Divergent Democracy: How Policy Positions Came to Dominate Party Competition

Online Appendix

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Model selection

I began by estimating five sets of models for levels of K ranging from 20 to 40 in increments of 5. The first (“Model 1”) includes party and year as prevalence covariates, estimated with a spline for year and an interaction between party and year, and party as a content covariate (my preferred model, as discussed in the main text). The others depart from Model 1 as follows: Model 2 includes all of the same variables, but does not interact party and year; Model 3 does not use a spline for year; Model 4 drops the content covariate; and Model 5 drops the interaction, spline, and content covariate (i.e., it simply includes party and year as prevalence covariates).

![Diagnostics for Models with Different Covariates and Topic Levels (K=20 to 40 by 5)](image)

**Figure A1: Diagnostics for Models with Different Covariates and Topic Levels.**

Diagnostics for these models, plotted in Figure A1, indicate that Model 1 is acceptable. As is typical with STMs, semantic coherence drops and exclusivity rises as the number of topics increases. While semantic coherence is slightly higher for models without the content covariates, the difference is quite small relative to the changes resulting from moving to higher levels of K. Given the limitations of statistics like semantic coherence, and the strong theoretical reasons to include content covariates, I do not take this slight decrease in semantic coherence as a reason not to include content covariates.
Additional robustness graphs for topic models

Figure A2: Impact of different minimum thresholds. This graph shows the number of documents, words, and tokens removed from the corpus in raising the minimum number of documents in which a word needs to appear in order to be included in the topic model.

Figure A3: Semantic Coherence at Different Topic Levels and Lower Thresholds. All models include party and year (estimated with a spline) as prevalence covariates (with an interaction), and party as a content covariant.
Detail on Topics

Law Enforcement/ Border Security

- Includes issues related to: crime; crime prevention; drug trafficking, distribution and use; border patrol and crossing; immigration; white collar crime; judicial processes related to crime; sentencing; parole; prisons and jails; law enforcement agencies; domestic, sexual and child abuse; incarceration; juvenile crime.

Territories/ Statehood

- Includes issues related to: territory admission and rights; statehood; states’ rights; residence; appointment of state/territory officials.

Transportation/ Infrastructure

- Includes issues related to: highways and interstate roads; railroads; air travel and transportation; water travel and transportation; land, air, and water infrastructure; water supply and purification systems; public sanitation infrastructure; natural disaster prevention and response; pollution containment infrastructure.

American Dream

- Includes rhetoric related to: manifest destiny; God-given potential; unity; economic potential; prosperity; hope; bootstraps mentality; capitalism; valorization of the middle class; deservingness.

Business/Jobs

- Includes issues related to: job creation; investment; minority enterprises; licensing; business technology; wages; small businesses; corporations; private and public sector workers; unions; entrepreneurs; intellectual property; manufacturing sector; service sector.

Education

- Includes issues related to: student welfare; teacher qualifications, regulation, compensation, and unions; curriculum; public schools; home-schooling; career and technical education; private and parochial schools; magnet schools; charter schools; online learning; racial disparities in education; student debt.

Land/ Natural Resources

- Includes issues related to: wilderness areas; natural resources; oil and gas drilling; landscape and wildlife preservation; National Parks; environmental protection.

Economy

- Includes issues related to: taxation and taxpayers; corporate taxation; employment and unemployment; government spending; public debt; inflation; GDP; income; departmental budgets (e.g. Defense Budget); economic growth and shrinkage.
Development

- Includes issues related to: urban and rural development; rural electrification, transportation and communication programs; agricultural assistance programs; farming; affordable and public housing; urban rehabilitation; community development programs.

Foreign Affairs

- Includes issues related to: foreign policy; international diplomatic and economic relations; national security; peacebuilding; international negotiations; international peace.

Social Welfare

- Includes issues related to: veteran services and welfare; disability services and welfare; widow’s pensions and welfare; old age and social security services; unemployment insurance; children’s services and welfare.

Healthcare

- Includes issues related to: healthcare services; insurance; mental health services; medical malpractice and lawsuits; choice regarding care; Medical Savings Accounts and Flexible Savings Accounts; preventative care; access to medication; Medicare and Medicaid; maternal care; extending healthcare to underserved areas; access to medical facilities and doctors.

Trade/Markets

- Includes issues related to: international trade; foreign and domestic markets; agricultural trade; tariffs; competition; exports and imports; subsidization; production and marketing quotas; embargos; reciprocal trade.

Regulation/Bureaucracy

- Includes issues related to: bureaucratic regulation; statutory and regulatory requirements; campaign finance reform; lobbying reform; currency; government structure; regulation of taxpayer funds; federal regulatory organizations (e.g. Department of Labor).

Energy

- Includes issues related to: renewable energy (wind, solar, biomass, biofuel, geothermal, and tidal energy); electricity generation; research into synthetic and alternative energy sources; clean coal; renewable resources as job creation; local energy options; International Energy Agency; Building Energy Performance Standards; energy self-sufficiency; atomic energy development; climate change.

Labor/Antitrust
• Includes issues related to: the homestead measure; employer/employee relations; unions; minimum wage; overtime policy; Fair Labor Standards Act; child labor; employer liability; contract labor; immigrant labor; antitrust measures; Taft-Hartley Act; collective bargaining; regulation of labor; strikes.

Democracy

• Includes issues related to: international promotion of democracy; tolerance; freedoms of speech and the press; communism; socialism; totalitarianism; economic freedom; general freedom; ethnic, political, and religious persecution.

Defense

• Includes issues related to: the military; the draft; arms control; nuclear arms; conflict deterrence; combat readiness and preparation; missiles; military occupation; wartime; military negotiation and attack.

Culture

• Includes issues related to: national language and culture; cultural and linguistic preservation; Indigenous cultures, peoples, and rights; investment in the arts; traditional family values; civic culture; personal responsibility; language in education.

Rights

• Includes issues related to: First Amendment rights; Second Amendment rights; civil rights; inalienable rights; abortion; intellectual property rights; minority rights.
Exemplar Documents

Law Enforcement/Border Security

Customs and Border Patrol who police our borders;

Nothing we do to fight crime is more important than fighting the crime and violence that threatens our children......

They put in place a tougher more comprehensive strategy than anything tried before, a strategy to fight crime on every single front: more police on the streets to thicken the thin blue line between order and disorder, tougher punishments – including the death penalty – for those that dare to terrorize the innocent, and smarter prevention to stop crime before it even starts.

We support strong penalties, including mandatory minimum sentences, for drug trafficking, distribution and drug–related crimes......

And we know all too well the havoc drugs wreak when they cross our borders and flow through our neighborhoods.

Figure A4: Exemplar Sentences for Law Enforcement and Border Security.
We support efforts to ensure equitable participation in federal programs by Native Americans, Native Alaskans, and Native Hawaiians and to preserve their cultures and languages.

We support efforts to ensure equitable participation in federal programs by Native Americans, Native Alaskans, and Native Hawaiians and to preserve their cultures and languages.

We support efforts to ensure equitable participation in federal programs by Native Americans, including Alaska Natives and Native Hawaiians, and to preserve their culture and languages.

We support efforts to ensure equitable participation in federal programs by American Indians, including Alaska Natives and Native Hawaiians, and to preserve their culture and languages that we consider to be national treasures.

We endorse efforts to ensure equitable participation in federal programs by Native Americans, Native Alaskans and Native Hawaiians and to preserve their culture and languages.

**Figure A5:** Exemplar Sentences for Culture, Arts, and Multiculturalism.
**Territories/Statehood**

<table>
<thead>
<tr>
<th>Paragraph</th>
</tr>
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<tbody>
<tr>
<td>Admission of Territories We favor the admission of the Territories of New Mexico, Arizona and Oklahoma into the Union as States, and we favor the early admission of all the Territories, having the necessary population and resources to entitle them to Statehood, and, while they remain Territories, we hold that the officials appointed to administer the government of any Territory, together with the District of Columbia and Alaska, should be bona-fide residents of the Territory or District in which their duties are to be performed.</td>
</tr>
<tr>
<td>Porto Rico We favor granting to the people of Porto Rico the traditional territorial form of government, with a view to ultimate statehood, accorded to all territories of the United States since the beginning of our government, and we believe that the officials appointed to administer the government of such territories should be qualified by previous bona-fide residence therein.</td>
</tr>
<tr>
<td>Alaska and Porto Rico We demand for the people of Alaska and Porto Rico the full enjoyment of the rights and privileges of a territorial form of government, and that the officials appointed to administer the government of all our territories and the District of Columbia should be thoroughly qualified by previous bona-fide residence therein.</td>
</tr>
<tr>
<td>Puerto Rico We favor granting to Puerto Rico such territorial form of government as would meet the present economic conditions of the island, and provide for the aspirations of her people, with the view to ultimate statehood accorded to all territories of the United States since the beginning of our government, and we believe any officials appointed to administer the government of those several territories should be qualified by previous bona-fide residence therein.</td>
</tr>
</tbody>
</table>

**Figure A6:** Exemplar Sentences for Territories and Statehood.
and, to secure that end, we favor, when practicable, the connection of the Great Lakes with the navigable rivers and with the Gulf through the Mississippi River, and the navigable rivers with each other, and the rivers, bays and sounds of our coasts with each other, by artificial canals, with a view of perfecting a system of inland waterways to be navigated by vessels of standard draught.

We favor the adoption of a liberal and comprehensive plan for the development and improvement of our harbors and inland waterways with economy and efficiency so as to permit their navigation by vessels of standard draft.

everyone recognized that we all need clean water and safe roads, rail, bridges, ports, and airports.

Everyone agrees on the need for clean water and safe roads, rail, bridges, ports, and airports.

ACHIEVEMENTS: St. Lawrence Seaway and power projects, Colorado River Storage Project, Great Lakes connecting channels, small watershed protection and flood prevention under local control, Mississippi Gulf level canal, extension of water−pollution control program, survey of power potential of Passamaquoddy Bay tides, expansion of small project development for flood control, navigation and reclamation;

Figure A7: Exemplar Sentences for Transportation and Infrastructure.
American Dream

We want an America that gives all Americans the chance to live out their dreams and achieve their God–given potential.

Our goal is to bring Americans together, not drive them apart.

Because every American counts, we will continue to work toward a census that counts every American.

We call on all Americans to make the most of this opportunity — never to use welfare reform as an excuse to demonize or demean people, but rather as a chance to bring all our people fully into the economic mainstream, to have a chance to share in the prosperity and the promise of American life.

Democrats believe that everyone deserves the chance to live up to his or her God–given potential.

Figure A8: Exemplar Sentences for American Dream.
We will create an Advanced Manufacturing Fund to provide for our next generation of innovators and job creators;

We will invest in advanced energy technologies, to build the clean energy economy and create millions of new, good “Green Collar” American jobs.

Businesses that invest heavily in R&D tend to create more jobs, and to employ high-skilled workers in those new jobs at above average wage levels.

Many Minority Enterprise Small Business Investment Companies have been licensed since 1969 to provide venture capital for minority enterprises.

Technology. We know investments in technology drive economic growth, generate new knowledge, create new high-wage jobs, build new industries, and improve our quality of life.

Figure A9: Exemplar Sentences for Businesses and Jobs.
Education

We support options for learning, including home-schooling, career and technical education, private or parochial schools, magnet schools, charter schools, online learning, and early-college high schools.

All qualified teachers should get a raise and master teachers should get the biggest raise.

We should support character education in our elementary and secondary schools and community service as a condition of graduation from high schools.

We need to do more to attract and retain teachers, more to encourage their excellence, and more to ensure that all teachers are offering high-quality teaching.

Many of these schools educate disproportionate percentages of growing populations of Americans: students who are racial and ethnic minorities, low-income students, and first-generation students.

Figure A10: Exemplar Sentences for Education.
Land/Natural Resources

Wilderness areas, forests, fish and wildlife are precious natural resources.

opening the coastal plain of the Arctic National Wildlife Refuge (ANWR) for exploration and production of oil and natural gas;

protecting the coasts of California and Florida and the Arctic National Wildlife Refuge from oil and gas drilling;

The artifacts of the desert, the national forests, the wilderness areas, the endangered species, the coastal beaches and barrier dunes and other precious resources are in danger.

America's national forests contain a national treasure that provides recreation, wilderness, fish and wildlife, and timber products.

Figure A11: Exemplar Sentences for Land and Natural Resources
Economy

Nearly 80 percent of the tax increase from the repeal of indexing would fall on taxpayers earning less than $50,000.

In July 1964, the jobless total was one-half million below a year ago, and was at its lowest July level since 1959.

In the four decades from 1954 to 1994, government spending increased at an average annual rate of 7.9 percent, and the public’s debt increased from $224 billion to $3.4 trillion.

The rate of unemployment has been reduced from 6.1 per cent to 5.5 per cent, lower than the average from 1961 through 1964 before the Vietnam buildup began, and is being steadily driven down.

Corporate taxes have dropped from 30 per cent of federal revenues in 1954 to 16 per cent in 1973, but payroll taxes for Social Security are regressive because the burden falls more heavily on the worker than on the wealthy. They have gone from ten per cent to 29 per cent over the same period.

Figure A12: Exemplar Sentences for Economy.
Development

To expand rural electrification through REA loans for generation and transmission, and to expand rural communication facilities;

Continue assistance to farm cooperatives, including rural electric and telephone cooperatives, in their efforts to improve their members;

We continue to support farmer cooperatives, including rural electric and telephone cooperatives, in their efforts to improve services to their members.

We continue to support a strong rural electrification and telephone program.

To support the rural cooperative electrification and telephone programs and to implement rural transportation programs as explained in the section Cities, Communities, Counties and the Environment of this Platform.

Figure A13: Exemplar Sentences for Development.
The foreign policy of the United States defines the relationships we seek with the world as a whole, with friends and with adversaries.

A strong, consistent, and principled policy toward the Soviet Union is a vital element of our foreign policy everywhere.

Our relations with foreign nations have been carried on by President Hoover with consistency and firmness, but with mutual understanding and peace with all nations.

The foreign policy of the United States should reflect a national strategy of peace through strength.

Nor can the pursuit of our interests elsewhere in the world be dominated by concern for Soviet views.

**Figure A14:** *Exemplar Sentences for Foreign Affairs.*
Social Welfare

Make veterans and their widows eligible for pension benefits at the same age at which Social Security beneficiaries may receive old age benefits.

Increased compensation benefits to veterans disabled by blindness, deafness, and kidney disorders, and increased benefits to widows and orphans of veterans whose deaths were service-connected.

In 1960, we proposed........Ô“Adequate compensation for those with service-connected disabilities,” and “pensions adequate for a full and dignified life for disabled and distressed veterans and for needy survivors of deceased veterans.”

Their pensions are a sacred debt of the nation, and the widows and orphans of those who died for their country are entitled to the care of a generous and grateful people.

The Nation owes a debt of profound gratitude to the soldiers and sailors who have fought its battles, and it is the Government's duty to provide for the survivors and for the widows and orphans of those who have fallen in the country's wars.

Figure A15: Exemplar Sentences for Social Welfare.
## Rights

Voting Rights: Voting rights are fundamental rights because they are protective of all other rights.

that they are endowed by their Creator with certain inalienable rights, among which are life, liberty, and the pursuit of happiness

Maintaining The Sanctity and Dignity of Human Life: Faithful to the first guarantee of the Declaration of Independence, we assert the inherent dignity and sanctity of all human life and affirm that the unborn child has a fundamental individual right to life which cannot be infringed.

Accordingly, we assert the sanctity of human life and affirm that the unborn child has a fundamental right to life which cannot be infringed.

Upholding the Constitutional Right to Keep and Bear Arms: We uphold the right of individual Americans to own firearms, a right which antedated the Constitution and was solemnly confirmed by the Second Amendment.

**Figure A16:** Exemplar Sentences for Rights.
We believe all Americans should have access to affordable, quality health care, including individuals struggling with mental illness. 

Consumers should have more options for affordable broadband access.

We believe all Americans should have access to affordable, quality health care, including individuals struggling with mental illness.

Enacted Health Savings Accounts, which allow individuals to save and pay for their health care tax-free.

Proposals discussed earlier, such as Health Savings Accounts and Association Health Plans, provide economic benefits while also making health care more consumer-driven and increasing access to high-quality, affordable health care.

Figure A17: Exemplar Sentences for Healthcare.
<table>
<thead>
<tr>
<th>Trade/Markets</th>
</tr>
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<tbody>
<tr>
<td>To safeguard the farmer’s foreign markets and expand his domestic market for all domestic crops.</td>
</tr>
<tr>
<td>by outlawing the manipulation of prices in stock and commodity markets</td>
</tr>
<tr>
<td>To protect the American farmer against the importation of all live stock, dairy, and agricultural products, substitutes thereof, and derivatives therefrom, which will depress American farm prices.</td>
</tr>
<tr>
<td>The revival of these negotiations opens the door to lower tariffs on consumer and industrial goods, reductions in tariffs and trade-distorting export subsidies on agricultural products, and market access and lower regulatory barriers for services.</td>
</tr>
<tr>
<td>They destroy competition, control the price of all material, and of the finished product, thus robbing both producer and consumer.</td>
</tr>
</tbody>
</table>

**Figure A18:** *Exemplar Sentences for Trade and Markets.*
Regulation/Bureaucracy

Unnecessary, regulation should be eliminated or revised, and the burden of excessive paperwork and red tape imposed on citizens and businesses should be removed.

Statutory and regulatory requirements that inhibit exports should be reviewed and, where practical, eliminated.

Agencies should be required to review existing regulations and eliminate those that are outmoded, duplicative, or contradictory.

Lobbying Reform and Campaign Finance Reform

We support campaign finance reform to reduce the influence of moneyed special interests, including public financing of campaigns combined with free television and radio time.

Figure A19: Exemplar Sentences for Regulation and Bureaucracy.
Energy

We encourage the cost–effective development of renewable energy sources – wind, solar, biomass, biofuel, geothermal, and tidal energy – by private capital.

It is important to create a pathway toward a market–based approach for renewable energy sources and to aggressively develop alternative sources for electricity generation such as wind, hydro, solar, biomass, geothermal, and tidal energy.

We support the tribal nations efforts to develop wind, solar, and other clean energy jobs.

Coal, our most abundant energy resource, can bridge the gap between our other present energy sources and the renewable energy sources of the future.

Fusion energy is a safe, clean alternative source of energy which can be used to generate electricity efficiently.

Figure A20: Exemplar Sentences for Energy.
and we demand the passage by Congress of the complete and satisfactory homestead measure which has already passed the House.

The labor provisions of the act have proven unsatisfactory in settling differences between employer and employees.

We are in favor of the arbitration of differences between employers engaged in interstate commerce and their employees, and recommend such legislation as is necessary to carry out this principle.

By extending the minimum wage and overtime provision of the Fair Labor Standards Act to all workers;

were passed the Child−Labor Act, the Workingman’s Compensation Act (the extension of which we advocate so as to include laborers engaged in loading and unloading ships and in interstate commerce), the Eight−Hour Law, the act for Vocational Training, and a code of other wholesome laws affecting the liberties and bettering the conditions of the laboring classes.

Figure A21: Exemplar Sentences for Labor and Antitrust.
Democracy

We denounce bigotry, racism, anti-Semitism, ethnic prejudice, and religious intolerance.

Accordingly, we denounce all who practice or promote racism, anti-Semitism, ethnic prejudice, and religious intolerance.

Free Speech and Press We resent the unfounded reproaches directed against the Democratic administration for alleged interference with the freedom of the press and freedom of speech.

We call for a dedicated platform for transmission of Radio and Television Marti into Cuba and, to prepare for the day when Cuba is free, we support the work of the Commission for Assistance to a Free Cuba.

Free Speech The principles of a free press and free speech, as established by the Constitution, should apply to the radio.

Figure A22: Exemplar Sentences for Liberal Democracy, at Home and Abroad.
We reject Donald Trump’s threats to abandon our European and NATO allies, all while he praises Putin.

Agreements violated by the Soviet Union include SALT, the Anti–Ballistic Missile Treaty of 1972, the Helsinki Accords, and the Biological and Toxin Weapons Convention of 1972.

A U.S. troop presence should be maintained in South Korea as long as North Korea presents a threat to South Korea.

insisted on confronting the threat from North Korea through Six–Party Talks involving the Republic of Korea, Japan, China, and Russia;

We pledge to end the Carter cover–up of Soviet violations of SALT I and II, to end the cover–up of Soviet violation of the Biological Warfare Convention, and to end the cover–up of Soviet use of gas and chemical weapons in Afghanistan and elsewhere.

Figure A23: Exemplar Sentences for Defense.
Topic model validation

This section provides an overview of existing strategies for topic model validation, and details the validation strategies used for the topic model used in Chapter 1.

Existing strategies for topic model validation

Traditional measures of statistical fit are generally not helpful for these purposes (Grimmer and Stewart 2013); rather, substantive evaluation is necessary. There are a number of ways to evaluate the output of the models from a substantive perspective. Quinn et al. (2010) offer a useful overview of types of “external or criterion-based concepts of validity” (216).

Semantic validity, or “the extent to which each category or document has a coherent meaning and the extent to which the categories are related to one another in a meaningful way” (Quinn et al. 2010, 216) is probably the most well-known and widely employed. There are statistics that have been developed to assist with this, though they have limits. Notably, semantic coherence, a metric developed by Mimno et al. (2011), has been shown to be associated with human judgment. As Roberts et al. (2014) note, however, semantic coherence only evaluates intra-topic coherence, and does not take into account the degree to which the topics are distinct from each other, a desirable characteristic in almost any topic scheme. One can balance consideration of semantic coherence with a quantitative measure of exclusivity, the degree to which words are uniquely associated with topics (Roberts et al. 2014; Roberts, Stewart and Tingley 2019; Bischof and Airoldi 2012; Eisenstein, Ahmed and Xing 2011; Zou and Adams 2012). While some models score better than others on both fronts, it’s important to note that there is generally a tradeoff between semantic coherence and exclusivity. This underscores the point that it is not advisable to pick a model based solely on these metrics.

There is a general consensus that careful substantive examination of results is also critical. It is common practice to read through the top words associated with each topic along with a set of exemplar documents. This strategy was recommended in highly influential work by Krippendorff (2004) and continues to receive widespread endorsement today (Quinn et al. 2010; Grimmer and Stewart 2013; Roberts et al. 2014). This strategy can be used to label the topics (i.e., determine that a topic whose top words include “doctor”, “insurance”, and “disease” relates to healthcare), and also evaluate the extent to which each topic is coherent and relevant to the analysis at hand, and the extent to which the topic scheme as a whole is valid and useful.

One can also examine the results in relation to external data. To gauge “predictive validity”, one can look for “an expected correspondence between a measure and exogenous events uninvolved in the measurement process” (Quinn et al. 2010, 216) (see also Grimmer and Stewart 2013; Grimmer 2010). For example, one might examine trends in topics over time in relation to high profile events (e.g., Quinn et al. use the Iraq War and 9/11). Similarly, one can compare topic model results to other measures, looking for expected correspondence (“convergent construct validity”) or divergence (“discriminant construct validity”) as appropriate (Quinn et al. 2010). For example, they look at the extent to which trends from their estimated topics for Congressional speeches correspond to patterns of roll-call votes and hearings. One might also consider “hypothesis validity,” or “the extent to which the measure can be used effectively to test substantive hypotheses”
(Quinn et al. 2010, 216). For example, they look to see if Democrats are more likely than Republicans to talk about social issues.

Comparison to human judgment is another valuable validation tool, when possible. One can compare aggregate numbers (i.e., the percentage of documents falling into each category in hand-coded v. machine coded data) and/or categorization of individual documents. Various comparisons of this nature have been encouraging for machine learning methods (Hillard, Purpura and Wilkerson 2007; Roberts et al. 2014).

Validation of topic model

I pursue a few validation strategies for my topic scheme. The first, semantic validity, was achieved through the process of selecting a level for K. Through this process of closely examining the top words and documents associated with topics, a research assistant and I determined through independent analyses that the topics produced with K set at 32 were sufficiently coherent.

To facilitate an evaluation of predictive validity, Figure A24 shows attention to topics over time. These are not percentages based on raw data. Rather, they are “expected topic proportions” drawn from the model, given that each document is assigned a probability of relating to each topic, with a 95% confidence interval shaded in gray. These graphs show sensible patterns in attention to topics over time. For example, early on, as the nation’s fundamental dynamics were still developing, attention to rights was very high; as the nation grew, and many matters in this area became settled, attention to rights decreased dramatically. In recent decades, attention to rights has risen again. Early platforms also tended to be concerned with foreign affairs, labor and antitrust, and matters of territories and statehood. This is all reasonable for a new nation.

During World War II and the Cold War, attention to national defense increased significantly, as one would expect. Matters of more contemporary concern, like healthcare, show a spike in recent decades. While there may be areas with which to quibble in a graph displaying this volume of information, it seems, on the whole, reasonable. Figure A25 breaks the trend down by party. While there are some differences in the amount of attention paid to certain topics at certain times, the overall pattern is one of consistency between parties: they tend to pay similar amounts of attention to issues on the whole.

Figures A26 and A27 offer an alternative view of these data, plotting the distribution of attention to topics within each platform from 1856 through 2016. Since, as discussed above, STM produces a probability that each sentences relates to each topic, rather than simply sorting sentences into categories, I used the top topic (i.e., the topic with the highest probability assigned by STM) for this graph. So, for example, the bar for “rights” in the first panel of Figure A27 indicates the percentage of sentences in the 1856 Republican

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1 When hand-coded documents are not available for comparison—as they often are not, underscoring the value of machine learning methods—researchers have also devised clever ways to use human judgement to evaluate topic model output (Chang et al. 2014; Grimmer and King 2011; Grimmer and Stewart 2013). For example, Grimmer and King (2011) ask people to rate pairs of sentences as unrelated, loosely related or closely related, and compare these assessment to the topic model’s evaluation of such relationships.

2 These estimates and confidence intervals were created using the *stm* (Roberts et al.) and *tidystm* (Johannesson) packages in R.

3 These estimates and confidence intervals were created using the *stm* (Roberts et al.) and *tidystm* (Johannesson) packages in R.
Figure A24: Attention to Topics in Party Platforms, 1856–2016. This graph shows the proportion of documents (i.e., platform quasi-sentences) relating to each topic in platforms over time. Rather than percentages based on raw data, these are “expected topic proportions” stemming from the model, given that each document is assigned a probability of relating to each topic, with a 95% confidence interval shaded in gray.

Platform that were primarily about rights (i.e., rights was the top issue-related topic). If the top topic was not issue-related, I assigned the highest issue-related topic.

There are a few things we might expect in this analysis. First, given that the nation and government have become more complex over time by orders of magnitude, we should see a significant increase over time in the sheer number of topics covered in platforms. And second, there should be more attention to issues fundamental to a new nation early on;
Attention to Topics in Party Platforms by Party, 1856–2016. This graph plots expected topic proportions over time by party, with a 95% confidence interval shaded in blue for Democrats and red for Republicans.

while, over time, the issues would become more fine-grained and complex. Both of these patterns are born out in the data. In the early years, there are relatively few topics covered in platforms, and they are largely focused on things like rights, territories and statehood. Over time, the number and nature of topics has increased in sensible ways.

To evaluate convergent validity, I compared attention to topics in platforms from my data to attention in roll-call votes, as determined by the American Institutions Project (AIP)\(^4\) AIP is an invaluable project that coded roll-call votes and statutes by topic in a

\(^{4}\) Lapinski, John S., Ira Katznelson, and David A. Bateman. "American Institutions Project", Data on Congressional Lawmaking, financed by NSF Grant SES 0318280. Many thanks to David Bateman, Ira Katznelson, and Jonathan Lapinski for making these data available.
three-tiered scheme. The topics do not all line up cleanly with STM’s, such that comparison makes sense across all categories. For example, AIP has a topic just for labor, while STM has a topic combining labor and anti-trust. However, there were several topics that were reasonably comparable across the two coding schemes. For each year, Figure A28 displays the number of sentences on each topic in the parties’ platforms (in red) and the number
of roll-call votes on the topic in the House (in green) and the Senate (in blue). The comparison needs to be made with care, since the number of sentence in platforms in modern times far exceeds the number of roll-call votes. Nonetheless, parallel movement would suggest convergent validity. And, indeed, while they are not perfectly correlated, they tend to trend together over time. This suggests that STM has offered a reasonable set
of topics and done a fine job assigning documents to them.

![Validation: Attention to Topics in Party Platforms v. Roll−Call Votes](image)

**Figure A28:** Comparison of Attention to Topics in Platforms to Congressional Roll-Call Votes. This graph compares attention to topics in platforms (measured by the number of sentences about each topic) in each year to attention to topics in roll-call votes in the House and Senate (measured by number of votes) using data from the American Institutions Project (AIP). The coding schemes do not line up perfectly (e.g., AIP has a topic for just labor markets and unions, while STM has a topic combining labor and anti-trust, and many of AIP’s topics are much more fine-grained than STM’s), but reasonably comparable topics are shown.

For an alternative view of the relationship between AIP and STM topics, I examined
correlations between platforms and roll-calls in each chamber of Congress, and also between roll-calls in each chamber as a benchmark (see Figure A29). While the relationship between attention to topics in roll-calls in the House and Senate is strongest—which makes sense, since they send bills back and forth to each other for consideration—they are generally nowhere near perfect; and the correlations between roll-calls and attention in platforms remain respectable in comparison. For example, the 0.37 correlation between attention to business in between platforms and House roll-calls seems quite high, considering that the correlation between attention in House and Senate roll-calls was only 0.5. Again, these correlations are not perfect; but, they lend credence to the notion that STM has identified reasonable topics.

Finally, I compared STM’s results with those from human coders from the (CAP). The CAP data, collected by Christina Wolbrecht, codes platform sentences at the quasi-sentence level from 1948 to 2016. As with AIP, the coding schemes do not line up completely. But, we can get a reasonable sense of the validity of STM’s topics by examining the distribution of STM topics within the major topics identified by CAP.

Figure A30 shows the distribution of STM’s “top topic” (i.e., the topic to which the model assigns the highest probability) within CAP categories, using different minimum probability thresholds. Taking the education graph as an example, the red dot next to “education” on the y-axis marks the percentage of CAP’s “education” sentences to which STM assigned “education” as the top topic as well. While the red dot includes all sentences for which STM considered education the top topic, the other dots impose a minimum probability threshold for inclusion. For example, the yellow dot indicates the percentage of STM sentences for which education was the top topic and the probability exceeded 0.1. The green, blue, and pink dots reflect increasingly higher thresholds: 0.15, 0.2, and 0.25, respectively. For context, the mean probability threshold for a top topic was 0.17, the median was 0.14, and the range was 0.02 to 0.75. It’s worth noting that these probability thresholds have little meaning in isolation. Because STM assigns a probability that each document belongs to each category, the raw numbers for these probabilities will tend to decline as the number of topics increases. But, they are meaningful in relation to each other.

Overall, when CAP and STM categories match closely (e.g., Civil Rights, Defense, Education, Health, Macroeconomics), STM’s corresponding topic stands out as dominant in the distribution within CAP categories. In cases where the topics don’t line up cleanly, the distribution tends to remain reasonable. For example, STM does not identify a category for agriculture, but tended to code CAP “agriculture” sentence under “trade and markets”, “economy”, and “development”. Similarly, sentences that CAP coded under “domestic commerce” tended to be identified by STM as “business & jobs” or “economy”. And for some CAP categories that influence many issue areas (e.g., immigration, environment), STM distributed sentences across many categories in a sensible fashion. It’s worth noting that there’s nothing inherently correct about assigning immigration, for example, to its own major category. Under STM’s categorization scheme, while immigration may not be its own category, it is not lost; rather, it will be expressed through other categories. Finally, we should expect that as the STM’s assigned probability for the topic increases, the match with CAP categories should increase. And this is exactly what we see in almost all cases.

In sum, these various strategies offer strong validation of STM’s topic scheme. While
<table>
<thead>
<tr>
<th>Platform</th>
<th>House</th>
<th>Senate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>0.37</td>
<td>0.07</td>
</tr>
<tr>
<td>Defense</td>
<td>0.29</td>
<td>0.13</td>
</tr>
<tr>
<td>Economy</td>
<td>0.45</td>
<td>0.36</td>
</tr>
<tr>
<td>Education</td>
<td>0.3</td>
<td>0.12</td>
</tr>
<tr>
<td>Health</td>
<td>0.44</td>
<td>0.04</td>
</tr>
<tr>
<td>Regulation</td>
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<td>0.13</td>
</tr>
<tr>
<td>Rights</td>
<td>0.16</td>
<td>0.17</td>
</tr>
<tr>
<td>Territories/Statehood</td>
<td>-0.08</td>
<td>-0.27</td>
</tr>
<tr>
<td>Transportation</td>
<td>0.35</td>
<td>0.17</td>
</tr>
</tbody>
</table>

**Figure A29: Correlations.** This graph shows correlations between attention to each topic in platforms (measured by number of quasi-sentences about the topic), roll-call votes in the House (measured by number of votes), and roll-call votes in the Senate (also measured by number of votes). Congressional data come from the American Institutions Project.
none are perfect, together they suggest STM has performed well.

**Figure A30: Distribution of STM Topics within Categories.** This graph shows the distribution of STM topics within each major CAP topic at different minimum topic probability thresholds.
Additional graphs for Wordfish estimates

Figure A31: *Unique Words in Corpus by Minimum Document Threshold*. The dotted horizontal line marks the minimum threshold (300) suggested by Proksch and Slapin (2009) for Wordfish to perform very well.

Figure A32: *Programmaticism in the U.S., 1856-2016 (1988 included)*. This graph replicates Figure 1.1 with 1988 included. The trend is similar, but harder to see because of the altered y-axis scale.
Figure A33: Programmaticism in the U.S. by Topic, 1856-2016. This graph is identical to Figure 1.4, except the scale for the y-axis has not been allowed to vary across topics. This makes it easier to compare levels of programmaticism across issues, but harder to see trends within issues over time.
Figure A34: **Robustness check: Wordfish with alternative document term matrix.** This graph compares results from the Wordfish model used in the main analysis, in which words were stemmed and stop words removed before the model was run, to a model in which these pre-processing steps were not taken. The outlying year of 1988 is discussed in Chapter 5.
Figure A35: *Sentences Exceeding Different Thresholds, 1856-2016*. This graph displays the percentage of total platform sentences exceeding different STM topic probability thresholds for different topics.
Figure A36: Number of Unique Words by Minimum Threshold. This graph demonstrates the number of unique words remaining in the corpus for each topic at different thresholds for STM topic probability assignment and minimum document appearances to be included in the Wordfish model. The dotted horizontal line marks the minimum threshold (300) suggested by Proksch and Slapin (2009) for Wordfish to perform very well.
Validating Wordfish results
I use several strategies to validate the results of the Wordfish models, beginning with the full platform models.

Full Platforms
First, I examine the parties' positions relative to each other over time. Interpreting liberal and conservative ideologies is difficult over a very long time period, especially when the country's ideology as a whole (in terms of its orientation toward the role of government) changed dramatically over this period. The New Deal era saw explosive growth in views on the role of government, and the size of government in the U.S. has grown over time, as it tends to do in nations around the world (Leuchtenburg 1963; Katznelson 2013; Grossmann and Hopkins 2016). We should expect to see both parties' estimates experience significant movement in the same direction over time. Though Republicans may have been less enthusiastic about many aspects of the New Deal, a lot of legislation during the mid-twentieth century passed with bipartisan support. There was a significant degree of consensus across parties that a different role of government was needed, relative to the pre-Depression period. Thus, I examine the parties' estimates from models covering the period as a whole, as well as from separate models for four periods of roughly equal length: 1856-1892, 1896-1932, 1936-1972, and 1976-2016.

Figure A37: Wordfish Estimates by Party, 1856-2016. This graph plots the Wordfish estimates (thetas) for Democrats and Republicans in each year.

Figure A37 shows the expected change among both parties in orientation toward the role of government after the New Deal's fundamental reshaping of the American state, with a steep increase beginning in the 1930s. This dramatic change in the role of the federal government over time makes differences between parties more difficult to discern.
However, it is worth noting that the Democratic party's estimate is almost always higher than the Republican Party's estimate from 1976 to the present. When estimates are created within roughly 40 year periods, as shown in Figure A38, it's clear that the Democratic and Republican parties have maintained distinctive ideologies since the early 1980s. This is the only period of the four with this kind of consistency and clarity.

Figure A38: Wordfish Estimates by Party, with separate models by period. This graph plots the Wordfish estimates (thetas) for Democrats and Republicans in each year, with separate models for different periods.

Second, I compared the programmaticism trend estimated by Wordfish to a measure of difference between parties developed by Laver and Budge (1992) using Comparative Manifestos Project data. This is similar to approaches taken by Slapin and Proksch (2008) and Catalinac (2018). As discussed elsewhere, this is not an ideal measure of programmaticism, as it is based on relative attention to left versus right issues. A great deal of effort has gone into improving upon this method over the past three decades, in order to take into account the language used to describe issues rather than just attention. Nonetheless, we can use its output as a broad strokes plausibility test for Wordfish’s output.

Figure A39 displays this measure from 1920 to 2020. The solid black line shows the raw difference between the parties’ ideologies in each year, and the dotted line shows a loess curve with a 95% confidence region shaded in gray. While this is not a perfect match for Wordfish’s estimates, as it shows a more gradual increase since 1920, it nonetheless shows an increase over time. The fact that the curve flattens beginning in 1980 suggests that the Laver and Budge (1992) method is not estimating differences between American parties particularly well. It is well known that American parties have staked out opposing positions across many issues over this period. Indeed, this comparison suggests that
Figure A39: Difference between American Parties using CMP Data, 1920-2020. This graph plots a measure of differences between parties developed by Laver and Budge (1992) using Comparative Manifestos Project data.

Wordfish has improved upon this earlier methodology.
Within Issue Areas

We can also examine Wordfish estimates for Democrats and Republicans over time within issue areas, displayed in Figure A40. It’s important to keep in mind that Wordfish doesn’t define the extremes of the distribution—it’s up to the researcher to determine which represents a more “liberal” position and which represents a more “conservative position” within each area. Because each plot within this figure reflects estimates from a separate model, one cannot tell from this graph which party has the more liberal or conservative position in each area in each year. However, we have one clear expectation: in the areas with a growing programmaticism, we should see little flip flopping. There should be a clear growth in division between the parties in continuous directions over the contemporary era. This is generally what we see in areas in which there has been an increase in programmatic distinction over time, like American Dream, Culture, Democracy, Development, Education, Energy, and Social Welfare.

As with the whole platform analysis, I also compared the Wordfish estimates to those generated by the Laver and Budge (1992) method using Comparative Manifestos Project data. Results are displayed in Figure A41. Not all categories lined up cleanly, but those that could be reasonably matched across the two topic schemes were included for comparison. The trends are not exactly the same, and we would not expect them to be given that Wordfish is a few generations ahead of the Laver and Budge method from a methodological perspective. But, the comparison is still useful for evaluating plausibility; and the results are reasonably similar to those in Figure A40.
**Figure A40:** Party Estimates by Topic, 1856–2016. This graph plots Wordfish estimates (thetas) for Democrats and Republicans over time within issue areas.
Figure A41: Estimates of Programmaticism within Issue Areas using Comparative Manifestos Project data. This graph displays estimates of programmaticism generated by the Laver and Budge (1992) method using Comparative Manifestos Project data.
National Party Organizations in the Media

Figure A42: Percentage of Articles in the Washington Post Mentioning Democratic or Republican National Committee, by Year. Newspaper data come from ProQuest Historical Newspapers.
References


