Visual First Amendment: Using empirical legal methods and visualization techniques to enhance understanding of Supreme Court rulings

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Abstract
The Visual First Amendment (VFA) brings together empirical legal methods and data-driven visualization to produce a new and engaging look at the Supreme Court rulings on the First Amendment. Our interactive displays allow visitors to explore the interrelation of issues, cases, courts, and justices over time, and to consider the broad social and legal changes that have impacted First Amendment rulings on the freedoms of religions, speech, press, assembly, and petition. The project contributes to a growing body of empirical legal research that relies on public datasets and interfaces used by journalists, researchers, and the general public for a variety of purposes, among them civil literacy and governmental accountability. A short video describing the project is available at: http://bit.ly/VFAintro.

Keywords: Empirical legal methods; Information visualization; First Amendment; Supreme Court of the United States


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1 Introduction

For the rational study of the law the black-letter man may be the man of the present, but the man of the future is the man of statistics and master of economics.


The First Amendment to the United States Constitution\(^1\) recognizes five inalienable rights: Freedom of Religion, Freedom of Speech, Freedom of the Press, Freedom of Assembly, and Freedom to Petition. The words of the First Amendment to the United States Constitution have been cited countless times, not only in court opinions, but by people the world over in every discipline imaginable. They are invoked by politicians, journalists, librarians, and educators as the *raison d’être* for many actions, and they define what rights Americans can expect.

While these rights are treasured by Americans and protected by law, they are also subject to interpretation. Interpretations of First Amendment rights by the Supreme Court of the United States are of particular importance since these opinions often set precedent. Given the hierarchal nature of the American common-law system, Supreme Court opinions are binding for lower courts considering similar cases and so their effects are often long lasting and far-reaching.

\(^1\) U. S. Constitution, Amendment 1. *Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.*
Traditional legal scholarship is qualitative in nature. It consists of careful and detailed analysis of primary sources, primarily legislation, and court ruling, supplemented by secondary sources such as legal scholarship. While digital tools allow a different examination of the law, digital research methods are still relatively uncommon in their application to the law.

Visual First Amendment (VFA) applies empirical methods and visualization techniques to the study of the First Amendment by creating interactive data-driven visualizations of Supreme Court rulings on cases involving First Amendment rights. In this paper we explain what empirical legal methods are, how they provide the foundation for visualizing legal research, and demonstrate their use in this project. Epstein and Martin (2010) describe the steps needed to complete research within the framework of empirical legal methods as designing research, collecting and coding data, analyzing data, and presenting results. In the paper we focus on how our visualizations contribute to the field of empirical legal research. We avoid technical jargon and programming details of the information architecture of the tool as they these provided elsewhere (Sula and Rabina, 2014).

2 Empirical Legal Methods

Visual First Amendment reflects emerging trends in legal studies and the history of law, specifically empirical legal research, which according to Georgetown Law (2014), "uses data analysis to study the legal system". This approach contrasts with traditional legal scholarship, which consists of careful and detailed analysis of primary sources, primarily legislation, and court rulings, supplemented by secondary sources such as legal scholarship. Empirical methods were first employed in American legal scholarship in the late 1990's, and while this approach is still not wide spread, it has been described as “the next big thing” in legal intellectual thought (George 2006).

Empirical legal research is described by Cane and Kritzer (2010) as reflecting a plurality of approaches to the study of legal phenomena. While these phenomena are rooted in the law, they are often interdisciplinary, examining questions in the intersection of law, society, and economics, as well as judicial behavior and politics. Empirical legal research uses both quantitative/statistical methods as well as qualitative methods, particularly those used in social science research (Cane and Kritzer 2010). Cane and Kritzer describe empirical legal research as “research that involves the systematic collection of information (‘data’) and its analysis according to some generally accepted method” and includes the coding or tagging of units of text that can, but do not necessarily have to be, numeric in nature (Cane and Kritzer 2010, 4).

Empirical legal data differ from other social science data in that most of it is not collected through experiments but is instead generated as a result of the judicial process. As Epstein and Martin explain, it is not feasible to interfere with legal proceeding by changing the make-up of the court or the gender of the plaintiff in order to examine affects of race or gender (Epstein and Martin 2010). As a result, researchers work mostly with observational data such as voting patterns, trial durations, and more. This project employed observational datasets that allow users to answer research questions using quantitative legal methods.
The proliferation of law-related datasets and the increasing availability of datasets to the general public represent an important step toward increased civic engagement. The Open Government Initiative makes over 200 datasets available, including the American with Disabilities Act, the Federal Register in XML, the hearing and appeals of military personnel, and more (OpenGov). These datasets are used by journalists, researchers, and the general public for a variety of purposes, among them government oversight and accountability. The Sunlight Foundation, for example, has supported several projects that draw on publicly available data to promote government oversight practices such as tracking the link between campaign contributions and congressional votes on legislation and public policy (Sunlight Foundation).

To date, few attempts have been made to visualize court rulings, and none are focused on presenting data about the First Amendment for a wide variety of audiences:

- One of the earliest projects, Visualizing Legal Information (http://www.cs.umd.edu/hcil/westlegal), was created in the late 1990s in Human Computer Interaction Lab at the University of Maryland. The project is no longer updated, and most of the visualizations are no longer functional.
- A group of researchers from the University of Oslo is working on an interdisciplinary Law and Visualization project (http://www.jus.uio.no/english/research/areas/law-history/projects/law_visualization.html), which focuses on the relations between law and visualization as expressed in art, architecture, and film. Though the project is described as “empirical,” it does not employ data-driven methods, instead examining the experience of aestheticians and their concepts of law.
- The Judicial Research Initiative (http://artsandsciences.sc.edu/poli/juri) from the University of South Carolina aims to “provide a comprehensive access point to the most recent and cutting-edge research on law and judicial politics.” This project only has datasets available for download, and does not include visualization.
- Ravel Law (https://www.ravellaw.com) is a commercial legal search database that includes analytics and visualizations of Supreme Court, Federal Court of Appeal, and circuit court cases. A spin-off of a Stanford University project, Ravel Law has attracted significant venture capital since its launch and is intended primarily for those who practice law; it “transforms how lawyers understand the law and prepare for litigation.”

3 Problem Statement

This project aims to communicate the complex environment surrounding Supreme Court rulings and to display the results in a way that is approachable to users who are trained in neither legal scholarship nor in data analysis. Visualizations allow users to examine discrepancies and patterns in the awarding, rescinding, and interpretation of First Amendment rights. A sample of questions that can be answered through be VFA includes: Are there consistent voting patterns of justices that were appointed by Republican presidents? Do long serving justices change their voting patterns over time? Are there discernable patterns of voting on freedom of speech during periods of war? Are there similar patterns of
voting by gender, religion, law school? Without the availability of data the road to answering such question would be labor and time intensive. It would require researchers to sift through thousands of documents and isolate each data point before integrating them and allowing users to zoom-out to the view the broader context of court rulings.

4 Project Description and Process

Visual First Amendment engages with legal content by situating jurisprudence data in the context of historical events, legislation, and social change. It goes beyond case-by-case understandings of the First Amendment to examine the larger narrative of Constitutional rights and the various factors that impact Supreme Court rulings, such as justices’ political views and the political affiliation of the presidents who appoint them. Through timelines, network maps, statistical charts, and geographic maps, users are able to glean hidden patterns and new meaning from this data. The goals of Visual First Amendment are to:

• provide a deeper understanding of American Constitutional freedoms;
• engage citizens in a discussion of rights, as interpreted now and in the future;
• raise awareness of First Amendment issues from a historical and legal perspective;
• facilitate research surrounding the First Amendment across a range of education levels and information tasks; and
• serve as a model for representing Supreme Court data generally.

After researching publicly available datasets on the First Amendment and the Supreme Court, three sources were selected for their recognized excellence in the field:

• First Amendment Center Timeline is compiled by the First Amendment Center, an operating program of the Freedom Forum located at the Newseum and Vanderbilt University. The Center was founded in 1991 by John Seigenthaler with the mission of fostering national dialogue, debate, and discussion of First Amendment rights and values. Today the Center provides in-time news aggregation about the five major areas of law covered by the First Amendment and lesson plans ranging from middle to high school levels of education. The First Amendment Center is a non-partisan educational entity. The Timeline is a chronological list of 150+ American historical events, Supreme Court rulings, and legislation relating to the First Amendment from 1215–2011, with narrative descriptions of each event.

• Supreme Court Database (SCDB) is a National Science Foundation project hosted by The Center for Empirical Research in the Law at Washington University in St. Louis with contributors from Michigan State University College of Law, University of Southern California, School of Law, University of Pennsylvania School of Law, Stony Brook University Department of Political Science, and University of Wisconsin - Milwaukee Department of Political Science. SCDB contains data on 8,407 cases, 655 of which are classified as First Amendment cases, with over two hundred pieces of information coded about each case, including the ideological direction of the ruling (conservative or liberal). While this schema has received some criticism (Shapiro 2008), it is highly regarded and used by scholars in various publications (Buckler 2012, Sharma 2013,
Stearns 2013), including a recent book on behavior of federal judges (Epstein, et. al. 2013). The project currently covers cases between the 1946 and 2012 terms and has a timetable established for the addition of other years, including very recent cases (there is a 1–2 year delay in the publication of official court records). [It is worth noting that there are few First Amendment rulings before the 20th century, when the Supreme Court first established a doctrine on free speech. Many of these first rulings stemmed from cases related to World War I and concerns over the spread of socialism in the U.S.]

- **Supreme Court Citation Network Data** was compiled by James H. Fowler (UCSD) and Sangick Jeon (Stanford). Their dataset contains 202,167 citations to and from 30,288 Supreme Court majority opinions over the period 1800–2002.

The project team developed a process to ingest existing data sets into free or open source softwares, including Tableau Public, Gephi, Leaflet, QGIS, SIMILE Explorer, TimelineJS, and WordPress. These tools were chosen for their web-based, user-friendly interfaces, which promote linking and sharing across blogs, websites, and social media. In addition, their free or open source status means that others can replicate our project design, either for additional work on the First Amendment or for work on similar data. Visual First Amendment also uses a number of best practices in information architecture and information visualization, each described below, to create accessible and welcoming points of entry for novice users and more advanced researchers alike. The initial prototype of Visual First Amendment has been disseminated to advocacy organizations (ACLU, NYCLU), law librarians, and legal researchers (e.g. law faculty, law school students) during user experience testing in the New York City area.

**Creating Multiple Entry Windows for Content**

Most VFA visualizations serve multiple purposes. An interface showing each justices’ votes over time tells us as much about Justice Antonin Scalia as it does about Justice Thurgood Marshall; users may arrive at the site by looking for one or for the other, but those questions lead to the same visualization. Alternatively, users may be interested in a timeline of First Amendment cases (and come to the site to see one), yet wind up being interested in how those cases are related through court opinions (and visiting a citation network); users’ information needs change as they move through the site.

These and other scenarios describe *wayfinding* processes for different users. “Wayfinding” is a term first used by Lynch (1960) to describe way that citydwellers navigate physical environments. The concept was later developed by psychologists (Paul and Passini 1992) to describe spatial problem solving, and it is applied by information architects to plan effective site navigation for various users (Wodtke and Govella 2009). Navigation includes initial entry points for websites (e.g., homepages and landing pages), as well as in-site navigation links, which moves user between content (e.g., related content, suggested products), and more.

**Focusing on Narrative**

In recent years, narrative and storytelling have come to play an important role in data visualization (Segel and Heer 2010). Prominent media outlets including *The New York Times*, *Washington Post*, *Guardian*,
and Huffington Post regularly include data visualizations as part of their stories, particularly for adding interactive, user-driven content. A recent story in The Economist even describes visualization designers as “melding the skills of computer science, statistics, artistic design, and storytelling” (Cukier 2010). The initial prototype most clearly uses narrative in its “First Amendment Stories” section, which develops a history of the First Amendment around a particular question or issue. Accompanying this narrative are several visualizations that display data about cases discussed. These curated visualizations appear through the text of the story and include a link to the full version of the interface, which contains more cases. Beyond the First Amendment Stories, narrative plays an important role in the introductory text used to describe each visualization and what it may be used to investigate. These introductions were suggested by users during the first round of user testing, but the text in the initial prototype has not been tested again with actual audiences.

**Guiding Users through Visualizations**

In some cases, users may be unfamiliar with a specific type of visualization. This is particularly true for complex visualizations, such as networks, which are used to show citations between Supreme Court case opinions and agreement between justices. To introduce users to new and complex visualizations, we created guided tours that describe each visualization type and what it may be used to investigate. This type of guided tour helps to orient users to new visualization types in several different ways, orienting them to the data and methods used in each type of visualization and showcasing several results of datamining activities. In addition to written guided tours, videos and screencasts play an important role in teaching users how to use our visualizations. The initial prototype includes an introductory video on the homepages that gives an overview of the site and several types of visualization.

**Providing Multiple Levels of Experience**

In their survey of 58 examples of narrative visualization (many from media outlets), Segel and Heer (2010) stress the need for balancing “author-driven” and “reader-driven” approaches to narrative visualization—in effect, balancing liner, optimized, and constrained interfaces with organic, flexible, and exploratory approaches. This technique helps to provide multiple levels of experience for users, ranging from simpler, passive presentations of data to more complex and interactive displays. Users may return to visualizations again and again, each time learning and using more advanced features to deliver greater insights. The visualizations in our initial prototype achieve this balance through a variety of approaches including details on demand, filterable displays, annotation, visual highlight, martini glass structure, tacit tutorials, and more.

By providing high-quality data in an intuitive way for users from many backgrounds and abilities, Visual First Amendment advances the vision of America’s founders, who recognized that democratic self-governance depends upon open and easy access to ideas (Hyde 2010).

5 Project Outcomes

The initial prototype of the project (http://visualfirstamendment.org) contains a range of visualization types
based on these data sources. A complete list of these pairings is given in the table that follows, and each type of visualization is described in below.

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Table 1: Visualization types and data sources

**Timelines**
Timelines are the simplest and most easy-to-read displays used in the project. The current prototype includes a timeline of 100+ major cases and historical events, as well as curated timelines around specific First Amendment stories. Users can swipe through the timeline using their mouse or touchpad, and events are divided into a number of groups including world/national events, freedom of speech, freedom of religion, freedom of the press, and freedom of association.

![Figure 1: Timelines (source: http://visualfa.org/timeline/)](http://visualfa.org/timeline/)

**Statistical Charts and Graphs**
The initial prototype includes several statistical charts and graphs about First Amendment rulings as well as the justices that have made up the Court (all using SCDB data). These visualizations are interactive, allowing the user to select, filter, and manipulate the information presented, and can be shared or embedded across blogs, websites, and social media. Users can view decision by direction of the vote (liberal or conservative) and can select a subset of the decisions by topic (obscenity, commercial speech,
and more). Other charts and graphs include voting patterns of justices and precedent-setting cases. The screenshot below shows voting pattern by justices. Each square indicated a case and hovering over it in a browser provides certain details of the case.

Figure 2: Justices voting patterns (source: http://visualfa.org/statistics/justices-by-ideology/)

**Network Maps**

Network maps are among the most complex yet frequently discussed visualizations in the initial prototype. Our brilliantly colored network maps illustrate the relationships between cases (using the citation network dataset) and agreement between justices (using SCDB data).

Each dot represents a case. Hovering over the dot calls up the name of the case, and clicking on it opens a box with full case details. Cases are searchable by name or by topic.

**Citation Network Maps: By Issue**

The cases below are color-coded into four large categories: obscenity and libel (red), freedom of religion (yellow), protest and political speech (green), and government security and loyalty (purple).
Figure 3: Citation network by issue (source: http://visualfa.org/citation-network-maps/network-maps-a-guided-tour/)

**Geographic Maps**

Geographic maps are some of the first visualizations young users learn to read, and they bring a new dimension of spatial reasoning to historical and thematic content. Several maps in our initial prototype illustrate the behavior of Circuit Courts, visually investigating whether these courts merit their reputations as being conservative or liberal in their rulings. A separate geographic map examines the number of cases that arise from each state, filterable by issue, petitioner categories, respondent categories, and more.

![Circuit Court Map](http://visualfa.org/circuit-court-map/)

Figure 4: Circuit court map by direction (source: http://visualfa.org/circuit-court-map/)

**Case Browser**

The final visualization type in our initial prototype is a case browser interface that allows users to perform faceted searches on selected First Amendment cases heard by the Supreme Court. The dataset for the case browser is smaller than the datasets for other visualizations, but the information presented about each case is extensive. The user can search by keyword, by strength of vote, by justice, by appointment president, and by the specific First Amendment right that is asserted in the case.
First Amendment Stories

In addition to visualizations, our initial prototype includes a written guided tutorial (“Network Maps: A Guided Tour”), an introductory video that surveys the project and visualizations, and a "First Amendment Stories" section, which develops a history of the First Amendment around a particular question or issue. The initial prototype contains four stories:

- “Is academic freedom a constitutional right?”
- “Kids say the darnedest things! Can they say them in school?”
- “See something, say something? Not when the boss is Uncle Sam is the Boss”
- “Welcome to the library. Is your speech protected here?”

Each story discusses seminal cases that have development First Amendment jurisprudence in a specific area. The stories are also accompanied by a series of curated visualizations around those cases that, in effect, provides a tacit tutorial for full-scale interfaces.
6  Further Developments

The Visual First Amendment team is currently working to increase both the functionality and the content of the site. In the next phase of development we plan to add additional stories based on the narrative portion of VFA, create additional guided tours and videos, and investigate possible links between different visualizations. We will also update the database to include the most recent Supreme Court rulings. On the user end, we plan to conduct user testing with three potential audience groups:

- Civic/Legal organizations and practitioners include not-for-profit organizations committed to educating the public about legal jurisprudence and First Amendment rights, as well as lawyers, law faculty and students, pre-law students, and law librarians. Visual First Amendment addresses a range of activities conducted by these groups, from research and analysis to research and education.
• Educational and scholarly settings range from advanced high school classes through graduate training and advanced research. At the middle of this level, general social and political science college courses might include Visual First Amendment in their syllabus and curriculum to provide an introduction to the influence of First Amendment cases on all aspects of American life. The site also holds potential for advanced high school schools and two-year colleges, providing interactive and fun tools to help understand the importance of the First Amendment in history and in their daily lives.

• Our approach to journalistic and new media venues will involve outreach to journalists, bloggers, and statisticians, whose content reaches millions of Americans every day. Journalists increasingly use visualizations in their reporting, but producing visualizations can be time consuming and require a level of expertise not always available to the solo journalist or a small team. Many Visual First Amendment interfaces allow users to create visualization and embed them elsewhere, including web pages, blog posts, and social media. In consultation with user testing groups and the project’s advisors, we will plan additional content and visualizations that address this growing group of content creators.

7 Conclusion

This paper outlined the emerging field of empirical legal research and demonstrated how these methods can be combined with visualization techniques to provide a visual history of Supreme Court ruling on the First Amendment.

Visual First Amendment applies visualization techniques to First Amendment data for a wide range of users, including students, teachers, researchers, legal experts, journalists, policy advocates, members of the public, and more. The information presented by the site is also highly contextualized both historically and thematically. For example, a timeline presents vital moments in Supreme Court First Amendment history alongside major events in world and national history. Another section of the site presents First Amendment Stories, which creates access points where users can delve into particular sub-areas of the First Amendment (e.g., school speech, academic freedom), many of which are accompanied by their own, curated visualizations.

Combining empirical research methods with visualization techniques allows user to draw inferences from the data presented in the VFA site and to understand the Supreme Court through a new lens. It augments the case-by-case approach of traditional legal scholarship with the ability to zoom-out and understand rulings in the broader context of the legal, cultural and political landscape.

References


Sula, C. & Rabina, D. (under review). Building a visualization tool for First Amendment Supreme Court rulings. TBA.

Sunlight Foundation http://sunlightfoundation.com/

The White House Open Government Initiative http://www.whitehouse.gov/open


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