# A Computational Analysis of Constitutional Polarization 

## Online Appendix

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In this Online Appendix, we provide supplemental results referenced in the Article. We note that additional material, including code and trained word embeddings, can be found through our website, www.pozentalleynyarko.com.

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## I. Constitutional Discourse in the 88th Congress

The following table depicts the most frequent terms from all of our dictionaries (combined) for the 88th Congress, beginning in 1963.

Table OA.1: Fifty Most Frequent "Constitutional" Terms, 88th Congress

| Term | Dictionary | Frequency in Republican Remarks | Frequency in Democratic Remarks | Total Frequency |
| :---: | :---: | :---: | :---: | :---: |
| civil rights | Expansive | 1,821 | 3,651 | 6,223 |
| trial by jury | Expansive | 262 | 1,878 | 2,210 |
| jury trial | Expansive | 259 | 1,331 | 1,668 |
| 14th amendment | Textual | 379 | 862 | 1,333 |
| segregation | Expansive | 422 | 624 | 1,130 |
| apportionment | Expansive | 225 | 641 | 959 |
| reapportionment | Expansive | 148 | 511 | 780 |
| right to vote | Expansive | 207 | 449 | 757 |
| bill of rights | Textual | 136 | 469 | 732 |
| equal protection | Extended Textual | 200 | 418 | 671 |
| founding fathers | Originalism | 81 | 479 | 653 |
| 1st amendment | Textual | 190 | 267 | 568 |
| desegregation | Expansive | 183 | 327 | 535 |
| article one | Textual | 139 | 346 | 520 |
| commerce clause | Textual | 131 | 329 | 471 |
| due process | Extended Textual | 90 | 283 | 413 |
| declaration of independence | Originalism | 88 | 215 | 386 |
| property rights | Expansive | 63 | 247 | 364 |
| state action | Expansive | 81 | 227 | 321 |
| voting rights | Expansive | 72 | 207 | 311 |
| constitutional convention | Originalism | 59 | 221 | 309 |
| states rights | Expansive | 69 | 146 | 273 |
| federal power | Expansive | 53 | 173 | 264 |
| 15th amendment | Textual | 71 | 174 | 264 |
| equal rights | Expansive | 94 | 113 | 256 |
| racial discrimination | Expansive | 78 | 136 | 236 |
| individual rights | Expansive | 51 | 160 | 235 |
| legislative powers | Extended Textual | 45 | 138 | 213 |
| checks and balances | Expansive | 65 | 111 | 210 |
| 6th amendment | Textual | 54 | 119 | 190 |
| article three | Textual | 40 | 126 | 178 |
| poll taxes | Expansive | 30 | 141 | 177 |
| judicial review | Expansive | 39 | 125 | 177 |
| fundamental rights | Expansive | 35 | 124 | 173 |
| suffrage | Expansive | 29 | 127 | 172 |
| founders | Originalism | 27 | 98 | 170 |
| 10th amendment | Textual | 42 | 119 | 169 |
| advice and consent | Extended Textual | 30 | 99 | 168 |
| 5th amendment | Textual | 43 | 105 | 165 |
| equal protection clause | Textual | 53 | 96 | 158 |
| freedom of speech | Extended Textual | 31 | 96 | 151 |
| judicial power | Extended Textual | 17 | 109 | 147 |
| separation of powers | Expansive | 33 | 99 | 147 |
| reserved to the states | Extended Textual | 45 | 91 | 147 |
| 13th amendment | Textual | 50 | 61 | 142 |
| free speech | Expansive | 37 | 90 | 140 |
| civil liberties | Expansive | 24 | 88 | 139 |
| free exercise | Extended Textual | 31 | 74 | 136 |
| appellate jurisdiction | Extended Textual | 52 | 66 | 132 |
| federalist | Originalism | 39 | 79 | 132 |

## II. Qualitative Examples

In order to extract remarks for the qualitative analysis presdented in Section IV.A, we ran the following query:

1. We extracted all constitutional documents from the 86th to 94th Congresses, defining as "constitutional" all documents with a $\rho$ score above the eighth decile using the Extended Textual dictionary.
2. Over this subset of documents, we computed the average predicted probability of a document originating from a Republican speaker. Based on the hypothesis that documents close to this average reflect generic or emblematic Republican constitutional discourse during this period, we then extracted the 10 documents closest to this average.
3. We repeated step 2 for Democratic remarks.
4. We repeated steps 1 through 3 for constitutional documents from the 106th to 114th Congresses.

This procedure resulted in a set of 40 documents, from which we removed one remark that was incorrectly parsed, resulting in 39 documents, as listed in the table below.

Table OA.2: Qualitative Examples, Full Results

| Congress | Speaker First Name | Speaker Last Name | Party | Chamber | Citation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 88 | James | Fulbright | Democrat | Senate | 109 Cong. Rec. 17,751 (1963) |
| 88 | Absalom | Robertson | Democrat | Senate | 110 Cong. Rec. 3404 (1964) |
| 88 | John | Sparkman | Democrat | Senate | 110 Cong. Rec. 10,436 (1964) |
| 88 | John | Sparkman | Democrat | Senate | 110 Cong. Rec. 10,678 (1964) |
| 90 | Otto | Passman | Democrat | House | 113 Cong. Rec. 32,977 (1967) |
| 91 | Charles | Diggs | Democrat | House | 116 Cong. Rec. 32,324 (1970) |
| 91 | James | Allen | Democrat | Senate | 116 Cong. Rec. 7105 (1970) |
| 92 | Philip | Hart | Democrat | Senate | 117 Cong. Rec. 4025 (1971) |
| 93 | Edmund | Muskie | Democrat | Senate | 119 Cong. Rec. 7740 (1973) |
| 94 | John | Tunney | Democrat | Senate | 122 Cong. Rec. 23,015 (1976) |
| 106 | Robert | Scott | Democrat | House | 145 Cong. Rec. 13,846 (1999) |
| 106 | Dennis | Kucinich | Democrat | House | 145 Cong. Rec. 20,154 (1999) |
| 106 | Harry | Reid | Democrat | Senate | 146 Cong. Rec. 24,796 (2000) |
| 107 | Eleanor | Norton | Democrat | House | 148 Cong. Rec. 6066 (2002) |
| 108 | Sheila | Jackson Lee | Democrat | House | 150 Cong. Rec. 18,491 (2004) |
| 109 | Maurice | Hinchey | Democrat | House | 152 Cong. Rec. 12,967 (2006) |
| 110 | John | Conyers | Democrat | House | 153 Cong. Rec. 22,774 (2007) |
| 112 | Peter | Visclosky | Democrat | House | 157 Cong. Rec. H5069 (daily ed. July 14, 2011) |
| 112 | Tom | Udall | Democrat | Senate | 157 Cong. Rec. S54 (daily ed. Jan. 5, 2011) |
| 113 | Harry | Reid | Democrat | Senate | 160 Cong. Rec. S1225 (daily ed. Feb. 27, 2014) |
| 86 | Barry | Goldwater | Republican | Senate | 106 Cong. Rec. 1642 (1960) |
| 88 | Kenneth | Keating | Republican | Senate | 110 Cong. Rec. 5772 (1964) |
| 89 | Richard | Poff | Republican | House | 111 Cong. Rec. 7963 (1965) |
| 89 | Gerald | Ford | Republican | House | 112 Cong. Rec. 18,397 (1966) |
| 91 | Thomas | Railsback | Republican | House | 116 Cong. Rec. 20,166 (1970) |
| 91 | William | Cramer | Republican | House | 116 Cong. Rec. 36,169 (1970) |
| 91 | Ogden | Reid | Republican | House | 116 Cong. Rec. 13,781 (1970) |
| 91 | Robert | Dole | Republican | Senate | 116 Cong. Rec. 19,186 (1970) |
| 93 | John | Anderson | Republican | House | 120 Cong. Rec. 35,167 (1974) |
| 106 | David | Dreier | Republican | House | 145 Cong. Rec. 14,973 (1999) |
| 106 | Todd | Tiahrt | Republican | House | 146 Cong. Rec. 12,551 (2000) |
| 106 | Phil | Gramm | Republican | Senate | 145 Cong. Rec. 3010 (1999) |
| 107 | John | Hayworth | Republican | House | 147 Cong. Rec. 26,451 (2001) |
| 108 | Tom | Feeney | Republican | House | 150 Cong. Rec. 11,297 (2004) |
| 108 | Jon | Kyl | Republican | Senate | 149 Cong. Rec. 10,817 (2003) |
| 108 | Jon | Kyl | Republican | Senate | 149 Cong. Rec. 25,509 (2003) |
| 109 | Roy | Blunt | Republican | House | 151 Cong. Rec. 720 (2005) |
| 109 | John | Boehner | Republican | House | 152 Cong. Rec. 15,096 (2006) |
| 114 | Jody | Hice | Republican | House | 161 Cong. Rec. H1550 (daily ed. Mar. 3, 2015) |

## III. The Vocabulary of Constitutional Partisanship: Additional Figures

The following figure, which is analogous to Figure 13.C in the Article, depicts the fifty most distinctive terms from the Expansive dictionary for each Congress from 1873 through 2016.

Figure OA.1: Fifty Most Distinctive (One-Party-Owned) Terms, Expansive Dictionary


1879-1880


1885-1886


1875-1876
$=$ =eminemt domain legislative powers suffrage judicial power
federal power
delegation of powers
delegation of power
right to vote
right to vot
1881-1882


1887-1888


1877-1878
privilezes and imunnitios
legislative powers
 constitutionaloconvention 14 th amendment just compensation
federal power federal $p$
suffrage

1883-1884


1889-1890
15 thind ine idnent regulate commerce legislative powers suffrage judicial power taxing power police powers police power

$\xrightarrow{T}$

1891-1892
frederal power
appelliate jurisdiction
time place and manner commer ce clause judicial power power totax feevas jurawistion 1 slation police powers regulate commerce right to vote

1897-1898
legislative powers conionder-in-chief apportionment
taxing power
regulate commerce
sur suf article one
power to tax age--

1903-1904
bill of rights
habeas corpus - 14 th amendment legislative powers 5 th amendment due process
executive power
equal amer
s equal footing



1893-1894
tederal power
delegation of powers
time place and manner taxing power trates rights executvep powir legislation legislative powers legislative power 15 th amendment nullification framers judicial power 1899-1900
 apportionment
trial by jury
lay and conle toct taxes ty


1905-1906



1895-1896
necessary and proper judicial power artise one advice and conssent legislative powers police powers articte three executive powe
taxing power -


1901-1902
equal rights


1907-1908
emol judicial power legislative powers trial by jury direct taxes article ar one enturational convention



1933-1934
$\frac{\text { article one }}{\text { taxing poween }}$ freedom of the press legislative powers bill of rights delegation of powers

18th amendment
free speech
free speech
federalist
1939-1940



1935-1936
 legislative powers delegat ion of power sum, deegationoin powers, =
 541

## 1941-1942



1931-1932
legislative powers
$\frac{\text { direct taxes }}{\text { articles of }}$ articles of confederation ......
article five due process. article five ane comperce clause constitutional convention oath of office
 execut ive powe poght
delegation of powers
anvice and consent

## 1937-1938

legiskative powers.... checks and balances. inferior courts due process state actionlay and collect taxes
14 th amendment articles of contedarathon moluments judicial power taxing pom equal protection -....... civil rights police power

1943-1944
14 th amendment






The following figure, which is analogus to Figure 13.B in the Article, depicts the twenty-five most distinctive Republican and Democratic terms from the Expansive dictionary from 1873 through 2016.

Figure OA.2: Twenty-Five Most Distinctive Terms by Party, Expansive Dictionary



1897-1898


1903-1904



1899-1900


1905-1906
--judicjal tile trev review pown - judicjal review
regulate coman of powers commander-in-chief POliCe powers

Just compensation due-process apportionment trial by jury

1895-1896
oath of office right to vote judicial power legislative powers repuli can form of givernent
 police pouers- = amative per

## 1901-1902

taxind in or ights articicis. of ponfederation att in suffrage regulate commerce =right to vote
empent domanin1ishth andenondent 1907-1908
comander-n-chnief comier'ce clause judicial power trial by jury direct taxes emoluments


## 1915-1916

 5 th amendment eminent domain states rights suffrage property riter delegation of powers $=$

1921-1922
billoonfs rights constitutional convention equal protection legislative powers Commerce clause judicial cower udicial Power regulate conmerc
power dientaxing po cologation of

1911-1912
taxing power article three omen judiccial power direct taxes police powerteremer article one

1917-1918

war powers ele equio or of pory st amendment súffrage commander-in-chief free speent
frent Uwam

1923-1924
direct taxes direct taxes
 polich powers apportionment reserved to the states founders

1913-1914


1919-1920
army clause Class leginlation militiaca advice and consent commar powers commander-in-chief jiri...justiciablement federalist.


1925-1926



1933-1934
infegior Gequrs. legislative powers 18 th amendment
bill of rights commerce clause
traxing poine 4

1939-1940
bull of ataidiar pocket veto
repubilican form of geveronern judicial review free speech regulate fopeme ice article edera
reapportionment free press

1929-1930
trial by jury $\pm$ Fire spech apportionment 18 th amendment police powers jury trial


1935-1936
Toterai paen advisory opini ions

14th amendment
legislative powers
1egislative powe equal protection egaim portect

1941-1942
states rights
reapport ionment
--free sportionment poll taxes right to vote - bibpoerty rizhts. suffrage

1931-1932
 =oth of office const tuuti ionlat conyyntion power to tax requate conmerce. powe motax regulate commerce direct taxes.executixine pomer executive poner =

1937-1938
sumeivir rights duy jid cidilitet taxes due process 14 th amendment emoluments judicial power equal prottection
article two $\cdots=$

1943-1944




## 1981-1982

bill of rights 1 st amendment voting rights equal rights habeas corpus federalist 1987-1988
founding fathers original intentions 1st amendment civil rights right to privacy
=obscenity
eligiousistree fredom
framers

1993-1994


1983-1984
deseer ereation
stotes rights free exercise 1st ant amendment war powers
legislative veto
legistative veto E.judidial reviey conmander-in-chie
segregation


1989-1990
habeas_corpus apportionment bill of $r$ ights free speech i1st amendment obscenity


1995-1996
civil rights - Civth amendment property rights bill of rights voting rights founding fathers affirmative action


1985-1986
wating ristes bear arm seat ity powes civil rights habeas corpus -segregation right to vote $\pm=$

1991-1992
property rights
habeâs corpus recomine re clause Civil rights 1ist tamendment fundamental rights right to vote right to privacy
$\qquad$
1997-1998



Below, we provide historical term-frequency plots, which are analogous to the plots shown in Figure 14 in the Article, for all terms in the Expansive dictionary. Each plot depicts the number of times the term was mentioned for every $1,000,000$ spoken words on a biannual, per-Congress basis.

Figure OA.3: Partisan Discrepancies in Constitutional Language (All Terms)









1808 clause





affirmative action






civil liberties

class legislation

coinage clause (20.2
civil rights


colorblindness


commander-in-chief

commerce power

compelled speech

commander-in-chief clause

committee of detail

compensation clause








> congressional power

constitutional convention


















## judicial deference <br> 


judicial power

judicial review




just compensation

just compensation clause







letters of marque and reprisal

liberty











privileges and immunities





prohibition amendment

property clause

property rights

provide and maintain a navy

public trial

provide for the common defense

public trial clause

race discrimination

public forum

qualifications clause






regulate commerce

religious freedom


removal power

reproductive rights

republican-form-of-government clause

republican form clause












taxing power





title of nobility




## vote dilution <br> 





warrant clause

warrant requirement


we the people





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