

Augmenting Citizen Participation in Governance Through Natural Language Processing

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Introduction

“The Turing test cuts both ways. You can't tell if a machine has gotten smarter or if you've just lowered your own standards of intelligence to such a degree that the machine seems smart. If you can have a conversation with a simulated person presented by an AI program, can you tell how far you've let your sense of personhood degrade in order to make the illusion work for you?”

- Jaron Lanier

The modern human experiences success and meaning through systems and structures that provide standardized validation. The nature of these structures directly shapes the assessment of the quality of such experiences. The 21st century presents some of the most drastic reductions in the meaning of these experiences: intellect and ability measured by standardized college admission scores, influence and inspiration measured by the number of research citations, attraction and interest measured by the number of responses received for a new profile picture... It should be no surprise that AI performs extremely well on predicting and solving such tasks. A takeaway beyond astonishment is that the structures in which humans evaluate their standards have been reduced to the point that probabilistic models seem to perform almost as well as a human could. Success of AI should prove merely that it is unfortunate for humankind to come to believe that such metrics are the true definition of profound human experience, and even worse, that humans started to tailor their investment and time to fit these weaker definitions of meaning. In attempting to regulate processes, a significant qualitative layer of human contact is obscured - it has been debated for more than two millennia since Plato's Republic, whether the heartfelt aspects of human nature are in inherent conflict with a fair and just society, and by no means I could provide a sufficient answer to the question in this work.

In the following chapters, I attempt to demonstrate that integration of AI and natural language processing in democratic frameworks can significantly augment the nature of citizen participation. First, I outline the evolution of democratic theories that focus on how the people are to rule and participate, how the vast diversity of problems and interests of citizens can be represented in lawmaking and governance. Then, I analyze the information reception frameworks of select federal agencies and case studies of crowdsourced laws from various states, by comparing corporate lobbying and comment collection in more traditional modes of legislation making with innovative methods to increase participation through active citizen feedback. Lastly, I propose and evaluate an unsupervised methodology that heavily relies on opinion mining, topic modeling and sentiment analysis, that can make large bodies of comments received be more digestible by clustering those similar in subject and attitude. In doing so, it eases the feedback reception process for federal agencies, thus addressing the calcification problem: democratic structures evolve to be procedural to the extent that they cannot accommodate the concern and suggestion responses generated by organic mobilizations of the electorate, which can freely take place in the informal networks of social life. I demonstrate the results of the methodology over three datasets: from Federal Communications Commission's first round of comment collections over net neutrality, from the 30 day public comment period 'Regarding the National Interest Determination for TransCanada Keystone Pipeline,' and from the Consumer Financial Protection Bureau complaints database.

As democratic structures increase in complexity to further accommodate the diversity of opinions, the governing and lawmaking agencies' requirements of providing for public participation and response seem to cause the nature of participation to narrow down, in a similar

fashion to the limited scope of standardized tests create school curricula that dare not expand outside an already outlined box. While I cannot provide a holistic solution to the problem of stagnating participation frameworks, I hope that the proposed approach can provide a proof-of-concept model that can make the time it takes for iteration over feedback of policymaking agencies a fraction of what it is today. While more individualized, high feedback iteration in policymaking is possible in a smaller scope, as demonstrated in the case studies, the model aims to increase both the public's ability to mobilize around causes, and the agencies' ability to receive feedback and respond in a timely manner, for more complex cases. In doing so, I hope to make it possible to hold the standards of organic human creativity and responsiveness higher in the face of governance frameworks to a level higher than a mere vote, cast every few years.

Chapter 1 - Evolution of Democratic Participation: Role of the Ruling Citizen

In this first chapter, I will analyze the works of major philosophers and political theorists who focused on the evolution of citizen participation and decision making in democratic governance. In order to prove that the methodology I propose in Chapter 3 is both helpful and faithful to democratic values, I first explore the definitions of meaningful self-governance and formats of participation. Second, I evaluate the earlier stages of democratic theory that focus solely on the electorate's participation in the selection of a ruler. Third, I explore the development toward pluralist representative forms, where the electorate's role increases through the rise of interest groups. Last, I compare and contrast three approaches to deliberative democracy and show the problems the methodology can help alleviate or reconcile. I conclude by establishing that the methodology I propose can best enhance a deliberative democracy framework, which stays most loyal to the ideas of meaningful citizen participation and accountability.

1.1 - Fundamentals of Democratic Decision Making: Collective Self-Governance

The diversity of values and interests in the modern world means that collective living naturally requires some people to live under constraints that are not preferred by them. In *Democracy and the Limits of Self-Government*, Adam Przeworski outlines four conditions, which, when met, balance autonomy, equality and liberty within a fair process of collective decision making:

- “1. Each participant must be able to exercise equal influence over decisions;
2. Each must have some effective influence over decisions;
3. Decisions must be implemented by those selected to implement them;

4. Laws must enable secure cooperation without undue interference.”¹

These rules are helpful in analyzing whether a democratic framework is sufficient in guaranteeing basic liberty and equality over decision making through various means of political participation, ranging from mere voting for a ruler to active participation in interest groups, or deliberative polls.

Przeworski examines whether an election-based government, consisting of representative institutions, can further accommodate political participation beyond voting for a ruling party or person. In the case of voting over a policymaking question, since the issues being debated and the variety of options are limited by the proposal of the administrators, not all possible opinions or stances can be raised, given that a voting process is already initiated. Furthermore, the timing constraints of voting cannot address evolving needs and variance of opinions depending on momentary political context. Przeworski places high value on being an ‘active chooser’ even though, in a representative system, ‘active choice’ merely entails voting on a predetermined question with predetermined options in a fixed time frame in history. In other words, the true outcome of a collective decision is very weakly dependent on each individual’s choice. In his words, for a weak system, “Collective self-government is achieved not when each voter has causal influence on the final result, but when collective choice is a result of aggregating individual wills.” Note that Przeworski’s disappointment in the use of the term ‘active chooser’ in weak systems refers to representative institutions guided by regulated voting, which is the most prevalent contemporary form of democracy. I will use this definition of participation as

¹ Przeworski, *Democracy and the Limits of Self-government*, 13.

contribution to democratic frameworks as I evaluate and compare how various models attempt to render their electorates ‘active.’

1.2 - French and American Early Democracies: Voting for a Ruler

In *The Tradition of Ancient Greek Democracy and Its Importance for Modern Democracy*, philologist and demographer Mogens Herman Hansen reimagines Przeworski’s issue with election-based government as a juxtaposition of democracy, liberty and equality that evolves to be reconciled. Along with effective participation, these are the values I will pursue in considering various citizen participation frameworks. Hansen comments that earlier iterations of modern democratic understanding, such as in the writings of Montesquieu and Jaucourt, associated democracy with equality and saw it as a threat to liberty.² As observed from the perspective of 18th century French Enlightenment scholars, the conflict between equality and liberty can reason limitations on true ‘active participation,’ to ensure a quality of liberty that will not be threatened by the irrationality of the masses, offering choice over a set of curated options seems stable. Attempts to reconcile these three elements slowly evolved with the French and American revolutions and each side’s response to the other. After the French Revolution, the French political thinker de Tocqueville maintained the fears of Enlightenment thinkers while holding all three values -- democracy, liberty and equality -- as non negotiable, writing in *De la Démocratie en Amérique* that although democracy furthers equality, it can easily be a threat to liberty.³

Both approaches constrained the nature of democracy by focusing the participation of the electorate on choosing the governing body rather than attempting to express their values and

² Hansen, *The Tradition of Ancient Greek Democracy and Its Importance for Modern Democracy*, 25.

³ Hansen, *The Tradition of Ancient Greek Democracy and Its Importance for Modern Democracy*, 26.

interests. The context of French Revolution and premises of stability in the founding of the United States primed the evolution of democratic frameworks to focus on choosing a ruler rather than ‘becoming’ rulers as a collective through encouraging interest groups. Today, we see echoes of this philosophy in attitudes toward unions and associations, which were first mentioned in Diderot’s *Encyclopedie*, framed as destructive to the good of the nation and inherently schismatic. De Tocqueville too notes that although the American tendency to form associations that can be seen as schools of democracy teach individuals the skills of coming together for public purposes, those purposes are not meant for full civic participation but for resisting dictatorial regimes.⁴ Thus, the formation of associations is valued only in its ability to choose a ruler and not as an expression of interest that may go beyond and perhaps expand the ruler’s outlook. The electoral college in the United States is a vestige of a similar system: an individual votes for electors who will, in turn, elect a President. The 2000 election of President George W. Bush is an example in which this method of public participation in electing leaders was apparent and hugely controversial.

Early American leaders saw civic participation in interest groups as a threat to the established community norms and values. Przeworski states the role of the people in this period has been seen as “to elect the government, not to participate in governance.”⁵ Political theorist and President James Madison can be viewed as strongly guarded against zealous participation through interest groups because of these groups’ ability challenge established values that could be claimed integral to the community. While it is already challenging to define a core set of values as integral and intangible, Madison’s views, as seen in Federalist Number 10, are further

⁴ Fukuyama, *America in Decay*.

⁵ Hirst, *Representative Democracy and its Limits*, 6.

problematic for their inability to accommodate shifts in political views or evolution of minority opinions, which the United States subsequently suffered through at several iterations, most prominently with respect to racial and gender identity. However, Madison's outlook persevered for more than a century, reemphasized in the works of American theorists such as Joseph Schumpeter and Walter Lippmann. Both express significant vexation towards the individual's inherently selfish choices and ignorance of domestic and international affairs, which yields to inability of individuals to govern and leads both theorists to distrust further citizen participation in governance. According to Schumpeter's *Capitalism, Socialism and Democracy*, which follows a framework similar to a competitive market, in the ideal case of governance it would be up to groups of elite political figures and skilled bureaucrats to form political parties with the power only to change their ruler, and this with minimal distraction. In political scientist John Dunn's wording of Schumpeter's outlook, "Democracies are distinguished from non-democracies by the way in which they acquire their rulers, not by the sorts of power which the rulers hold whilst they are rulers."⁶

1.3 - Pluralist Frameworks of Democracy: Interest Groups and Calcification

It is also reasonable to read Madison's prudence towards factions as an intent to maintain a nonpartisan government that shall not be divided and not a hostile expression towards interest groups. If we limit the definition of interest groups to entities that do not intend to have the sophistication or scope of a political party and instead merely intend to have their approach heard, these groups could fall short of Schumpeter's threshold for political participation, in which case they can be seen as entities to be heard by the governor. On the spectrum of political

⁶ Dunn, *Western Political Theory in the Face of the Future*, 26.

participation, this is one step further towards ‘collective choice as a result of aggregated individual wills’ as compared to the cynical outlook of Lippmann in *The Phantom Public*, where the scientific elite are expected to guide the people into understanding what is good for them. This interpretation aligns with American political scientist Francis Fukuyama’s analysis in *America in Decay* of Madison as a figure more sympathetic towards interests groups, given a climate strong enough to not to be dominated by a single faction. The interpretation also matches well with mid-twentieth century pluralist political theorists’ outlooks (Fukuyama quotes Theodore Lowi) in which the free market perspective in Schumpeter’s parties descend to the interest groups whose dynamics will yield a ‘public interest’ hoped to be optimal.⁷ Reclaiming de Tocqueville’s view of the American tendency to form associations with a new definition to capture actual values and interests beyond solely ousting tyrannical rulers, this generation of scholars like Robert Dahl and Martin Lipset underline a “freedom of a multiplicity of groups to associate to further their political interests”⁸ as a core concept of democracy.

The presence of a climate of dynamic interests groups, however, is not in the least a satisfactory point in the evolution of democratic participation. Fukuyama notes that Madisonian democracy leads to an elite class with higher access to power to protect their interests. The elite have the ability to define interest groups’ values that challenge or contradict their stance as contrarian to values of the state. Furthermore, the wealthy groups’ ability to mobilize interest groups in lobbying much more efficiently also challenges equality. The calcification of a wealthy oligarchy further instills beliefs in the electorate that may make them vote against their interests.⁹ Dunn has a similar criticism of the complacency of the pluralists: Lipset, in *Political Man*,

⁷ Fukuyama, *America in Decay*.

⁸ Dunn, *Western Political Theory in Face of Future*, 26.

⁹ Fukuyama, *America in Decay*.

argues against the oligarchies observed in socialist states, yet is satisfied with the baseline that there is no barrier of entry to the American political scape as a guarantee for American liberty. “If it turned out that the working class and above all the poorer ethnic minorities were distinctly less able to get themselves actively organized than, for example, large scale farmer or Texas oil-well owners, then that was no great cost because the working class class and the poorer ethnic minorities were, it turned out, decidedly more ambivalent in the attitudes which they expressed towards the values of American democracy than those who were doing more handsomely out of it.”¹⁰ By entertaining political parties and interest groups as the main factions, the democratic framework may both fail to guarantee equality and lose accountability to the true opinions of citizens: it becomes the failure of the party, or of the interest group to not have made the sufficient change. These concerns challenge the first two rules of Przeworski, where each citizen must be able to exercise equal and effective influence over the decision making. The calcification problem of pluralist representative frameworks will be referred to later on, and provides a good comparison point for the analysis of opinions in rational deliberative setting.

1.4.1 - Deliberative Democracies and Polls: Habermas and Parallelized Rationality

Neither the pessimism of Schumpeter and Lippmann nor the iterations by the pluralists can sufficiently capture collective choice as an aggregate of individual wills able to hold the state accountable. Realizing that it is, in fact, in human nature to associate and organize along like-minded interests forces us to seek social models that combine the natural and organic communicative ability to organize within a democratic framework. The German philosopher

¹⁰ Dunn, *Western Political Theory in Face of Future*, 27.

Jürgen Habermas outlines this issue concisely in *Three Normative Models of Democracy*: “These premises either invite us to ascribe the praxis of civic self-determination to one encompassing macro-subject or they have us apply the rule of law to many isolated private subjects. The former approach views the citizenry as a collective actor that reflects the whole and acts for it; in the latter, individual actors function as dependent variables in system processes that move along blindly.”¹¹ In the same text, he comments on the kind of pluralism discussed above as a necessary compromise:

“Under conditions of religious, or in any way cultural and societal pluralism, politically relevant goals are often selected by interests and value orientations that are by no means constitutive for the identity of the community at large, hence for the whole of an intersubjectively shared form of life. The political interests and values that stand in conflict with each other without prospects of consensus are in need of a balancing that cannot be achieved through ethical discourses - even if the outcomes of bargaining processes are subject to the proviso that they must not violate a culture’s agreed-upon basic values. The required balance of competing interests comes about as a compromise between parties that may rely on mutual threats.”¹²

The framework of compromise, seen as a balance of incompatible factions, may yield a solution from aggression but not necessarily a resolution that attempts to sincerely capture the evolving dynamics of the full array of opinions. Both approaches are faulty for Habermas, who prefers to observe the modern citizenry through its own informal “peripheral networks of the political public sphere,”¹³ which encompass both structured unions and associations as well as more

¹¹ Habermas, *Democratic and Constitutional Theory Today; Three Normative Models of Democracy*, 8.

¹² Habermas, *Democratic and Constitutional Theory Today; Three Normative Models of Democracy*, 5.

¹³ Habermas, *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*, 27.

casual gatherings and protests. In this ‘decentered society,’ opinion clusters form and dissolve naturally; the organic formation of human minds cannot easily be accommodated by a calcified democratic structure with predetermined cycles. This system is highly theoretical yet remains loyal to the nature of opinion evolution in a large crowd. Thus, it outlines qualities I will seek in the development of a methodology in the following chapters.

In *Structural Transformation of the Public Sphere*, Habermas presents the 18th century salons and coffee-houses of bourgeois Europe as spaces where use of reasoning for critical debate appeared as a framework for deliberation rather than negotiation. A framework that provides the space in which already-fixed factions do not compromise but instead share perspective and deliberate is much closer to the original goal of aggregating individual wills, which are not inherently fixed. Note that the assumption of unity through reasoning is a fairly demanding one. Recognizing individuals as endowed with reason, equal to each other and susceptible to moral appeals means participants in the deliberative process do not need to ‘aggregate’ their preferences through voting because they arrive at the same decision. Thus, according to Philosopher and Stanford Professor Joshua Cohen, “deliberation aims to arrive at a rationally motivated consensus – to find reasons that are persuasive to all.”¹⁴ While the discussion sphere of 18th century was defined as inclusive in theory, it had natural barriers to entry in the form of class, property ownership and education level. Yet, the basis of the communicative ideal of the salon environment sets the standard for Habermas’s take on deliberative democracy: a cooperative environment constituting of equal agents, free of

¹⁴ Przeworski, *Democracy and the Limits of Self-governance*, 34.

socioeconomic barriers of entry, in which critical discussion can lead to an understanding, if not agreement, on the discussed question.

This culture of ideal public rational discourse, called *Öffentlichkeit*, succeeded an era of ‘representational’ culture in Europe. Representational, in Habermas’s definition, corresponds to Marxist feudalism in that a dominant party ‘represents’ itself by imposing mostly financial -- but also social -- limitations and oppression on its subjects. The rise of the merchant class, therefore, brought a corresponding rise in *Öffentlichkeit* culture, where a powerful public space of bourgeoisie could exist outside the structure and control of the state and engage in critical deliberation, similar to the existence of familial units outside the immediate jurisdiction of a central governance, with its own, organic and customized cultural norms not enforced outside its confines. In this sense, Habermas claims *Öffentlichkeit* is an extension of the “domestic space” in which entities are observable and interactable by virtue and security of familiar intimacy: “Living room and salon were under the same roof; and just as the privacy of the one was oriented toward the public nature of the other, and as the subjectivity of the privatized individual was related from the very start to publicity, so both were conjoined in literature that had become ‘fiction.’”¹⁵ The literature, journalism and social culture of 18th century further championed and reinforced the sense of hospitality of *Öffentlichkeit* culture.

Post French Revolution, Habermas saw discussion societies slowly degenerate into ‘economics of mass media consumption’ and bourgeoisie institutionalized into constitutional state frameworks as the public sphere evolved into a factious scrambling for the state’s resources instead of a deliberative, rational consensus. The adaption of informal networks into the state,

¹⁵ Habermas, *The Structural Transformation of the Public Sphere*, 50.

blurring the boundary between the two, is called the ‘refeudalization’ of the public sphere. Mass media plays a central role in this process by virtue of its economic ease of production and diffusion. Mass media shifts the focus of rational discourse to leisure, its content naturally controlled by a select subset that effectively resembles the Marxist feudal influence networks of clergy and nobility under which private interests assume direct public functions. This converts the public into passive consumers rather than the critical engagers that exist under a welfare state. The public ‘receives’ a manufactured consensus conceived by several factions that cannot independently claim majority yet, altogether, create the feudal dynamic with political figures ‘representing’ themselves before the public. The state swallows the *Öffentlichkeit* culture into its body thus institutionalizing and calcifying its once organic discourse dynamic into frameworks of lobbying and media. The claim of *Öffentlichkeit* still exists, yet what is observed is merely a farce of true rationalist discourse with an impossibly high entry threshold. Here, discourse focuses on leisure and ‘aggression,’ defined in *Three Normative Models of Democracy* as a core element of faulty pluralist frameworks.

Against this romantic approach, one must acknowledge that the intellectual and rational discourse of 18th century Europe did not occur at a state scale but was confined to those privileged enough to enter upper class salons and coffee-houses. Yet the communicative model is still valuable because naturally arising communities of discussion that run parallel to the state are able to capture public opinion in the form of individual wills condensed through reason without running the risk of compromising already outlined interests. Fukuyama comments:

“Both classical Athenian democracy and the New England town hall meetings celebrated by Tocqueville were cases in which citizens spoke directly to one another about the common interests of their communities. It is easy to idealize these instances of small-scale democracy, or to minimize the real differences that exist in large societies. As any organizer of focus groups will tell you, people’s views on highly emotional subjects, from immigration to abortion to drugs, will change just 30 minutes into a face-to-face discussion with people of differing views, provided that they are all given the same information and ground rules that enforce civility.”¹⁶

For an entity to be truly democratic, the power of face-to-face discussions as seen in Habermas’s idealized salons must be brought into a framework that creates the space for conversation to happen rather than replicating pluralist, precipitated camps that serve only to challenge and negotiate. In short, a democratic system that aims to take command of humans should be able to foster an independent, unconstrained *Öffentlichkeit*, a public reasoning culture for both civic associations and informal, spontaneous gatherings and germinations of dissent (such as the “Occupy Movement”) and allow the state and public sphere to coexist in a productive dialectic and be receptive to learning from and responding to each other.

Habermas’s discourse principle, “a rule of action or choice is justified, and thus valid, only if all those affected by the rule or choice could accept it in a reasonable discourse,”¹⁷ as laid out above is difficult to accomplish at a national scale. The exclusivity of Greek city states and French coffee-houses is convenient for this level of discourse, not only by the virtue the smaller scale, but also because education threshold eases productive discourse and devotion to

¹⁶ Fukuyama, *America in Decay*, Liberty and Privilege.

¹⁷ Bohman, “Jürgen Habermas”, *The Stanford Encyclopedia of Philosophy* (Fall 2014 Edition).

intellectual time is often not feasible for working classes. The model, however, is extremely helpful not only in providing an ideal to aspire toward, but also through case studies of various scales in policymaking and local governance. Patterns of deliberative democracy with narrower scopes and functionalities exist in federal agencies and county-level consensus, bringing the platform of discourse closer to the more ‘intimate’ setting of salons. On the highest scale, most modern democracies’ election cycles stand somewhere between the passive voter and pluralistic interest representative models; however, instances of deliberative democracy have been successfully tried on smaller scales, further explored in the section on case studies.

Before advancing into case studies of attempts at deliberative democracy, it is important to explore the works of political theorists that are critical in bringing deliberative democracy to application. First, I will analyze Joshua Cohen’s ‘ideal deliberative procedure’ as outlined in *Deliberation and Democratic Legitimacy* in order to bring its fundamental aspects into discussion of real-life instances. Then, I will look at James Fishkin and Robert Luskin’s practical implementations of deliberative democracy, which views deliberation as a subtype of direct democracy.

1.4.2 - Deliberative Democracies and Polls: Cohen and Pluralist Deliberation

In *Deliberation and Democratic Legitimacy*, Cohen outlines Rawls’s three principles about what constitutes democratic politics in a just society. Firstly, “political debate is organized around alternative conceptions of the public good,”¹⁸ which limits pure self-interest or narrow standpoints. Secondly, “the ideal of democratic order has egalitarian implications that must be

¹⁸ Cohen, *Deliberative Democracy: Essays on Reason and Politics*, Deliberation and Democratic Legitimacy, 68.

satisfied in ways that are manifest to citizens,” outlining clear commitment to public equality and consideration of measuring to limiting forms of inequality, important not only insofar as it serves the function of democratic framework by not having the political agenda controlled by financially and socially ‘representing’ groups but *inherently* important as a premise and as a goal. Thirdly, “democratic politics should be ordered in ways that provide a basis for self-respect, that encourage the development of a sense of political competence, and that contribute to the formation of a sense of justice; it should fix ‘the foundations for civic friendship and [shape] the ethos of political culture.’”¹⁹ Acknowledging the malleable aspect of human nature to shape is crucial: humans shape their own conception of their interests and values through the platforms on which these are discussed and brought to reality. Reducing civic responsibility to a voting cycle, therefore, redefines satisfactory commitment to a level that is not only easy to attain, but leads to self-imposed, anticipatory exclusion of further participation on the basis of completed obligations and lack of self-trust. Recalling the Lanier quote in the introduction, this is ultimately destructive for human nature as it perpetuates a more reduced understanding of civic responsibility, which builds the negative feedback cycle of reduced human capabilities. In the long run, the third aspect may be the most important of all, as it fosters the belief that evolution of any civic state is possible under any circumstance, as citizens, with what they inherently have, are entitled to participate in political discourse.

However, Rawls’s three principles are not fully sufficient for true equality through a deliberative democracy based on the speculative nature of Rawls’ claims of human nature. Cohen presents a framework of five features that do not build on assumptions of human nature

¹⁹ Cohen, *Deliberative Democracy: Essays on Reason and Politics*, Deliberation and Democratic Legitimacy, 69.

but, instead, theory of justice, which enables “citizens in such an order [to] share a commitment to the resolution of problems of collective choice through public reasoning, and regard their basic institutions as legitimate in so far as they establish the framework for free public deliberation.”²⁰

- 1) **Permanence:** Deliberative democracy is ongoing and independent, continuing to the indefinite future.
- 2) **Commitment:** Free deliberation among equals is the basis of legitimacy, and all members are committed to coordinating their activities within institutions that make deliberation possible and according to norms that they arrive at through their deliberation.
- 3) **Pluralism:** Citizens have diverse preferences, convictions and ideals concerning the conduct of their own lives.
- 4) **Transparency:** Because deliberative procedures are the source of legitimacy, the connection between deliberation and the terms of their association should be evident.
- 5) **Respect:** Citizens recognize each other as having the deliberative capacities necessary for a public exchange of reasons and for acting on the results.²¹

This procedure is both free and reasoned: the act of deliberating and reaching a conclusion, from the same set of premises, entitles the participants to act upon the results. Cohen quotes Habermas’s communicative theory, that “no force except that of the better argument is exercised.”²² All parties are not only formally equal in that the rules do not outline individuals, but further equal standing by access to facts and ability to put forth issues, propose solutions and

²⁰ Cohen, *Deliberative Democracy: Essays on Reason and Politics*, Deliberation and Democratic Legitimacy, 72.

²¹ Cushing, *On Joshua Cohen: Deliberation and Democratic Legitimacy*.

²² Habermas, *Legitimation Crisis*, 108.

offer support or criticism to other's proposals. The goal to find reasons that are persuasive to all is ultimately what is needed - in cases where this is impossible, falling back to voting is not a weakness of falling back to a majority-rule non-deliberative, 'aggregative' system: "The institutional consequences are likely to be different in the two cases, and the results of voting among those who are committed to finding reasons that are persuasive to all are likely to differ from the results of an aggregation that proceeds in the absence of this commitment."²³

In the last part of *Deliberation and Democratic Legitimacy*, Cohen attempts to address the "irrelevance objection" to his ideal deliberative procedure: "a direct democracy with citizens gathering in legislative assemblies is the only way to institutionalize a deliberative procedure," and since direct democracy is infeasible in the modern society's context, contemplating deliberative democracy becomes irrelevant. His primary response to this objection is through showing that direct democracy is neither natural, nor necessary for a deliberative framework. By claiming that a large gathering with an open agenda does not necessarily yield a platform of rationalist discourse, and furthermore with minimal guarantees on political behavior, he states that it may even be a bad arrangement.

Cohen's response focuses on the nature of ancient direct democracy too strictly, and does not address the scaling concerns of deliberative frameworks. He is correct in stating that deliberation organized on a local or issue-specific scale would be insufficient to create a complete, open-ended deliberation framework for a democracy, since in aggregation of the smaller deliberations, the formation of interest groups would lead a calcified pluralist framework that can only settle through confrontation and negotiations. He does not focus on the fact that

²³ Cohen, *Deliberative Democracy: Essays on Reason and Politics*, Deliberation and Democratic Legitimacy, 75.

limiting the scope of deliberation can instead generate healthy rational climates for specific issues, which has been more successful in instances of crowdsourced laws and deliberations. Within an outlined debate, all participants would be free and equal and through their commitment to the system, avoid formation of interest groups, but only condensation of collective reasoning.

The bigger problem with Cohen's argument is the conviction that political parties, supported through public funding, can instead provide a truly widespread independent deliberation environment. He is fast to conclude that if political parties can overcome financial dominance of the wealthier interest groups, this fixes inequalities for all citizens that would prevent true deliberation. The scope of political parties can accommodate all interests and concerns, but this does not necessarily mean that every interest of every citizen can be brought to discussion - in fact, the agenda may still be controlled by a select group, rendering the rest receptive to others' deliberation. The degeneration of political party systems to factious pluralism evolves from two sources: financial dominance over agenda, and the 'funnel problem': difficulty of receiving a large amount of opinion input into a deliberation sphere. Cohen resorts to theory for a point of concern about applicability: "There is certainly no guarantee that parties will operate as I have just described. But this is not especially troubling, since there are no guarantees of anything in politics. The question is how we can best approximate the deliberative conception."²⁴ While the objection may challenge positioning deliberative democracy at a global scale, it certainly does not undermine the value generated from the framework, and any

²⁴ Cohen, *Deliberative Democracy: Essays on Reason and Politics*, Deliberation and Democratic Legitimacy, 86.

approximation or adaptation of deliberation into current frameworks would be helpful in creating a basis for self-respect and participatory civic culture.

By introducing reasonable pluralism and deliberative justification, Cohen overall enriches Habermas's two-track deliberative democracy,²⁵ where deliberation in the public sphere and state run parallel to each other in combining mass participation towards functional executive power. Habermas's 'discursive democracy' model mostly focuses on the respect and commitment qualities of Cohen's ideal deliberative procedure, and values the informal aspect if it can also minimize the entry threshold. By formalizing it further and introducing rules of guarantees of permanence, equality and transparency, Cohen's outlook becomes much more pluralist, which also inevitably brings in the difficult requirement of a political party system truly committed to rationality that will not devolve into confrontational representative democracy. Habermas's assumptions, in a sense, are more embedded in human nature and also are less constraining. An in-depth comparison can be found in Cohen's response in *Reflections on Habermas on Democracy*,²⁶ where the higher ambition of outlining a democratic framework of integration becomes clearer, along with the stringent assumptions.

1.4.3 - Deliberative Democracies and Polls: Fishkin and Luskin's Direct Deliberation

James Fishkin provides a model of deliberative democracy that is much closer to a direct democracy framework, which is helpful for the applicability question of deliberation. Fishkin approaches the question of just deliberation by outlining circumstances that would render an instance of discourse just, rather than construing an environment in which political discourse

²⁵ Cohen, *Reflections on Habermas on Democracy*, Ratio Juris, 389.

²⁶ Cohen, *Reflections on Habermas on Democracy*, Ratio Juris, 416.

would inherently maintain the deliberative nature as both Habermas and Cohen aim for. In *When the People Speak: Deliberative Democracy and Public Consultation*, Fishkin outlines the criteria for participant disposition and institutional design:

- 1) **Accurate Information:** All participants are given equal access to all sources of information that each participant believes to be relevant to the issue, which may include expert consultation.
- 2) **Substantive appraisal:** Every argument made by every participant is weighed for its values, benefits and burdens, and is responded by those with opposing perspectives.
- 3) **Diversity:** Each argument space is spanned comprehensively, with consideration for opposing viewpoints.
- 4) **Conscientiousness:** All participants are equipped with reason and commitment to deliberation that all arguments are truly considered
- 5) **Equal consideration:** Arguments of all participants are considered equally on the merits regardless of origin or status of the participant, privileging the opinion over the proponent.²⁷

It is clear that the rules focus on the nature of deliberation itself, rather than the environment in which deliberation takes place - Fishkin is much more concerned about the assumption both Habermas and Cohen make, that reasoning will prevail under the right circumstances with minimal external control as it comes from human nature. While none of the deliberative democracy theorists have solely chosen to target an educated elite, Habermas's focus on the intellectual salons and Cohen's need of guarantees of rational party behavior both show that

²⁷Fishkin, *When the People Speak: Deliberative Democracy and Public Consultation*, 42.

Fishkin seeks a more applied form of deliberation, thus needs to guarantee a well-mediated discussion much more actively. The mere fact that it is crucial for Fishkin to establish a fact base that can be consulted shows that it is geared towards a broader audience, not necessarily equipped with awareness on issues that may be of importance to them. While this model of deliberation is better geared towards an already outlined debate, it can prepare and guarantee quality deliberation better for a wider range of participants. Stating, as Cohen and Habermas does, that the deliberative platform ensures that any and all opinions can be brought to the agenda is insufficient in a world of unequal information. Critical information may be hidden from those who will be affected by the legislation in question the most, and furthermore, one may not even be aware of the circumstances they are in, in order to attempt to have it included in the deliberative agenda.

What makes Fishkin's take of deliberative democracy close to direct democracy is that citizens may directly create binding law through deliberation. Based on the legal powers granted to the result of deliberation, we may consider a spectrum of taking public input into final governance, from opinion polling to a referendum. In a deliberative opinion polling, the ultimate goal is to measure opinion change. Center for Deliberative Democracy outlines the procedure as: "A random, representative sample is first polled on the targeted issues. After this baseline poll, members of the sample are invited to gather at a single place for a weekend in order to discuss the issues. Carefully balanced briefing materials are sent to the participants and are also made publicly available. The participants engage in dialogue with competing experts and political leaders based on questions they develop in small group discussions with trained moderators. Parts of the deliberative events are often broadcast on television, either live or in taped and

edited form and/or through social media and other mediums. After the deliberations, the sample is again asked the original questions. The resulting changes in opinion represent the conclusions the public would reach, if people had opportunity to become more informed and more engaged by the issues.”²⁸

Fishkin’s deliberative polling can be contextualized in a trade off between higher participatory democracy and diminishing deliberation. In another sense, the tension between precise representation of opinions against exhaustive representation of people in a participatory setting is important to understand, in order to see the benefits of deliberative polling. In *Experimenting with a Democratic Ideal: Deliberative Polling and Public Opinion*, James Fishkin and Robert Luskin outline the rise of direct democracy as a global trend, and attempt to convince the reader that the antagonism between representative and deliberative models is not actually an inherent tension between equality and deliberation. Representative pluralist models are ‘equal’ in the sense that they redefine participant agency to such a low threshold of participation through votes, and any further involvement with an inherent high threshold, that it is fairly difficult to attain a level of blatantly unequal participation for every socioeconomic segment within itself. A very small subset of the population can afford to form significant interest groups and participate in the formation of mass media. Representative sampling, on the other hand, is intentionally curated to be able to reflect the demographic span of the entire electorate. This yields to a more precise representation of opinions at the expense of equal participation from every citizen, yet has an equal chance to participate for every citizen - which seems more empowering than what representative pluralist models can provide.

²⁸Center for Deliberative Democracy, *What is Deliberative Polling?*

Furthermore, the negotiative context of representative democracy changes the flexibility and rational evolution of thought for the politicians. Even in an elite-level deliberative model, the concern for election cycles, media perception and change and inconsistency of opinions all hurt deliberation quality.²⁹ Freedom to alter one's views is critical - ultimately desired in deliberative democracies - and any structure that will hinder and replace rationalist attitudes with hostile discourse will inherently be undemocratic.

For Fishkin's and Luskin's deliberative models, most of the confidence relies on the strength and accuracy of representative sampling. Scalability concerns are not only based on the numbers or the quality of the participant crowd, which ultimately relies on participants' availability to a large commitment, and on a certain authority's wisdom of representative sampling, who thus has significant control over the results of the deliberation. There is more that is curated beyond the participants: the briefing materials have to be concise and digestible, yet exhaustive of the issue. Accurate information as a premise for deliberation is easy to state, yet any prior knowledge of participants need to be validated. Furthermore, the fact base is codified: any mistake may render the result invalid. Participation is biased as it is a self-selective group unless participation is mandated by law, and final presentation of the results to the public may aggravate the stances of calcified interest groups that did not have a chance to participate in deliberation.

If the goal is not to extrapolate to a conclusion about the overall public, but to address a specific issue and the interest of those who are invested the most, however, the deliberative polling framework as outlined by Fishkin and Luskin appears well functional, as the natural

²⁹Fishkin and Luskin, *Experimenting with a Democratic Ideal: Deliberative Polling and Public Opinion*, 286.

constraints above become beneficial to the goal. Aside from crisis response, if the timeline permits, participants may bring their own briefing material with limitations, and agree upon a fact base along with the deliberation itself, which can significantly slow deliberation down.

Note that reduction of polling quality in order to capture a larger sample is dangerous, since it presents a framework for citizens to evaluate their context, values and interests in a simplified manner, which in turn affects their behavior to actualize what is optimal for the nature of the poll, but not necessarily for human interests. As quoted by Fishkin, George Gallup presented polling as a democratic reform: “Today, the New England town meeting idea has, in a sense, been restored. The wide distribution of daily newspapers reporting the views of statesmen on issues of the day, the almost universal ownership of radios which bring the whole nation within the hearing of any voice, and now the advent of the sampling referendum which produces a means of determining quickly the response of the public to debate on issues of the day, have in effect created a town meeting on a national scale.”³⁰ This ‘sampling referendum,’ by virtue of the nature of its format cannot foster discourse, but instead forces its respondents into a fixed set of predetermined responses, propagating a calcified interest group attitude in the general public. Gallup poll has been helpful in making it possible to have an understanding of opinion dispersal. However, it is important to be able to incorporate technological developments to both extend the nature of polling to a format that encourages deliberation, and to remove the priming it induces through supplying a fixed response dataset. Fishkin and Luskin point out that respondents often

³⁰ Fishkin, *Polls and Politics: The Dilemmas of Democracy*, 147.

have not put thought into a question at hand³¹, and furthermore the presence of the buckets will cause conclusions to be forced to fit into molds.

The methodology I propose in the following chapters also ultimately reduces a general populace into a set of response buckets, thus it may also propagate the same negotiative pluralist attitude. However, the fact that there are no guiding questions or options for the respondents, and that the grouping and organization of the opinion results is processed in an unsupervised way, yields a less manipulatable attempt at capturing a state of diverse opinions. Moreover, its integration into deliberative frameworks can redefine its use beyond a polling mechanism with static, explanatory results. Recall the ‘funnel problem,’ which is the difficulty of increasing the number of opinions brought into the deliberation sphere, by natural constraints of time and human ability to focus. By distilling open-ended comments that are written prior to deliberation, any number of participants can have an understanding of the thought diversity without being presented a list of curated results. The two main issues of Gallup poll, a curated survey that filters a representative sample into predetermined buckets, and lack of deliberation, can both be alleviated with the incorporation of natural language processing techniques.

While Fishkin and Luskin argue that their form of direct deliberative democracy is representative, equality of participation is a much stricter requirement that is difficult to accomplish in their framework. The self-selected group that attends the discussion, out of a larger sample, can be further controlled to attain a diversity and substantive appraisal, but equal probability of participation does not correspond to equal participation. For polling purposes this is not a problem, but for a true implementation of deliberative democracy, representative

³¹ Fishkin and Luskin, *Experimenting with a Democratic Ideal: Deliberative Polling and Public Opinion*, 287.

sampling challenges equality of participation. Further aggravated by sampling, any non-ideal sampling or briefing material will yield results similar to the problems Habermas attempted to respond to while outlining deliberative democracy. A select group, in this case the authorities that administer the deliberation, have significant authority over the results and may curate and manufacture many kinds of apparent value and interest set.

1.5 - Conclusion: Role of Comment Analysis in Deliberative Democracy

A comparison of the highlights and weaknesses of Habermas's, Cohen's, and Fishkin and Luskin's takes on deliberative democracy will be extremely beneficial for the next chapter, where governmental organizations with public administrative authority are analyzed through the lens of meaningful democratic participation of the citizens.

- 1) Tradeoff between specificity of cause and impartiality to all opinion: For Habermas, the ideal deliberation would be freeform, where participants equipped with reason bring issues of importance to themselves to the debate. Similarly, Cohen believes that for a true deliberative democracy, deliberation should not be constrained to specific governmental agencies or questions, but should survive at a political party-level where all concerns can be brought to attention.³² Fishkin and Luskin, on the other hand, find benefit in narrowing down the scope of deliberation to a specific cause, thus making it possible to produce a deliverable at the end of the session.
- 2) Tradeoff between scaling equal participation and in-person deliberation: While Cohen can reconcile deliberative democracy with representative political party structures,

³² Cohen, *Deliberative Democracy: Essays on Reason and Politics*, Deliberation and Democratic Legitimacy, 86.

Habermas and Fishkin and Luskin's outlooks require deliberation to remain direct and in person. This pushes Habermas towards having deliberation present for everyone in the informal networks of the public, while it pushes Fishkin and Luskin towards representative sampling to capture the state of the public, thus challenging equal participation as a fundamental aspect. For polling, this is not an issue, yet exhibits the 'funnel problem' for actual governance integration: feasibility of bringing in the true set of diverse opinions onto the public deliberation platform. Their outlook has high quality, yet is not easily scalable to the whole public.

- 3) Tradeoff between deliberation quality and results: Informal deliberation networks of Habermas do not have time or context limitations, yet also no pressure for deliverables. Cohen introduces, to some extent, an entry threshold through claiming that deliberative democracy can take place through political parties, and has the deliberation more result-focused. Fishkin and Luskin keep deliberation quite result-oriented, by inducing time constraints and limited material.
- 4) Tradeoff between curated material and accurate grasp of the state of the public: Fishkin and Luskin attempt to remedy the problem of lack of awareness or in-depth knowledge by delivering briefing material and expert consultants to participants, but in doing so, also prime the participants towards a limited fact base and perspective. Habermas's model is closer to a true snapshot of the qualms of the public, yet lacks any form of guidance towards a more applicable deliberation product.

The methodology I propose seeks to balance many of the tradeoffs above by introducing new technological capabilities to the deliberation platform. The potential of collecting open-ended

text data instead of non-numeric inputs on a national scale resolves some of the tradeoffs above to some extent. Furthermore, I aim to have the proposed methodology not only follow Habermas's commitment to create non-state agents of rational deliberation, but also be easy to integrate to the common representative democracy frameworks with minimal disruption. A complete overhaul of democratic structures is important to analyze in theory, but in practice, reintroducing the ability of deliberation into already existing frameworks has a higher impact. First, I will attempt a resolution of Cohen's 'funnel problem,' difficulty of increasing the number of opinions brought into the deliberation sphere, without having to resort to negotiative representative frameworks. Second, I will attempt to address the equal participation problem of Fishkin and Luskin's framework, which is the goal of giving an equal voice to every interest and value that could be present in the society.

While Chapter 3 focuses on the methodology in detail, it would be valuable to briefly present the framework, in order for the reader to see how it may fit into already existing government frameworks which are analyzed in the next chapter. Given the strongly representative nature of current political structures, it would require significant organizational restructuring to be able to introduce face-to-face deliberation into governance, as outlined by Habermas. Understanding that it is impossible to integrate every opinion of every citizen for thorough deliberation, I aim to improve the deliberative quality of citizen participation for policymaking in a smaller scale, through federal agencies and organizations with smaller scope. Outlining the scope for a specific case not only attracts parties that are interested into the deliberation pool, but also creates the possibility of briefing material prepared by the federal agency, overall improving quality of grounds for deliberation.

Several federal agencies are required by law to issue a notice of proposed rulemaking, which is subsequently followed by a public comment collection process. This body of comments may be used in deliberation materials, both as agenda creation materials, and a supply of expert opinions and statistical claims on the public's stance over the issue. I aim to specifically address the 'funnel problem' by organizing the comments received by their topic content, delivery structure, attitude of the commenter and content relevance/expertise. This organization relies on natural language processing techniques analyzed in detail in Chapter 3, and ultimately automates the unsupervised processing of the comment body to an easy to explore format for not only the analysts of the comment collection period, but also its participants. By asking open-ended questions, the structure of the comment collection process does not lead its participants into predetermined factions or categories, and make it possible to give free-formed responses under the scope of the question, for all participants, without having to select a subset for deliberation. While crafting a written response, or looking at other written responses does not equate to deliberation in person, which is what is ultimately championed in all deliberative democracy theories, resolution of the funnel problem through efficient comment collection is still helpful: the agenda, crafted through the comment collection process, is not set by the subset of people participating in the deliberation, and whether or not the points are satisfactorily deliberated is transparent for outside observers who may have submitted comments but not been able to participate in person.

This brings deliberative frameworks one step closer to the theory of 'monitory democracy' of John Keane, where communicative abundance of the modern technological era "facilitates a watchdog function of society upon representative institutions. Principles of

representative democracy are taken up not only by government bodies or political parties, but in all spheres of social and political life by ‘a whole host of non-party, non-electoral and non-parliamentary bodies.’”³³ The methodology, in summary, can be used on several levels: in its simplest format, it can fasten the process of comment collection and processing for federal agencies, NGOs, or any entity that seeks public input. Generating a response statement for the collected comments is painstakingly difficult and significantly slows down the process. It can also be used to bring the current representative frameworks one step closer to rational participation: by having open-ended comments, it has room for all kinds of input and encourages thinking for one’s own, instead of providing factions to align by. It can be used to iterate over drafting of a law, which can be strengthened by parallel deliberation: it is easy for an agency to deliver its current state of affairs to the public, and through this tool, the results of comment collection can be organized so that the public’s response is easy to explore for the participants, and create a base material for agenda making for deliberation.

In conclusion of this chapter, while most democratic frameworks in the world remain in a negotiative representative participation format at the highest level, it has been possible to apply theory of deliberative democracy in smaller scales. It may not be at the same intensity of face-to-face discussion at an 18th century salon, yet opinions of the public can be collected and evaluated equally for everyone without inducing pre-existing alignments, encouraging rationality over factious behavior. The problem with true discourse is that the narrowing of the funnel is too extreme: millions of electorate opinion needs to be distilled into a quantity that is digestible in a deliberation session. Communication from state or lawmaker to the public is easy, but public to

³³ Nguyen, *On Democratic Theories*, Further Democratic Models.

lawmaker isn't. Recalling Habermas, the public in its informal networks can do a great job in fostering discourse, but upon bringing the results to the state, these may solidify into factious representative behavior as well. A methodology that significantly augments crowd participation can be applied both to a representative democracy that cares about feedback, or a deliberative democracy framework where instead of votes, 'opinions' are yielded from public for deliberation. This both makes it easy to trace the evolution of thought without forcing calcification into interest groups, and also shifts the role of mass media input. Be it expression of discomfort or creative suggestions, the fluid nature of humans to generate responses to issues is impossible to precisely capture, as the organic evolution needs to be reduced to a static form. All models of democracy discussed in this chapter attempt this goal while negotiating with feasibility and core values of liberty and equality. Through introduction of technology, we can get one step closer to this ultimate goal, and foster a system that enhances human capacity and conviction to meaningfully participate in governance.

Chapter 2 - Comment Collection Frameworks in Governance

While it is rare and novel to make room for in-person, citizen deliberation in policy making, comment collection is ubiquitous at many levels of governance. As explored in the previous chapter, focusing deliberation on smaller scale issues makes the results of the process more suitable to producing applicable results, rather than merely measuring opinion change or fostering a rationalist culture. Comment collection, if augmented with iterations on responses and policy drafts, can act as a primary step towards a system that incorporates the deliberative spirit to its representative frameworks. This form of accountability to citizen opinions through comment collection and response is especially meaningful for agencies that have powers characteristic to all three branches of a federal government: executive, legislative and judicial power. These agencies have both a narrower scope, and more pressure for producing deliverable, actionable results, which makes deliberative iteration more feasible. In this chapter, I will first analyze the 1946 Administrative Procedure Act, which applies to federal executive departments and the independent agencies in the United States, governing their processes of proposing and establishing regulations and providing opportunities of public comments. Then, I will analyze a more recent law, the 1970 National Environmental Policy Act in depth. Lastly, I will look at an experimental crowdsourced legislation attempt from the Ministry of Environment of Finland. Overall, in these three parts, I collect six main points the methodology proposed in Chapter 3 can address well. These six points, summarized in the conclusion, will be addressed in detail in the methodology chapter.

Since 2013, the number of comments received by federal agencies has significantly increased. The Federal Communications Commission received approximately 3.7 million

comments, an initial 1.4 million, and 2.3 million more comments responding to the second draft of Tom Wheeler's net neutrality proposal.³⁴ The Keystone XL oil pipeline created more than 2.5 million comments for the State Department. Quoting Gautham Nagesh's article from *The Wall Street Journal*:

"The public has woken up to the potential of agency rule-making," said Nuala O'Connor, president of the Center for Democracy and Technology, which advocates on privacy and Internet matters. "The public has flocked to the agency rule-making process in the absence of real or anticipated action in Congress... The level of engagement suggests a broader shift in how the public attempts to influence policy." ³⁵

This increase should not be interpreted only as an indicator that citizen participation in policymaking is increasing - participation does not necessarily improve quality of decision making, with agencies ignoring the majority of comments as duplicates, irrelevant points or unfounded claims. Furthermore, it also has consequences of creating deadlocks in the execution of the regulations, which are analyzed in depth in the following chapters. Overall, I aim to show that the proposed methodology can make the comment analysis process easier for agencies, and create a healthier framework for an iterative, deliberative lawmaking process that does not suffer from the some of the current issues in policymaking.

2.1.1 - Administrative Procedure Act: Background and Process

The Administrative Procedure Act (APA) was enacted on the heels of a large expansion in the American Federal Government in the 1930s. Under Franklin D. Roosevelt's leadership, new

³⁴Hu, *3.7 Million Comments Later, Here's Where Net Neutrality Stands*, September 2014, npr.org.

³⁵Nagesh, *Federal Agencies Are Flooded by Comments on New Rules*, September 2014, wsj.com.

programs known collectively as the “New Deal” were initiated in response to the Great Depression to alleviate unemployment and poverty and prevent the crisis from repeating. Dozens of new agencies were created, with some surviving to this day, including the Securities and Exchange Commission and the Social Security System.

The APA was conceived in a controversial environment in which the need for extensive governance to move beyond the crisis conflicted with fears about the impact such extreme centralized power might have on the economy. By the time the APA was enacted in the 79th United States Congress, at least 100 new offices were created through Roosevelt’s term.³⁶ Roosevelt found the autonomy of many independent regulatory commissions troubling. In 1937, he spoke to Congress:

“The committee criticizes the use of boards and commissions in administration, ... and points out that the practice of creating independent regulatory commissions, who perform administrative work in addition to judicial work, threatens to develop a fourth branch of government for which there is no sanction in the Constitution.”³⁷

The Attorney General’s Manual on the Administrative Procedure Act, prepared by the United States Attorney General Tom C. Clark in 1947, lists the purposes of the acts as follows:

- “1. To require agencies to keep the public currently informed of their organization, procedures and rules,
2. To provide for public participation in the rule making process,

³⁶ Flynn, John. *The Roosevelt Myth*, Garden City Books, 1948.

³⁷ *FDR and Civil Aviation: Flying Strong, Flying Free*, 45.

3. To prescribe uniform standards for the conduct of formal rule making and adjudicatory proceedings, i.e., proceedings which are required by statute to be made on the record after opportunity for an agency hearing,
4. To restate the law of judicial review.”³⁸

The Act introduced the concept of accountability through citizen commentary to the United States government. Section 4(b) focuses on public participation in the rulemaking process. The original text reads:

“PROCEDURES.—After notice required by this section, the agency shall afford interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity to present the same orally in any manner; and, after consideration of all relevant matter presented, the agency shall incorporate in any rules adopted a concise general statement of their basis and purpose.”³⁹

In the model followed today, a public announcement known as an Advanced Notice of Proposed Rulemaking (ANPM) is issued when an agency wishes to add, remove, or change a rule or regulation. The announcement opens a period of public commentary on what is not yet a fully proposed law. All data regarding the upcoming rule is required to be made public for review. To prevent deadlocked opposition, a board of affected parties may be invited for give-and-take bargaining, called negotiated rulemaking, which is analyzed in 5 U.S. Code Subchapter III in the Code of Federal Regulations (CFR) in § 561-70. Citizen comments during this overall period may be used to craft a well-informed Notice of Proposed Rulemaking (NPRM), which needs to

³⁸ U.S. Department of Justice (1947). *Attorney General's Manual on the Administrative Procedure Act*. Florida State University College of Law.

³⁹ *Administrative Procedure Act*, 4(b).

be issued to start the process of rulemaking. The Code of Federal Regulations (CFR § 5.553) stipulates that Notices must consist of:

- “1. a statement of the time, place, and nature of public rule making proceedings;
2. reference to the legal authority under which the rule is proposed;
3. either the terms or substance of the proposed rule or a description of the subjects and issues involved.”

Most federal agencies often include two more factors in their Notices. For instance, CFR § 553.15, which applies to the National Highway Traffic Safety Administration, requires, “4. A statement of the time within which written comments must be submitted; 5. A statement of how and to what extent interested persons may participate in the proceeding.”⁴⁰

Almost all federal agencies follow the above format. While a specific time window is not stated, the NPRM usually gives 60 days for the public comment window and a further 30 day period for reply comments. There are minimal constraints on the nature of the comments such as a 15-page limit, which can be extended through attachments. If the comments collected in the NPRM phase lead to significant changes in the law, a further notice (FNPRM) may be issued for another round of comments. Note that this process is unreasonable for crisis moments, and emergency cases may skip the NPRM requirement. The rules are established by issuing a Report and Order (R&O) after the comments have been evaluated, and then is codified in the CFR. Both the Federal Communications Commission and the United States Environmental Protection agency are subject to this law, which are analyzed in the case studies section in the next chapter. This hybrid of rulemaking frameworks recalls Habermas’s theory of establishing platforms of

⁴⁰ *The Code of Federal Regulations of the United States of America*, Section 553.15, 137.

relation between formal and informal governance networks, formal being the hearing and record, and informal being the APNM notice, negotiated rulemaking, and the comments process.

Before the R&O is issued, the agency needs to publish a full response to all issues raised in the public comments period. Updates and analyses on the newly submitted data by the public are expected to be published. Interested parties may file a lawsuit in case where the report fails to address critical data or comments that were submitted by interested parties, triggering a judicial review process. In reality, courts often show deference to the agency, yet the process can still be used to slow down the policy making process for years.⁴¹

2.1.2 - Administrative Procedure Act: Analysis and Case Study

Overall, the structure for public comment feedback outlined by APA is fairly rigid and ‘non deliberative.’ It only has room for in-person negotiation for invited parties, it has rigid comment opening and closing periods, and only if a group of people mobilize effectively as an interest party, they can have an issue directly addressed. While collecting text comments is much better than a Gallup-like response measurement and both the comment body and report are public, the process of crafting of the report is not explicitly made public. Thus, outside parties may only challenge the final result if they have an unaddressed comment, otherwise there is minimal room for appeal. This has made the APA regulations mostly be used defensively, instead of encouraging public opinion participation. In a sense, Roosevelt’s fear is not fully addressed by the APA: it is a ritualistic checklist, not a guarantee of public accountability. The motivation for the agencies devolved into questioning whether the legal record has adequately responded to comments, winding up insulating the decision from judicial review, and from being

⁴¹Burrows, Garvey, *A Brief Overview of Rulemaking and Judicial Review*, 10.

overturned by court. Thus, the main function of the APA from the point of view of the public interest parties became a vehicle through which legislation enactment can be slowed down until the attention of higher authorities, such as the President, can be captured.

Furthermore, note that the APA was written in 1946, much before the conception of mass media vehicles or the Internet. The Judiciary House Committee is undertaking an Administrative Law, Process and Procedure Project to understand better how proposed laws are developed in a changing technological context, but this is unlikely to yield rapid changes to the legislation.⁴² With the advancement of information technology, opportunities for comment collection and efficient feedback has changed significantly. While this development should have been used to enhance the quality of deliberation, in the case of inaction to reform the APA regulations, it could lead to an even worse situation: the quantity of comments received increases exponentially as the quality and diversity of opinions plummet. It is possible to flood the comment collection box with copies of the same form letter, leading to ‘clicktivists’ taking most of the discourse space. For example, in the second round of comment collection by Federal Communication Commission on the subject of net neutrality, most comments came from a single faction:

“In marked contrast to the first round, anti-net neutrality commenters mobilized in force for this round, and comprised the majority of overall comments submitted, at 60%. We attribute this shift almost entirely to the form-letter initiatives of a single organization, American Commitment, who are single-handedly responsible for 56.5% of the comments in this round.”⁴³

⁴² *Reauthorization of the Administrative Conference of the United States: Hearing Before the Subcommittee on Commercial and Administrative Law of the House Committee on the Judiciary*, 104th Cong. 31

⁴³ Pendleton and Lannon, *One group dominates the second round of net neutrality comments*, sunlightfoundation.com.

This is a prime example of Lanier's problem, where the political framework has redefined what is successful and meaningful for the citizens in expressing disagreement, and changed human behavior from rational discourse to copy-pasting opinions to optimize for the results of the system. Such behavior also further pushes the agencies away from caring about the comment body, reducing room for potential deliberation to factious percentage statistics. This triggers a negative feedback loop, where agencies resort to merely fulfilling the APA requirements, rather than learn meaningfully from it.

Bruce Cain's article, *The Transparency Paradox*, outlines this issue fairly well, where initial visions of democratizing input has been turned into vehicles to make agencies dysfunctional. Firstly, he states that the comment collection boxes are dominated by stakeholders with strong material interests, who also can have a chance to participate in the negotiated rulemaking process. Without even a true guarantee of broad public interests, this process prolongs political battles and prevents closure. "Public comment opportunities can assist sore losers to modify or nullify laws that they could not stop at the electoral or legislative stages."⁴⁴ By hindering effective governance in a system already susceptible to gridlock due to the federal structure, a closure is placed even further away, defeating the original goal of increasing federal agencies' ability to urgently and effectively address issues in the 'New Deal.' The problem is especially exacerbated by large environmental and energy projects, which is further analyzed in the National Environmental Protection Act section.

"There is often no process for officials [from multiple agencies] to deliberate together or reconcile their differences into a collective decision. Instead, each agency makes separate

⁴⁴Cain, *The Transparency Paradox*, 2015, the-american-interest.com.

choices, creating, in effect, a system of sequential vetoes and enabling those who oppose the project to delay it using the public comment process.”⁴⁵

Cain uses the San Francisquito Creek flood in 1998 as an example of comment collection process bringing administration to a halt. The flood caused about \$20 million damage to more than approximately 1,700 properties, which caused five local agencies, the cities of Palo Alto, Menlo Park, and East Palo Alto, the County of San Mateo, and the Santa Clara Valley Water District, to join together to create the San Francisquito Creek Joint Powers Authority.⁴⁶ The Environmental Protection Agency, the Corps of Engineers, the State Water Resources Control Board of California, State Department of Fish and Wildlife, and the Bay Conservation and Development Commission are some of the agencies that need to approve the Joint Powers Authority’s actions. Cain states that “City officials believed that the public comment process has been used to leverage the bargaining power of groups that sought policy goals beyond flood protection. Stakeholder demands for more information seemed to them a delay tactic intended to build pressure on local officials who were understandably anxious about escalating project costs and the lack of public safety.”⁴⁷ The stakeholders have other interests that were tangentially related to the issue, and the State Water Resources Control Board does not have the authority to prioritize this issue above others, causing the issue to drag more than 17 years.

Overall, the APA’s failure to develop its comment collection and processing structure along with the evolution of modern communication technology is an instance of technological development aggravating a state of minimal deliberation into a toxic regulation. These deadlocks

⁴⁵Cain, *The Transparency Paradox*, 2015, the-american-interest.com.

⁴⁶San Francisquito Creek Joint Powers Authority, *Agency Overview*.

⁴⁷Cain, *The Transparency Paradox*, 2015, the-american-interest.com.

are most likely to take place in cases of multiple-agency permission cases, where each agency has a different agenda.⁴⁸ Some may argue that this is a failure of Keane's 'monitory democracy' theory, that the watchdog function of communicative abundance, and the transparency expectations that come along with higher access rate hurt democratic execution.⁴⁹ I suggest an alternative explanation to the collapse of executive functionality: while the evolution of Internet and email should have made it easier for deliberation to take place, because the structures through which comments were collected, the system drifted away from quality deliberation. Envision the ideal deliberative structure of Habermas: a salon setting, a limited number of people and voices, where each opinion can be traced to its owner and it is fairly easy to organize similar opinions together and respond as a whole. Repeating or paraphrasing a comment already made does disturb the dialogue scape, and will be severely scorned at. There is a natural finality to the debate, which also induces an urgency to present all claims and data as soon as possible. Noting that the system did not suffer from the same kind of deadlock at the same rate before the advent of Internet, the legislative framework must attempt to maintain these qualities while adapting to the modern technology.

2.1.3 - Administrative Procedures Act: Technology Integration

While I will not aim to address potential of impasse at the negotiated rulemaking case, the subsequent comment collection process can be significantly alleviated by organizing the comments in a way that makes it possible for every contributor to see the impact of the submitted comment after the submission. Given the state of current natural language processing techniques,

⁴⁸Hayes, *Leaning on NEPA to Improve the Federal Permitting Process*, eli.org.

⁴⁹Cain, *The Transparency Paradox*, 2015, the-american-interest.com.

it is possible to not only automatically estimate the similarity of opinions, but also claim that the set of comment topics in a database is enhanced upon the addition of a new comment. Problems of duplicate, near-duplicate and paraphrased form letters can easily be resolved. Furthermore, along with tagging critical and expert comments, comments of similar subject and attitude can be grouped into buckets from which a representative sample can be drawn. Clustering opinions can make the process of addressing every general issue raised much more efficient, and reduce room for lawsuits based on insufficient consideration.

While the simplest baseline AI technologies for this purpose has been present for years, it is not prepared in a way that is tailored for the purpose of arranging a large comment body for condensed analysis. This causes such agencies to contract and outsource comment analysis, which is particularly troubling in cases of multiple agencies attempting to align their permitting processes. Moreover, this process is not transparent to the commenters. Transparency in this case is not only inherently valuable, but also eases the role of commentators and interest groups to see whether all the issues they raised are critical and explicit enough to be taken into account in the larger span of comments. While it may at first glance appear as a way to orchestrate a deadlock more precisely, in fact clustering algorithms make it more difficult to broaden the diversity of comments to the point that it is impossible to respond effectively. Like the original comment database, this method can suffer from irrelevant comments as well. However, transparency can make deliberate attacks to the success of the system hurt much more. Attackers may programmatically disturb the success of relevance clusters through sending intentionally composed, irrelevant comments. Since each cluster, in an ideal world, constitutes all comments that are similar in subject and attitude, having full transparency at every stage of clustering is

also exposing the nature of the algorithm to attacks. An assumption of good faith from every commentator may be too much to ask for, especially given the current behavior observed in the comment databases. Thus, this may be a good argument against complete transparency of clustering processes. Each agency can have the choice to situate the comment collection at a desired place along the tradeoff between risk of malicious intent to transparent procedures, or grant transparency access to trusted parties, expert commentators, or the parties from negotiated rulemaking.

2.2.1 - National Environmental Protection Act: The Categorical Exclusion Problem

The National Environmental Protection Act (NEPA) is a more recent law from 1970 that forces all executive agencies to prepare Environmental Assessments (EA) and Environmental Impact Statements (EIS) for any major project on a local, state or federal level that may have a significant environmental impact. NEPA is a regulatory analog of APA and often seen as much more stringent on its requirements, requiring several iterations. The 1969 Santa Barbara oil spill was influential in the creation of the U.S. Environmental Protection Agency, along with NEPA. The requirements for EA and EIS are much more stringent, making the overall process much more difficult to complete in a short time frame for cases where the environmental impact and risk are high. The structure of NEPA is such that the role of public comments and interest groups is much more critical than APA, which means that the agencies also strongly benefit by an increase in efficiency in the comment processing period.

NEPA attempts to ensure that all environmental factors are taken into equal consideration along with human and other factors in a standardized decision making process for all federal agencies. EIS are used for Congressional funding, and need to be created in all cases where the financing of the project is done through a federal agency. The wording of the NEPA mandate is vague, stating in 42 U.S.C. § 4331 that:

“The Congress . . . declares that it is the continuing policy of the Federal Government ... to use all practicable means and measures ... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”

To create a more binding legal framework, Council on Environmental Quality (CEQ,) an executive agency created in the same year, requests that each agency should publicize a set of rules for its own observance of NEPA. In the initial phase, the agencies need to file the proposed plan under one of the following categories:

1. Categorical Exclusion (CE): “A category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations.”⁵⁰ If the proposed action is included in the CE section, further preparation of an EA or EIS is not required.
2. Finding of No Significant Impact (FONSI): “A document by a Federal agency briefly presenting the reasons why an action, not otherwise excluded [in CE,] will not have a

⁵⁰ *The Code of Federal Regulations of the United States of America*, 40, Section 1508.4.

significant effect on the human environment.”⁵¹ FONSI requires an EA to be filed and made public, but not an EIS.

3. Environmental Assessment (EA): “A concise public document ... that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.”⁵² EAs need to outline a proposal, a list of alternatives, and a list of agencies and consultants referred to in the drafting process. The EA aims to determine the significance of the environmental outcomes of the proposal, and also to list alternatives that can accomplish the same objectives. An EA is supposed to provide sufficient evidence and analysis for determining whether preparation of an EIS is necessary.

Note that while there are no requirements for public comment collection or consultation in the creation of the EA, but it is encouraged by the CEQ. Creation of a CE, on the other hand, may necessitate a public comment period, since CE can easily be abused to circumvent the responsibilities of the NEPA. This problem arises from the fact that per the request of CEQ, each agency needs to outline its own CE criteria. The CEQ effectively enables agencies to evade NEPA requirements. The only moment of accountability, if an agency attempts to follow this path, is outlined in 40 C.F.R. § 1507.3(a) :

"In the course of developing implementing procedures [which includes the CE categories,] agencies are required to consult with the Council and to publish proposed procedures in the Federal Register for public review and comment."

⁵¹ *The Code of Federal Regulations of the United States of America*, 40, Section 1508.13.

⁵² *The Code of Federal Regulations of the United States of America*, 40, Section 1508.9.

In the law review *Circumventing the National Environmental Policy Act: Agency Abuse of the Categorical Exclusion*, Kevin Moriarty argues that the relaxation of CE from original exceptional circumstance requirement to a generalizable case has ultimately hurt the agencies: while the original format permitted fewer actions to fall under the CE category, these actions were also further protected from judicial challenges. Loss of agency discretion through use of broad CE, therefore, would increase policymaking efficiency in this case.⁵³ Public comments in the drafting of CE, in the current circumstances, holds an extremely important role in establishing accountability as the sole vehicle of challenging the agencies' ability to circumvent NEPA, before litigations.

2.2.2 - National Environmental Protection Act: Public Input in Drafting and Commenting

If it is found that an EIS needs to be drafted, there are further requirements on input collection, which are much stricter than APA guidelines. The EIS Chapter 5, *Consultation and Coordination*, needs to describe all public and governmental bodies, including other relevant federal agencies and sovereign governments including tribal, that were consulted in drafting of the EIS action plan and alternative actions. This chapter needs to be extensive, and failure to include the input of critical parties can lead to the action plan be overturned by court.

Furthermore, public commentators and non governmental interest groups are required to comment on the EIS draft, which are then listed in EIS Chapter 6, *Comments and Responses*.

The combination of Chapters 5 and 6, named Volume V, often is in the order of several hundred pages, and is rewritten at every iteration of EIS if the responses are not found to

⁵³Moriarty, *Circumventing the National Environmental Policy Act: Agency Abuse of the Categorical Exclusion*, NYU Law Review, 2312.

sufficiently address the concerns raised. Land and economic interest issues can be quite emotional, triggering a lot of commentary from public. While the strength of the accountability to public input is impressive, the costs of bureaucratic overhead and time are so high that the efficiency problem has stifled important action plans throughout the history of NEPA. For example, the Bureau of Land Management has developed several land-use plans for a 23-million acre area called National Petroleum Reserve in Alaska (NPR-A) in an action plan called National Petroleum Reserve-Alaska Integrated Activity Plan/Environmental Impact Statement. The initial plan, submitted in 1998 for the Northeast NPR-A, continued to be expanded until 2012 when a final EIS was released. The last step took place in 2014, when BLM released the Final Supplemental EIS for the development of petroleum resources in the Greater Mooses Tooth Unit, with the whole process taking 16 years.⁵⁴ This is an issue that the proposed methodology may address well, by grouping public commentary alongside the main subject matters already addressed by the relevant federal agencies and other bodies ranging from NGOs to tribal governments.

Every time a large project that has a significant impact on the environment and involves multiple federal agencies is slowed down by another round of EIS drafting, the question of NEPA reform arises from those who are urging for the completion of the project. President Obama has recognized the need to improve the NEPA permitting process, by issuing Executive Order No. 13604, *Improving Performance of Federal Permitting and Review of Infrastructure Projects*: The Executive Order directed federal agencies as such:

⁵⁴ Bureau of Land Management, *National Petroleum Reserve, Alaska (NPR-A) Planning Area*, blm.gov.

“It is critical that executive departments and agencies take all steps within their authority, consistent with available resources, to execute Federal permitting and review processes with maximum efficiency and effectiveness, ensuring the health, safety, and security of communities and the environment while supporting vital economic growth... They must provide for transparency and accountability by utilizing cost-effective information technology to collect and disseminate information about individual projects and agency performance, so that the priorities and concerns of all our citizens are considered.”⁵⁵

David Hayes, in the article *Leaning on NEPA to Improve the Federal Permitting Process*, urges for a makeover to strengthen EIS creation process for policymakers, particularly focusing on the multiple-agency permitting problem. The fact that each agency completes its permitting process and hands the finalized review down to the next agency creates complications: a less significant agency may have a strong conflict overlooked by the larger agencies with different subject matter, and it may be too cumbersome to reorient the direction of the EIS. Hayes outlines another potential issue:

“Indeed, it is not uncommon for nonlead agencies to file comments that are critical of the lead agency’s EIS, either because the EIS gave short shrift to issues of special concern to the commenting agency or otherwise failed to reflect that agency’s experience, data, and/or perspective in the EIS.”⁵⁶

In this case, we see another benefit the methodology can provide: the ability to link comments from all previous iterations and agencies’ reviews together. By having all comment submissions and evaluations done on the same platform, it will be made much more difficult to have a

⁵⁵ Obama, Executive Order 13604 - *Improving Performance of Federal Permitting and Review of Infrastructure Projects*, 2012.

⁵⁶ Hayes, *Leaning on NEPA to Improve the Federal Permitting Process*, eli.org.

comment go unnoticed or not addressed, especially if it comes from an important party, such as another agency. The reviews can be permanently linked to the comments, and the comments in turn can be linked to the draft consultation inputs in Chapter 5 of the EIS. Thus the structure prevents the main federal agency to review without paying attention to all issues flagged in any of the comment or consultation issue buckets. Presenting consultation and comments in the same framework also shows whether the agencies' concerns are reflected in the public as well.

2.3 - Finland Off-Road Traffic Act: Crowdsourced Law Reform

In 2013, the Ministry of Environment in Finland and the Committee for the Future in the Finnish Parliament initiated a crowdsourced legislative process. The Off-Road Traffic Act attempts to regulate where unusual vehicles like snowmobiles and ATVs can be ridden and how landowners whose lands are used for off-road traffic are compensated.⁵⁷ The drafting and enactment of the law was significant in that it attempted to actively involve citizens in the drafting process, and not merely through reviews as in the American examples of APA and NEPA. The crowdsourcing attempt is a successful experiment to bring active deliberation into participatory and direct democracy frameworks. Here, I attempt to outline the crowdsourcing process, in order to show that a drastically different policymaking structure, more heavily reliant on deliberation, can also significantly benefit from the methodology I propose.

The Committee for the Future acknowledges that most democratic innovations and experiments are happening at a municipal scale, such as Danish consensus conferences, or deliberative polling cases from around the globe. The scaling benefits of open-source development in businesses can access collective intelligence effectively, and there has been cases

⁵⁷Committee for the Future, *Crowdsourced Off-Road Traffic Reform 2014*, 5.

where input of the crowd has been used to choose between drafts, such as the Icelandic crowdsourced constitution.⁵⁸

The process of crowdsourcing the Off-Road Traffic Act was enacted in two phases:

1. Problem Mapping: Citizens were asked to share their concerns experiences and problems with off-road traffic and current regulations, or lack thereof. Conversations with civil servants in the Ministry of Environment who wrote the expired bill made the process faster, where 10 main areas were identified that can benefit from the crowdsourcing attempt. While guided with concrete questions, such as on experiences with the expired legislation, the participants also had room to share their concerns that were not addressed by the questions. This phase generated more than 340 ideas and 2600 comments from approximately 700 participants. The small size of the dataset made in-person evaluation of each comment possible.
2. Concept Generation: Analog to a collective brainstorming step, citizens were asked to innovate on and propose solutions to the problems from the first step, working closely with professional helpers on policy drafting. The deliverable-oriented phase generated approximately 170 resolution ideas with 1300 comments, which were of higher scope and density than the comments from the previous step.

While the conversation on the online platform was mostly constructive, about 20 comments were removed, which was made possible by the small size of the comment database. Removal of comments that are unhelpful or inciting violence would be infeasible in comment bodies that are

⁵⁸Committee for the Future, *Crowdsourced Off-Road Traffic Reform 2014*, 9.

orders of magnitude larger. The specificity in the scope of the law attracted the attention only of participants who would be most affected by it. This is a significantly different situation than described in the deliberative democracy models of Fishkin and Luskin. The fact, in the Finnish example, that all citizens have an equal ability to participate is positive, and the fact that the citizens most invested in the issue can be more active in the deliberation are both helpful in allowing executive agencies to develop a good understanding of the public's reaction.

Overall, the process was fairly supervised, but instilling policymakers to help at every step is a high quality bar to deliberation. The organizers conclude that people not only participated in constructive ways but also, through deliberation, quickly developed a good understanding of legal language:

“I’m somewhat surprised to see that the online process serves as a way to add to the participants’ knowledge base and correcting their incorrect perceptions. I had read carefully the current law and the expired bill, and I realized that quite many participants didn’t have correct understanding about the terms about the law and its implementation. But, in many conversation threads these misconceptions seemed to transform into correct ones, when somebody corrected the false information and told where to find correct information.”⁵⁹

The final drafts were first processed through a clustering algorithm, similar to Chapter 3.3. The fact that the 170 ideas are brief enough to render them readable by a human makes the clustering more of a novel exploration of metadata patterns than a critical support tool. The writers categorized ideas under the 10 main buckets outlined at the end of the first iteration, so an

⁵⁹Aitamurto, *Seven lessons from the crowdsourced law reform in Finland*, thegovlab.org.

unsupervised clustering algorithm was not ‘necessary’ in a sense. Using metadata, such as the location, gender and age of the participants, it could find latent results that people from a certain demographic agreed upon, effectively separating the voices of minorities that could go hidden under the result of the submissions. This approach is highly meaningful to preserve minority voices in comment databases where the number of comments far exceed the ability of a human to personally read through, such as in the order of 100,000 to 1 million comments. These comment databases are often dominated by specific demographics. High participation of only a specific segment of the population could be interpreted as they cared about or were affected by the issue the most, and whether it is more meaningful to get a reflection of the whole population or only of the affected groups should be the choice of the agency depending on the issue. Either way, the ability to outline minority voices is tremendously helpful.

The final results are not left to the discretion of the participants: they are not only voted by the crowd, but also an expert panel to ensure quality. Most experimental policymaking attempts follow such supervised structures, since it is extremely early in the development of deliberation in direct and representative frameworks to have complete conviction. In every iteration, the results from the public are treated as ‘raw material’ that is to be refined by policymakers, in the presence of the citizens that maintain the opinion, recalling Habermas’s parallel reasoning of state and rational society. In 2014, Brazil also crowdsourced a significant law, ‘The Brazilian Civil Rights Framework for the Internet,’ with a similar outlook:

“The law’s original text was drafted through a website that allowed individual citizens and organizations — including NGOs, businesses, and political parties — to interact with one another and publicly debate the law’s content. This open, interactive, and

collaborative process relied on a belief that the collective intelligence would both improve the final product and prove less beholden to powerful corporate lobbies.”⁶⁰

As crowdsourced policymaking cases become more prevalent around the globe, deliberation in democratic frameworks will become more grounded in reality. These cases have the most to benefit from methodologies of comment organization, since they require strong facilitation of discourse, and ease of finding similar and opposing opinions from a large dataset.

2.4 - Conclusion: Key Issues for Methodology

The chapters above discussed three different frameworks for comment-based participation in policymaking. The following six points are a summary of problems in these structures that I aim to address and alleviate through the introduction of the methodology outlined in Chapter 3.

1. It is possible, using opinion clustering methods and representative distances, to make a claim that the addition of a new comment to an arbitrarily large dataset has enhanced the diversity of subjects or approached the issue with a novel attitude or perspective. This tool can be delivered both to the policymaking agencies and to the participants, who may want to see how their perspective fits into the greater collection of ideas for a specific issue.
2. Duplicate, near-duplicate and paraphrased comments can be efficiently filtered, reducing clutter and human digestibility. When paired with tagging expert submissions using complexity measures and a set of predetermined trusted parties, potentially from negotiated rulemaking steps, this can drastically increase comment processing efficiency and reduce litigations and draft repetitions from unaddressed comments.

⁶⁰O'Maley, How Brazil Crowdsourced a Landmark Law, 2016, foreignpolicy.com.

3. The evolution of the comment scape over time can be used not only to create content for deliberation, but also to increase transparency, for the public to see the vehicles through which the comment database is going to be explored. In a sense, this creates easy and accurate agenda for deliberation without representative sampling, which was one of the tradeoffs analyzed in Chapter 1.
4. Framing deliberative inputs to the drafting period, comments and federal agency reviews in the same window, can add further security that all parties' concerns are addressed well in the resulting statements.
5. Helping lawyers and public commentators sift through very large and unstructured public commentary, and using the clusters to form draft subjects can significantly speed up the process of crowdsourced lawmaking.
6. Through clustering based on comment submission metadata, which not only entails the demographic information of the commentator but also the date, time, and the means with which the comments were submitted, it is possible to correlate and preserve minority opinions.

Overall, these methods can hopefully turn legal frameworks' perception back to their original intent of introduce accountability and deliberation, which has since then devolved into a procedural defense mechanism against lawsuits and offense tool to slow down functional execution.

Chapter 3 - Methodology Analysis

AI research on the field of natural language based clustering is extremely extensive. In the last two decades, the catalyst power of social media analysis caused many innovations to move from being groundbreaking to mainstream and ultimately surpassed by new techniques. Most of these techniques, published in papers, are heavily employed by analysts, statisticians and programmers for specific tasks. General engines that can perform these tasks are also present, such as library packages or out-of-the-box data analytics tools. However, there aren't many domain-specific analysis platforms geared towards an audience that is not an expert in the field of natural language processing (NLP) or data science. Obstructing technical aspects away from the user while still maintaining a modifiable NLP engine would be valuable for extending the value generated by this field of research beyond the use of experts. The current state causes most work to be contracted, creating a strong dependency and redundant execution of a similar task for each contractor. The overall optimization for this field can come from addressing the fact that similar problems, such as comment characterization for public input to specific legislations, can be solved through domain-specific engines that can be tailored to fit the needs of each client.

The proposed methodology follows the spirit of the previous paragraph. The novelty of the methodology is not through an increase of efficiency or accuracy, but through a combination of techniques that can address an otherwise difficult task extremely well. While it is immensely important to push the forefronts of NLP research, the presence of domains that can make use of well developed techniques is so drastic that it is also meaningful to focus on adapting and structuring current research to fit new domains of knowledge. Note that it is a fair argument to

make that the political scape requires most methods to be unsupervised: supervised data can easily prime the evaluation and results of the algorithms in a certain direction. This, in structure, is actually not too different than any elective algorithm. Recall the 2000 George W. Bush election, where the use of electoral colleges, analogous to an algorithm of prior choice, has led to a conclusion that was ultimately contestuous. While choices of algorithms may be analyzed through the same lens, by using unsupervised algorithms, one can attempt to minimize introduction of linguistic bias that can easily skew the results.

I will first evaluate the existing research in the field of document vectorization. Instead of focusing on spanning the entire research field, I will attempt to group similar techniques together in a modular fashion, which implies that upon further development on a certain aspect, the whole structure should not need to be reconfigured. Then, I explain the process of topic clustering, with the preprocessing and flags that went into it, with a brief rundown of results from three datasets: the Federal Communications Commission's Net Neutrality (NN) comment database, and Notice of 30 Day Public Comment Period Regarding the National Interest Determination for TransCanada Keystone Pipeline, L.P.'s Presidential Permit Application, in short the Keystone XL permit (KXL) comment database, and the Consumer Financial Protection Bureau's consumer complaints (CFPB) database.

The KXL comments are collected using the Regulations.gov API,⁶¹ the NN comments are taken from Sunlight Foundation's cleaned-up format of the dataset,⁶² and the CFPB dataset is hosted at the official website of the agency.⁶³ Datasets regarding comment collection on already

⁶¹ More information and download: <https://api.data.gov/docs/regulations/>

⁶² To download: Lannon, Pendleton, *What can we learn from 800,000 public comments on the FCC's net neutrality plan?* sunlightfoundation.com.

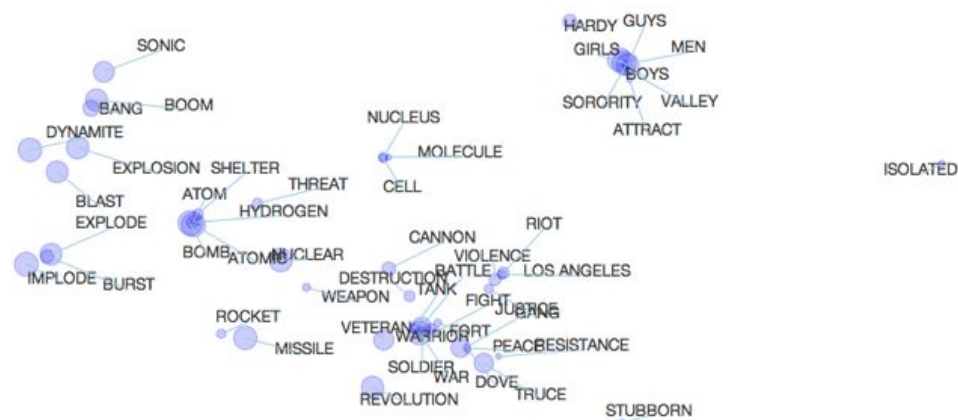
⁶³To download: <http://www.consumerfinance.gov/data-research/consumer-complaints/>

issued judgments are preferred for analysis of the methodology, since the existence of a verdict and a static opinion scape helps whether the model successfully managed to capture the issues that led to the judgment. It is trivial to apply the methodology to new datasets, and the goal of this chapter is not to use the methodology to make further predictions, but to assess whether it can accurately capture an opinion scape and could be used for the purposes outlined in Chapter 2.4.

3.1 - Simple Explanation of Combined Methodology

The goal of mapping every document in a high dimensional space is to be able to use the distance between the document points in this space as an analog to semantic similarity between documents. This approach can be used to group any form of data, including individual words and paragraphs, or larger texts. The example shows a 2-D representation of words, where words of similar nature appear closer to each other. We can see that the cluster of ‘atom, bomb, hydrogen, threat, atomic, nuclear’ are close to the explosive cluster and sound cluster.

Mutliple-maps T-SNE visualization example from Delft University of Technology.⁶⁴



⁶⁴Implementation of algorithm from L.J.P. van der Maaten and G.E. Hinton. Visualizing Non-Metric Similarities in Multiple Maps. *Machine Learning* 87(1):33-55, 2012.

To be able to accomplish this task, first every document to be represented in the high dimensional space needs to be converted to a vector, which is analyzed in the document vectorization strategies section in Chapter 3.2.

T-SNE, the technique above, is used to reduce high dimensional clusters to a human comprehensible format. While the example above is in two dimensions, it is often helpful to maintain the words in a higher dimensional space, which can capture higher complexity of meaning. Dimensionality reduction methods help find latent dimensions that correlate to highest axes of content variation. One can not only cluster documents by finding groups of documents that are closest to each other, but also by using the proximity of documents to these latent dimensions. Variations on this approach can yield satisfactory comment clustering methods: in an unsupervised way, it is possible to categorize groups of comments into distinct content buckets.

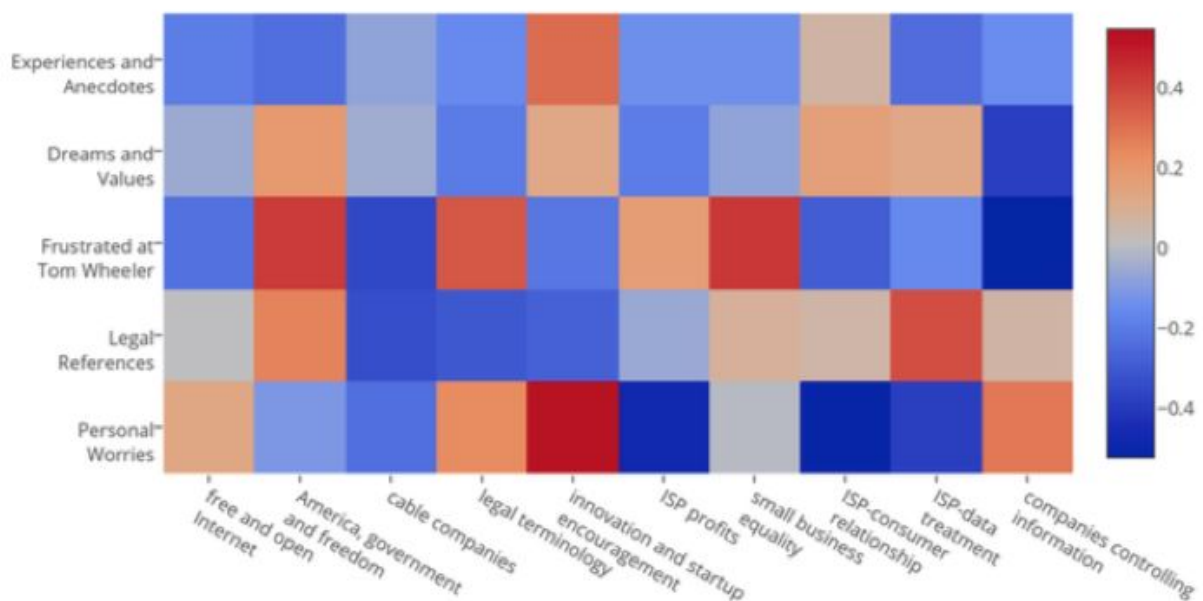
The same approach can be used on linguistic features that are highly indicative of attitude of the writer. These features are virtually endless: ranging from pronoun frequencies to presence of swear words, it is possible to again extract latent dimensions that correlate to the approach a commentator takes. Sentiment analysis is a subset of this concept, along with analysis of metadata that can yield information about the demographics of a commentator.

Since two comments can have similar attitude over distinct concepts, or talk about the same concept with very different outlooks, it is meaningful to create a comparison matrix using the results of these two approaches as discrete buckets. It is possible to have filtered expert comments and outlier comments based on how far they are from the outlined latent dimensions, along with using supervised knowledge, such as partner agencies or critical interest groups that

have participated in the drafting process. Similar preprocessing can be done to duplicate form letters, effectively reducing the opinion space to capture the variety with minimal noise and also not to miss comments that must be addressed.

Then, a policymaker can easily sample from the resulting buckets of opinion content, thus making it extremely easy to evaluate the content of an otherwise unexplorable comment base. The picture below, from a machine learning project that was influential and inspirational for this project, shows a resulting heatmap of comments. One can not only see which comment buckets have the most comments in them, but also explore the contents of each. These buckets, using similarity metrics of similar fashion, can also be used to host non-comment data, such as the original drafting inputs required by NEPA, to ensure that all necessary points are explored by the agency in the drafting of a response.

Heatmap of comments received by the FCC on first round of Net Neutrality.⁶⁵



⁶⁵ This heatmap is from prior work for CS229: Machine Learning.

3.2 - Document Vectorization Strategies

A note to keep in mind for the rest of the Chapter 3 is that in evaluating the success of the techniques, along with numerical clustering efficiency metrics, human observation plays a critical role. Ultimately, even if the inter-intra cluster distance ratio seems to be doing well, if the latent meaning doesn't come across, the clusters are not successful. At several points, strategies were not further pursued after manual inspection of resulting clusters. The evaluation chapter covers the standardization process of this approach in detail.

The most naive attempt to represent documents as vectors is to create a bag-of-words model, where each dimension indicates the presence of another word, which yields a space that can then be reduced. This approach is extremely simplistic, and does not yield significant results as it is quite prone to noise. Even with the filtering of stop words, the cluster words upon dimensionality reduction do not yield substantial results.

To improve on the baseline, one can determine the most common topics represented in the comments using the term frequency-inverse document frequency (tf-idf) scores of each word in a particular comment as the set of features for that comment. Term frequency indicates the how frequent a term is within a document, indicating the importance of the term for the document. Log term frequency is used to limit high frequencies of certain words. Inverse document frequency indicates how distinctive a term is for a subset of the documents: common words, such as "the," occur in every document, thus is not characteristic of any document that contains the word. On the other hand, a word that appears several times, only in a handful of documents, can be used to identify a common subject denominator for those documents.

Applying the SVD algorithm in Chapter 3.3.3 to the set of features from the tf-idf scores of the documents is also known as Latent Semantic Analysis (LSA) when used in this context.

Mikolov and Le's proposal of paragraph vectors in the paper *Distributed Representations of Sentences and Documents*, trained in a way similar to word vector models, is a more sophisticated format for representing documents in a high dimensional space.⁶⁶ Paragraph vectors are learned from unlabeled data, and given the large quantity of comments, seems feasible for a representation. Using distributed bag-of-words and options of hierarchical softmax or negative sampling,⁶⁷ this model can be fairly powerful by representing words in any desired vector dimensionality through deep learning. In the methodology, gensim doc2vec library is used. Since this method does not yield easily comprehensible dimensional information, the resulting clusters can be explored through k-means clustering instead of eigenvalues.

3.3.1 - Topic Clustering Strategies: Preprocessing and Form Letters

Prior to document vectorization for topic clustering, it is important to have a preprocessing all metadata about the commentator's information, along with form letter content is collected and tagged. In this state, an named entity recognition (NER) tagger is used to annotate the comments for critical content, along with a part-of-speech (POS) tagger. NER taggers identify words in sentences that are 'named entities,' which consist of person, place, organization names, and more. While organization names and specific person names are extremely crucial for this topic, most person and place names are from addresses of submitters. Post-NER tagged data can be analyzed without the complications of personal data by removing all NER-tagged words that do

⁶⁶Le, Mikolov, *Distributed Representations of Sentences and Documents*.

⁶⁷Mikolov et al. *Distributed Representations of Words and Phrases and their Compositionality*.

not occur frequently across documents, which would only yield organization and people names that occur more than a detection threshold. Effectively, the model would replace every personal name, location or company that isn't frequent enough, meaning that isn't relevant to the subject, with a generic "NAME," "LOCATION" and "ORGANIZATION" tag, unifying these three concepts that lead to a lot of noise if untreated. In cases where a word occurs frequently and with different NER tags, these tags may help clustering correctly by resolving disambiguation between uses of the same word in these different contexts. For more elaborate tagging, a method that proved to be extremely useful in building a bigram corpus was to use syntax parsing on a small subset of the comments, and generalizing the results. Syntax parsing can be used to tag word clusters that altogether have a distinct meaning, such as "net neutrality," which is different than "net worth" or "neutral stance." Removing these overlaps by defining words not through word breaks but by syntactic context can significantly augment the clustering algorithm.

Secondly, a corpus of stop words and bigrams need to be compiled: along with the most common English words that do not carry significant meaning such as 'the, a, of' etc., there are domain specific words, such as the word 'pipeline' for the Keystone XL permit comment database, that do not carry significant meaning and interfere with cluster qualities. These words need to be skipped in establishing vectors for topic clustering, along with greetings, addresses and random names, which can be filtered using the NER tagger.

3.3.2 - An Experimental Supervised Tool: Neural Net Opinion Miner

Given a corpus of documents, an opinion miner can tag sequences in the text as being expressions of an opinion (an attitude), being the holder of an opinion (an agent), or being the

target of an opinion. In more complex miners that are implemented with tools beyond a neural net, the relationships between holders, opinions and targets can also be captured. The fine-grained opinion miner seeks to, given textual input, find the opinions expressed therein, their intensity and other properties such as their holder and their target. Most of the research in this field is produced since 2013, and while the algorithms are far from perfect, it would be significant, both for the algorithm's evaluation and the contribution to the thesis project, to measure the difference in the resulting topic modeling when the opinion miner tags are considered.

Cutting-edge research in these three fields often uses conditional random fields and neural nets to address the problem. Since the problem is a complex one relating words that come before and after, combining the context clues with the semantic and syntactic content of the words, a complex learning engine such as a neural net may be fit. While neural nets' success heavily depends on the success of a train dataset, which echoes several of the problems addressed in the sentiment analysis chapter, the benefits in precisely capturing opinions as tokens from a comment would be massively useful. While for the NER recognition, a simpler neural net has been shown to work well, for opinion mining, implementation of gated recurrent units on a recurrent neural net is helpful. There is prior work on neural networks on opinion mining⁶⁸ that is limited to discriminating null-class text from subjective expressions, by Ozan Irsoy and Claire Cardie. To train the model, the MPQA version 2.0 opinion dataset is used.⁶⁹ This dataset contains

⁶⁸Irsoy, Cardie, *Opinion Mining with Deep Recurrent Neural Networks*.

⁶⁹Wiebe, Wilson, Cardie, Annotating Expressions of Opinions and Emotions in Language. Training Dataset: <http://mpqa.cs.pitt.edu/opinionfinder/opinionfinder2>

several opinion-related tags, and the scope of the classes are limited to agent, attitude, target, direct subjective expression (DSE) or expressive subjective expressions (ESE) as tags.

Experimenting with deep bidirectional recursive neural networks, and incorporating gated recurrent units for nonlinearity to Irsoy and Cardie's implementation has not returned results that perform significantly better.⁷⁰ Furthermore, its use of MPQA dataset is problematic, the fact that the comments are extremely domain specific requires the neural net to train on a tagged dataset of similar kind, which in turn challenges unsupervised learning constraints. Overall, the addition of this supervised unit to empower the topic modeler is conceptually expensive, and introduces significant room for misjudgment. However, a well-trained robust model beyond a proof-of-concept methodology, if can be proven to be not significantly biased, could enhance the results.

3.3.3 - LSA and LDA Comparison

For Latent Semantic Analysis (LSA,) the Singular Value Decomposition algorithm (SVD) from scikit-learn was used to perform dimensionality reduction on the dataset, for the discovery of the most salient characteristics of the comments. As a brief overview of the process, given m comments and n features, let $X \in \mathbb{R}^{m \times n}$ be a matrix with $X_{i,j}$ = the value of feature j in comment i . Given some $k < n$, it is possible to produce a low-rank approximation of X that contains less noise and only the most salient characteristics of documents in the smaller-dimensional space.

⁷⁰ The attempt analysis is partly from prior work for CS224D: Deep Learning for Natural Language Processing.

$X_k = U_k \Sigma_k V_k^T$ where Σ_k is a diagonal matrix containing X 's k largest singular values; this hence represents k components inferred from the original features. $U_{i,j}$ then corresponds to the value of new component j at comment i , while $V_{i,j}$ corresponds to the weighting of feature j at old feature i . Higher values roughly correspond to that component being more characteristic of the comment or feature.

A problem with the LSA approach is that the resulting topic eigenvectors are assumed to be orthogonal. To alleviate this problem, one can treat topics as word distributions, and model co-occurrences of word and document as a mixture of conditionally independent multinomial distributions. The success of this generative approach is superseded by Latent Dirichlet Allocation⁷¹ (LDA,) so it makes sense to directly attempt to use an LDA model with the preprocessed tokens.

The LDA model from the gensim package is used. LDA also represents each document as a mixture of several topics, and each topic, depending on its characteristics, has higher probability to generate words related to itself than other words. Thus a topic has a higher probability to generate the words of a document if the document's content is more relevant to the topic.

Both LSA and LDA approaches can be helpful if the comment scape is to be analyzed during the comment collection process. For example, if a commentator would like to see if the content of his comment is already present in the database, or query for an opposing point, they can use the methods to look for similarity results. In LSA, after the new comment is vectorized, one can use cosine distance to see which eigenvector the new comment falls closest to, and how

⁷¹Blei et al, *Latent Dirichlet Allocation*.

similar it is. In LDA, it is possible to see the generative probability of each topic to create the new comment, thus similarly one can pick the highest topic or prefer to analyze as a combination of topics. Similarly, in cases where both LDA probabilities are too low or LSA distances are not distinctive, one can rule that a comment is new in content.

For interpretability of the results, the number of topics is $k = 10$ for the toy NN database of 88,000 comments, and $k = 5$ for the toy KXL database of 20,000 comments. Attempting to choose k such that the improvement in reconstruction error $\|X - U_k \Sigma_k V_k^T\|$ levels off produces 25 topics, but the differences between topics were much more subtle in the tail end of the eigenvectors, and did not significantly add to the analysis. The LDA model is also used to generate the same number of topics for both cases.

3.3.4 - Example Output of the Model: $k = 5$ KXL Data

The most distinctive words that outline the 5 topics are listed below. The names of the buckets are decided upon analyzing a large sample of the comments that fall into each bucket, and ‘discovering’ the latent semantic dimension it focuses on.

0 : Energy Security and Employment

state , energy , energy security , state department , security , xl pipeline , department , jobs , department keystone , barrels , day

1 : Nation Building and Employment

president , america , build , good , nation , signal , good nation , conclusion , oil , jobs

2 : Environmental Concerns

oil , pipeline , keystone pipeline , people , tar , water , climate , tar sands , keystone , approve ,

country , stop , change , states , carbon

3 : Links to LinkedIn Profiles

com , www , linkedin com , linkedin , pub , com pub , alert , insider , insider alert , tracking , number , tracking number

4 : Approval Urging

project , keystone , approve , keystone pipeline , federal government , approve keystone , study , federal , government , forward , pipeline , delay , construction , approving , forward approving

Example comments from buckets demonstrate loyalty to the concepts:

1: Dear Kerry; Secretary of State;I am writing in support of the Keystone XL pipeline and to tell you that the project is in America's best interest. At the conclusion of the National Interest Determination period for the pipeline; you have to tell President Obama that Keystone XL is good for our nation.Keystone XL would add stable energy from a reliable source to our supply; with minimal environmental risk. Your department has studied the project for over five years; reaching the conclusion that the pipeline is environmentally safe and that the oil sands will get developed with or without Keystone XL.In addition; the Keystone XL pipeline would not only transport fuel safely; it would boost economic activity along the way. Building the pipeline would create more than 42;000 new jobs and put \$2 billion in income in workers pockets. In addition; it will generate more than \$5.2 billion in property taxes for communities along the route...

2: I oppose the Keystone XL pipeline. It is against the national interest; and that of the world. There are many reasons.1. The top reason is that it will contribute significantly to CO2

emissions; both by making the tar sands oil available and by means of the petcoke byproduct; the dirtiest fuel on the earth. It doesn't matter whether these are burned in the United States or elsewhere; the CO₂ recognizes no national boundaries. So the pollution; CO₂ level increase and the warming it causes will come back to affect the United States; wherever it is created. Therefore let us not enable it. The consultant's report is not credible having been produced under conflict of interest. It ought never to have been contracted to that party or accepted as impartial...

3.4 - Attitude Analysis Strategies

In addition to the topic and semantic content of a comment, it is very fruitful to gain insight from the linguistic features of a comment, and on a higher-level, how the comments are written. Both for opinion polling and for policy recommendation purposes, the general attitude of the public is critical in deciding the importance of the question to be addressed, as various ideological factions identified in the first step of the topic clustering. Attitude analysis is used as an umbrella term that encompasses the widely researched subject of sentiment analysis, and also accommodates metadata about the comments, and simple linguistic characteristics that identify certain behaviors. This section also produces vector representations, though not of content, but of features about attitude of the commentators, which then can be processed with dimensionality reduction, or clustering, in order to capture similarity groups.

3.4.1 - Discussion of Supervised Sentiment Analysis

The topic of sentiment analysis poses a critical question for opinion evaluation: does the use of pretrained word vectors, or a tagged set for labeling contradict a fundamental premise of opinion

analysis, that the code should be without bias at every step? It is quite possible that a false label in the training dataset tags may be responsible for an extremely inaccurate conclusion. Even though there may be agreement by all parties in debate that the code is unbiased, slight differences in the train dataset may sway the sentiment analysis.

One might argue for the use of pre-trained sentiment analyzers is that most sentiment analysis tagged datasets are open-source and are collected from massive corpora, such as collected from tags on Twitter using various bootstrapping algorithms, such as iteratively collecting more tags that co-occur with tags with a known sentiment, thus increasing the pool over time. Furthermore, since the sentiment tagged corpora are developed without the awareness of the final dataset to be used, as long as the choice of the dataset is made before the collection of the comments and is not disclosed to the public, it is not possible to ‘exploit’ and sway the analysis. This is similar to the discussion on different polling methods yielding different winners in elections – as long as the original method is agreed upon by all parties, the discourse on difference in results through alternative methods is not taken into account in governance.

3.4.2 - Simple Weighted Linguistic Characteristics

Sentiment, along with several grammatical and linguistic characteristic features such as attitudes of the writers and the entities they directed the comments to, are used as features for delivery analysis. Examples of features are:

1. percent of sentences with 1st singular, 1st plural, 2nd singular pronouns
2. average number of words per sentence, along with number of sentences

3. percent of sentences with negation, with imperatives, hedge words, with must, should, will, may, can etc. that identify various attitudes
4. Flesch-Kincaid and SMOG Reading Ease score, and frequency of swear words (fairly powerful in identifying polarity of legal terminology and colloquial comments)
5. Mention of critical people and organizations – while these can be manually entered for special cases, such as Tom Wheeler for the FCC, it should be theoretically possible to extract from the NER tags.

To balance really long comments, log values of the numeric data are taken, followed by discretization of numbers, yielding a feature vector that can undergo dimensionality reduction. Note that the feature space is virtually infinite - it is important to limit to features that create distinct qualities between comments. The fifth point may require some curation, yet it is extremely significant for a comment's attitude to see if it targets, threatens or cherishes certain figures.

3.4.3 - Example Analysis On Net Neutrality Dataset⁷²

Using these features, with $k = 5$ and SVD as outlined in section 3.3.3, the clusters can be characterized in surprisingly striking and intuitive ways, listed below. The full table of components to features is shown below:

1- Personal Worries - High use of I and negatives, low terminology, no directed audience:

⁷² The analysis of the features in the section are partly from prior work for CS229: Machine Learning.

□”i was a computer wizard practically before i could read without a parent over my shoulder and i think its obvious why someone who knows computers so well would be so concerned...”□

“dear fcc i use my pc like millions of others do online for research for diseases or for radio astronomy in conjunction with volunteer run projects at universities across the usa those that use the boinc interface, seti@home, ein- stein@home, rosetta@home, milkyway@home gpugrid etc”

2- Legal References - Low reading ease, low profanity, lengthy comments:

□”forbearance furthers the objective of interpreting law in light of modern technology and markets without undermining its core purposes.”

”before the federal communications commission washing- ton dc in the matter of protecting and promoting the open internet gn docket no. 1428 framework for broadband in- ternet service gn docket no. 10127 comments of comcast corporation comcast corporation”

3- Frustrated at Tom Wheeler - High use of you and profanity, directed at Tom Wheeler, concise comments:□

”mr wheeler i will first remind you that you are an employee of the federal government of the united states of america. basically you work for us the people.”

”mr wheeler as a paying customer of the internet i find what you are doing offensive and incredibly criminal. if you do not back down from this position of destroying net neutrality i and every one of the computer geeks i know will demand your resignation.”

4-Dreams and Values - High use of plural pronouns, can, must; no directed audience:

”please consider as this part of our era is economically hard in so many ways. for many like me who are somewhat housebound the internet is our library our bank”

”the internet has already greatly changed the way our world works and for a time this was acceptable. unfortunately legislation has failed to keep up with the technology and we have reached a crossroads that could make or break the continued prosperity and innovation the internet provides.”

5-Experiences and Anecdotes - High use of I, low negativity, short comments

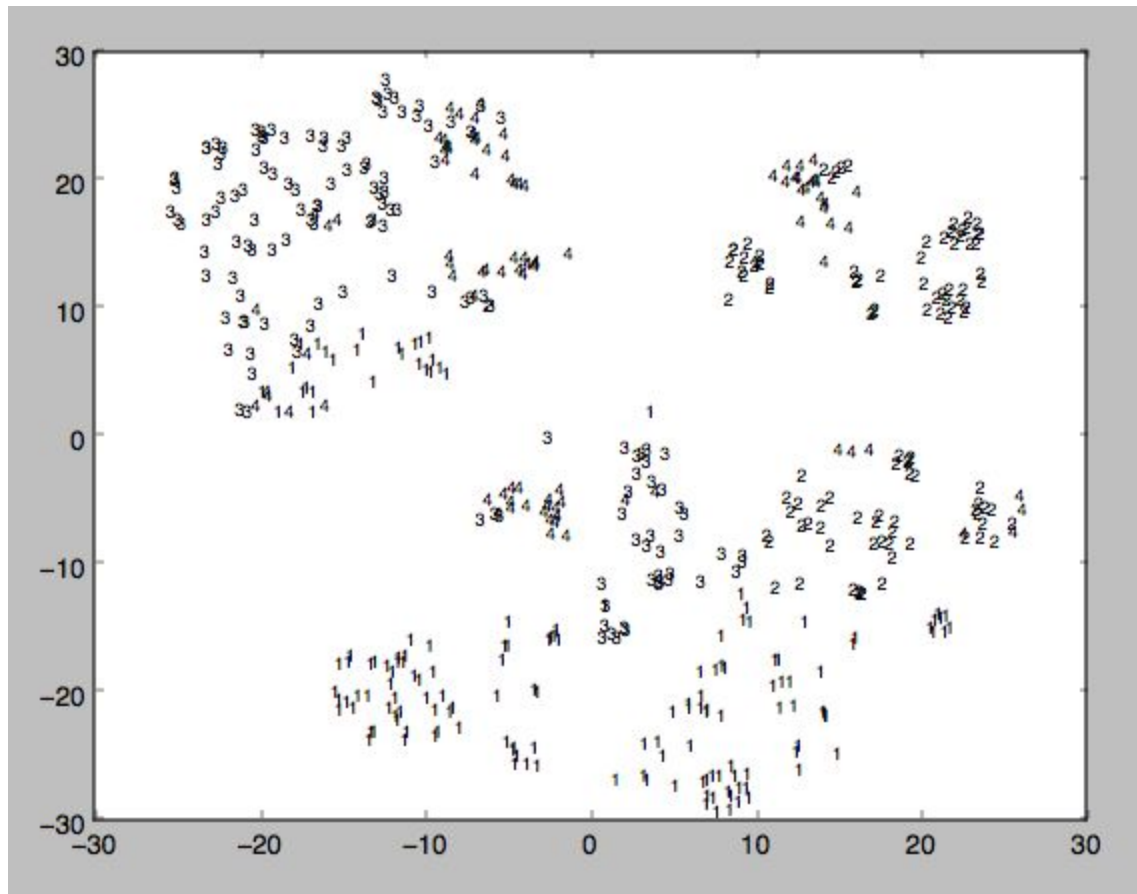
”the internet is important to me because as someone who suffers from disabilities due to multiple sclerosis it gives me back some of my independence that this disease has stripped from me. i can go online and research treatments to better make informed decisions.”

”i work for a company that creates comedic videos and puts them online. its my livelihood. if the internet becomes an exclusive club myself and many others may be out of a job.”

3.4.4 - Metadata clustering

Comment collection processes may choose to ask several questions about the demographics of the commentator. The Consumer Financial Protection Bureau (CFPB) complaint comments, for example, have obligations obscure details about the filer of the complaint. Yet still, from the comment submission times, demographics of the ZIP codes and categories checked while filing, it is quite possible to extract significant information about minority opinions.

The CFPB dataset has quite a lot of metadata, that yields a fairly balanced mapping of clusters and eigenvector dimensions, as shown below. The number labels correlate to the eigenvalue that the comment appears closest to. The T-SNE visualization shows that the results of k-means and SVD somehow relate to each other, that there are more comment ‘subclusters’ that aren’t captured in the $k = 5$ level of metadata clusters, and the level of abstraction has obscured without completely confusing all of the dimensions. Thus, we can infer that k-means is more accurate in precisely capturing this kind of metadata.



For opinion polling purposes, it is extremely valuable to be able to map attitudes to certain demographics. However, upon the hands of the policy maker, this can also yield the opposite impact, of certain demographics’ comments being weighed as more important when taking into

account. The inclusion of personal data as a fundamental attribute of sentiment and delivery analysis poses the problem of opinion weighing on a personal level. Even applying a delivery analyzer that identifies form letters introduces the concept that some comments are more “aware” of the situation than others, and it is at the policymakers’ hands to take it into account. In a sense, one can connect these results with the education level or awareness of the commenter, which may or may not be related to demographic reasons. Net neutrality, for example, is much more relevant to people working in the tech industry, which is also heavily male, white and Asian American, and highly educated. While a traditional referendum can successfully obscure these factors, these factors may be considered significant, especially for questions that may not necessarily have a nation-wide policy consequence. Thus, to what extent the personal information of a commenter should factor into the clustering of their comments should be decided by the agency.

3.5 - Measurements of Success

Success measurement in clustering methods are traditionally done by making sets of comments, consisting of random sampling of $n-1$ comments from a cluster, and an intentional comment that does not belong to that cluster. If human evaluators can consistently identify the outlier comment, that means that the clustering method has been successful. By setting $n = 6$, I had a total of 253 sets of comments be analyzed by 7 evaluators, with 150 on topic clustering and 103 on attitude analysis. On the axis of topic clustering, the success rate of identifying the outlier comment has been 89%, and on the axis of attitude analysis, 82%. For a proof-of-concept engine these metrics are quite well, given that the human evaluators will also exercise their judgment on

the relevance of the comments in the clusters, the methodology can only improve with further testing and implementation in a professional framework.

3.6 - Cross-Comparison of Results⁷³

There are two different sets of characteristic components of the comment set, topic and language.

To investigate the relationship between the two, a matrix $M \in \mathbb{R}^{t \times c}$ can be created. t is the number of topics, c is the number of components, U_t is the U vector resulting from topic modeling and U_c is the U vector resulting from comment clustering.: $M[i, j] = \sum_{k=0}^n U_t[k, i] * U_c[k, j]$

From M , another vector M' can be obtained, which is normalized such that $M' = M/\max(M)$. A large $M'[i, j]$ value, corresponding to a red color in the heatmap in Figure 3, indicates high overlap between topic i and component j . Each component-vector pairing, called comment buckets, matched a characteristic portrait of a commenter.

□1 - Personal worries - Innovation and startup encouragement. Most people in this bucket either are, or particularly concerned about small business and startup owners:

”i am a small businessman. the internet is critical my success. consigning me to a slow lane of the internet might do serious damage to the success of my business. also as a private individual i believe the internet serves as a public good”

⁷³ The analysis of the features in the section are partly from prior work for CS229: Machine Learning.

2 - Frustrated at Tom Wheeler - Equality for small business. The second most crowded bucket contains most of the comments with swearwords:

”if you dumb asses pass this law taxes will have to go up to pay for schools and because some schools wont be able to afford it so the education levels of schools will decrease... and facebook will die out and many stocks will drop and die affecting the stock market for many stockholders. with that all aside you will piss off millions for literally no reason”

3 - Frustrated at Tom Wheeler - Government, America, Freedom. This bucket was much less profane, and used patriotic references and national values extensively:

”mr wheeler and fcc members i grow increasingly concerned with your attempts to ram an anticonsumer net neutrality bill through the process. we know what you are doing. you may feel inclined to bow to the corporate influences”

4 - Legal References - ISPs Data Treatment. Containing relatively higher levels of rigor, this bucket shows that people who are worried about monopolization of data had the most eloquent comments:

”isps need to be reclassified as title ii common carriers allowing this proceeding to go through would allow isps to charge people extra fees to carry traffic from any online business that they want if a company depends heavily or entirely on internet traffic the isp could refuse to allow web pages to load in under a minute”

5 - Experiences and Anecdotes - Innovation and startup encouragement. This bucket held an interestingly high number of comments from people who were very worried about their profits or lifestyles, but did not have a very clear understanding of the case:

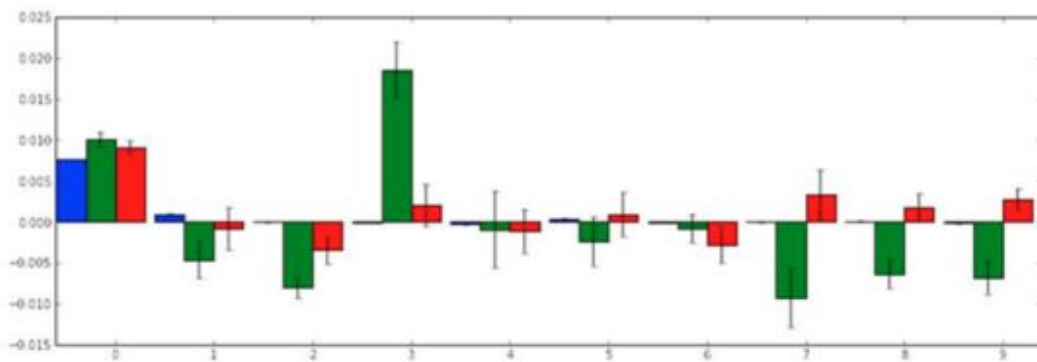
”i am an artist. how can i succeed in an internet that favors already built giants. who will be able to find me in a segregated cyberspace. i will no longer be able to find endless inspiration and utilize the internet the way i do now”

A surprising finding is the low correlation of use of legal terminology and legal references component. This may be the case because the legal references bucket had the length and rigor of the comment as a strong characteristic, and personal worries captured a lot of comments that were well informed and used terminology, but were short or included colloquialisms.

There is significant correlation between the legal reference comments, and the dreams and values comments in terms of subjects they tackled, even though their level of rigor is was distinctive. Large companies controlling information is repeatedly mentioned in personal worries, even though it is rarely mentioned by legal reference documents. Comments with high profanity are also simplest. Government and American values are rarely referred to in personal worries or experiences, but are very common on comments at Tom Wheeler, legal references and dreams and values. Most of the garbage data that is unusually long, literary or complicated, such as the full text of The Great Gatsby or LCD screen instructions, are also contained in the legal references cluster.

3.6.1 - Form letters⁷⁴

Given the high volume of form letters, one may ask whether form letters talk about different topics than original comments, which are unaffiliated with any form letter campaigns. To answer this question, the topic weights for each comment can be used. Consider the average topic weight of a set of comments S for topic j , $|S|^{-1} \sum_{x \in S} U_{xj}$. For each topic, the average weight over all the comments, over only the 13 form letter comments of the NN dataset, and over a random sample of 13 comments (as a control) can be calculated. A bar graph of topic weights per topic is shown below:



Topic Weights per Topic. For each of the three groups with blue corresponding to all comments, green corresponding to form letters, and red corresponding to random comments, along with standard error.

From the graph we can infer that, form letters seem to particularly mention topic 3, "legal terminology", a lot more than the average comment (representative words and comments for this topic are listed above). This is corroborated by a manual examination of the form letter comments, which are mostly fairly explicit references to past legislation and proposed legislative changes: "title ii of the communications act of 1934 already grants you the authority to declare

⁷⁴ Part of this analysis, including the graph, is from prior work for CS229: Machine Learning.

the internet a public utility” (from the Daily Kos) □”The FCC should use its Title II authority to protect [net neutrality]” (from Battle for the Net) Given these results, it can be tentatively concluded that while most comments encompass a wider range of ideas, form letters are specifically organized calls for legislative change in the NN dataset.

The potential to identify and filter form letters and explore the whole scape of comments with and without the contribution of form letters significantly augments the ability of a policy maker to respond to the role of ‘clicktivist’ campaigns. While sheer numbers are also meaningful, the fact that a citizen chose to send in the comments means something about their stance, the ease form letters provide should not have to obscure the diversity of opinions. By keeping the form letter tagged comments in a filterable format, the system handles the comment flooding issue quite well.⁷⁵

⁷⁵Nagesh, *Federal Agencies Are Flooded by Comments on New Rules*, September 2014, wsj.com.

Conclusion

The full power of the methodology I proposed is difficult to convey on paper; only a manual exploration of comments over the heatmap can truly show its abilities to the viewer: The ability to toggle form letters, outlier comments, and create a set of important comments that can be custom defined - these significantly change the experience of both the policymaker, and if shared, of the general public. The dynamic nature of the final heatmap product and the ability to continuously sample from each bucket change the way poll administrators, politicians and lawmakers are able to relate to a more 'active' space of public commentary.

The model in its current format is merely a proof-of-concept tool. It aims to demonstrate that participation of large numbers of people should not be a constraint for internet-based deliberation or a reason to immediately resort to factional representation. Room for improvement should not discourage the readers, but instead show that AI and natural language processing, fields flourishing in the last two decades, can already begin enhancing citizen participation in democratic processes. Constant research development makes the domain of policymaking able to continuously receive better techniques. Research adapted to foster a culture of rationality and equality in citizen participation in rulemaking will relieve agencies from the significant burden of bureaucratic procedures as well as allow commentators more time to voice concerns in a complex bridge between the parallel cultures of Habermas.

While the tool on its own cannot guarantee a deliberative quality to all policymaking, it provides a platform for the informal networks of the public sphere to explore and interact with numbers of opinions orders of magnitude higher than what an 18th century salon could host. This tool augments human exploration and digestion of an opinion space that attempts to make them

‘active participants.’ ‘Active’ shall not entail a mere casting of vote to choose a governor nor shall it entail submission of comments; ‘active’ should expect citizens to understand the comment scape and seek contributions in meaningful and applied ways. The methodology is solely a step on this path, yet if it can induce any human to live up to its definition of ‘successful participation,’ where one attempts to see the validation that they have made a meaningful contribution to the collection of deliberated opinions, then its goal is accomplished: to build spirits that aspire to true ideals of equal and free self-governance.

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