the identity of the second largest dimension does, though by a hair.

track the evolution of O'Brien's career.

5.4   Recap: dimensions' substance in each city

Wholesale movement of the principal first dimension appears associated with a major shock to the local party system. The best examples are Cincinnati's Progressive Democrats in the late 1930s, later absorbed by the GOP, and Worcester's Mayor O'Brien, later a key CEA figure.

There are also a few patterns in the evolution of certain dimensions. Cincinnati's third dimension clearly reflects issues of racial discrimination and race-related redevelopment grievances. By 1957, when liberals dominate the Charter Party, the third dimension recedes. Perhaps not coincidentally, "old-line Democrats" and labor unions excluded from government participated in changing the voting system. Worcester's O'Brien dimension follows a similar course, emerging first in 1952-3, surging in 1954-5, and receding to last place by 1961. In New York City, the fourth dimension emerges in early councils, when the ALP is the major left-wing player, and peaks in 1944-5 with the reported influence of two Communist Party members.

If anything emerges from the foregoing analysis, it is the importance of ephemerally popular individuals or minor parties. Sometimes a new individual or party arrives to carry on their work (e.g., race in Cincinnati, left politics in New York). Otherwise the dimension dies out in a successive term, either because another dimension absorbs it or the issue goes away. Further evidence for the importance of people is the frequency with which the same issues appear on the first and second dimensions. There is probably much strategic voting

and bill proposal. One example of this, a "parking" bill for 1952-3 in Cincinnati, would have allocated receipts from increased meter rates to slum clearance and housing construction. The importance of personality means we may be able to explain dimensionality itself as a function of important people.

6   Explaining dimensionality

How can we account for varying levels of dimensionality across council terms? My proposition is simple. STV leaves ample room for enterprising politicians to win seats. This is because election outcomes under STV largely depend on three factors: party control of nominations, party coordination of the flow of vote transfers (i.e., voters' rankings), and whether voters follow those instructions (Farrell and Katz 2014)

The centerpiece of STV is a Droop quota, which is the number of votes a candidate needs to win a seat. Given that V is the total number of valid votes and M is the district magnitude, a Droop quota is:

$$\frac{V}{M+1} + 1$$

This means that, in a district of 9 seats and an election with 100 valid ballots, any single candidate who can organize 11 voters is guaranteed a seat.[29] By necessity, that seat will not go to the member of a regular party slate. This fact is a problem for parties. Specifically, it means they have to co-opt upstart candidates (witness Cincinnati's Progressive Democrats after 1939 or O'Brien's entry to CEA after 1957). Co-optation might mean becoming a good "party man" in return for organization support, but this imperative vanishes if the candidate

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29. Nine is not coincidentally the district magnitude under a template council-manager charter.

can muster a very large number of votes. In the event that they organize more than a quota's worth, they are positioned to direct their own vote transfers. If they get close to a quota, transfers to them will give them a surplus, and they will again be positioned to direct their own transfers.

The typical pattern in the municipal STV data was for a party's leader to amass an over-quota share of first-preference votes. They were then positioned to direct transfers to co-partisans. On rarer occasions, though, candidates outside the two-party system achieved first-preference shares well in excess of quota (e.g, Progressive Democrats, James O'Brien). This also happened within a party's ranks, such that two candidates effectively led its ticket in a given year (e.g., Jesse Locker (R) and Ted Berry (Charter-D)). Under the right circumstances, STV made it easy for popular figures to destabilize the local party system.

Party system challenges were probably not built on thin air. That is, they were based on grievances that portended new legislative dimensions (e.g., desegregation, relocation housing, postwar hyperinflation). These grievances found expression in council politics when they produced winning candidates.

Hypothesis: The dimensionality of council business varies directly with competition among the strongest winners.

6.1   Variables

I operationalize competition among winners as the *effective number of winning candidates* (ENWC), which is a workhorse inverse Herfindahl index of their vote shares. The purest measure of competition would be to count the number of candidates over quota, with two

normally expected (each party's leader) and three the aberrant outcome. This does not work in New York City. Despite a fixed Droop quota of 75,000, the vast majority of candidates simply won because all others had been eliminated. Further, parties competed with varying strength across the five boroughs. ENWC is a context-netural way to deal with this particularity. Consider two cases. In the first, the top two of nine winners (the party leaders) each win 25 votes. All other candidates win equal shares of the remaining 50 percent. In the second case, the first winner (party leader) gets 25 percent of votes, the second and third winners get 12.5 percent each (divided leadership), and remaining candidates get equal shares of the other 50 percent. In the first case, $ENWC \approx 6.2$. In the second, $ENWC \approx 7.4$. The difference between these scenarios is precisely what the effective number of winning candidates is meant to capture.

Relevant election data come from *Results of Elections in Hamilton County*, 1929-55 (odd years); *Annual Report of the Board of Elections in the City of New York*, 1937-45 (odd years); and official results on file at Worcester City Hall, 1949-59 (odd years). For New York City, I construct a weighted average of the borough-level calculations. Weights are equal to each borough's share of council seats in that term.

The dependent variable, *effective dimensionality*, is the result of applying the procedure in section 3, then calculating inverse Herfindahl (H) indices of the proportions of roll calls that load onto each dimension. I deviate from the procedure in three ways. First, rather than discard votes, I include effectively all of them (the OC default lop proportion is 2.5 percent). Second, I run the procedure on separate matrices for each council term. Without reduction, this information could appear in bar graphs like those above. Calculating inverse H reduces that information to a single number for each term. Third, rather than hand-pick

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an "extreme" legislator to orient the model, I instruct the computer to use the legislator who cast the most nay votes in each term.

Figure 4 displays both measures, effective dimensionality and ENWC, for all three cities. In each, change in dimensionality responds positively to increases in ENWC.

**Effective dimensionality (solid) vs.
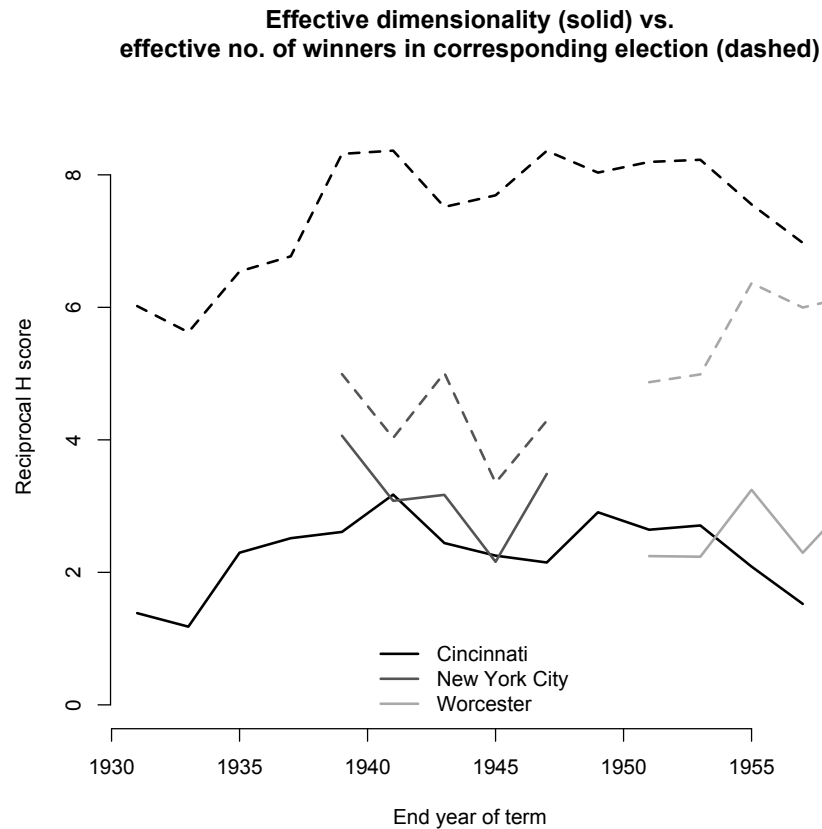effective no. of winners in corresponding election (dashed)**

Figure 4: Effective dimensionality of council business tracks leadership challenges in the corresponding election, measured as the effective number of winning candidates.

I also include several controls. The first two, *machine* and *coalition unity* are mean party unity scores for each term, using the method of Hix et al. (2005). Their agreement index is an update of the familiar Rice cohesion score, but because I code abstentions as nays, the measures are virtually identical. I use "machine" heuristically. By this, I mean the party in power before PR. By "coalition," I mean the Charter in Cincinnati and the CEA

in Worcester, respectively. In New York City, I mean all parties and independents (i.e., Al Smith) that were not the regular Democratic Party. Contemporaries literally called this grouping "the coalition," and Shaw (1954) handles it similarly.[30]

Nominal coalition control is a dummy variable that equals one if the coalition nominally controlled the chamber. In Cincinnati and Worcester, this is the mayor's partisanship. In New York, it is the partisanship of the Majority Leader. Charter, the CEA, and New York's "coalition" were all coalitions formed to campaign for PR. If coalitions are meaningfully different from parties, we might expect periods of coalition control to be associated with spikes in dimensionality. When I estimate change models below, this becomes a dummy indicating whether council changed hands that term.

Polarization is the absolute value of the distance between the median ideal points of machine and coalition legislators. Following Shor and McCarty (2011), I generate ideal points with a one-dimensional Bayesian item-response model (Clinton et al. 2004).[31] Polarization may be the marker of highly organized parties. Many believe that parties are instruments for suppressing dimensions (T. Schwartz 1989; Aldrich 1995; Bawn et al. 2012).

Finally I include fixed effects for each city, with Cincinnati as reference category.

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30. See also "Coalition Death Due to 'Spoils,' ALP Charges," *Brooklyn Daily Eagle*, January 9, 1939.

31. Following Jackman (2001, 236), I generate 1.5 million samples for each parameter with a burn-in of 100,000 iterations and a thinning interval of 2,000. I use default start values and the `ideal()` command in R (Jackman 2015). Convergence diagnostics are available on request. Results are based on omitting any vote in which one (Cincinnati and Worcester) or two (New York) legislators voted in the minority. They are not substantively different when a lop proportion is unspecified. Ideal points are normalized for one-dimension identification. Rotational invariance is irrelevant in this setting.

6.2 Results and discussion

I estimate three types of models. The first is a naive ordinary least squares (OLS) regression. In the second, I log effective dimensionality to minimize bias from outliers. In the third type, I regress change in effective dimensionality on change in the predictors. The change models eliminate bias from unobserved, time-invariant confounds. They ought to provide the most persuasive evidence.

Figure 5 display results from the naive OLS and full change models. A conventional table with results from all models is in the appendix. In each, the coefficient on effective number of winning candidates is precisely estimated at the conventional level of statistical significance. Of the variables considered, competition among the winners is the best predictor of high legislative dimensionality.
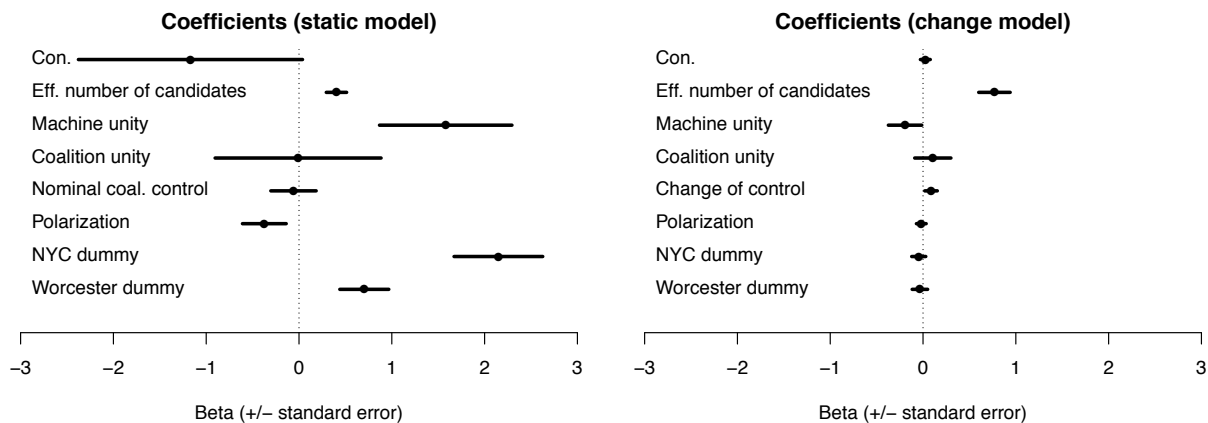
Figure 5: Plot of coefficients and standard errors for the naive OLS and change regressions (also OLS). $N = 25$ on the left, and $N = 22$ on the right. Results for the logged dependent variable model are in the appendix. The results are not substantively different from those of the naive OLS model.

The results for polarization are interesting. Polarization is measured in the same period as dimensionality. The measure is based on a similar model of the same underlying data.

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Yet polarization does not move with overall dimensionality. This result is consistent with other studies showing that high dimensionality and party polarization can coexist (Aldrich et al. 2014). One of those studies uses methods similar to these (Roberts et al. 2015). All of this suggests the need to take model fit seriously when reducing roll call data to a single dimension.

7   Conclusion

Decades of urban politics literature implies that Progressive reform was bad for democracy. According to conventional wisdom, nonpartisanship and small councils were hallmarks of a white, middle-class power-grab. There is no reason to expect motives were different in the PR cities. I have evidence elsewhere that, even where self-styled "proportionalists" praised the virtues of minority representation, less altruistic actors drove the design of the institutions.

Yet the other side of Progressive reform, proportional representation by the single transferable vote, left room for insurgent candidacies and shifting coalitions. The qualitative evidence is in case studies, technical reports, dissertations, and old newspapers. I have given evidence of fluid coalitions in the reformed councils themselves. Dimensionality varied, and sometimes it was quite high. This dimensionality further had roots in an "electoral connection" (Mayhew 1974). We can point to actors who upset local party systems, and we can quantitatively link those candidates to outcomes in council.

Overall, we know little about the internal workings of the 20th century's "reformed" governments. Were these uniformly bad for democracy? The evidence we have is largely of two types. One probes the motives behind their design. Another uses relatively modern

data to link them with voter turnout and spending priorities. Yet STV was gone from the map by the time data were good enough to see if it was different. At the least, three STV councils were interesting. The next step is to look inside an historic, small council elected under plurality.

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Appendices

Term	d1	meaning1	d2	meaning2	d3	meaning3	d4	meaning4
1935	1	Licensing, bond issues, cars						
1937	1	Tax home rule	3	Wagner Housing Bill				
1939	5	Gambling, roads, federal grants, flood protection, permits to gather, anti-fascism	1	Viaduct, nicotine benefits research, subway, reallocate WPA funds to airport, mayor, override planning commission, flood protection	3	Gambling, PR, slum clearance, council rules, parking	4	Gambling, slum clearance, home rule, W.H. Taft
1941	5	Flood protection, federal grants, lease city property, bike safety, traffic, land taking, anti-fascism, permits to gather, parking meters, compel charity work by firemen	3	Housing project, taxis, street names, bond referendum threshold, damages, zoning, licensing, city workers, city manager, highways, used truck sales				
1943	1	Budget, gambling, pollution, city workers, time zone	2	Utilities, traffic, railroads, flood protection	5	Roads, city wages, gambling		
1945	1	Gambling, utilities, police, railroad, airport	3	Railroads				
1947	1	Recreation commission, vacancies, pollution, PR, services to suburbs, inflation, housing, youth curfew	3	Taxi license refusals, demonstrators, utilities, university board, police brutality				
1949	1	Land taking, city manager, building code, federal funds, rent control, annexation, streetcar fares, mayoral deadlocks, vacancies, university	3	Zoning, convict registration, gambling, recreation commission, highways				
1951	1	City manager, loyalty oaths, police, services to suburbs, workplace desegregation, moment of silence for FDR, recreation commission, rent control, housing	3	Audit city construction, zoning, dampen loyalty oaths, city workers, rent control, parking, suburban use of city jails, fundraiser for underprivileged youth				
1953	1	Zoning, committees, rentable attics, public transportation, housing permits, council calendar, TV station, workplace desegregation, airport, pollution, mortgage access, rent control, housing shortage, services to suburbs, civil defense, slum clearance, redevelopment, free relocation, building code, vacancies, Bettmann-Collett	3	Redevelopment, prayer before meetings, desegregation of fire department, desegregation of amusement park, rent control, parking, civil defense, fair employment practices, land taking for park, increase frequency of trash collection				
1955	1	Labor relations, city workers, budget, mill rate, annexation, income tax, fair rent committee, fees for police reports, urban renewal, housing, PR, traffic code, zoning, Bettmann-Collett, gambling, utilities, utility rates, parking, comfort stations, poor relief, services to suburbs, supplemental appropriations, city workers, executive salaries, traffic, police salaries, Bettmann-Collett, zoning, municipal ownership of utilities, gas rates, pollution, airport	3	City workers, civil defense, income tax, street lights, zoning, desegregate public housing, labor relations, gas prices, council rules, mill rate, campaign violations				
1957	1	PR, vacancies, city workers, budget, rooming houses, highways, land taking, vehicle inspection, urban renewal, community organizations, fiscal discipline, city solicitor, low income housing, committee on youth, income tax, budget, pollution, free relocation, mill rate, university	3	City workers, park commission, zoning, override planning commission				

Table 1: Substantive content of Cincinnati's two main dimensions.

Term	d1	meaning1	d2	meaning2
1939	1	Organization of chamber, park names, investigate judges, retirement, slum clearance, meat grading, county sherriffs, county reform, subway workers, budget, school construction, taxi licensing, council salaries, preserve city land for Queens College, excise tax, youth welfare, parking, World's Fair access for poor and WPA rolls, commodities standards	3	Civil employees, unfiorm price for phone calls, zoo construction, dump construction, budget.
1941	1	Disability, retirement, Bertrand Russell, zoning, abolish registar of deeds, abolish sheriff, sewage plants, park names, tax on sale of real estate, sales tax, weed removal, water rates, Council budget authority, investigate Department of Health and Correction, investigate Lincoln Hospital, PR, investigate Fire Department, race track licensing, investigate civil service commissioner	3	Fire commissioner, street names, truancy for religious education, law suits, civil service investigation, demolition of elevated structures, obstructions, tax rate, investigate Lincoln Hospital, waste treatment plant construction
1943	1	Civil Service Commission, Council budget authority, treatment of drug addicts, zoning, transit fares, city purchase of Staten Island Edison Corp, purchases for Board of Ed, that Dewey intervene in city finances, budget, military vacancies, financial crisis, party designations of councilmen, nominations of councilmen, investigate Civil Service Commissioner, investigate everything	3	Demolish elevated railroads, licensing of race tracks, teacher shortage, draftees' city jobs, rent ceilings, retaliatory investigation of Dems
1945	1	Powers of taxation, retirement eligibility, soldier ballot, budget, labeling boric acid, cancel lien against American Legion post, zoning, naming of FDR Drive	5	Permit to extend Mt. Saint Mary's Cemetery, city's power to acquire water supply, federal rationing, federal rent control, federal price controls
1947	1	Board of Elections, competitive airports, civil service architects and engineers, oppose St. Lawrence Waterway, convert naval base to housing, permanent income tax, city's share of state taxes, temporary childcare, city's taxing power, use of federal housing for schools, independent candidates and qualification of political party, Housing Authority, parking garages, bus terminals, displaced persons	2	Consolidate Triborough Bridge and NYC Tunnel authorities, create NYC Airport Authority, property for airport construction, airport tax exemption, budget amendments, BPL and QBPL librarian salaries, budget, acquisition of sites for schools, school modernization in all boroughs

Table 2: Substantive content of New York City's two main dimensions.

Term	d1	meaning1	d2	meaning2
1951	1	Zoning, streets	2	Lift exemption
1953	1	Zoning, streets	2	Clerk, broadcasting council meetings, zoning
1955	3	Zoning, salaries, welfare, parking, (limit period?), budget, (refer manager?), rent control, radiologist salary	2	Welfare, housing, redevelopment, (recall vote?), (competitive director?), (grant permission?), budget, (loan?)
1957	1	City auditor, police and fire salaries, city manager travel, election official wages, licensing of nursery school, parks department, free milk for children, police and fire holiday bonuses, Redevelopment Authority, oppose expressway, Commissioner of East Side Expressway, parking	2	Parking, repeal tax limit, election official wages, declare street abandoned, size of Public Welfare Board, across-board budget cut, suspend Board of Appeals pending rezoning, policies on non-resident city workers, parking
1959	3	Amendments on max signage height, duration of sewer loan, snow removal spending, welfare, Housing Authority appointments, school sale, police station renovation, number of dump trucks, investigate Housing Authority, fee for transfer of liquor license, federal funding for WHA, purchase parking garage, lease of land for airport motel, lower voting age, tax rate, scarifying, city salary study, removal of no-parking signs, permissive teacher seniority	1	Restriction on blight declaration, urban renewal, federal redevelopment funds, max signage height, Housing Authority appointments, repeal parking bans, purchase dump trucks, lease land for airport motel, resume mayoral election, sale of land for light industry by Redevelopment Authority, damages to private citizen, salaries, election official wages, Director of Count compensation, notify voters about Plan B referendum, convert park to school or city building
1961	1	Housing project construction, hearing on Housing Authority, new school, new library, salary caps for senior police and firemen, new zoning ordinance, Pledge of Allegiance before council meetings, extension of airport runway	2	Zoning, land for new school, topographic survey for new school, airport runway extension

Table 3: Substantive content of Worcester's two main dimensions.

	OLS	OLS	OLS w/ log DV	OLS change	OLS change	OLS change
Con.	−1.03	−1.17	−0.75	0.02	0.02	0.00
	(0.78)	(1.21)	(0.49)	(0.05)	(0.05)	(0.03)
Eff. number of winners	0.44***	0.40**	0.19***	0.77***	0.78***	0.83***
	(0.10)	(0.11)	(0.04)	(0.17)	(0.16)	(0.13)
NYC dummy	2.25***	2.15***	0.92***	−0.03	−0.03	
	(0.39)	(0.48)	(0.20)	(0.08)	(0.08)	
Worcester dummy	0.95**	0.70*	0.33**	−0.05	−0.04	
	(0.26)	(0.26)	(0.11)	(0.08)	(0.07)	
Machine unity		1.58*	0.72*	−0.19	−0.19	−0.17
		(0.71)	(0.29)	(0.18)	(0.17)	(0.16)
Coalition unity		−0.01	−0.07	0.11	0.12	0.16
		(0.89)	(0.37)	(0.20)	(0.19)	(0.17)
Nominal coal. control		−0.06	−0.03			
		(0.24)	(0.10)			
Polarization		−0.37	−0.18	−0.02		
		(0.24)	(0.10)	(0.05)		
Change of control				0.09	0.08	0.08
				(0.07)	(0.06)	(0.06)
R^2	0.61	0.73	0.76	0.78	0.78	0.77
Adj. R^2	0.56	0.62	0.66	0.67	0.69	0.72
Num. obs.	25	25	25	22	22	22
RMSE	0.43	0.40	0.16	0.12	0.12	0.12

$^{***}p < 0.001, \,^{**}p < 0.01, \,^{*}p < 0.05$

Table 4: Regression results.