The Role of Information Among Policy Elites:
A Case Study of the Federal Communications Commission

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For the most part, Federal Communication Commission policy has gone unnoticed by the American public for most of its seventy-five year history. That all changed in the spring of 2003. In the fall of 2001, the FCC launched its Third Biennial Review of media ownership rules. By the spring of 2003, the FCC was inundated with electronically filed comments, most of which expressed displeasure at the proposed rule which relaxed ownership rules for both television and radio. The resulting vote of 3-2 in favor of the rule change outraged many Americans. This research is a case study focused on determining the role that information played in decision making among the policy elites of the FCC. Given the limitations of a positivist approach to policy study, this study employs the methodology of Network Text Analysis (NTA) and Social Network Analysis (SNA) to discover knowledge maps. This discovery is intended to reveal what criteria guided the decisions that emerge in the written policy, the five commissioner comments, the Third District Court opinion, the 12 FCC commissioned studies, and the public record. This analysis, which uses SNA, reveals consistent concepts or knowledge maps; primarily reasoned analysis, competition, legal, and broadcast media. Additionally, this research shows that the policy itself was most responsive to ecomments filed by corporations and interest groups – not individual citizens. The research shows that the media had little influence in this policy primarily because they reported on the policy during the week that the policy was released.

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PREFACE

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1. Introduction

The goal of this research is to determine what role information plays within decision-making among policy elites during the policymaking process. It continues to be a given that information is vital to the policy process. Daily policy decisions are being made at the local, state, and federal level in a similar manner: information is gathered by policy elites through studies and hearings while for the public information is communicated through the media, and web sites as well as public hearings. A strong trust exists in information; yet, questions exist regarding the use of this information. Do policy elites really use the gathered information in decision-making or are they gathering information to look good to the public? This last question raises the issue of the nature of information; is the information empirical or does it consist of other types of information? Given that the media has the potential to be an information source for the public, is it the same for policy elites? Have new technologies made a difference in information gathering for policy elites and the public alike? These are just some of the myriad questions that can be raised in a post-modern world.

The Federal Communications Commission (FCC) provides an excellent study in the role of information during the policymaking process. The third biennial review as mandated by the Telecommunications Act of 1996 provides insight into the process of both decision-making and policy review. This chapter provides an overview of this study by looking at the background of both policy decision-making and media ownership, the overlap between these two fields, how the overlap determined the methodology, the significance of this study, limitations of this study, and the chapter-by-chapter overview for the study.

1.1. Background of the Problem

1.1.1. Policy Decision-making

The challenge in determining the role that information plays in policy decision-making is tied to the challenge involved in social science research. Social science research has been primarily set in the positivist camp. Judith Innes (1990) details the problems of this approach: 1) it implies that knowledge is produced only by experts; yet, knowledge can be produced by non-experts as well, 2) the process of informing policy is not stepwise, but is much messier, and 3) we need to know ahead of time what kind of policies we want.

Social construction, a response to positivism, is the notion there is no objective reality but rather constructions of reality. Much of this approach flows from critical theory. Jurgen Habermas is credited with much of the development of critical theory; a development that came from his reaction against positivism and to a lesser extent Marxism. While Habermas agrees with Marx that a critique must be given towards social structures, he does not eliminate empirical research to do so but suggests a hermeneutical approach. The understanding or meaning of society is properly understood as a text that must be interpreted. The meanings are found in people's actions, language, daily practices, laws, and worldviews (Habermas, 1984).These social systems can be considered consisting of two parts: the lifeworld and system. The challenge of what he calls communicative action within the lifeworld is even more important in our current global economy and the resulting political structure. This economy, he says, is the result of a rationalization which contributes to the destruction of the lifeworld. (Giddens, 1982, Grant, 2000). The solution is the creation of a political system in which people are able to engage in discursive democracy.

Slowly, critical theory as well as the focus on social construction is making its way into policy study. For example, Schneider and Ingram (1997) argue that both the targets of policy

and the knowledge of policy are socially constructed. Their suggested solution is a policy process that is highly communicative and engaging.

Knowledge is important, even within a social constructionist approach. The key then becomes knowledge management: its acquisition and utilization. Both aspects of knowledge management, acquisition and utilization, are influenced by the policy making environment. Doris Graber (1991, 2003) argues that while there are similarities between the public administrative environment and the private sector, there are definitely differences between the two. The differences are related to the reliance on appropriations, public perception of need, legal and formal constraints, and political influence.

Herbert Simon (1997) contributed significantly to the issue of knowledge acquisition by arguing against rational choice and proposing that it is impossible to search for the perfect solution. Rather, people "satisfice"; that is, they acquire knowledge to a point at which they make the best decision at the moment. Simon's work is consistent with the limitations of a positivist approach to policy and social science.

Positivism assumes that a common scientific methodology will produce the "correct" answer to a given policy problem. A distinction is made between the observer and the observed, and between fact and emotion/values. The reality of the policy process simply does not contain a common methodology or a separation of values from fact.

As far as knowledge utilization, multiple scholars have broken the policy decision-making process into discrete steps (with the assumption that it is not always so neat and organized). These steps generally look at decision-making as including a problem analysis phase, option exploration phase, an actual decision phase, and an evaluation phase. The challenge is to get the right information while balancing competing interests. Again, multiple

scholars have suggested varying ways to categorize the types of information required. Required information can be summarized as technical/factual information, political/strategic information, and symbolic information. Regardless of the type of information, information in the policy process generally comes from four major sources: policy elites in the form of commissioned studies, position papers and public comments, the public in the form of written and spoken feedback, and the media reporting on the policy.

Why the FCC's Third Biennial Review constitutes a helpful case study in looking at the role of information in policy decision-making is best understood by exploring the nature and history of FCC media ownership policy.

1.1.2. FCC Media Ownership Policy

In spite of the ubiquitous nature of broadcast media, FCC policy in general, and media ownership policy specifically, and its formation have flown under the radar for most of the American public. That is, until the FCC decided to change policy regarding ownership of television stations in the spring of 2003. This latest policy decision regarding media ownership began with the passage of the Telecommunications Act of 1996. A controversial aspect of the Act was to lift ownership restrictions, most significantly, for radio stations. Also part of the Act was a required biennial review of ownership policies that led to the policy change resulting from the Third Biennial review in 2003.

1.1.2.1. Formation of the FCC and Ownership Policy

The Telecomm Act of 1996 is best understood as the next step in a long line of policies attempting to regulate media ownership within the context of changing technology. FCC media

ownership regulation has almost as long a history as the history of broadcasting[1]. The Radio Act of 1927 established the Federal Radio Commission (FRC) as a congressional regulatory body due to abuses of the radio spectrum within the electro-magnetic spectrum. In spite of the large amount of information that can be communicated within this spectrum, radio and television broadcasting has a defined and limited bandwidth as set by the FCC. Consequently, the scarcity of the bandwidth has been one of the key reasons regulatory policy has existed.

Another reason for regulatory policy and specifically media ownership policy has been to encourage diversity; that is, a variety of opinions (Einstein, 2004). The Communication Act of 1934 changed the name of the FRC to the Federal Communications Commission (in part because telephony was moved under FCC jurisdiction). One of the most significant phrases/ideas to come from the Act of 1934 is that licensed broadcasters are to serve the "public interest, convenience, and necessity." Part of serving the public interest according to the FCC has been to limit the number of broadcast stations owned by one entity. This policy has been grounded in democratic theory: a democracy functions best when citizen are informed from as many diverse sources as possible (Barber, 1984). "The belief that the public should get the greatest number of viewpoints from diverse, competing sources is the basis for the Commission's rule limiting the number of broadcast stations which a licensee may own." (Birkle, 1980, p. 6). Over time the focus on diversity became focused on source (ownership), viewpoint (variety of voices), and programming (variety of programs) diversity. This desire for diversity is also intended to foster competition (Aufderheide, 1999, Einstein, 2004). The ability to measure ownership diversity empirically correlated to programming diversity has been difficult, if not impossible (Birkle, 1980). This is due in large part to the inability of the various stakeholders in defining diversity (Einstein, 2004). In contrast, measuring competition within the context of diversity has been a bit

[1] See Appendix for the complete listing of FCC media ownership regulation

easier (Rogers and Woodbuy, 1996, Drushel, 1998, Barry and Waldfogel, 1999).[2]

While it has been argued that the policy goal of diversity was the primary motivation from the early days of the FCC (Einstein, 2004, Coffey, 1979), the goal of competition has been in constant tension with diversity. The first media ownership decision appears to have been made to protect source diversity. The FCC in 1938 denied the Genessee Radio Corp license for a second station in the same market believing that ownership of more than one station would violate the public interest: diversity (Prometheus Radio Project v. FCC, p. 11, 2004). In contrast, during a time period of national concern regarding monopoly power, the FCC also dealt with this issue in the 1941 Report on Chain Broadcasting. This resulted in NBC being forced to sell one of its two networks. Within the same policy, the decision was made to limit network ownership to one station in one market (Prometheus, p. 11, 2004). The Supreme Court upheld this decision in 1943. Both of these early decisions reflect the tension of media ownership policy attempting to encourage diversity and competition.

1.1.2.2. Ownership Caps and Cross Ownership

According to Mara Einstein (2004), media ownership policy can be categorized by placing ownership rules into two divisions: ownership caps (limiting the number of stations) and cross ownership (limiting ownership to other media such as newspapers and cable TV). Ownership caps became formalized with the passage of the Rule of Sevens (group ownership rule limiting ownership to 7 AM stations, 7 FM stations, and 7 TV stations; no more than 5 can be VHF) in 1954. This policy lasted for 30 years before changing to the Rule of Twelves in 1984. The first cross-ownership rule, Broadcast-Cable Cross-Ownership Rule, prohibiting the ownership of both a TV station and cable station in the same market, was passed in 1970. The

[2] Information, however, such as advertising rates, profit margins, etc. are proprietary. This has made information expensive to purchase and because the information is self-reported, difficult to verify.

ban on owning both a TV station and a newspaper in the same market was not formalized until 1975, and even then, existing cross-owned TV station and newspapers were grandfathered into the law.

1.1.2.3. Deregulation

The deregulatory spirit of the eighties and nineties continued to influence FCC media ownership rules during the same period (Aufderheide, 1999) culminating in the Telecommunication Act of 1996. The Act of 1996 is considered to include the most significant changes since the Act of 1934. Specifically, the Act: 1) removed national radio ownership limits; 2) decided local radio ownership is determined by the size of the market so no one owner can own half the market; 3) set the limit on TV ownership not to exceed 35 percent of the national audience; 4) allowed ownership of more than one TV station or a radio and TV station in the top 50 markets; 5) allowed ownership of a TV station and a cable company in the same market; 6) allowed for the cross-ownership of TV networks and cable companies; and finally, 7) allowed ownership of more than one TV network.

1.1.2.4. Third Biennial Review

While television station ownership was mentioned in the Act of 1996, it was given major focus in the review of 2003. The decisions made in 2003 came as the result of a twenty-month process begun in 2001.

As a part of the policymaking process, the FCC formed the Media Ownership Working Group (MOWG), commissioned and released twelve studies on differing aspects of current media structure[3], and conducted at least three public hearings across the country inviting feedback and additional information. The FCC additionally allowed electronic feedback via the

[3] See the appendix for a summary of the 12 FCC commissioned studies used in the media ownership decision of 2003.

Internet and thus received close to a half a million emails commenting on the ruling. A federal court remanded parts of the policy to the FCC a year later, and the FCC opted not to challenge the ruling.

There is little doubt that ownership consolidation has occurred since the Act of 1996. Because of the Act, aided by a healthy economy in the late nineties, there was been a frenzy of buying and selling, especially in radio. Today, one company, Clear Channel Broadcasting owns over 1,100 radio stations across the country.

The result of lifting ownership restriction in the Act of 1996 has drawn considerable discussion from special interest groups, industry leaders, and the academic community. The debate has been fueled by research conducted to determine if station ownership consolidation has harmed radio. The debate is centered on the three stated policy goals of the FCC: competition, diversity, and localism.

The key components of competition are ease of entry into the market, monopoly power, and consumer substitution. With the concentration of ownership that has occurred in radio, the discussion has not centered as much on the structure of these three economic aspects of broadcasting, but rather on how these aspects have affected the diversity of programming within radio.

As has been briefly mentioned, the goal of diversity flows out of democratic theory. In the literature on democratic theory, many have addressed the need for a diversity of viewpoints and the role that media can play in contributing to a healthy democracy. Benjamin Barber (1984) wrote of the need for a "strong democracy", a democracy in which participation of citizens is crucial to the concept of self-government. With this concept of strong democracy, Barber calls for a significant role of the media to foster participation of the citizenry in

democratic decision making. Participation will encourage a diversity of viewpoints making democracy stronger.

Related to the need for a diversity of viewpoints is the importance of an informed citizenry. John Dewey especially pushed this concept in his 1927 book, *The Public and its Problems*. Dewey based his views of an informed citizenry on an active role for the media. He believed that a good democracy yielded a good community, and the key to producing both was "the improvement of the methods and conditions of debate, discussion and persuasion." (Dewey, 1927).

Dewey's writings have led to the development of the social responsibility theory of journalism. This theory postulates that the media, specifically journalism, must play a role in helping to clarify the goals and values of society.

The final policy goal of localism has not been given as much focus with the notable exception of the case of Fargo, North Dakota. When a federal agency attempted to call radio stations in the area regarding the impending flooding of the Red River, the lack of any person at the Clear Channel stations (all stations in the community are owned by Clear Channel) has been viewed as a significant public safety issue. Nevertheless, localism has traditionally been defined as local people owning media in the community in which they broadcast. It assumes that ownership implies a commitment to the community, and will result in better broadcasting and service in the public interest.

The single issue that unifies the policy goals of competition, diversity, and localism is content. The ultimate concern is whether FCC policy can encourage competition while not harming content that is diverse and local.

When the MOWG formation was announced FCC Chairman Michael Powell stated that

the committee was charged with "developing a solid factual and analytical foundation for media ownership regulation." (FCC, press release, 2001). He additionally stated that the way to obtain that foundation was by ". . . having a clear and informed understanding of the current state of the market. . . . Conducting an empirical examination of these types of questions will give us a solid foundation to re-evaluate the way we regulate media companies." (FCC, press release, 2001). Implied in this statement is that previous ownership policies were not empirically grounded. Chairman Powell's goal should, in theory, produce not only a good policy, but also one in which all stakeholders can agree. Yet, one of the results of the proposed policy was a significant negative response from the public as well as special interest groups.[4]

This particular rule-making process, including the role of the federal court, appears to have been a textbook example. The problem is that the decision is perceived to have been the result of partisan politics with little regard to the information provided[5]. While information was a part of the process, criticism was targeted at not only how conclusive the information was, but also the validity of the empirical evidence. The third biennial review by the FCC provides an excellent opportunity to ask what is the role of information in the decision making process among policy elites?

1.2. Research Design and Methodology

This study investigates the role that information plays in decision-making among policy elites by specifically studying the FCC's Third Biennial Review. The literature suggests a need to study policy with methodologies that understand social construction and critical theory as well as the complexity of knowledge management and acquisition. The history of the FCC's media

[4] As an example, the organization Free Press (www.freepress.net) was started as a response to this biennial review and is continuing to draw attention to ownership issues.
[5] The vote by the FCC commissioners in favor of the rule was 3-2 along party lines.

ownership policies appears to be driven by a desire to foster diversity and encourage competition. Chairman Powell's 2001 comments imply that there has been a limited empirical basis for previous policies. Consequently, the FCC's Third Biennial Review is an excellent case study to investigate issues raised by the literature for a number of reasons.

First, the FCC desired to make a policy based on empirical data. The literature points to limitations of making policy decisions based on empiricism, especially social science research. The stated policy goals of FCC media ownership policy are localism, diversity, and competition. As has been discussed, it may be possible to test empirically the goal of competition, but as the literature shows, attempting to define and measure diversity and localism have proven to be extremely difficult. Employing a methodology in line with social construction holds out the potential for emerging knowledge.

Second, the methodology employed in this study, network text analysis (NTA) and social network analysis (SNA), is consistent with social construction and Habermas' hermeneutic. Both NTA and SNA have the potential to reveal knowledge maps through emerging concepts; concepts that come from the text rather than concepts that are brought to the text by the researcher. The FCC has been very careful to make all documentation related to this biennial review available on-line. Consequently, all the information used in the decision-making process, including each FCC commissioner's statement on the decision, is in text form, and can be analyzed using the hermeneutic used in NTA and SNA.

Third, the Third Biennial Review attracted much public attention by providing a form of participatory democracy. The information gathered from public input had the potential to provide an additional perspective not provided by the other sources of information. In other words, much of the information appears to be from a certain perspective; namely, that of the owners. Public

comments provide the possibility of the perspective of consumers of media; a very different target audience with different knowledge. There could be valuable information available to the policymakers even if some of the information may be non-empirical. By employing NTA and SNA, there is the possibility that non-empirical data may surface.

Fourth, this study provides an interesting opportunity to explore how the media covers its own regulatory body and perhaps policy issues in general. While Barber (1984) and others view the media as essential for participatory democracy, it is necessary for this information to be disseminated in a timely and thorough fashion. Emerging mental maps within the policy process have the potential to reveal the role that media plays in communicating policy information.

Given the connection between the role of information in policymaking and the Third Biennial Review, the following questions are being asked:

> Q1: How empirical is the FCC media ownership policy in its basis?
> Q2: How ideological is the FCC media ownership policy in its basis?
> Q3: How much do media reports contribute to the FCC media ownership policy in its basis?

These questions will be answered by analyzing all the textual information available using NTA and SNA aided by computer software. The analysis will result in cognitive or knowledge maps that come from concepts in close proximity to each other within the text forming a network.

1.3. Significance

This case study has significance for both policy analysis and the role of media in American democracy. Information, be it empirical studies, citizen participation, media reports, or political discourse, is vital to the policy making process. FCC ownership policy was based presumably on empirical information, but choices were made. Given the human element of decision-making, and questions on what constitutes knowledge, how information is used in policymaking reveals key aspects of the policy process. This analysis also provides an

opportunity to study alternative methodologies for policy studies.

For years, Federal Communication Commission's regulation limiting ownership of broadcast outlets was based on its perceived role as public guardian protecting the public interest. This rationale was based on the notion that the more diverse the ownership base, the greater the diversity of content on those outlets. Framers of the regulation were motivated by two factors; the broadcast spectrum is a scarce resource, and democracy demands a diversity of viewpoints.

Increasing media consolidation in the United States and globalization have contributed to the increase in multi-national media conglomerates like Robert Murdoch's News Corp. These companies have brought about additional competitive pressures within countries that have had state-owned media resulting in changing media ownership policies (Arsenault and Castells, 2008). This case study has significance for those countries that are early in their media ownership policy changes.

The stated goals of the third biennial review are consistent with what the FCC sees as its primary charge: to develop policy that promotes diversity, localism, and competition. The belief is that if our democracy is to provide a public sphere, television and radio must provide programming that is inclusive of all diversity. The significance of this problem is first a fundamental issue of American democracy: a decrease in ownership diversity of radio and television stations has the potential to hurt the public sphere necessary for a healthy democracy.

1.4. Limitations of the Study

There are basically two limitations present in this study. The first is researcher bias. Chapter three discusses in detail the theory and process of network text analysis (NTA). While a

strength of NTA is coming to the text without preconceived notions of concepts, there is no researcher who approaches a text without background, and what some might consider, intellectual baggage. This researcher is no exception. While a concerted effort was made to be consistent and objective in making concept decisions, there is no question that my background as a non-commercial, religious broadcaster influenced my decisions. I applaud the FCC's policy goals of diversity and localism but struggle with competition. Source, viewpoint, and programming diversity are totally consistent with a public broadcasting philosophy and my own philosophy and worldview. I have a strong commitment to local ownership and am not thrilled with large networks (though I used to work for one). Competition, on the other hand, as practiced today is of concern. The post Telecomm Act of 1996 consolidation era appears to have brought about broadcast that is more concerned about economies of scale than doing the job well and serving its audience. This is my bias and while I hope that is not reflected in this research, it is bound to.

Another limitation of this study is the exclusion of telephony. The Telecomm Act of 1996 involved a significant overhaul of the telephone industry which is increasingly challenging traditional broadcast media. Omissions of discussing that aspect of FCC policy are intentional in order to focus solely on FCC traditional media ownership policy.

1.5. Organization of Dissertation

This dissertation consists of six chapters. This first chapter has presented an outline of the information provided in the other five chapters. The second chapter provides the theoretical basis for the problem by laying out a literature review of relevant research. The literature review examines the nature of policymaking and policy analysis, the role of knowledge acquisition and utilization, the nature of information for decision-making, and finally, the background on the

FCC's media ownership policy. The connections between the research on information and the FCC's media ownership policy form the groundwork for the research methodology.

This groundwork leads to the third chapter, a more detailed explanation of the methodology, network textual analysis (NTA) and social network analysis (SNA). NTA is a form of content analysis but differs from the majority of standard content analyses. SNA, based on mathematical graph theory, has been primarily utilized in looking at the relationships among the actors. The chapter makes the connections between NTA and SNA in order to effectively study the FCC media ownership policy. The analysis procedure with explanations of measurements is also provided. The chapter also details the research questions being asked and answered in this dissertation.

The fourth chapter contains the findings while the fifth chapter discusses those findings in light of the research questions. The sixth and final chapter looks forward. Having summarized the research, the chapter discusses the strength and weaknesses of the study by placing within the context of issues raised in the literature review and the direction for future research.

2. Information in the Policy Process

The prevailing wisdom in policymaking has been that if the correct information is provided, policymakers will design good policies. This, of course, implies that the decisions that are made are also good as well as the entire decision-making process. The problem is that there is much more to good policymaking than good information. What is often overlooked is the environment, both within and outside a governmental agency. The agency itself contains many factors that have the potential to constrain and liberate behavior. The policy process is not linear thus creating the challenge of managing the myriad details. In fact, the role of information within the policy process is best understood as a role of knowledge management.

Several theorists provide insight into the problem of the role of information by looking first at the nature of policymaking and policy analysis, secondly, the role of knowledge acquisition and utilization within an organization, thirdly, the nature of information for decision-making, and then finally, the development of the FCC's media ownership policy.

2.1. The Nature of Policymaking and Policy Analysis

The first distinction is between policy analysis and policymaking. "Policy analysis is the activity of creating knowledge *of* and *in* the policymaking process." (Dunn, 1994, p.1). Policymaking is a process which ". . . includes the manner in which problems get conceptualized and brought to government for solution; governmental institutions formulate alternatives and select policy solutions; and those solutions get implemented, evaluated, and revised." (Sabatier, 1999, p. 3). Analysis can be, but is not obligated to be a part of the policymaking process. This disconnect is a problem inherent in approaches to social science research.

2.1.1. Social Science Research

In the early part of the twentieth century, the prevailing approach to social science research was positivism as advanced by the Vienna Circle. Positivism is defined as, ". . . the ontological belief in a deterministic universe and the epistemological beliefs that knowledge reflects external realities, that the laws of the universe can be known, and that science can be unified through a common methodology." (Morcöl, 2001, p. 382). Because of the focus on common methodology, a distinction is also made between the observer and the observed, and between fact and emotion/values. The belief has been, do the proper research and analysis and it will result in *the* answer.

Consequently, starting with the work of Laswell (1971), the policymaking process was broken into stages. These stages, initiation, estimation, selection, implementation, evaluation, and termination, while providing a clear structure and helping to establish the field, are not necessarily grounded in reality. It is rare for the policymaking process to move in such a systematic, linear way. Likewise, keeping values separate from fact in a positivist framework also does not reflect reality.

Until researchers began to experience frustration with their policy analysis (knowledge in) not making it into the policymaking process (knowledge of), the belief was that the purpose of policy study was to provide the right answer to a policy problem so that it could be implemented through the policymaking process. The practice of science within social settings has not lived up to its positivist's claims.

This background is important because while social science research is progressing beyond positivism, positivism's strong influence is still being felt in the policy sciences. Göktuğ Morçöl concludes that the majority of policy professionals (policy analysts) are positivistic in

their abstract beliefs but more post positivistic in the actual process (policymaking).

The problem is that the entire policy process (policy analysis and policy making) contains more than just technical data or text that provides laws or guidelines. According to Judith Innes (1990) the problem with a positivist approach is three-fold: 1) it implies that knowledge is produced only by experts; yet, knowledge can be produced by non-experts as well, 2) the process of informing policy is not stepwise, but is much messier, and 3) we need to know ahead of time what kind of policies we want. Underlying all information are values that speak more to societal views as opposed to a normative truth.

Social construction, a response to positivism, is the notion there is no objective reality but rather constructions of reality. Much of this approach flows from critical theory.

2.1.2. Critical Theory

Critical Theory, specifically Habermas' viewpoint is motivated by moral and political concerns in light of modernity. He does not wish to ignore the Enlightenment, but rather combat trends hurting democratic societies.

> Habermas has sought to defend the notion that only in society in which a general notion of reason can be invoked can we hope to sustain a good society. Without an appeal to general standards of truth and goodness, social life gravitates toward an endless power struggle among antagonistic interest groups. (Seidman, 1989, p. 1).

To provide a simple definition of Critical Theory is not easy without exploring Karl Marx and The Frankfurt School.

The Enlightenment promised freedom through rationality, through an epistemology that saw reason as the key to all understanding and truth. Marx claimed the Enlightenment failed in two major areas: 1) it failed to connect the critique of consciousness with social structural conditions that shape consciousness, 2) it never addresses or theorizes domination as a condition

of social structure. (Seidman, 1989) In other words, rationality-producing consciousness is not the major factor that shapes social action, but rather, it is societal structures that tell us how to view ourselves. Consequently, Marx's critique changed from epistemological to material. It is the wealth in a society that creates social structures that affect consciousness.

The philosophy of Critical Theory developed from The Institute for Social Research located in Frankfurt, Germany thus becoming known as The Frankfurt School. The primary thinkers from this school who took issue with the Marxist critique of materialism and political economy were Theodore Adorno and Max Horkheimer. Their critique moved more toward instrumental reason. They argued that the problem was not capitalism but an assumption of cultural hegemony, which along with capitalism, bureaucracy and science creates a dynamic that "obliterates all forms of autonomy and individuality." (Seidman, 1989, p. 5)

Habermas, though generally associated with The Frankfurt School has over time argued some of the major points with Critical Theorists. To begin, he does not believe the Enlightenment was completely detrimental; in fact, he believes that critique through reason can be a good thing. He agrees with Marx that the critique must be directed towards social structures. He goes a step further by saying this critique must come from empirical social research. The methodological approach to do this must be a hermeneutic approach. The understanding or meaning of society is properly understood as a text that must be interpreted. The meanings are found in people's actions, language, daily practices, laws, and worldviews. ". . . the categorical structure of a critical theory must be sufficiently close to or resonant with people's historically specific, meaningfully constituted experience in order to accomplish the critical reflexivity that it intends." (Seidman, 1989, p. 7)

Habermas believes this critique also must be joined with a look to social structures; namely, lifeworld and system. The lifeworld is made up essentially by language and culture. The system consists of those nonlinguistic communication processes involving money and power. There is no difference in how societal structures should be studied; they should also be studied from a hermeneutical perspective. The development of his theory is called the theory of communicative action.

> The communicative model of action does not equate action with communication. Language is a means of communication which serves mutual understanding, whereas actors, in coming to an understanding with one another so as to coordinate their actions, pursue their particular aims. (Habermas, 1984, p. 101)

Habermas says Communicative Action has three interrelated functions: 1) develop a concept of rationality that is not tied to modern philosophy and social theory, 2) construct a two-level concept of society that integrates the lifeworld and system paradigms, and 3) sketch out a theory of modernity that accounts for what it is rather than doing away with the Enlightenment. While volumes have been written regarding Communicative Action[6], the critical aspect important to this research is the hermeneutical critique.

Habermas says the concept of communicative action ". . . refers to the interaction of at least two subjects capable of speech and action who establish interpersonal relations (whether by verbal or by extraverbal means). The actors seek to reach an understanding about the action situation and their plans of action in order to coordinate their actions by way of agreement." (Habermas, 1984, p. 143). In order to make sense of these interactions, a linguistic or hermeneutic is required.

The hermeneutical approach can bridge the gap that exists between analysis and policymaking since it understands there is interdependence between all aspects of the policy

[6] Aspects of Communicative Action significant to broadcasting policy is discussed later in the chapter.

process. Additionally, the focus on meaning found in viewing society as a text offers the hope of new insight into the policy process. Information cannot stand alone; not in a growing complex world.

In his later work, Habermas addresses how communicative action can resist the global economy and the resulting political structure. This economy, he says, is the result of a rationalization which contributes to the destruction of the lifeworld. (Giddens, 1982, Grant, 2000). "In essence, Habermas argues that the rationalization tendencies – of which globalization is a symptom – can only successfully be offset by a political formation which guarantees participation, inclusion and reciprocal recognition of dignity and goes beyond globalization." (Grant, 2000, p. 134). Habermas places even more importance on the place of communicative reason in rescuing the life-world. "In complex societies the deliberative formation of opinions and will embedded in the principles of the sovereignty of the people and human rights constitutes in the final analysis the medium for an abstract and legally formal form of solidarity reproduced via political participation (Habermas quoted in Grant, 2000, p.145)

Two aspects of policy analysis and policymaking are affected by social construction: targets and knowledge. Schneider and Ingram (1997) argue that social construction of target audiences has a profound affect on public officials, policy agenda, media, and the target themselves, and most importantly, policy design. The construction of targets they hypothesize is based on a matrix of positive and negative constructions along with power that is strong and weak. Those who are positive and strong are advantaged, those who are negative and strong are contenders, those who are positive and weak are dependents, and those who are negative and weak are deviants.

The agenda, tools (those things that motivate target populations to comply), and

rationales (those explanations intended to legitimate policy goals, the choice of target populations, and the tools used) send messages to all populations as to how they are viewed by the government. These perceptions effect participation. They wrap up their argument with the contention that public officials, the media, and the groups themselves manipulate these social constructions. The question remains as to how fluid these perceptions are.

While the notion of social construction of knowledge has existed for some time, there are those policy scholars that have begun to apply the concepts to the field of information within public policy. Perhaps none is more interesting and revealing than the work of Judith Innes. "When it really comes down to it, there is not much that can be said with confidence about how knowledge influences policy." (Innes, 1990, p. 1) With this beginning sentence Innes begins the introduction to her second edition. What makes the introduction so interesting is that it describes her journey in exploring how knowledge is used in public policy.

The book is written from a positivist position; a firm belief in science as the means of constructing social indicators. In her journey she has come to an interpretive or phenomenological view of knowledge; a view she feels is more consistent with reality. The interpretive approach says that knowledge is grounded in everyday events, not in objective statistics, theories, etc. The second aspect is that knowledge is not free from bias of an observer or of a method. The third aspect is that knowledge is grounded in particular contexts. In other words, it need not be generalizable to be knowledge. (Innes, 1990).

There does appear to be a problem between policy analysis and policymaking: social science research is moving beyond a positivistic epistemology to one that is grounded in reality. Those writing about the policy process acknowledge positivism ignores groups affected by policies, thus needing new approaches. The point of policy study does not appear to be to

discover the perfect solution to a public problem. Agreeing with Habermas, it is also important not to ignore the benefits of rationality. Knowledge is definitely needed, but care must be given to how it is acquired and utilized; in other words: knowledge management.

2.2. Knowledge Acquisition and Utilization

The study of the role of information in policy decision-making is not a linear process; rather it can be likened to a circle. The circle provides the boundaries of the public administration agency; these boundaries are not solid, but permeable. Activities within the circle are affected and affecting that which is outside the circle. The overarching focus of the circle (as a policymaking entity) is knowledge management. This management involves the interactive process of acquiring and utilizing knowledge.

It is important to define terms integral to a public administration environment. Doris Graber (2003) provides insight in her definitions of the following terms:

a. Communication: the transfer of meaningful information from a source to a receiver
b. Information: data about various occurrences that have been collected and arranged to serve a purpose
c. Information Management: the carefully planned and controlled steps taken to achieve such purposes
d. Knowledge: information shaped into an organized body of thought
e. Organizations: stable systems of individuals who coordinate their work through communication to achieve collective goals

It is these terms along with appropriate literature that will provide focus to the study of the role of information.

2.2.1. Knowledge Acquisition

The process of acquiring knowledge is not a task of simply looking for information. The process is affected by the public administration environment, the collective action of people, legal realities, design, and structures.

2.2.1.1. Public Administration Environment

Doris Graber's work (1991, 2003) brings focus to this review because her premise is simple: communication steers the activities of all organizations, not coordination. She is clear on what makes public agencies different from the private sector: environmental factors, organization-environment transactions, and internal structures and processes.

The environmental factors are each significant to the FCC: degree of market exposure, legal, formal constraints, and political influences. Since legal constraints will be discussed and political influences have been implied, a word is needed regarding market exposure. Market exposure gets to the process and reliance on appropriations. Public agencies must communicate/market themselves well in order to get good publicity for funding. These environmental factors do not encourage open, honest communication both within and outside the agency.

2.2.1.2. Collective Action

Researchers have been intrigued with the issue of collective action; that is, ". . . how a group of principals who are in an interdependent situation can organize and govern themselves to obtain continuing joint benefits when all face temptations to free-ride, shirk, or otherwise act opportunistically." (Ostrom, p. 29).

Perhaps the best known example is *The Tragedy of the Commons* described by Garrett Hardin in 1968. Hardin argued that when individuals are using a scarce common resource, they will overexploit it acting out of their self interest rather than collective interests. Another model of collective action theory is the *Prisoner's Dilemma Game* that concludes individuals will be worse off collectively because of pursuing their self-interest. The use of coercive force is the solution in every one of these models.

Coercive force according to Ostrom is the wrong solution because each of these models includes the problem of free-riders; those who are willing to let others do the collective work while continuing to pursue their self-interests. Free-rider situations generally include a lack of trust between individuals, a lack of communication (usually because the opportunity does not exist as in the Prisoner's Dilemma), and a lack of outside monitoring of the situation for accountability. While there may be situations within public agencies where a free-rider problem exists, Ostrom is correct in arguing that the free-rider problem is not applicable to public agencies.

The solution of collective action theories, "coercive force" does seem to fit in well however with the scientific management focus that characterized the Progressive Era in public administration, and continues to have a lasting impact. Scientific management has been preoccupied with what in essence is coercive coordination: put the correct hierarchical structures in place, and organizations will be efficient. While that summary is somewhat simplified, scientific management does believe correct structure will improve efficiency. (Ostrom, 1990). The idea of coercive force may not be explicitly discussed, but hierarchical structures do fulfill that role. For any employee, the temptation to free-ride is quickly lost when the boss (hierarchical structure) comes strolling past her office, or threatens no raise if performance is not improved.

Judith Merkle (1980) argues the commitment to scientific management has had some negative consequences: performance is based on a machine-like mentality (structures make performance, not people), state power is exercised by technical elites, society is maintained by the middle-class (tends to make communication lack any egalitarian nature), and it dehumanizes people. Her conclusions are significant since none encourage communication.

That which makes breaking the dependency on scientific management difficult is that for the most part, it does produce efficiency. Because coordination fits in better with the focus of collective action theory and scientific management, communication is assumed to occur within a coordinated environment.

2.2.1.3. Legal Realities

Another possible restraint on communication is the reality that public agencies must function within the Constitution. In recent years the courts have forced public agencies to make significant changes. Rosenbloom and O'Leary (1987) argue that the changes have transformed American public administration by adding a substantial legal dimension to management. While scientific management values efficiency, individual rights protected by the Constitution are not necessarily efficient. This has created a tension within public administration: encourage flexibility, efficiency, and effectiveness, but within legal structures.

The challenge for communication comes in that coordination tends to be more consistent with law. The FCC is legally obligated as a federal agency to Congress, and the American people. When employees are aware that withholding information could have legal ramifications, it is possible for communication to occur, but the more likely result is fear. Fear tends to encourage structures (coordination), not communication.

2.2.1.4. Challenge of Obtaining Good Information: Design

The concern with communication as a first step towards knowledge management, gives rise to how the design of an organization affects communication. In other words, organizations communicate according to the limits of their design.

The rationality of the individual forms the basis of scientific management. The strong belief in structure is because the rational being is able to think thoroughly through what works.

This was the prevailing belief until Herbert Simon, influential in economics, artificial intelligence, and organizational decision-making, applied his economic theory of bounded rationality to organizations. (Simon, 1997).

Bounded rationality is at its core, an economic theory regarding decision-making. His basic idea as it relates to organizations is that people have limited cognitive ability when it comes to making decisions. Consequently, they "satisfice"; that is, they do not spend an infinite amount of time looking for the answer, but settle for the best thing at the moment. Within organizations, people function within the same limited capacity since organizations are made up of people. Organizations are rational, but are bounded by the limited cognitive ability of its people. According to Simon, it is best to understand organizational behavior by understanding that it also "satisfices". Ostrom uses this reasoning when concluding voluntary organizations with self-governance are better at producing cooperation than coercive force.

Another way to view organizational behavior is the theory presented by Chris Argyris (1993, 1996). Rather than focus on the task of decision-making primarily and the value of people secondarily, as Simon is criticized for doing, Argyris places people at the center of the organization. He does so by emphasizing the ability of an organization to learn as individuals within the organization learn. The key to performance is the organization's ability to learn.

This ability to learn is central to who we are as humans. Argyris develops what he calls the ladder of inference: a model that involves numerous steps from observation to the ability to question all beliefs. This is distinctly human, but does require help in getting people to be able to step outside themselves to understand the meanings of their actions. This is very similar to Luhmann's (1995) focus on the human ability to be self-referential. Both men are placing emphasis on the human ability to learn by the creation of meaning from our actions.

Argyris takes his theory a step further by focusing on “theories-in-use”, the theory people actually use to govern their behavior as opposed to theories they espouse. If people within organizations live by their theories-in-use, he calls this Model I behavior that results in defensiveness and misunderstanding. It does so because Model I behavior is focused on four criteria: 1) achieve your intended purpose, 2) maximize winning and minimize losing, 3) suppress negative feelings, and 4) behave according to what you consider rational.

Argyris goes on to say individuals in the organization need to learn Model II that contains three elements: 1) valid information, 2) informed choice, and 3) vigilant monitoring of implementation of choice. Model II thinking results in what he calls “double-loop learning”. The double-loop comes primarily from the third element, being able to monitor the implementation of choice. Argyris’ position continues to be similar to Luhmann (1995) who argues that as an individual in an organization, or his terminology sub-system, is able to be self-referential, their interactions will continue to create the correct choices. The key for Luhmann and Argyris is the need for communication.

According to Simon, people cannot fully respond to the environment because there is too much information. The key to organizational performance is being able to get the right information to enable individuals and the organization to make the right decision. His focus on structures is so that decision-making is done well, thus enhancing performance. If an organization is designed rationally, the organization will resonate with the environment and right decisions will occur.

Concurrent with Simon and Argyris and engaged in the conversation is Charles Lindblom. Lindblom (1959) argues that policy changes are never decisions of looking at major bodies of knowledge, and making the best decision. Rather, agreeing somewhat with Simon that

there are limited numbers of alternatives, Lindblom argues that changes in policy are incremental; decisions are based on previous experience. This is consistent with Argyris' double-loop learning in which the individual must be self-aware to understand governing values that direct action.

The significant aspect of bounded rationality is Simon's emphasis on the design of the organization, and on how that effects its communication. The challenge according to Graber (2003) is to secure good information.

2.2.1.5. Challenge of Structures: Networks

While it would appear structures are central to knowledge management rather than communication, it is the concept of networks of associations that pulls together the concepts discussed thus far. In scientific management, hierarchical structures allow communication to travel in a linear fashion; most likely, individuals at the top of the organizational chart communicate downward. Reality is simply not like that, but more like a network of multiple connections in which communication can flow in a myriad of ways – sideways, up, down, or through. Additionally, organizations are a part of a broader network of organizations, or cultural institutions. Consequently, as Nohria (1992) argues, organizations are social networks and need to be studied as such.

While a few researchers looked at this associational phenomenon, also known as six degrees of separation, Duncan Watts (1999) gave credibility to the field by mathematically proving these multiple connections do exist. He further was able to show that both content and structure are extremely important (2003).

Scott helps to bring structure to the growing field by placing it into organizational theory. His book is an overview of the major approaches to organizational theory: rational systems,

natural systems, and open systems. The rational systems approach focuses on the normative aspects of organizations, specifically goals and the formalization of rules and roles. Though the natural system resulted from criticism of the rational model, it nevertheless focuses not on goals, but social groups evolving as they grow. The open systems approach is focused on the relationship of the organization with its environment.

It is within the open systems approach that networks fit. John Holland (1995) is attempting to build a theory of complex adaptive systems or CAS. CAS, argues Holland, is made up of many connected parts known as agents. The study of the agents is an attempt to learn how these agents come together to interact and accomplish work. This brings us back to Watts in his concern with the qualitative nature of a system's connectivity: the structure.

Graber defines structures as "the patterns of information flow inherent in formal organization charts and reflected in work manuals." (2003, p. 64). While that seems to be counter to network theory, Graber is arguing these structures affect the direction, speed, and accuracy of information flows. As discussed earlier, how an organization tackles these, determines how well the organization functions.

Information technologies hold promise of being able to help in communicating better. The tragedy of the Space Shuttle Columbia crash of 2003 illustrates the falsity of putting technology before communication. In an appearance before a Senate committee, Sean O'Keefe, the NASA administrator said NASA engineers were discussing the problem of loose foam hitting the wing before the accident, but these concerns were not being listened to.

> While most of these engineers were not directly assigned to safety, they were e-mailing one another to discuss their concerns about the hard foam debris that hit the orbiter during liftoff. Mr. O'Keefe said that one result of the e-mail messages had been to democratize communications within the agency but that the results were an unstructured cacophony that NASA had not made sense of. (Wald, 2003).

This is the danger of new technologies. Simply because an organization possesses information technology does not mean they are information managers. The focus must be first on communication. To be more specific, organizations must have a basic understanding of the simple communication model: there is a sender and a receiver, connected by a channel, through which a message is encoded, sent, and decoded with the potential for feedback. Once this is understood, the structures can be assessed to make sure direction, speed, and accuracy are enhanced through an associative network structure. Then, and only then, will knowledge management occur.

Simon says conduct a good search (influenced by how the organization is designed) and enough knowledge will result to make a decision. Argyris says knowledge is that which is acted on, and Lindblom says knowledge is important, but limited. In other words, Simon sees the role of the analyst as important (conducting the search), Argyris and Lindblom see a limited role for the analyst. While these three discuss the role of knowledge in decision-making, the assumption is that policy analysis is complete without further focus on utilization of the knowledge. There is a need to focus not only on knowledge acquisition, but also on knowledge utilization.

2.2.2. Knowledge Utilization

The concern is that this knowledge is not being used, but that may not be the case. Feldman and March (1981) help to bring focus to this by discussing the gap between the amount of information gathered in organizations and the decisions that are made. The authors, attempting to explain this gap, acknowledge information is crucial to rational choice. “Information-processing interpretations of cognition, economic theories of information, and cybernetic perspectives on adaptation all build on the idea that the processing of information is a

vital aspect of human behavior." (p. 171). The research literature can be summarized by six statements:

1) Much of the information has little decision relevance.
2) Much of the information used to justify a decision is gathered and interpreted after the decision is made.
3) Much of the information gathered is not considered when making a decision.
4) Regardless of how much info is gathered, more is always needed.
5) Complaints that an organization does not have enough information are made while available info is ignored.
6) The relevance of info to the decision begin made is less obvious than the need for information.

By in large, organizations gather more information than is actually used. Rather than concluding that organizations are stupid, the authors argue this tells us more regarding the limitations of our ideas about information.

The authors begin with "elementary" explanations: organizations may be unable to process information due to organizational problems or human limitations, and the information available may be the wrong kind of information.

Additional explanations are: 1) organizations provide incentives, 2) much of the info is gathered in a surveillance mode, and 3) much of the info is subject to misrepresentation.

Organizations are organized in ways that provide incentives for too much information. This is done first, because often two different groups of people are involved: information gatherers and information users. From a cost-benefit perspective, the gatherers can allow the cost to be passed on to other departments while retaining the benefits. Also, this organizational split doesn't worry about information overload because the responsibility is delegated to the gatherers. Additionally, the criticisms made to the gatherer after the decision is always going to be "not enough information" rather than too much information. Consequently, it is the smart decision maker who gathers too much.

Similar to individuals organizations gather gossip or other information that has no apparent connection to the decision. Gatherers are anticipating what might be especially in situations in which relevance cannot be determined in advance.

Misrepresentation of information can occur specifically related to strategies. The environment of information gathering and decision making is one in which there are conflicting interests and opinions. Information is used than as a persuasive tool with power. It becomes a strategic tool. This also results in an overabundance of information.

Feldman and March (1981) argue that the more profound explanation for overabundance of information and the gap between information and decision can be explained in information as symbol and signal. In our rational, enlightenment era, organizations value careful, deliberate decision making that includes gathering of information. The process of gathering information is symbolic of a good organization. For decisions to be legitimate, they must be information sensitive. Borrowing from the economics of information, information can also be a legitimizing signal. "When benefits from information use are approximately equal among organizations, and costs of maintaining an information system are less for good decision makers than for others, conspicuous consumption of information is neither organizationally nor socially foolish." (Feldman and March, 1981, p. 179). ". . . information use symbolizes a commitment to rational choice. Displaying the symbol reaffirms the importance of this social value and signals personal and organizational competence." (p. 182). This is more likely the case when the environment is uncertain.

Feldman and March make the argument that information is used without empirical support. David Whiteman's (1985) study is to provide theoretical context and empirical underpinnings for both the use of policy analysis in Congress and implications for congressional

decision making. The author argues that models for congressional decision making should be expanded to include critical activities that precede votes: problem analysis, the search for alternative solutions, and search for information. Additionally, the model should also include congressional staff activity. Existing research suggests staff play an influential role in congressional decision making.

The purpose of the paper is to investigate the activities preceding congressional votes specifically related to the role of policy analysis. The author focuses his research on information from the Office of Technology Assessment (OTA) used by congressional committee staff.

There were five projects from OTA the author traced (medical technology, coal pipelines, railroad safety, nutrition research, and residential energy conservation) resulting in 25 cases in which a committee made use of the information. Using structured and unstructured interviews with committee members as well as content analysis of the information make up the data in this study.

The analysis produced three types of usage: substantive, use of information (policy analysis) occurs in the absence of a strong commitment to a position as the policy-maker is searching for a solution; elaborative, information used to extend and refine a position; and strategic, information used to advocate or reconfirm a held position. Whiteman analyzes these uses against a framework developed by Price (cited in Whiteman, 1985) that breaks up legislative activity into four stages: formulation, looking for legislative remedy; information gathering, both formal and informal activity; modification, making changes; and deliberation, final committee reports, floor debate.

Additionally, the author compared his results within the political environment: issue salience, and group conflict.

	Substantive	Elaborative	Strategic
Formulation	16%	20%	12%
Info Gathering	36%	84%	56%
Modification	0%	12%	20%
Deliberation	0%	4%	52%

Table 1: OTA Information Usage

The conclusions of the study are threefold. First, Congress does make use of policy analysis. Strategic usage is not surprising; substantive and elaborative usage is. Second, the political environment does have an effect. High conflict environments tend to use information more in the modification and deliberation stages, whereas low conflict environments use information in the early stages. High salience environments simply use the information more than do low salience environments. Third, the research sheds light on questions regarding highly specialized knowledge within democracy (the fear decisions rest on highly trained technocrats). Policy analysis is not irrelevant to the process; there was an effect on Congressional decision making.

Nancy Shulock argues through her empirical study of congressional committees that policy analysis "is more a tool of the democratic process than the problem-solving process." (1999, p. 227). More specifically, she argues policy analysis is used in three ways: 1) as language for framing political discourse, 2) legitimate rationalization for legislative action, and 3) as a symbol for legitimate decision-making.

Shulock's findings are consistent with Weiss' argument, "It (policy knowledge) provides a background of empirical generalizations and ideas that creep into policy deliberations." (p. 381). The strength of Shulock's work is that she proposes a new way of viewing policy analysis

that takes it beyond decision-making. Her final two sentences speak to her hope, "Ideas, aided by institutions and embraced by citizens, can reshape the policy landscape. Policy analysts can supply the ideas." (1999, p. 242).

Though Shulock does not phrase it this way, but what really is needed is to begin talking about knowledge management. The concept of knowledge management is spelled out in Thomas Kalling's recent work. Kalling used a qualitative case study approach in studying three specific business situations in which knowledge management played a significant role. "In all the cases, new knowledge was developed through various means, but it did not result in widespread utilization, and it did not result in overall improvements in profitability." (2003, p. 75). Kalling suggests the objective of knowledge utilization be to improve activities, however that may be defined.

2.3. Policy Decision-Making

Knowledge acquisition and utilization within the policy process is conducted very specifically within a decision-making context. The decision-making process can be broken down into four stages: initial problem analysis phase, option exploration phase, actual decision making phase, and post-decision feedback phase (Graber, 1991).

2.3.1. Required Information

The challenge, according to Graber, is to develop and obtain good information (2003). The challenge is ". . . that decision making is an eclectic mixture of searching for rationally sound criteria while accommodating conflicting interest and perceptions to arrive at an unplanned, often unforeseen acceptable compromise." (Graber, 1991, p. 157). Graber outlines two major categories of information necessary for effective operation. Technical and political data are information most thought of when discussing policy analysis; i.e., cost-benefit data,

academic and agency studies. It is also information about the political climate in which public agencies operate, information about resources that potentially are available to them, and information on tactics that would provide success. Graber says it is the political consideration rather than technical analysis that determines implementation. Symbolic and tactical data is information that can serve certain purposes other than implementation. For example, public feedback could be gathered for symbolic reasons – to appear democratic, or obtain studies to appear interested in making the right decision. The tactical aspect of this is gathering information that helps determine what structures are necessary for collecting and process information. Many public agencies have legal procedures for collecting information that are the result of tactical information.

The work of Feldman and March discussed earlier is consistent with Graber's focus on symbolic and tactical information.

2.3.2. Sources of Information

There are multiple sources for information; the public, policy elites, and the media.

2.3.2.1. Policy Elites

This leads to another source for information in decision-making within the policymaking process: the policy elite. As has been mentioned, the focus on the individual citizen has been overdue and quite necessary. What have resulted are new insights into the policymaking process. These new insights have not been applied to the policy elites. What is not known is how policy elites socially construct targets and knowledge. Work, as has been discussed, has been done on knowledge utilization, but always by looking at the product not the process.

2.3.2.2. The Public

A major source of information from the public is feedback. Historically, there are two streams of thought regarding public preference on policy formation: the public expresses their preferences through either direct or indirect methods. When a citizen votes for a particular candidate, it is assumed they do so because of agreement with the politician on certain issues. The politician then understands she has a responsibility to represent that citizen's preference when making policy decisions. In this way, a citizen has indirect control over policy preferences.

The second method is using public opinion polls. A significant portion of the literature devoted to public preferences is split. On the one hand, discussion has questioned the validity of public opinion polls since there is no cost to the individual on answering questions like "should the government provide better health care for it's citizens?" The answer to a question like this must be yes (who is against better health care?), but the question may or may not explore the increase in taxes to provide improved health care, and even if it did, it is easy to say yes to an increase since it has not yet occurred. On the other hand, discussion on public preferences makes great use of polling data because it is the primary means of assessing opinion.

There has been another direct method in agency rulemaking process. The Administrative Procedure Act (APA) allows for a period of time for the public to comment on proposed rules. With the advent and growth of the internet public participation is changing. Before electronic forms of communication individuals could write and submit letters, postcards, or other forms of analog communication. Digital forms of communication are increasing expectations for improved public participation (Johnson, 1998). The policy under study (FCC Third Biennial Review) grabbed attention because the FCC received close to half a million emails during the

comment period (Holman, 2005). Early conclusions on the use of the new technology to enhance direct democracy are mixed (Shulman, 2004).

Beyond Graber's perspective on public feedback for symbolic purposes, public preference information can be helpful within the decision-making process. The role of public preference in the formation of policy has long been debated. With the development of information technologies, the opportunity to communicate policy preference to politicians and policy elites is even greater.

The focus of the work done on social construction (Innes, Schnieder and Ingram) is on that of the average citizen, and rightfully so. The positivist approach has created policy elites; a class of professionals portending to know what is best for all people. The attention paid to underrepresented groups because of social construction has brought about an encouragement to participate in the democratic process. A major problem however, for participation is the growing complexity not only in the policy arena, but also all of society. This has brought about a larger role for special interest groups who taking advantage of the Internet and encouraging public feedback via automated email letters to appropriate agencies during comment periods. Additionally, these special interest groups have the financial strength to sponsor their own studies to add to the decision-making process.

2.3.2.3. The Media

The final source of information is the media; a source that can supply information for the public and policy elites. For years, a tightly held belief has been that for democracy to flourish, citizens must be well informed in order to make good decisions. That idea has been challenged by Michael Schudson in *The Good Citizen: A History of American Civic Life* (1998). According to Schudson, there have been three distinct periods of civic life: 1) politics of assent, 2) politics

of affiliation, and 3) the rational, "informed citizen". To analyze each of these eras, the author looks at the rules of politics: constitutional provisions, statutory laws, and typical patterns of electoral activity. The 18th century rule was by gentlemen, 19th century rule by numbers, and 20th century rule by everyone and no one all at once. Concurrent with this has been the significant emphasis placed on civil rights (the "rights-bearing citizen"). This emphasis has lessened the centrality of the voting booth so that all aspects of life have become political. Another way to look at the changes is through authority: personal authority (gentlemen), interpersonal authority, to impersonal authority ("science, expertise, legal rights, and information" (p.8)).

During the Progressive era, rationalism, scientism was rapidly moving to front and center of our society. The role of newspapers was affected by this as well as they began to talk of objectivity in reporting. The newspaper as hostile was changing. The newspaper was becoming a primary source of information regarding candidates for office.

"Information in the early twentieth century had become a commodity, marketable, moveable, and separable from value, belief, conviction, or even narrative. Buoyed by ideas of neutrality in science and efficiency in political administration, the very idea of information took on a kind of dazzle." (1998, pp. 196-197).

At the same time public relations as an industry and use in politics began. Walter Lippmann (1955) put forth an articulate argument regarding the role of the expert in governance. Journalism would help the public to understand the difficulties of governance, but nevertheless, the public was ill equipped to make good decisions. Dewey (1927) answered this by arguing for the public sphere, more specifically, better communication in the public sphere.

> If television is less powerful than people believe, newspapers retain more authority than people often realize. Newspapers are no longer the primary source

> of news for most people directly, but they remain the primary source indirectly because they supply news to television. Television news, even the national network news programs, are parasites of print. Rarely does a broadcast journalist pick up a story that newspapers and newsmagazines are not already on top of. Television confirms, anoints, and dramatizes news, and when it covers events live, it witnesses news. But it rarely finds news. That remains almost entirely the task of print. (p. 287).

The critique that TV controls the debates Schudson also questions. It is true TV like newspapers makes decisions as to what gets on the news, but it does provide questions as to how that effects interest groups, parties, corporations, and government officials in determining the topic of debate.

> Moreover, the informed citizen model has had less influence on progress toward a society of free and equal citizens than the model of the 'rights-bearing citizen' that began to displace it in recent decades. Even so, the rights-bearing model has curiously failed to win the cherished place in civic education or public discourse that the informed citizen has now held for nearly a century. (Schudson, 1998, pp. 9-10).

He concludes by suggesting seven measures for citizenship to determine if it's in decline: voter turnout, trust in government and social institutions, social capital (social memberships), quality of public discourse, disparity between rich and poor, capacity of least advantaged groups to make their voice heard, and state-guaranteed rights increasing or decreasing.

While he does not think the rights-bearing citizen is the answer, he does think the Monitorial citizen is. "Monitorial citizens scan (rather than read) the informational environment in a way so that they may be alerted on a very wide variety of issues for a very wide variety of ends and may be mobilized around those issues in a large variety of ways." (Schudson, 1998, p. 310). Broadcasting works well for this type of citizenship because it offers headlines, and that is consistent with monitoring. People should still be taught about civics and being informed, but the point is this: stop beating ourselves up over an ideal that is impossible to attain, and work at fixing the injustices within our democracy in a way that works.

John Zaller and Doris Graber have used Schudson's work to study how the media does its job of providing information. While they both agree that media cannot live up the standards placed on it within the informed citizen model, there are subtle differences between the two.

Graber claims to be a member of the group that holds to the view that democracy can flourish quite well without the media providing full information (2003b). She argues this point by providing a critique on the assumptions under girding criticism of poor media coverage. The four assumptions: 1) provide a forum for discussions on conflicting ideas, 2) provide for a marketplace of ideas through public opinion, 3) serve as eyes and ears for the public on things political, and 4) act as public watchdog. Graber not only argues against each assumption but also provides research to suggest either the assumption does not hold up to reality or that there is not strong support either way (2003a).

Zaller (2003) argues that because the average citizen cannot live with the demands of the Full News standard, a Burglar Alarm standard is far more realistic. The "full news" standard is what is required in an informed citizen paradigm as outlined by Schudson. In order to evaluate his proposed new standard of burglar alarm news, he suggests three criteria: 1) informational needs of self-governance, 2) feasibility (is this type of news coverage doable), and 3) critical potential (can the news standard be improved). After presenting his case for the new standard he evaluates how burglar alarm news does against his previously outlined criteria. The bottom line is that burglar alarm news is more of what is being done currently, and is consistent with the needs of the monitorial citizen.

Good information leading to good policy simply cannot be held to in a complex world. The role of information does continue to be important in the policy process, specifically within decision-making. Before analysis can be conducted on the FCC's third biennial ownership

review, it is important to have a basic knowledge base on media ownership and FCC rules regulating ownership.

2.4. Federal Communication Commission Media Ownership Rule

The policy goals throughout the third biennial review have been clearly stated: to promote diversity, competition, and localism fulfilling the public interest obligations. In passing the Telecommunications Act of 1996, Congress mandated the FCC review its broadcast ownership rules every two years to "determine whether any of such rules are necessary in the public interest as a result of competition." (Section 202(h)). Critical to answering the research questions posed in this paper, is an understanding of the Federal Communication Commission (FCC), public interest mandate, and studies that have been conducted regarding issues of content diversity, competition, and localism.

The Radio Act of 1927, besides establishing the Federal Radio Commission, determined that radio broadcasters should be licensed to operate in "the public interest, convenience, and necessity." On February 6, 2001, newly appointed Federal Communications Commission (the successor of the Federal Radio Commission) Chairman, Michael Powell gave his first press conference. When asked what he thought serving the public interest meant, he responded that it was difficult to define and did not do so. One could possibly think that in an almost seventy-five year history of broadcasting there would be a basic definition of what it means to serve the public interest.

Press reports from the New York Times interpreted the February 6, 2001 press conference as partisan politics. "Signaling a marked departure from his Clinton administration predecessors, the new Republican-appointed chairman of the Federal Communications

Commission voiced skepticism today about a wide array of regulations affecting broadcasters, telephone companies, cable operators and Internet service providers." (Labaton, 2001). Partisan politics, of course, is nothing new to public administration, but in this case, the perception is that if you are a republican, the public interest mandate is not quite clear whereas if you are a democrat, it is a bit clearer.

The reality is that the insertion of this phrase was purposely made loose allowing for various interpretations. Senator Clarence Dill (D-WA) suggested this phrase in order to encourage investment in the new technology of radio (Aufderheide, 1999). The thinking apparently was that if the federal government placed this mandate on the new industry it would show a commitment encouraging private sector investment.

2.4.1. Background of Media Ownership Rule

Throughout the years, in spite of the designed "looseness" and partisan approaches, debate has ensued regarding public interest. In recent years, the debate has been renewed thanks to the passage of the most sweeping legislation since the Radio Act of 1927 and 1934. The Telecommunications Act of 1996, signed into law by President Clinton, contained significant deregulatory policies. Perhaps the most significant area of deregulation occurred with the lifting of radio ownership restrictions.

Before the Act of 1996, FCC regulation was based on a couple of principles: first, is the scarcity principle. In the forming of the Radio Act of 1927, it was determined that the "ether" or known today as the airwaves were a limited commodity. It is simply not possible for everyone who wishes to broadcast to be able to do so. As has been the case throughout the history of government when scarcity is at issue, governmental regulation occurs. When regulation occurs,

it is done so with the belief that regulation is necessary to serve and protect all of society. That same kind of thinking led to regulating how many broadcast stations a single entity could own. This policy was based not only on scarcity, but also on the idea that diversity of content would occur with a diverse ownership base.

With the passage of the Act of 1996, a buying frenzy has occurred which has led to one company, Clear Channel Communications, owning 1,200 radio stations across the country. This consolidation has prompted much discussion and some research on how the public interest is being served.

Serving the public interest is not limited to broadcasters, but as has been mentioned, has been a part of public administration for a long time. By exploring the nature of public interest from a public administrative perspective, my desire is to learn something that could contribute to this debate in the form of a definition or new policies.

2.4.1.1. History of Public Interest

Public interest discussion can generally be placed into two major categories: economic considerations and social welfare considerations. In the background chapter of her book, Communications Policy and the Public Interest, Patricia Aufderheide (1999) gets to what has been considered the heart of public interest for broadcasting narrowly, and public administration generally. Broadcasting policy has tended to define public interest as an economic factor. It is the idea that the government determines policy to protect private capitalistic interests balanced against the public interests.

This, of course, is no easy task. This is best illustrated by the story Glendon Schubert (1960) tells regarding Eisenhower nominee for the Secretary of Defense, Charles Erwin Wilson. Because he held a large amount of General Motors stock, he was questioned regarding potential

conflict of interest between the Defense Department and General Motors. His reply, ". . . for years I thought what was good for the country was good for General Motors, and vice versa." (p. 5). A misquote led to the mythical quote, "What is good for General Motors is good for the United States."

Michael Hantke-Domas (2003) argues that economic public interest theory has roots in law, politics, and academia. From law, he has traced it to the work of Lord Matthew Hale, *The Portibus Maris* (1787). Lord Hale argued that if there was only one public wharf in a port, it must charge in a manner that is "reasonable" and "moderate". ". . . Lord Hale concluded that if a wharf, crane, or other facilities enjoyed a monopolic activity licensed or chartered by the King, then they were affected with a public interest and, consequently, the business ceased to be *juris privati* only to become *juris publici*." (Hantke-Domas, p. 166).

Within the legal realm, Lord Hale's public interest generally became associated with just pricing. The obvious problem is what is meant by a just or reasonable price? The Supreme Court wrestled with the public interest definition in a couple of cases around the turn of the twentieth century. Most notably was how the court defined the phrase 'affected with a public interest' in Nebbia v. New York. The case dealt with a grocer who failed to follow fixed pricing by the New York Milk Control Board in 1933. "Justice Roberts . . . stated that the Supreme Court tradition recognized that government inherently has an unquestionable power to promote general welfare." (Hantke-Domas, p. 172). The major guiding principle for the government's power to promote general welfare is due process of law.

Whereas in legal proceedings, public interest has been used to solve controversies on regulation, politicians have used it to create regulations. The vagueness has been as much a part of the political process as the legal process.

The Progressive Era (1890-1917) in American history saw the First World War and significant capitalization with less than good results. Significant levels of immigration due to the war and economic growth created big cities with a host of problems: poverty, poor sanitary and health conditions, lack of education to name a few. New legislation like the Interstate Commerce Act, the Sherman Act, and the Hepburn Act were all designed to limit abuses by the private sector.

The New Deal Era (1933-1938) brought continued legislation but different from the Progressive Era. Because of the Great Depression, the National Industrial Recovery Act (NIRA) helped, along with a relaxation of anti-trust laws, to allow self-regulation of industries with government oversight. Though this regulation was later determined to be unconstitutional, it set the tone for the private sector to create wealth but with a social responsibility for public service.

According to Hantke-Domas, academics begin linking regulation and public in research. Their interest was in part due to political regulation occurring in both the Progressive Era and the New Deal. During this period up through the 1960s and 1970s, research focused on economic stability. Beginning in the 60s and 70s, research and regulation focused on protecting the consumer. "This new focus suggested that regulation was a pervasive intrusion into business activities since its aim was to target production processes." (p. 180). This new research began to articulate the assumptions of an economic regulatory theory of the public interest. The two assumptions, written by Richard Posner in 1974 were: "(a) that markets were prone to fail if left alone and (b) that the transaction cost of government regulation was zero. Thus, market imperfection justified regulation without any cost." (p. 181). He later criticized his work and these assumptions arguing from empirical evidence that regulation performed poorly. Nevertheless, he was not ready to toss out the economic regulatory theory of the public interest.

Another group of scholars began writing of these theories taking the research to another level by arguing that public interest regulatory theory is really welfare economics. The weakness of their work, according to Hantke-Domas, was no attribution to the assumptions of their work.

A group identified as being from the Public Choice School conducted research that showed empirically that protection of the public interest did not occur, but what was protected were the interests of those special interest groups advocating certain policies. ". . . the only evidence academics have now, thanks to Public Choice scholars, is that declared political goals based on public interest do not always coincide with the actuality of the policy." (p. 187).

Figure 1 outlines the basic argument of economic public interest regulation:

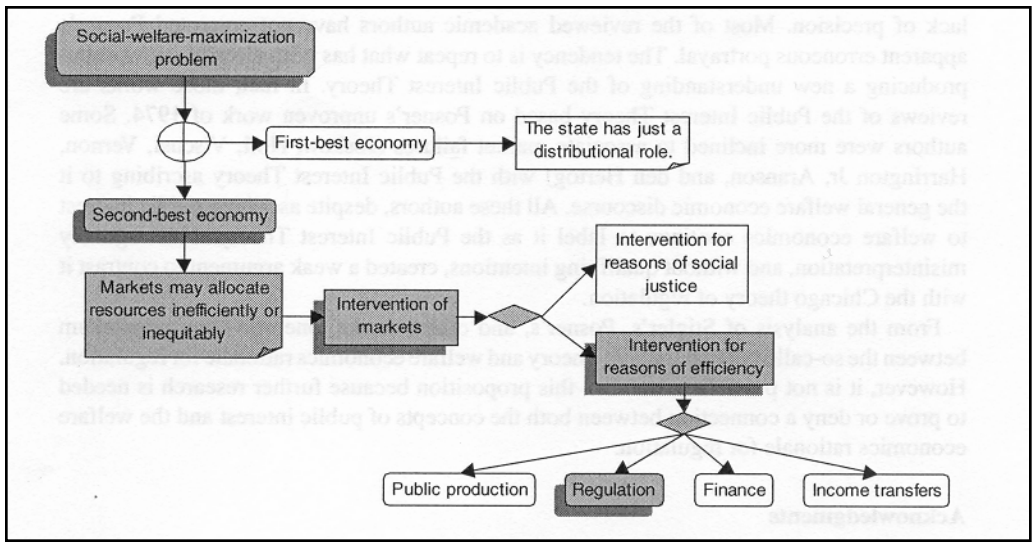


Figure 1: Source Hantke-Domas, 2003

Hantke-Domas' conclusion is quite simple: "After reviewing the history of the concept of public interest in law, politics, and academia, and without finding any source constructing a theory of regulation based on public interest, it is possible to argue that the Public Interest Theory is not a theory." (p. 188).

That which makes his conclusion questionable is not the mixed empirical evidence regarding regulation, but the lack of attribution to a source for a Public Interest Theory.

Certainly, the lack of a single source is problematic, but enough to conclude there is no theory? Suffice it to say there is enough evidence, both in the lack of theories and empirical evidence to question not the theory's existence, but its validity. Early studies of the effects of the Act of 1996 have focused more on content because of changing economic structure and not as much on direct economic factors such as the effect of consolidation on advertising revenues.

Pendleton Herring (1936) argues the concept of public interest from a broader perspective. While acknowledging the need for regulation in economic concerns, he alludes to a wider social concern. "The 'general welfare' is no longer regarded as a by-product inevitably ensuing from the profitable operation of the competitive system. This means that the public interest cannot be left to chance but must be formulated in concrete terms." (p. 4). His concern was that special interest groups have always pressured public bureaucrats for legislation that benefits them economically, but potentially can hurt others not only economically but also in their general well-being. These social concerns are the same concerns expressed by the framers of the constitution when trying to determine how to protect minority groups from the "tyranny of the majority".

Aufderheide (1999) additionally argues that communication policy enters into social welfare concerns as well as economic concern. Traditionally, social welfare policies have concerned themselves with protecting the weak and underrepresented minorities. These kinds of arguments relate directly to the nature of democracy.

Perhaps no one work has done a better job of providing oversight regarding the nature of arguments regarding the social welfare aspect of public interest than Glendon Schubert in his book The Public Interest, (1960). It is the notion of responsibility Schubert is most concerned with. Schubert is attempting to discover a theory of public interest. He argues this issue comes

down to government responsibility, or who is responsible? Is it the public that is at the top of the order with the bureaucrats at the bottom doing the will of the people, or is the executive determining what is in the best interest of the public? "What is conspicuously lacking is what might be called "middle-level" theory, specific enough to provide guiding norms for particular decisions and yet sufficiently general to be applicable to a wide variety of substantive questions and decision-making situations." (p. 11).

He also mentions two major lines of thought: universalists and particularists. Those who hold to a universal position argue for the common good and broad guidelines, while those who argue for particulars argue for more power given to various groups. To proceed from this point is not sufficient. Further analysis must be done. In analyzing the issue, Schubert arrives at five actors involved in the public interest debate:

1. Constituency (the public, political parties, interest groups)
2. Congress
3. The Presidency
4. Administrators
5. The Judiciary

He further identifies three general groups of theories: rationalists, idealists, and realists. Schubert uses the five actors in each of the theories to complete his analysis.

2.4.1.2. Rationalist Theory

According to Schubert, Rationalists are positivists who believe the public interest is found in majority politics. To determine the public interest, put it to the vote. In other words, the public interest is what interests the public. A second Rationalist approach is the "Madison Avenue" concept of the public interest. This view places the emphasis on public relations and polling of the public.

Within Congress, there are two views as well. The first view, Anglophile Rationalists argue commitment is to party affiliation, not the constituents. In the second view, the Popular Rationalist, believe a Congresswoman should follow the will of her constituents, and no other.

As to the President, the views vary along the lines of a strong president who imposes his will versus being a leader who follows/leads the party line. Administrators to a Realist fit into two different camps. One, coming from organizational theory, places administrators, as the doers of congressional will. The second camp comes because of dissatisfaction with congressional oversight. This camp says that administrators ought to have the judicial oversight when it comes to the legality of their activities.

Finally, those who are Legal Rationalists believe in the law being the ultimate test of what is in the public interest. However, as discussed in Hantke-Domas, there are certain ambiguities inherent in this view as well. Schubert concludes his discussion with this, "Rationalist theory postulates a theocracy with a priesthood of the robe; and the only test for the validity of the public interest it defines is the willingness of the investigator to subscribe to the articles of faith." (p. 78).

2.4.1.3. Idealist Theory

"The Idealists are social engineers." (Schubert, 1960, p. 79). This is really the classic democratic debate regarding elitist versus popular rule. Madison is often given credit for espousing a strong representative form of government. "Madison's express opposition to the dangers of both political parties and interest groups, which he felt could be equally pernicious and enemies of good government, remains the logical (though often unarticulated) premise underlying the position of contemporary Idealist theorists of the public interest." (p. 81). Robert Dahl, a more recent democratic theorist fits in the Idealists mode according to Schubert.

Walter Lippmann (1955) is placed in this category in part because of his commitment to a high moral order that if the right people come together, they would know it and understand it. Lippmann's argument from his book, The Public Philosophy is divided very simply into two major parts: the problem of western society, and the public philosophy. The problem for western culture is that democracy is on a decline because the governed and the governors have their roles confused. "Because of the discrepancy between The People as voters and *The People* as the corporate nation, the voters have no title to consider themselves the proprietors of the commonwealth and to claim that their interests are identical with the public interest." (p. 33).

He illustrates this confusion using World War I and World War II. The seeds of WWII were sown in the initial reluctance of the public to go to war in WWI, then the overwhelming public support for war that brought about post-war policies that Germany ultimately did not buy into. This led to WWII, which again, Americans hesitated to move towards, and then only because of Pearl harbor public opinion changed again. This constant shifting of opinion is because we have not bought into the public philosophy. "Put this way, we can say, I suggest, that the public interest may be presumed to be what men would choose if they saw clearly, thought rationally, acted disinterestedly and benevolently." (p. 42). Lippmann appeals ultimately to a higher order – God and the promise of heaven for the basis of his public philosophy.

When it comes to Congress, Schubert argues, the Idealist politician does not listen to her constituents, but rather her own conscience knowing what is good for all the people. "After all, the job of the legislator, according to the Idealists, is not to give the people what they want; it is, rather, to let the people have what will be good for them." (p. 95). The view of the Presidency is in many ways the 20th century view. A man who is a great, heroic leader, who rises above all to invoke the public good upon all; this is the view for those who belief in an Idealists presidency.

The role of the bureaucrat and judge has a similar role to the others. It is largely based on natural law in determining what is best for those served.

2.4.1.4. Realist Theory

The Realists have no idealistic notions nor do they believe rationalism solves the problem. The key is the multiple points in which the government interacts with the public. These multiple points enable politicians and bureaucrats to continuously balance the various needs. When it comes to the constituency, those holding a Realist position claim that the public will and public interest are myths. Part of the argument is that when people are allowed a voice what it really becomes is a collection of special interests, not the public.

John Dewey is an example of one who fits into this group. "The essential need is the improvement of the methods and conditions of debate, discussion, and persuasion. That is the problem of the public." (Dewey, p. 208 as quoted in Schubert, p. 146). He arrives at this conclusion in his book The Public and Its Problems (1927) by building his case step by step. He begins with his definition of a good state, "namely, the degree of organization of the public which is attained, and the degree in which its officers are so constituted as to perform their function of caring for public interests." (p. 33). Further, by focusing on the consequences the state will look different from public to public because the public is always different. It is at this beginning Dewey proposes a method of social inquiry called Pragmatism that proceeds based on observable acts and their results.

Dewey explores the concept of the state and the public, and the problems that have resulted from a social inquiry that is scientific. By focusing on consequences, he argues for a look at history that explains democracy. The problem with a scientific viewpoint is the public becomes a collection of individuals. "Henceforth moral and political individualism could appeal

to “scientific” warrant for its tenets and employ a vocabulary made current by psychology: - although in fact the psychology appealed to as its scientific foundation was its own offspring.” (p. 88-89). He concludes a chapter with despair, “The democratic public is still largely inchoate and unorganized.” (p. 109)

The answer to righting a democracy that has sailed off-course, according to Dewey, is communication. By employing a pragmatic inquiry to consequences, Dewey considers the new age of technology and mass production. The result of these changes has produced too many publics. Too many publics break down the strength of democracy – the creation of community. Dewey believes there is a need for a Great Community. “Till the Great Society is converted into a Great Community, the Public will remain in eclipse. Communication can alone create a great community. Our Babel is not one of tongues but of the signs and symbols without which shared experience is impossible.” (p. 142).

It is at this point Dewey reveals his view of epistemology. Dewey’s epistemology is related to the need for individuals to be competent to engage in political affairs. He argues that in “pure science”, the human element is removed, and that knowledge is useless. The problem for Dewey is that when democracy is focused on facts derived from science, the public is excluded from the process. “For most men, save the scientific workers, science is a mystery in the hands of initiates, who have become adept in virtue of following ritualistic ceremonies from which the profane herd is excluded.” (p. 164). The key is “freedom of social inquiry and of distribution of its conclusions.” (p. 166). “Democracy will come into its own, for democracy is a name for a life of free and enriching communion. . . . It will have its consummation when free social inquiry is indissolubly wedded to the art of full and moving communication.” (p. 184).

Realists, according to Schubert, are not concerned regarding special interest groups getting to and affecting Congressman. This, they believe, is part of what determines public interest. Final decisions are not the result of policy alternatives that are decided on rationally, but rather multiple voices and compromises. The presidential role is similar to the congressional role, that of accommodating the myriad voices. The decision made reflects the public interest. Pendleton Herring's book Public Administration and the Public Interest reflects the Realist view of administrators.

> We conclude, then, that the purpose of the democratic state is the free reconciliation of group interests and that the attainment of this end necessitates the development of a great administrative machine. Thus, paradoxical as it may seem to Jeffersonian Democrats, the liberal democratic state must be sustained by a huge bureaucracy. This viewpoint, however, has not won general acceptance. (p. 9).

In this book, Herring looks to the relationship between federal agencies and the external groups they serve. He looks not at the internal aspects of public administration (personnel recruitment, administrative organization, etc.) but external aspects. This statement makes his work appear to be consistent with those advocating a systems approach to organizations. Schubert does in fact, mention Herbert Simon in his section on Realists as another example of Realist theory. Simon is considered a key member of a systems approach to public administration, though because of his theory of bounded rationality, is considered a rationalist.

The emphasis for legal Realists is on due process and the "bureaucratization" of the judicial process. This is a similar position as outlined by Hantke-Domas in the Nebbia v. New York Supreme Court case in which the court decided the government could determine public interest economic regulation as long as one's due process rights were observed.

After studying relevant data and theories, Schubert concludes there is no theory of public interest. "Any systematic typology may have utility for analytical purposes, but no matter how the literature is classified and the data are compared, no systematic body of 'public-interest theory' appears extant." He does offer what a theory should include. "A theory of the public interest in governmental decision-making ought to describe a relationship between concepts of the public interest and official behavior in such terms that it might be possible to attempt to validate empirically hypotheses concerning the relationship." (p. 220).

As one reads Schubert's work organizing the body of literature written on public interest, it reads closely to works on democratic theory. Yet, there are aspects of social welfare addressed in democratic theory not mentioned in Schubert's work that may provide the ability to empirically validate the concept of public interest.

Recent scholars while discussing democracy, not public interest per se, have focused on the meaning of the public. As previously discussed, Jürgen Habermas is one who has added to this discussion by suggesting the notion of the Public Sphere.

The public sphere is defined as ". . . a domain of our social life in which such a thing as public opinion can be formed." (Habermas, 1984, p. 231). Private individuals form a public when coming together not as a part of any legal, professional, or governmental obligation, but rather as free people to discuss matters of common interest.

Habermas is arguing for one public sphere in which all people come together to discuss and decide matters significant to all people. One concern for democracy theorists has been whether this can happen with a nation as big as the United States. The founding fathers wrote in the constitution representation in part because they did not believe democracy could work in a large, diverse country.

The inclusion of the public sphere while not directly defining public interest does place importance on the public in determining its well being. The question Habermas does not answer and is left over from Schubert and others, is the public one or many? Moreover, if it is many, how does a government determine what is in the best interest of all its citizens?

Consequently, debate does occur regarding the size of the public sphere. Using Habermas' lifeworld and systems approach, Lewis A. Friedland (2001) proposes a structure to aid in research that explores the relationship of communication, community and democracy. He argues that communities, rather than the public sphere lie at the intersection of system and lifeworld. He is not concerned primarily with publics of citizens: the problem of what sort of rule we should have, but rather the communities in which they live: what kind of selves are needed.

Because there exists concern whether communities exist today as compared to the perceived normative rural community, Friedland looks at the concept of community sociologically. His conclusion simply put: communities are changing and becoming more complex. Since he is a journalism professor, he also views the issue from a communication perspective arguing communities are perhaps best viewed as containing a number of social networks. He comes back to Habermas in order to take communicative action and develop a "communicatively integrated community" framework that looks at six different integrative levels: system, macro, macro-meso, meso, meso-micro, and micro across location, structure, medium of integration, medium of communication and form of symbolic integration. His final step is to look at communities as communication ecology. The advantage, according to Friedland is that it allows placing specific communication media within the framework. As a result, he places broadcasting at the macro level (metropolitan location). Broadcasting also

connects with the system level because of national network affiliations, or production of content elsewhere (music is produced at a systems level).

The strength of Friedland's work is not only the development of a research framework, but the fleshing out of Habermas' communicative action. To a lesser extent, he is also dealing with Dewey's desire for an organized public by integrating communicative action with network structures of community to provide specificity of how an organized public could look. He is not disagreeing with either Habermas or Dewey but is arguing for more specific ways to viewing the public. Clearly, there is a need for more research exploring the relationship between broadcasting, the public, and FCC policy.

The problem of defining the public interest appears to be the same whether looking at the issue economically or from a social welfare perspective: while it is discussed and perhaps theorized, it has yet to be empirically validated or in attempting to do so has produced mixed results. Perhaps the real issue is not defining it from a public administration perspective, but rather defining it as a part of answering the question what do we want in a democratic theory? The issues of public interest as outlined in this paper come down to public versus private economic interests, elite governance versus the public, and the voice of the underrepresented; these are all issues addressed in democratic theory.

The debate within broadcasting that has resurfaced due to the Act of 1996 is an important discussion and must continue because it does get to the heart of what it means to be a democracy. Aufderheide is concerned the Act of 1996 has not solved any dilemmas regarding serving the public interest, but demands ever increasing discussion. She is concerned there are limited social places for these discussions (as evidenced by the recent public outcry over the lack of regulatory hearings by the FCC over more deregulation.) She likens this to the problem of the commons,

but calls it the "protected electronic commons", and says it has been "quashed, by corporations aspiring to be at once the shapers of culture and the delivery systems of it." (p. 106). "This perspective on the inevitable interrelationships between civic involvement, government regulation, and new communications technology opportunities opens the door for a stakeholders' debate on the evolving meaning of the public interest." (p. 108).

Herring in exploring the relation between bureaucracies and special interests within the FCC, argues that in attempting to be neutral to special interests, they have given special standing to advertisers, and in fact, argue that is in the public interest. "This policy is the result of the commission's worship of conventionality and its cautious, uncertain, and nugatory attitude." (p. 171). His conclusion is that the environment of economic influences has clearly influenced the FCC. He suggests a couple of things:

1. Government ownership and operation like the BBC.
2. By law, allow a fixed percentage of radio facilities for nonprofit programs.
    a. First, by licensing nonprofit stations
    b. Require, commercial stations to give a certain ratio of time to nonprofit programs

Since neither of these suggestions would fit well in the United States, he argues there must be a middle ground.

We are still looking for that middle ground. Debate among the public must continue as well as research by economists, democratic theorists, and policy advocates. The economic regulatory theory of public interest is perhaps the "easiest" to research because it deals with economic data. Yet, early research measuring changes in radio since the Act of 1996 have not proven damage to the public interest. But then again, how does one really know without a solid definition of what the public interest is? The mandate of licensed broadcasters to serve the

public interest appears to be more related to the social welfare aspect of public interest, but also is difficult to measure.

The importance of a definition is stated by Pendleton Herring. "Either the federal administration must be sufficiently strengthened to attempt its own positive interpretation of the public interest in accordance with the general policy indicated by Congress, or it will continue to be dominated by the private interests that are able to influence officials and threaten Congressmen." (p. 178).

2.4.2. Policy Goals: Competition, Diversity, and Localism

In 1952, economist Peter Steiner proposed a key economic model centered on the concept of public interest. The focus of this classic work is program differentiation as a means of measuring how well competition works in radio broadcasting. He acknowledges that questions of economics also involve "social judgments" with respect to the issue of public interest. His basic model is stated well:

> The structure of such a system is familiar: stations and networks, organized for profit (operating, however, subject to federal licensing and surveillance), sell a product (time) to customers (advertisers or their agents), in accordance with rate schedules that are privately established. Since to be valuable the time of stations must be a means of communication to listeners (who are, of course, the potential customers of the products advertised), some inducement to listening must be offered. This inducement is the program, which is thus only indirectly the product of the industry. The public pays no direct price for this program. Listening is voluntary, and the acquisition of listeners is a problem in program differentiation. (p. 195)

Once Steiner defines this basic model, he explores assumptions affecting program diversity and diversity over time. He looks at the issue of program duplication (obviously if a program is duplicated, diversity decreases), and through economic modeling determines that "the greater the disparity in size among the various listener groups, the sooner duplication of any given order will set in." (p. 201). This is based on the notion that splitting an audience in half with duplicate

programming is still a larger audience than an audience that would be attracted to new programming. His conclusion is twofold: 1) program diversity will occur as radio stations increase, and 2) a monopoly would provide the greatest program diversity since the owner would want to capture the entire audience.

Key to this issue is how you define program types. Steiner's definition, "Two or more programs may be defined as of the same type if listeners to any one of them would always prefer listening to one of the others to not listening if the particular program of their choice was discontinued." (p. 202) Since broadcasters make programming decisions based on listener's preferences, it is assumed that the broadcaster's perception of the size and preferences of the audience will determine the amount of duplication.

The significance of this study is two-fold. First, the basic model has been one that all researchers studying this problem have used as a foundation for further study. This is in part because his model appears to be inclusive of both economic needs of the owner and advertiser, and how competition can serve the public interest. Second, Steiner lays the groundwork for explaining programming diversity in both a competitive and monopolistic environment.

Additional studies since the Act of 1996 have certainly revisited Steiner, but sought different methods of determining program differentiation. One of the weaknesses of Steiner's work was the time in which he wrote. At that point, radio was more like television is today. There were definite program types; i.e., soap operas, music programs, comedy programs, etc. It was easier to determine program diversity, was the program a soap opera or music show? Since the Act of 1996, the challenge has been to determine how to measure program diversity especially within music radio.

Rogers and Woodbury (1996) looked at programming diversity before the Telecommunications Act of 1996 thus not having the additional burden of ownership issues. The advantage is that it provides a look empirically at diversity including market structural factors without ownership being one variable.

The first relationship tested is consistent with the work of Steiner and Spence (1972) who both postulated that as the number of radio stations increases, diversity increases. Another relationship looked at in this study is the relationship between total audience size (listenership) and diversity; in other words, does increasing diversity (using increasing formats) lead to more listeners? The third relationship tested is between the audience of a given format and the number of stations in that format. The last relationship explored whether consumers have a preference for given stations in a given format. This last relationship implies that if there is no preference, the FCC could mandate formats for each market in order to ensure diversity.

The statistical analysis found the number of stations coefficient both positive and significant indicating that an increase in the number of formats is associated with a greater number of stations. Though significant, the percentage increase is very slight; a ten percent increase in the number of stations leads to a 1.88 percent increase in the number of formats.

With regard to the second relationship, listenership, the coefficient of the number of formats is both positive and statistically significant. This suggests that a ten percent increase in formats is related to a 2.25 percent increase in listenership.

The last two relationships explored provided no significant results indicating consumers do not appear to value additional stations within a format, but clearly prefer some within format stations to others.

Though this research seems to support Steiner's theory that more stations lead to more diversity, the percentage increase in formats is very slight. At the same time, the more formats that exist, the larger the audience becomes.

Drushel's (1998) major focus is the market structure of the top 50 radio markets in light of the buying frenzy after the Act of 1996. Drushel develops three sets of hypothesis around the following areas: 1) is ownership concentration increasing because of the Act of 1996?, 2) based on Steiner's work, is there increased program diversity?, and 3) has advertising revenue increased? He limited himself to the top fifty because data were more readily available and those markets have larger advertising revenue that should make changes in market structure more obvious.

To investigate ownership concentration Drushel used the Hirschman-Herfindahl Index (HHI); a tool used by antitrust investigators. The results show clearly that concentration has increased with the HHI nearly doubling from spring 1992 to spring 1997.

Drushel's second set of hypotheses dealt with program diversity. The primary problem he faced was how to determine distinctions between specialized, niche formats that permeate radio today. Instead of flattening out formats according to music similarities, he chose to rely on the descriptions provided by each station. He formulated an index by taking the total number of formats divided by the number of stations in the market. The index showed a slight, but statistically significant increase. The link he was looking for, between concentration and program diversity, however, did not show a significant connection.

The final set of hypotheses looked at advertising revenues. He retrieved annual revenue data from BIA Publications (aware not all privately held firms are obligated to report). Because revenue is not a simple number but affected by market forces, he devised an index from market

wide radio station revenues divided by retail sales. This index showed a market wide average increase of 6.2% from spring 1992 to spring 1997, which is statistically significant. When looking at the statistical relationship between this index and the HHI numbers, the relationship was not significant. It did however, show a slight association.

Berry and Waldfogel (1999) look at the issue from the perspective of free entry and how that affects product variety. The strength of their study is the extent to which they defined product or programming diversity. They used data from all commercial stations in 243 markets in 1993 and 1997; that totaled 5,111 in 1993 and 5, 869 in 1997. Secondly, they did not take radio self-description of formats but devised a system based on information from both Arbitron and Duncan's *American Radio*. Using this data they concluded concentration has occurred which reduces free entry into markets. This reduction in free entry has the potential to increase advertising prices (though their study did not look directly at this issue).

In order to determine how concentration has affected programming diversity, the authors regressed change in diversity measures on changes in the number of owners and population. They secondly, regressed change in diversity on changes in the number of stations. The change in ownership was statistically significant on the change of formats. Like Rogers and Woodbury's study, the increase in programming diversity is very slight, approximately ten percent. Their second conclusion is that with increased concentration has come increased programming variety.

In another attempt to determine market diversity in light of the Act of 1996, the Alexander, Brown, and Williams (2002) devised their own measure of music diversity. This measure looks at top 10 songs in the top markets (which ones are not specified) as determined by Radio and Records. The two lists are from March 1996, and March 2001. The measure of

diversity they created is a new measure they call a distance measure. The distance function measures the number of unique songs between radio stations. In essence, the less duplication of songs between two radio stations, the distance became greater resulting in a more diverse playlist.

The bottom line is that the average distance between radio station top ten lists declined over the five year period for nine out of twelve radio formats. They also looked at pairs of similar formats that showed statistically significant increases in distance in seven of the thirteen pairs examined.

They next took the distance function and used it in a panel regression to look for causes in diversity. They specifically looked for market structure changes. The coefficients of the regression indicate song diversity has declined by 4%. Though significantly significant, there is no indication ownership concentration affects playlist diversity.

Within this recent literature, there is no doubt ownership concentration has occurred since the Act of 1996. The debate centers on how to define program or content diversity, and whether ownership concentration has decreased this diversity.

2.5. Conclusion

The process of policy analysis and policymaking needs newer methodologies consistent with the non-linearity and complexity of the process. Knowledge acquisition and utilization on the part of policy elites remains elusive and must be studied. Additionally, the FCC's Third Biennial Review on Media Ownership provides a good case study for inquiry into knowledge acquisition and utilization as well as employing a methodology that has the potential to discover socially constructed knowledge.

3. Methodology

It is worth reiterating: the goal of this research is to determine what role information plays within decision-making among policy elites during the policymaking process. The literature review provides insight into the problem being studied. It continues to be a given that information is vital to the policy process. A disconnect however, is created by the nature of positivism used within policymaking. The desire for the perfect, or at a minimum, a good solution, allows for values to be separated from fact, an insistence on a linear process, and reliance on knowledge production from experts. Additionally, the literature helps to provide insight into both knowledge acquisition and utilization; both of which play a significant role in the policymaking process. Applying these ideas from the literature to the FCC's Third Biennial Review focusing on media ownership provides a unique policy problem to study. This chapter connects the literature review to the problem by providing the research questions, the design, and methods of analysis.

3.1. Research Questions

This study's genesis is Chairman Powell's desire for an empirically based media ownership policy. While that policy goal may sound good within a positivist framework, the literature review raises significant issues which help to provide a context in which this study will occur.

First, being able to empirically assess ownership deregulation on policy goals and outcomes is difficult. A positivist approach may not be the means to gather knowledge in and knowledge of. A need exists to engage a policy analysis that provides a hermeneutic to interpret the growing complexity of policy problems. The literature points to limitations of making policy

decisions based on empiricism, especially social science research. The stated policy goals of FCC media ownership policy are localism, diversity, and competition. As has been discussed, it may be possible to empirically test the goal of competition, but as the literature shows, attempting to define and measure diversity and localism have proven to be extremely difficult. By employing a methodology in line with social construction holds out the potential for emerging knowledge.

Second, the methodology employed in this study, network text analysis (NTA) and social network analysis (SNA), is consistent with social construction and Habermas' hermeneutic. Both NTA and SNA have the potential to reveal knowledge maps through emerging concepts; concepts that come from the text rather than brought to the text by the researcher. The FCC has been very careful to make all documentation related to this biennial review available on-line. Consequently, all the information used in the decision-making process, including each FCC commissioner's statement on the decision, is in text form, and can be analyzed using the hermeneutic used in NTA and SNA.

Third, the Third Biennial Review attracted much public attention providing a form of participatory democracy. The information gathered from public input had the potential to provide an additional perspective not provided by the other sources of information. In other words, much of the information appears to be from a certain perspective; namely, that of the owners. Public comments provide the possibility of the perspective of consumers of media; a very different target audience with different knowledge. There could be valuable information available to the policymakers even if some of the information may be non-empirical. By employing NTA and SNA, there is the possibility that non-empirical data may surface.

Fourth, this study provides an interesting opportunity to explore how the media covers its own regulatory body and perhaps policy issues in general. While Barber (1984) and others view the media as essential for participatory democracy, it is necessary for this information to be disseminated in a timely and thorough fashion. If Graber (1991, 2003) and Zaller (2003) are correct that the media does a good job of providing news for the monitorial citizen, and given the growing complexity of the policymaking process, does the concept of the monitorial citizen apply to policy elites? Given the use of FCC policy for this study, it is additionally intriguing to look at how media are used as an information source. Emerging mental maps within the policy process have the potential to reveal the role media plays in communicating policy information.

The four preceding connections between the information literature and assessing FCC media ownership policy lead to the following three questions begin asked in this study:

> Q1: How empirical is the FCC media ownership policy in its basis?
> Q2: How ideological is the FCC media ownership policy in its basis?
> Q3: How much do media reports contribute to the FCC media ownership policy in its basis?

Given the interpretive nature of all text, definitions related to the research questions are necessary. First, the use of the word *empirical* is taken directly from Michael Powell's statement, "Rebuilding the factual foundation of the Commission's media ownership regulations is one of my top priorities. . . . Conducting an empirical examination of these types of questions will give us a solid foundation to re-evaluate the way we regulate media companies." (FCC, press release, 2001). Given the nature of knowledge acquisition in this case, the appointment of the Media Ownership Working Group (MOWG), the 12 FCC studies, the few public hearings, and the desire and acceptance of electronically filed comments, it would appear these are the means for building the factual basis and empirical examination. In keeping with Powell's desire, *empirical* appears to be referring primarily to a policy based on the twelve studies.

Second, ideologies need to be defined. The difficulty is in finding a methodology that assists in that defining. That connection will be developed further as the methodology is discussed. Third, *policy elites* refer specifically to the MOWG as well as the five commissioners. Finally, fourth, *media* is defined as mainstream media; the major three broadcast TV networks as well as PBS, commercial radio stations and NPR stations, and major daily newspapers and weeklies.

3.2. Research Design

The idea that good information leads to sound policy simply cannot be sustained in a complex world. The process of policy analysis and policymaking needs newer methodologies consistent with the non-linearity and complexity of the process. The role of information continues to be important in the policy process, specifically within decision-making. Knowledge acquisition and utilization on the part of policy elites remains elusive and must be studied. Additionally the role of the media as an information source among policy elites becomes intriguing.

As mentioned previously, Habermas suggests methodologies that critique societal structures as a text needing interpretation. This study will utilize network textual analysis (NTA) and social network analysis (SNA), hermeneutical tools intended to discover the interactive, relational aspects of knowledge that can help explain the FCC's written policy of the third biennial review. The focus of this study has already been mentioned: what is the role of information in the decision-making process among policy elites? The challenge in this study is to measure the role or function of information in the policy process. The decision-making process is a dynamic and complex process, thus requiring a methodology that can analyze data consistent with the process and consistent with social construction of knowledge and targets.

To discover the basis for decision-making in policy making and policy analysis, it is necessary to discover how that information has been represented as knowledge. Within the Third Biennial Review, knowledge is represented as both written text and citations of studies, comments, and legal rulings. Answering the research questions will be done through text and citation interpretation.

The assumption in textual interpretation is that information gathered in the policy process results in explicit and implicit knowledge in the written policy (Popping, 2003). Textual analysis is consistent with Habermas' hermeneutical approach as well as the focus on social construction of knowledge. The field of knowledge representation is the umbrella under which textual analysis fits and can be divided into two major areas of study: Logical Formalism and Semantic Networks (Popping, 2003). Logical Formalism finds its focus in the study of expert systems (studied in the field of Artificial Intelligence) which include a rule base, a knowledge base, and an inference engine. Semantic Networks contain a number of different fields of study: semiotics, rhetorical analysis, discourse analysis/critical discourse analysis, content analysis, social cartography, knowledge graphs, and network text analysis.

Marya L. Doerfel (1998) takes a slightly different organizing approach from Popping by taking the same concept as semantic networks and referring to them as meaning networks. She breaks meaning networks down into three network types: semantic, interpretation, and attitudinal. Semantic networks in her typology focuses on word frequencies and associations requiring minimal analyst imposition on data. Interpretation networks, she argues, focus on traditional content analysis requiring moderate imposition on data (use of a priori categories). Attitudinal networks are the result of questionnaires requiring maximum analyst imposition as a result of closed-ended perceptual scales.

The consistent thread within the larger discussion of the definition of semantic networks is the goal to make clear the structure of knowledge that is present in text. With that in mind, this study will maintain Popping's definition of semantic networks. Table 2 summarizes the major approaches to semantic networks.

	Purpose/Goal	Coding	Interpretation	Quantitative/Qualitative
Rhetorical Analysis	To understand the rhetorical devices used by authors	None	Using rhetorical devices (ethos, pathos, logos, etc.)	Qualitative
Discourse Analysis	Place analysis in a theoretical framework of communication and discourse.	None	Focuses on both form (structure) and function (societal context) looking for Implied meaning.	Qualitative
Content Analysis	Drawing inferences from a text based on number of incidences of coded words that represents concepts	Develop codebook based on previous steps of theory, conceptualization, and operationalization.	Hand or computer tabulation of incidences of coded words then run through statistical analysis.	Quantitative
Social Cartography	Creating maps for the purpose of comparative studies.	Codes derived from the text.	The researcher's prerogative	Qualitative
Knowledge Graphs	To make clear the structure of knowledge (no different than semantic networks) through comparison.	Codes derived from the text.	Process involving the integration of other authored knowledge graphs for comparison	Qualitative
Network Text Analysis	Discovering a conceptual map based on language as a network with relations between words.	Codes derived from the text.	Using SNA for comparative purposes.	Primarily Quantitative but aided by Qualitative approach.

Table 2: Semantic Network Summary

This study will utilize network text analysis to discover cognitive maps that result from the ties or relations between concepts. The focus of this study has already been stated: what is the role of information in the decision-making process among the policy elites within the FCC? The challenge in this study is to measure the role or function of information in the policy

process. The benefit of mapping as a methodological approach is the ability to compare.

In this study, cognitive maps resulting from both explicit and implicit knowledge (derived from information) can be compared throughout the process in order to illuminate how the information has been used.

Looking to discover and analyze cognitive maps while playing a significant role in answering the research questions will not completely answer the questions. Citation interpretation will also be done from a network perspective. To be more specific, the citation network utilized will be connecting a set of "actors" with a set of "events".[7]

The resulting network data (for both text and citation interpretation) will be analyzed using network textual analysis (NTA) as well as social network analysis (SNA).

3.3. Methodology

3.3.1. Data Collection/Sources of Information

To determine how factual the policy is, a number of items need to be tracked. First are the four major sources of information: the policy itself[8], the twelve commissioned studies, the public record which includes public comments, testimony and studies submitted through public hearings and the comment period, and media reports. All of the information (with the exception of media reports and the court decision) is available on the FCC website[9].

Media reports were gathered through a variety of sources. First, a Lexis-Nexis search for all broadcast and print media reports broadcast/published from October 29, 2001 through June 2003 (the time frame for study and passage of the policy) was conducted. To guarantee that the media reports are exhaustive, the Lexis-Nexis search was enhanced by other sources.

[7] Citation networks will be explained in section 1.3.3, Methods of Analysis.
[8] This analysis while labeled Policy includes the following documents: the Policy, the NPRM, the Commissioners comments, and the Third Court Decision.
[9] See the Appendix for a complete explanation of the process for obtaining the electronically filed public comments.

Specifically sources were cross-checked with a list generated by the American Journalism Review (AJR). AJR had conducted a search of news coverage of the FCC third biennial review. Priority was given to television coverage; local Washington, D.C. news stations, cable news, and networks, and to National Public Radio local stations. Print media coverage comes primarily from The New York Times, The Washington Post, and national weekly magazines[10]. Internet sources were difficult to track given the changing nature of websites, so determination was made through a listing of websites used in Holman's (2005) study.[11] All data are in electronic form.

3.3.2. Processing of Information

As in most textual analysis, the coding of words into concepts is crucial to proper interpretation. A distinction does need to be made regarding semantic network methodologies outlined in Table 2 that utilize coding versus those that do not; also a distinction needs to be made regarding coding that is the result of a theoretical grounding (a priori) versus from the text (emergent). Consequently, the issue most relevant to this research is the distinction of a priori coding (used in content analysis as well as qualitative analysis) versus emergent coding (Stemler, 2001). A secondary issue is that of hand coding versus computer coding.

A fairly typical process of textual analysis that employs coding from a theoretical basis is the one recommended for content analysis by Kimberly Neuendorf (2001):

a. Theory and rationale: determining what content to analyze and determining what theories/research exist; very similar to grounded theory used in qualitative research.
b. Conceptualization decisions: determine variables and concepts that are to be studied.
c. Operationalization measures: taking concepts and applying variables to them that maintain validity.

[10] Because the search was limited through Lexis-Nexis, it resulted in a very small number of magazines.
[11] Holman's study is a look at the role of information technology in public participation in the Third Biennial FCC review. She additionally looks at how advocacy groups used information technology to communicate to their constituents.

d. Coding schemes: develop a codebook with clear definitions of variables and how to apply.
e. Sampling: determine approach to sampling texts
f. Training and initial reliability: the assumption is that others will be coding texts so they must be trained to do it correctly.
g. Coding: involve at least two coders if it is being done manually; computer coding doesn't need this.
h. Final reliability: calculate reliability statistic for each variable.
i. Tabulation and reporting: multiple ways to report analysis.

In keeping with good social science research, this methodology is concerned with both reliability and validity issues (Stemler, 2001, Neuendorf, 2001). This is the crucial issue when evaluating textual interpretation research; do the codes rightly measure the theoretical concepts? Given that network text analysis uses emergent coding and this research will be done via computer software, it is necessary to discuss rationale for these methodological decisions.

Choosing to use emergent coding as opposed to a priori comes down to issues of epistemology as well as the research questions asked. The theoretical section of this research states that a disconnect occurs between policy analysis and policymaking due to primarily a positivist approach to policy sciences. It is further argued for a need for more of a critical theory/constructionist approach. Denzin and Lincoln (1998) make a distinction between critical theory and constructivism (pp. 202-210). The distinction being the extent to which the inquirer is involved in the process. The constructivist inquirer participates with those being studied to obtain agreement on meaning. In light of that distinction, this research falls into the camp of critical theory. The common element between both is illustrated by Thomas A. Schwandt (Denzin and Lincoln, 1998, p. 222), "The constructivist or interpretivist believes that to understand this world of meaning one must interpret it. The inquirer must elucidate the process of meaning construction and clarify what and how meanings are embodied in the language and

actions of social actors." The process of interpretation, whether it comes from critical theory or constructivism, is concerned with the structure of knowledge inherent in text.

The research questions, as has been discussed, deal with knowledge representation and comparisons of cognitive maps for this specific policy. Allowing for emergent coding is more in keeping with this concern. Using network text analysis also appears to be consistent with cognitive storage. Humans store and retrieve knowledge in a networked fashion rather than in a linear fashion. Though writing is more of a linear process, analyzing text from a network text perspective enables the researcher to potentially discover implicit knowledge more in line with cognitive processing. "I would argue that NTA gives you more ways to gain multi-level access to the data. Furthermore, since network text analytic methods are applied, no independence assumption among words in texts are made." (Diesner, 2005, email).

One of the biggest struggles of hand coding text versus automated computer coding is dealing with large data sets. Analyzing the data set of text in the Third Biennial Review would take far too much time if hand coded. The software selected for this coding is AutoMap and UCINET 6; both have been written for NTA and SNA analysis. The benefit of hand coding is the ability to carefully work with the text for consistent, reliable coding (Doerfel, 1998, Stemler, 2001). Research comparing hand coding versus automated computer coding in showing reliability is equal to that of hand coding (King and Lowe, 2003, Diesner, Kumaraguru, Carley, 2005). While more work is needed on this issue before the results can be considered conclusive, the process used by AutoMap[12] is not significantly different than other computer software such as NUD*IST and WordStat. While NUD*IST allows linking of coding to sentences in the text, AutoMap uses multiple windows to compare the text in the various stages of coding so as to determine if a single word or concept is being coded consistently. The bottom line is that

[12] The Appendix provides more detail on the iterative nature of the pre-processing stage of coding.

computer coding enables a researcher to analyze larger data sets. "Computer programs do not get tired, bored, and distracted, and so in the long run the program would certainly outdo any human coder that would be feasible for a researcher to recruit." (King and Lowe, 2003, p. 619).

AutoMap and UCINET 6 will be used to both code and analyze. Both of these software tools will be discussed in the next section.

3.3.3. Methods of Analysis

In determining the role that information plays in the decision-making process, it is important to define what is meant by role. According to Merriam-Webster role is, "a function or part performed especially in a particular operation or process."[13] To recap Simon, Argyris and Lindblom, information leads to knowledge. Knowledge is best understood in its stored form as mental maps (Diesner and Carley, 2004). The function of information is its contribution to the formation of cognitive maps. This study is looking at the function of information throughout the policy process. Written policy as well as the entire policy process is information, according to the categories defined by Graber. There is no part of the process that is void of information and cannot be analyzed via a hermeneutic. By questioning the role of information in the decision-making process, this study is determining what kinds of information and cognitive maps are evident in the written policy compared to studies, the public record, and media sources. The three additional questions look at its empirical basis, and its cognitive mapping. Table 3 outlines the research questions, information source, methodology and analysis, and the tools used.

The first phase of analysis will address the first question: how empirical[14] is the FCC media ownership policy in its basis? The citation network will analyze which sources of information are most influential in arguing the policy. In the sociology of science, studies have

[13] http://www.merriam-webster.com/
[14] See section 3.4.1 for definitions relevant to this section.

been done looking at the influence of journal articles by looking at who has been cited by whom by using Social Network Analysis (SNA) (Noma, 1982, Michaelson, 1993, Wasserman and Faust, 1994). Sources cited in all information will be tracked in a matrix, which is the mathematical basis for SNA. The method employed in this analysis is referred to by Noma as the centroid method (another name for SNA). Noma's concern is how to graphically illustrate networks of scientific articles that are either cited in an article or have been cited in other articles. His suggested solution to map this network in multidimensional space is SNA specifically looking for centrality.

Research Question	**Information Source**	**Methodology/ Analysis**	**Tools**
1. Empirical basis/foundation of the policy	• 12 FCC studies • The public record • Media reports • The policy • Commissioner's Statements	Citation network looking for influential empirical information	UCINET
2. Cognitive Maps/Ideological Foundation	• The policy • 12 FCC studies • The public record • Media reports	Network Text Analysis (NTA) • Centrality • Groups/cliques • Roles/equivalence • Hamming Distance between maps	AutoMap to discover cognitive maps, and then UCINET to conduct the social network analysis
3. Media Influence	• The policy • 12 FCC studies • The public record • Media reports	Network Text Analysis (NTA) • Centrality • Groups/cliques • Roles/equivalence • Hamming Distance between maps	AutoMap to discover cognitive maps, and then UCINET to conduct the social network analysis

Table 3: Research Summary

This method is based on the idea that "linked items should be located near each other in a space." (Noma, 1982, p. 44). A key assumption of citation networks and citation analysis is that ". . . an article is substantively similar to articles on its reference list." (Noma, 1982, p. 51). A matrix is used in which the rows are articles that have citing references and the columns are the articles that have been cited. Noma argues this method can be used for any data set in which each item is placed at the center of the items to which it is linked.

Citation networks can also be viewed as two-mode networks or affiliation networks. Wasserman and Faust refer to these types of networks as matrices that consist of a set of actors and a set of events (1994). In this case, the actors are the concepts that emerge from the text of the policy, and the events are the types of citations[15]. Wasserman and Faust acknowledge the methods are not as fully developed for two-mode affiliation networks as they are for single node networks. The focus for two-mode networks is primarily on the visualization of the graph rather than analyzing the networks.

The strength of two-mode networks is that they can either show how the actors and events are related to each other, how events create ties among actors, and how actors create ties among events (Wasserman and Faust, 1994, Polites and Watson, 2008).

There are a number of different ways to view and analyze the data in two-mode graphs. This is accomplished by adding the rows as additional columns and columns as additional rows within the matrix (Hanneman). Another method involves converting the two-mode graph into a one-mode graph. Because this is valued data, the preferred method within UCINET is the minimums method. This method takes a look at two actors at each event and selects the minimum value. "For valued data, the minimums method is essentially saying: the tie between the two actors is equal to the weaker of the ties of the two actors to the event."

[15] See the Appendix for a complete listing of concepts and citation types.

(Hanneman)[16] The advantage of the data in this format is that it is possible to run similar analysis to standard social network analysis.

What is difficult to do, and unnecessary in this analysis, is to characterize basic graph properties, ego networks, and the various other measures that will be run on the rest of the data. Centrality measures will be run to confirm what has been observed in the two-mode matrix as well as the bipartite graph.

There is a line of research focusing on hidden cognitive maps by analyzing written text using Network Text Analysis (NTA) (Diesner and Carley, 2004). "Map analysis systematically extracts and analyzes the links between words in a text in order to model the authors 'mental map' as networks of words." (p. 2). By closely reading text, determining meaning, and clustering meaning into concepts, NTA is able to provide analysis similar to social network analysis. Rather than analyzing social relationships, NTA looks at relationships between concepts to discover a network of ideas.

It would appear rare that media reports would be cited within a formal rule or policy, consequently a NTA is necessary to determine media's influence. The value of determining cognitive maps in text analysis has applicability with all the information sources. A textual analysis will be conducted focusing on all information sources.

Traditional sociology measurements have looked at the aggregated attributes of individuals often analyzed through a form of multi-variate regression. What is assumed but missing in this measurement are the various forms of relationships that occur between individuals. Relationships between actors can be social, knowledge or information based, limited to events, centered on tasks, or relationships can be defined between organizations. Relationships are important because they can constrain or enable behavior (Carley, 2005a).

[16] http://faculty.ucr.edu/~hanneman/nettext/C17_Two_mode.html#core

SNA, based on graph theory, is able to measure and assess how relationships affect information, knowledge, tasks, events, and organizations. The resulting quantitative measurement provides insight into three key characteristics: centrality (who has the power in a network), groups/sub-groups (cliques or sub-groups within a network), and roles/equivalence (position and role). These measurements are accomplished by looking at the actor, a node and the tie or link between nodes is the relationship referred to as a dyad.

Text has always been analyzed for its content. The software AutoMap is a text analyzer that looks at the connection between words and converts those words and connections into nodes and links. This information can then be converted into data that can be analyzed using SNA software. The assumption is that "language and knowledge can be modeled as a network of words and the relations between them." (Carley, Diesner, 2004).

Using the software AutoMap will not only track the development of concepts during the analysis, but will provide an opportunity to create either a matrix of concepts or a meta-matrix model. AutoMap has the ability to export matrix information to SNA software UCINET 6 to perform network analysis.

The strength of SNA techniques is that it provides quantitative analysis for networks of relationships. By producing data and plotting the information graphically, a determination is able to be made as to who is central to the network as well as distance between relations, the density, size of the network to name a few. Centrality is one of the most significant characteristics of networks because it speaks of power, and is in fact, another word for influence. By plotting the cognitive maps from the text of information and then applying SNA influence should be detected through centrality.

In order to complete the analysis required of this study, a cognitive map will be developed from the written policy as well as the various sources: studies, public comments, and media. AutoMap contains the ability to compare maps and run an analysis of the comparison. Hamming Distance is the primary measurement to determine the difference between maps.[17] By comparing the various maps, the analysis should show how much source material has made its way into the written policy and contribute to determining the function of the varying types of information.

Another benefit of this analysis is that it can help discover bias inherent in empirical studies. The twelve commissioned studies have the potential of inherent bias due to the MOWG asking the authors (some of whom are FCC employees) to conduct the research for the FCC. By comparing the cognitive maps of the twelve studies with studies entered into the public record should help to show potential bias at the maximum and differing foundations at the minimum.

UCINET 6 is a software tool designed to analyze social network data. As already discussed, SNA based on graph theory, has the ability to determine centrality measures, subgroup identification, role analysis, elementary graph theory, and permutation-based statistical analysis. It is also integrated with a drawing program to plot the data in a diagram which aids in analysis.

3.4.Analysis Procedure

3.4.1. Pre-Processing of Data

Network Text Analysis (NTA) begins with the pre-processing of data utilizing AutoMap. The appendix provides all the details of this process. For simplicity sake, this process involves multiple reiterative steps of eliminating non-content bearing words (i.e., and, it, also, etc.), and

[17] Hamming Distance, used in information theory, is a measurement of difference between two strings of information. AutoMap uses it comparing graphs of cognitive maps.

creating a union concept list that will be coded with generalized concepts. The resulting text is that which is ready for analysis.

3.4.2. The Analysis or Pre-Analysis:

The Analysis begins with taking a look at the some basic properties of the graph specifically the nature of connections between the nodes. The actual number of connections is based on a number of factors determined in AutoMap.

The first of these is window size. Window size refers to the process of windowing: a method in which the relationship between concepts is determined by the distance between words. This distance between words is determined by setting the window size. Another way of defining window size is ". . . the maximum distance of concepts that will be linked into statements." (Diesner, Kumaraguru, Carley, 2005). The bottom line to this decision is that the window size (as well as other analysis settings) must be set based on whether it is helping to answer the research question. It is recommended to run various analyses in AutoMap to determine the proper perspective. As a result, I ran the data[18] with the window size 99, 10, 7, 4 and 2.

Window size 2 is not the way to go because it dropped 4 concepts from the generalization thesaurus in the analysis; in other words, the concepts were not connected to any other concepts. All concepts/nodes should be reflected in the analysis even if they are isolates. It also has a density of 26.2% – a very "loose" network to be sure. Density is the ratio of the number of connections over the possible number of connections. A density of 26% means, for instance, there are 26 connections out of a possible 100.

On the other extreme, window size 99 also does not work as there are three nodes that are connected to every concept/node. There are a total of 19 nodes that have a 90% or higher row or source connectivity. The density is .807 (80% of the nodes are connected). Having a network

[18] For these initial decisions, I ran the data using policy text.

with such high density does not help me answer my research questions since there are limited holes in the network.

The following resulting graph from these pre-analysis steps illustrates the relationship of window size to univariate mean connectivity; it is the mean of the number of ties (connections) within the entire matrix (Hanneman, 2005). Similar to research by Carley (1997), the larger the window size the more connectivity between concepts. The graph seems to indicate the greatest gains in mean is accomplished by a window size of 10 (the slope is steeper from 2 to 10 than from 10 to 99). To make sure the slope from 10 to 99 is accurate I also ran an analysis with window size 25. The slope remains basically the same.

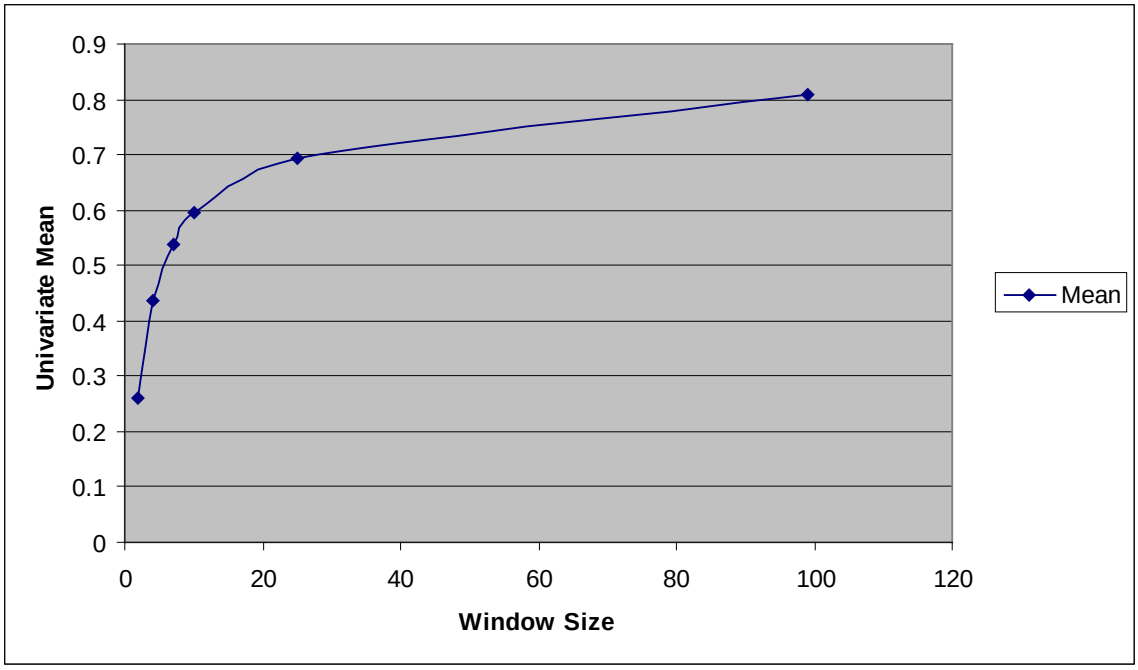


Figure 2: Window Size Effectiveness

After looking at the densities of the graph, the univariate means, and basic statistical stats, the conclusion is to use window size 4, 7, and 10 for my analysis. This is consistent with Carley's (1997) recommendation to use various window sizes within the analysis in order to get the complete picture.

Another factor affecting the results relates to the adjacency of the generalized concepts to each other and the deleted words. By selecting rhetorical adjacency when using the generalization thesaurus, window size includes deleted words and x'd out concepts. The following text from one of the research sources displays the complete text.

> The first point that Mr Powell makes about his agenda is a practical one. As a matter of urgency, says Mr Powell, a trained lawyer who cut his teeth as a judge's clerk, the FCC's rules must comply with the 1996 act. This is not just stating the obvious. The act made ambitious attempts to inject competition into the "last mile" of telephone lines running into homes and businesses by forcing the local "Baby Bell" operating companies to lease these networks to competitors at discounted prices. Nearly seven years after the passage of the 1996 act, says Mr Powell, the FCC has neglected to demonstrate that its network-opening rules are, in fact, legal. On the contrary, the courts have twice thrown the FCC's rules out and told it to start again.

The following is what AutoMap displays after non-content bearing words are deleted.

> xxx first point xxx Mr Powell makes xxx xxx agenda xxx xxx practical xxx xxx xxx matter xxx urgency says Mr Powell xxx trained lawyer xxx cut xxx teeth xxx xxx judges clerk xxx FCCs rules must comply xxx xxx xxx act xxx xxx xxx just stating xxx obvious xxx act made ambitious attempts xxx inject competition xxx xxx last mile xxx telephone lines running xxx homes xxx businesses xxx forcing xxx local Baby Bell operating companies xxx lease xxx networks xxx competitors xxx discounted prices Nearly seven years xxx xxx passage xxx xxx xxx act says Mr Powell xxx FCC xxx neglected xxx demonstrate xxx xxx networkopening rules xxx xxx fact legal xxx xxx contrary xxx courts xxx twice thrown xxx FCCs rules xxx xxx told xxx xxx start again

The next set of text is what the same text looks like after the generalization thesaurus is run.

> xxx xxx xxx xxx fcc xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx fcc xxx xxx legal xxx xxx xxx xxx xxx xxx xxx xxx xxx policy_process xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx competition xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx localism xxx xxx xxx corporations xxx xxx xxx broadcast_media xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx fcc xxx fcc xxx xxx xxx xxx xxx xxx xxx policy_process xxx xxx xxx legal xxx xxx xxx xxx xxx xxx xxx xxx xxx policy_process xxx xxx xxx xxx xxx xxx xxx

By selecting rhetorical adjacency, the deleted and x'd out words are not ignored. The resulting map will depend on whether the window size is 4, 7, or 10.

3.4.3. Basic Graph Properties

In order to appreciate graph properties, some basic definitions are in order. The basis of graph theory is the connection between nodes; also known as actors. These connections can either be directed or asymmetrical, meaning from source to receiver (out degree) or receiver to source, or symmetric. The movement from one node to another is considered a walk. The distance of a walk is measured by counting the number of nodes from point A to point B. A path is a walk in which a single node is not repeated. Finally, the geodesic distance is the shortest path.

Graph Connectivity: The first step in analyzing the basics of graph properties is to look at graph connectivity. Graph connectivity is to look at how well connected each node is as a source or the out-degree of the node. The assumption in this step of the analysis is that the data is directed or asymmetric. In early testing of the data, analyses using bi-directional data were run only to determine that the graph is denser with symmetric data, and this was not helpful to answering the hypotheses.

Taking a casual look at each of the matrices reveals how well connected the nodes are. It also reveals that the diagonals should be included in the analysis. To understand how a node could be connected with itself, a look reveals that nodes/concepts are positioned next to each other in text (while separated by deleted words and concepts) and therefore can be connected to each other.

Reachability: Reachability is a measurement that looks at whether one node is connected to others directly or indirectly regardless of the distance; it is either connected or it isn't.

Point Connectivity: Running a point connectivity analysis provides insight into how many nodes would have to be removed before there was no longer a connection between two

actors/nodes. A high number reveals stability in the connection whereas a low number reveals vulnerability.

Geodesic Distance: "For both directed and undirected data, the geodesic distance is the number of relations in the shortest possible walk from one actor to another (or, from an actor to themselves . . ." (Hanneman). Overall, the geodesic distances are very small (2 being the highest) in the majority of graphs.

Maximum Flow: Maximum Flow is concerned not with efficiency but how many pathways from one node to another. The results of this analysis look very similar to point connectivity making total sense. If we are concerned with how many nodes would need to be removed to isolate a node, it should not be surprising that the results are related to how many pathways exist.

These basic graph properties provide a great deal of information about a graph. The visualization of these graphs also provides a great deal of information without further analysis. There is far more however to graphs than just the basic properties.

3.4.3.1. Embedded Graph Properties

The basic graph properties looked primarily at connectivity issues from the bottom up; starting with individual nodes. Another way of looking at the overall graph is from the top down to see how nodes are embedded within the graph. The basis for conducting this evaluation is through the relationships between nodes – either dyads or triads. There are a number of measurements used to analyze embeddedness.

Reciprocity: This measure looks at the dyads, relationships between two ties, and either the percentage of dyads with reciprocated ties (dyad approach) or the percentage of reciprocated ties between all relations (arc approach). "In the arc-based method, the reciprocity value indicates the proportion of all arcs that are reciprocated. In the dyad-based method, the

reciprocity value indicates the proportion of dyads that are reciprocal." (Hannemann). The recommendation is to focus primarily on the dyad-based method.

Transitivity: This measure evaluates the number of triads; specifically, a "balanced" or transitive triad in which A is connected to B, B is connected to C, and A is connected to C.

Clustering: These relationships fit within neighborhoods – groups of nodes with higher than normal connections (through randomization).

> One common way of measuring the extent to which a graph displays clustering is to examine the local neighborhood of an actor (that is, all the actors who are directly connected to ego), and to calculate the density in this neighborhood (leaving out ego). After doing this for all actors in the whole network, we can characterize the degree of clustering as an average of all the neighborhoods. (Hannemann)

Krackhardt GTD Measures: this measure is based on the idea of what Krackhardt calls an "out-tree graph". This graph provides a "perfect" picture of a true hierarchy in the graph. In order to determine how hierarchical a graph is, this measure calculates four categories.

- Connectedness evaluates whether a graph is a single connected graph: ". . . what proportion of actors cannot be reached by other actors?" A score of 1 indicates that it is a single connected graph – no disconnected pairs.
- Hierarchy determines the proportion of tied pairs that are reciprocated. In a pure hierarchy there should be no reciprocal ties.
- Efficiency evaluates to what extent an actor has a single boss. If this is the case each actor should have an in-degree of 1. This measure is calculated by ". . . . counting the difference between the actual number of links (minus 1, since the ultimate boss has no boss) and the maximum possible number of links."
- Least Upper Bound (LUB) takes a look at common bosses. To be a pure out-tree a pair of actors must have a common boss; both connected to the same actor. This

measure is ". . . by counting the numbers of pairs of actors that do not have a common boss relative to the number of pairs that could . . . "

The hope with embeddedness analysis is to discover the building blocks of the graph. Depending on the results, it has the potential to reveal whether sub-graphs made up of either dyads or triads exist.

3.4.3.2. Ego

Each node can also be considered an ego. While the analysis is still concerned with how nodes are embedded within the graph, looking at the graph from an ego perspective is more a micro-perspective as opposed to macro with the previous analysis.

Ego Network Density: Of the various ego measurements this is perhaps the most helpful in that is calculates the density of each ego network in the graph. Additionally, it provides the average geodesic distant for each ego network.

3.4.3.3. Centrality Measures

Without question, the centrality measures will be the most significant in order to answer the research questions. The various centrality measures will be run in order to get as complete picture as possible.

Degree Centrality Measures: Degree centrality is a measure of how many ties an actor has to other actors. In this case, it is a measure of how many ties a node/concepts has to other nodes/concepts. This can begin to paint a picture of how powerful or influential an out degree node may be.

Closeness: Closeness is a measurement of the distance of one node to others using geodesic distance. Geodesic distance is using the shortest path from each actor to all the others.

Betweenness Centrality: Betweenness Centrality is the measurement that ". . . views an actor as being in a favored position to the extent that the actor falls on the geodesic paths between other pairs of actors in the network." (Hanneman, 2001, p.67). It has also been referred to as the measure which can discover structural holes; in other words, a low betweenness shows an actor is not strongly connected to the network, and consequently, can be a good predictor of power.

Bonacich's Power Centrality: Rather than arguing power is a function of how connected an actor is to others, Bonacich argued that power is a function of being connected to weak others (those not as central to the network), or strong others (those also central to the network). This means that an actor being connected to weak others is depended on than if a powerful actor is connected to other powerful actors. The calculations are based on the idea that power is a function of your own centrality plus the centrality of others weighted by distance and the number of walks between you and others. It does this by including a Beta coefficient; a positive reveals the extent to which an actor is connected to powerful others, and a negative coefficient reveals the extent to which an actor is connected to weak others.

The bottom line is that high degree, high closeness, and high betweenness are considered to be in positions of power. (Hanneman).

3.4.3.4. Cliques and Subgroups

Bottom-up Approaches:

One of the advantages of network analysis is the ability to see groupings: dyads and triads. These subgroupings provide additional analysis into the structure of the network: how separate are the sub-graphs? Is there overlap of concepts (nodes) between sub-graphs? How large are the sub-graphs or small? Is there one concept (node) that is crucial to tying sub-graphs together? These are just a few of the questions the next set of measures can answer. At this

point in the analysis, there are four types of measures used to evaluate subgroups: cliques, ncliques, nclans, and kPlexes.

A *clique* is simply defined as ". . . some number of actors (more than two, usually three is used) who have all possible ties present among themselves." (Hannemann, 2001, p. 80). This is also known as a maximal complete sub-graph. The significance of a clique is that it can reveal what actor(s) may be the most important in holding together the network structure. This definition is very stringent and consequently, may not be the most helpful.

Using the measure *nClique* loosens the definition by saying an actor is a member of a clique if they are connected to every member of the group greater than a distance of one. Most often a distance of two is used, thus producing a clique that includes a "friend of a friend".

The next measure – *nClans* – is very similar to nCliques with one exception. It is possible with ncliques to have an actor in a clique be connected by an actor who is not in the clique. nClan adds an additional restriction: the diameter of an nclique be no greater than *n* (most often 2). More specifically, the paths must be no greater than two within the sub-graph (Wasserman and Faust, 1998).

To summarize: a maximal sub-graph or clique provides the strictest of definitions of who gets in a sub-graph. By expanding to a "friend of a friend" or nclique more actors are allowed in the group, but the connection may be from someone outside the group. *nClan* allows the analyst to restrict the definition by making the sure the "friend of a friend" must be within the group. Another alternative to the strict maximal sub-graph is using the idea that an actor may be a member of a group (size *n*) if it has direct ties to *k-n* members or known as *kPlex*. This measure tends to produce a large number of small groups that can help to reveal overlaps and centralization.

Top-Down Approaches:

The major difference between the bottom up approach and top down approach is that in the bottom up approach, the analysis starts with the dyad and builds up from there. Top down approaches start by looking at the whole of the graph to determine if it can be broken down into various parts. The next two analyses focus on individual actors to determine weak spots within the graph.

Components: "Components of a graph are sub-graphs that are connected within, but disconnected between sub-graphs." (Hanneman). The components form isolates within the structure of the graph determining whether the graph is weak (connected regardless of direction) or strong (must be connected A to B). This method of analysis is accomplished using directed binary data. Because this analysis looks at strength of connections, valued data is also used providing cut off values of tie strength to determine non-isolated components. It would appear that the valued data provides more insight than the binary data.

Bi-components (Blocks and cutpoints): This method of analysis determines the weak spots in a graph by looking at vulnerability. In other words, if a node was removed, what node would be crucial to maintaining the group. This node is referred to the cutpoint. Establishing the cutpoints gives insight into different blocks of subgraphs. Directed binary data is used.

Lambda Sets and Bridges: Rather than focusing on actors, this analysis looks at the connections between actors. It accomplishes this by looking at the flow through connections/actors and then determining how much of a disruption would occur if connections were removed. These subgroups are not based on adjacency in contrast to the other top-down approaches (Wasserman and Faust, 1994) making them different from other subgroups

discussed. The higher the lambda value, the more lines must be removed from the graph in order to eliminate a path between two nodes. The data set used should be symmetric.

Factions: This analysis is attempting to determine the amount of "factionalization" (Hanneman) present as defined by subgroups connected (cliques) but complete disconnection between subgroups (components). The resulting analysis is visualized by a matrix showing connections with subgroups (1's) and lack of connections (0's). The data also reveal error numbers which are the total number of zero's present within a matrix along with the number of one's present (which shouldn't be) between other factions. This error factor is called Hamming Distance and can be used as a measurement of goodness of fit (though the software allows for other measures of goodness of fit such as Pearson correlation). Being able to set the number of factions can be useful in testing hypothesis as to how many factions exist. Directed binary data is used.

3.5. Conclusion

NTA and SNA are relatively new methodologies intended to discover knowledge maps within a body of text. The role that information plays in policymaking is in need of further study, and in utilizing a methodology that does not fit within the positivist camp. NTA and SNA hold promise that by allowing concepts to emerge from the text, mental/cognitive maps will emerge. These maps have the potential to reveal knowledge acquired and utilized in the decision-making process. The research questions reflect the challenge of the Third Biennial Review as well as the theories surrounding the role of information within policymaking. The various texts to be analyzed represent what is typically considered a good policy process.

The following chapter presents the findings of both NTA and SNA analysis. These findings are presented in the language of SNA.

4. Findings

The overriding concern of this study is the role that information plays in policymaking as seen in the case of the FCC's Third Biennial Review. There are three research questions being asked in this study:

> Q1: How empirical is the FCC media ownership policy in its basis?
> Q2: How ideological is the FCC media ownership policy in its basis?
> Q3: How much do media reports contribute to the FCC media ownership policy in its basis?

The overarching question of this study along with the three questions flow from the connection between the literature on information within policy formation and FCC media ownership policy: First, positivism has limitations in policy decision-making, second, there is a need for a new methodology that takes into consideration knowledge that is socially constructed, three, the FCC's Third Biennial Review garnered a great deal of public input offering the potential for new insight, and fourth, the FCC's Third Biennial Review provides insight into how the media covers its own regulatory agency. The findings presented in this chapter are organized around the three research questions.

The first research question, the empirical basis of the FCC's media ownership policy, only employs SNA. Consequently, there is no need to look at graph characteristics.

4.1.Empirical Basis of the FCC's Media Ownership Policy

FCC Chairman Michael Powell stated the goal of the third Biennial review was to achieve the most empirically based policy the FCC had seen. The first research question seeks to determine if this was accomplished by using SNA to create a citation network[19].

Even before engaging in network analysis, a quick visual inspection of the two mode matrix or affiliation network provides great insight. Table 1 shows the matrix for the policy citation network; the actors/concepts are on the vertical axis, and the events/citation categories are on the horizontal axis. The number in each cell represents the number of times a concept was cited, and thus tied to a citation category. It is obvious that the largest number of citations fall into the category of ecomments; column 5. The largest number of concepts cited is competition; row 18. Consequently, the largest single number of citations is the intersection of competition and ecomments; that is, competition node citing ecomments (219 times).

While looking at the matrix provides some insight into answering the research question, the value of this matrix is that it can be analyzed using social network analysis. As outlined in the methodology chapter, Wasserman and Faust (1994) acknowledge that methods are not as fully developed for two-mode affiliation networks as they are for single mode networks. The focus for two-mode networks is primarily on the visualization of the graph rather than analyzing the networks. Figure 3 shows the bipartite graph created in UCINET 6 with an emphasis on degree centrality. The graph shows that the events are at the center of the graph, with ecomments especially towards the center. Specifically, the square nodes represent the citation types; the larger the square, the higher degree centrality. In this bipartite graph ecomments and FCC are the two largest followed by MOWG, Federal Court, fact, and study. The next size includes Supreme

[19] The Appendix contains an explanation of the citation categories listed on the horizontal axis in Table 3. The vertical axis contains concepts used throughout the analysis, also explained in the Appendix.

Court, ex parte, CFR, internet, and journal. The circle nodes represent the concepts that are cited. Like the square nodes, the size of the circle represents a higher degree centrality. The higher degree centrality concepts are competition, broadcast structure, record, broadcast media, other electronic media, diversity, programming, localism, and policy process. Both the square nodes and circle nodes are placed within space according to connections and ties.

In addition to creating the bipartite graph, UCINET 6 can also transform the affiliation network into a standard one-mode graph[20]. Table 5 is the resulting chart. The data is now centered on the event; in this case, the citation type. The resulting one-mode graph can by analyzed using standard SNA centrality measurements. This will allow for more specific quantitative analysis than what is available by looking at the bipartite graph.

The one-mode data was then measured for centrality to determine the type of citation most prevalent or central to the graph. As will be detailed in section 4.2.4, the most helpful centrality measurement is the Bonacich's Power Centrality because it measures centrality or power as a function of being connected to powerful others. The primary three centrality measures (degree, closeness, and betweenness) were run on this data, but only the Bonacich's power centrality will be presented.

[20] Chapter Three, p. 77 details the method utilized in this analysis.

Table 4: Citation Network, Raw Numbers

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		FCC	CFR	Fed	fac	eco	USC	Sup	Boo	MOW	jou	pap	stu	con	int	mag	new	SEC	en	ex	DOJ	omb
1	broadcast_ownership	17		5		36		1		5												
2	NPRM	1			1																	
3	national_TV_rule	6	3		1	12				1										6		
4	local_TV_rule	4	2	1	5	10	1						2							7		
5	cross_media_rule	2	4	1	2	7		1		3										2		
6	dual_network_rule	2	2		1	5					1		1								2	
7	legal	3		6			5	4						1								
8	local_radio_rule	11	2		6	4														2		1
9	policy_process	73	10	19	8	99	4	15		1			9	1						7	1	
10	1996_act	4		1			2			1												
11	public_interest	14		5	1	25	2	6					1		1					2		
12	other_elec_media	19	3	2	7	20		1	1	2	4	3	11		2			4		2		
13	broadcast_structure	13	2	2	4	12	1	1		1	2	1	3		1					4		
14	broadcast_content	1		1		3		2														
15	democracy	5			1	32	1		22	5	9		2		3							
16	record	13	1	4	7	42			2	16	7	1	12		2	1	1			9	1	
17	diversity	17	1	4	2	102			1	5	7		7				1		3			
18	competition	69	5	17	27	219	1	6	11	19	22		31		2				2	23	11	
19	corporations	1				12							3									
20	localism	12		1	1	49		1	2	8	2		7		1					2		
21	reasoned_analysis	14		9	4	37		3	4	2	1	1	6		2					4		
22	broadcast_media	34	3	2	12	80	1	2	1	10	2		20		6	1				6		
23	programming	18		2	11	102	2		4	8	5		9	1	2		1		1	5		
24	fed_gov					7				1					1						1	1
25	technological_innovatio	4				10									1							
26	policy_goals	10		2		30													1			
27	internet				1	2							3		9							
28	newspapers		5		4	2			2	2	2		1		1							
29	audience	9	3		11	57				4	9		15		5	1				5		
30	information					9				1	1		1									
31	FCC			1																		
32	media	1				10		1		1	2		1	1						1		
33	interest_groups		1		1		1															
34	fin_syn	2		2	1	3														3		
35	behavioral_rules	1																				
36	legal_reasoning			2																		

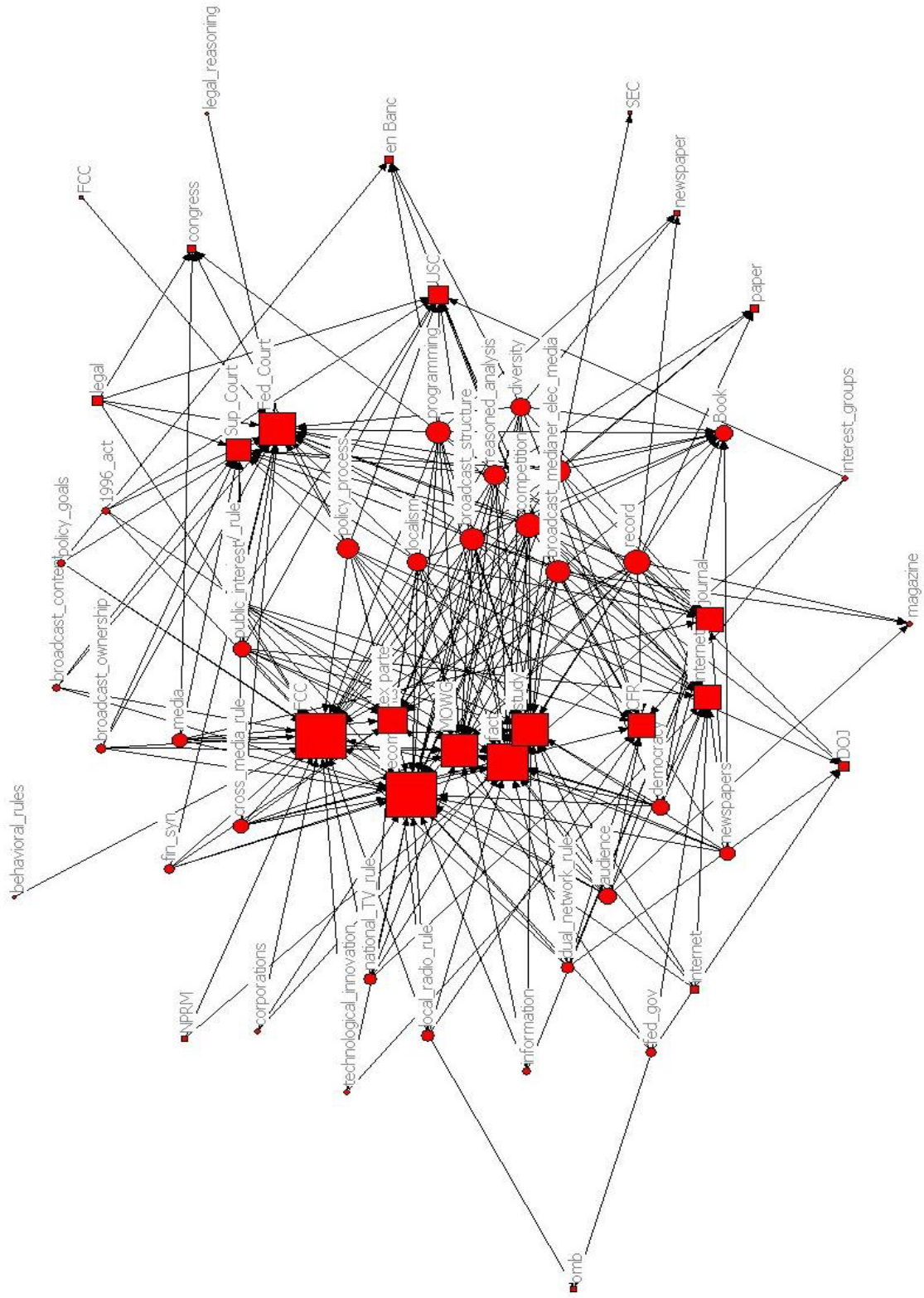


Figure 3: Bipartite Citation Network Graph showing Degree Centrality

In looking at the various centrality measures, there is no surprise: ecomments, FCC, and study are the top three nodes on all four centrality measures.

Bonacich Power		
One Mode Affiliation		
	Power	Normalized
ecomments	183170	17.409
FCC	91493.24	8.696
Study	43190.19	4.105
Fact	36162.92	3.437
MOWG	29826.75	2.835
ex parte	29033.9	2.76
Fed_Court	25263.72	2.401
Journal	24534	2.332
Book	14130.78	1.343
CFR	13880.72	1.319
Sup_Court	12872.3	1.223
Internet	10768.49	1.023
DOJ	5637.964	0.536
USC	5176.805	0.492
en Banc	2402.618	0.228
Paper	2238.666	0.213
SEC	1359.542	0.129
Congress	1167.204	0.111
Magazine	1145.154	0.109
newspaper	1130.387	0.107
Omb	442.241	0.042

Table 5: Affiliation Network Bonacich Centrality on Citation

Table 6: One-Mode Network with events tied to actor

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		FCC	CFR	Fed_	fact	ecom	USC	Sup_	Book	MOWG	jour	pape	stud	cong	inte	maga	news	SEC	en B	ex p	DOJ	omb
1	FCC	380	39	83	110	363	18	42	31	88	68	6	132	4	28	3	3	4	7	86	15	1
2	CFR	39	47	25	39	43	9	20	11	23	20	5	31	1	13	3	2	3	3	32	9	1
3	Fed_Court	83	25	89	48	79	18	41	23	43	35	5	51	3	15	2	3	2	7	47	13	0
4	fact	110	39	48	119	113	13	24	28	63	59	6	98	2	27	3	3	4	5	76	14	1
5	ecomments	363	43	79	113	1038	13	40	50	95	76	6	144	3	32	3	3	4	7	90	16	2
6	USC	18	9	18	13	13	21	13	5	8	6	1	12	3	7	1	1	0	2	12	2	0
7	Sup_Court	42	20	41	24	40	13	44	12	17	13	3	25	3	10	1	0	1	2	25	7	0
8	Book	31	11	23	28	50	5	12	50	31	34	3	29	1	15	2	3	1	4	25	12	0
9	MOWG	88	23	43	63	95	8	17	31	96	57	5	76	3	27	3	3	2	6	55	14	1
10	journal	68	20	35	59	76	6	13	34	57	76	6	67	2	22	3	3	4	6	49	13	0
11	paper	6	5	5	6	6	1	3	3	5	6	6	6	0	5	1	1	3	0	5	1	0
12	study	132	31	51	98	144	12	25	29	76	67	6	145	3	30	3	3	4	6	70	14	0
13	congress	4	1	3	2	3	3	3	1	3	2	0	3	4	1	0	1	0	1	3	1	0
14	internet	28	13	15	27	32	7	10	15	27	22	5	30	1	39	3	2	2	3	24	4	1
15	magazine	3	3	2	3	3	1	1	2	3	3	1	3	0	3	3	1	0	0	3	1	0
16	newspaper	3	2	3	3	3	1	0	3	3	3	1	3	1	2	1	3	0	2	2	1	0
17	SEC	4	3	2	4	4	0	1	1	2	4	3	4	0	2	0	0	4	0	2	0	0
18	en Banc	7	3	7	5	7	2	2	4	6	6	0	6	1	3	0	2	0	7	3	2	0
19	ex parte	86	32	47	76	90	12	25	25	55	49	5	70	3	24	3	2	2	3	90	13	1
20	DOJ	15	9	13	14	16	2	7	12	14	13	1	14	1	4	1	1	0	2	13	16	1
21	omb	1	1	0	1	2	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	2

By way of contrast, another one-mode graph was created this one is focused on the concepts tied to the citation types; actor tied to events. The following table shows the results of Bonacich power centrality for the actors tied to events.

Bonacich Power		
One Mode Network: Actor		
	Power	Normalized
Competition	129522.664	17.02
policy_process	97283.781	12.784
broadcast_media	88621.898	11.646
Programming	87741.477	11.53
Diversity	78379.727	10.3
Audience	66998.563	8.804
Record	66701.211	8.765
Localism	56185.184	7.383
reasoned_analysis	54908.664	7.215
other_elec_media	47958.07	6.302
broadcast_ownership	43668.996	5.739
Democracy	40782.598	5.359
public_interest	37819.891	4.97
broadcast_structure	32853.621	4.317
policy_goals	32047.416	4.211
local_TV_rule	22027.643	2.895
national_TV_rule	21140.092	2.778
local_radio_rule	17869.895	2.348
cross_media_rule	15301.994	2.011
Media	13505.841	1.775
Corporations	13116.173	1.724
technological_innovation	12532.415	1.647
Newspapers	10889.773	1.431
Information	9905.371	1.302
dual_network_rule	9661.07	1.27
fin_syn	8439.403	1.109
fed_gov	7715.739	1.014
Legal	7482.383	0.983
Internet	6239.877	0.82
1996_act	5483.396	0.721
broadcast_content	5109.783	0.671
interest_groups	1777.666	0.234

NPRM	1671.856	0.22
legal_reasoning	1363.132	0.179
behavioral_rules	882.968	0.116
FCC	724.731	0.095

Table 7: One-mode graph Bonacich Power Centrality

The results confirm what was observed in the two-mode affiliation network: competition is the most central node followed by policy process, broadcast media, programming, and diversity.

4.2.Ideological Nature of the FCC's Media Ownership Policy

As previously outlined, the combination of AutoMap along with UCINET provides data to help answer the ideological nature of the policy. The resulting cognitive maps are analyzed using network text analysis (NTA) and social network analysis (SNA). The following analysis will be organized around the major aspects of SNA as outlined in chapter three.

4.2.1. Basic Graph Properties

The first aspect of graph connectivity is the density of the graph. Other SNA measures will reveal that density, in these graphs, provides a good predictor of the nature of the results. Table 8 provides the densities of all matrices analyzed.

	Window 4	Window 7	Window 10
Policy	44	Na	60
NPRM	45	57	59
FCC Commissioners	36	50	57
Republican Commish	19	30	36
Democratic Commish	32	46	53
Third Court Decision	32	44	48
Majority	46	51	55
Dissenting	30	40	46
FCC Studies	26	34	38
Capitol Hill Hearing	34	42	49
En Banc Presentations	36	45	52
FCC Roundtable	27	39	44
Electronic	76	78	80

Comments			
00-244	71	75	77
01-235	80	83	85
01-317	71	75	77
02-277	79	86	88

Table 8: Density of Graphs

The density of these graphs is fairly consistent among all documents with the exception of the public comments. These graphs are extremely dense. In contrast with the policy documents, the public comments consist primarily of short, one to two paragraphs. There are longer documents within the ecomments corpus similar to the policy texts, having been submitted by broadcasting corporations and non-profit agencies.

The other measures of connectivity, while important, are all consistently pointing to the fact that these graphs are well-connected, dense graphs, very reachable, with limited vulnerability, and a geodesic distance of 1 to 2.

Univariate statistics do reveal nodes that are strongly connected as both a source and receiver. Given that these results are similar to centrality measurements, only differences will be discussed within the centrality discussion. The bottom line is that regardless of the document used in the policy process, the ideologies discussed are close in distance and connectivity to each other.

The univariate statistics also provide mean, standard deviation, and variance as well as other standard descriptive statistics. The usefulness of such measures can be helpful but in very different ways than standard descriptive statistics. According to Hanneman (2005), the first major difference is that social network measures relationships between actors, not differences between variables. The second challenge with descriptive statistics is that many of the inferential statistical tools simply do not work with network data, again because SNA is looking at the ties between actors. The statistics provided in univariate stats could be helpful if the data was valued.

Much of the data used in this study is binary and thus, not very helpful; the value of these stats is limited. Some of these stats are provided in the appendix.

4.2.2. Embedded Graph Properties

Given that a graph consists primarily of dyads and triads, the most helpful measure in determining the nature of the ties between nodes is looking at reciprocity and transitivity. Table 8 provides the percentage of reciprocated ties as well as the percentage of triads that include transitive triads (A connected to B, B connected to C, and C connected to A).

	Window 4		Window 7		Window 10	
	Reciprocity	**Transitivity**	**Reciprocity**	**Transitivity**	**Reciprocity**	**Transitivity**
Policy	72%	17.6%	na	na	81%	33.4%
NPRM	64%	16.8%	81%	27%	75%	30%
FCC Commissioners	54%	9.4%	66%	20%	71%	26.2%
Republican Commish	39%	2.8%	48%	6.1%	58%	9.3%
Democratic Commish	50%	7.4%	61%	16.5%	70%	22.9%
Third Court Decision	49%	8.2%	58%	15.6%	64%	18.94%
Majority	81%	17%	78%	21.2%	77%	24.9%
Dissenting	51%	6.9%	61%	13.2%	64%	17.9%
FCC Studies	64%	6.7%	67%	10.3%	69%	12.9%
Capitol Hill Hearing	56%	9.4%	64%	15.3%	72%	20.6%
En Banc Presentations	55%	10.8%	64%	17.5%	72%	24%
FCC Roundtable	54%	6.5%	61%	13.2%	67%	16.7%
Public Comments	91%	57%	94%	61.7%	94%	64.7%
00-244	89%	49.5%	92%	56.9%	93%	60.4%

01-235	90%	61%	94%	67.4%	94%	70.7%
01-317	88%	49.1%	91%	56.9%	93%	60.5%
02-277	88%	59%	92%	70.3%	93%	74%

Table 9: Reciprocity and Transitivity

Without question, these graphs are primarily built on reciprocal dyads. The lowest percentage of reciprocal dyads is the Republican Commissioners (window 4). Not surprisingly, the density is also low in that same graph. The overall building block structure of these graphs is the reciprocal dyad. What this measure does not reveal is the central nodes within these graphs.

4.2.3. Ego Networks

Looking at ego measures, like univariate stats, names individual nodes. The individual node is another name for ego. A neighborhood consists of egos generally 1 step away. The appendix contains the results of out-degree ego nodes. What these results show is that often, outlier nodes will have an ego network that is made up of a small number of nodes and these ego networks are one hundred percent dense. This kind of information does not provide great insight into answering the research question. Consequently, it makes more sense to discuss the ego networks of nodes that are high in centrality measures. Specific ego networks will be discussed during the centrality measures findings.

4.2.4. Centrality Measures

The key aspect of this analysis is the various centrality measures. In SNA centrality is considered to be the focus of power. Because the research question in this section is the ideological nature of the policy, the central nodes or concepts help to answer the question. Given the complexity and abundance of data within centrality measures, the discussion will center on each body of policy text. Additionally, as previously discussed, data analysis was conducted

using window sizes of 4, 7, and 10. While the results fall within an acceptable range with these window sizes, it became apparent through analysis, that the looser the graph (less dense), the more helpful that data would be in providing interpretation. Discovering centrality is helped by a less dense graph. Consequently, the discussion and interpretation for the rest of the analysis measures will be conducted using the results from window size 4.

As chapter three outlined, the primary centrality measures are degree, closeness, and betweenness. A fourth centrality measurement, Bonacich's Power Centrality analysis was also performed on the data. The three primary measures of centrality provide consistent results across the measures with little variance between nodes. In other words, a number of the results have nodes tied with multiple others. For example, within the policy texts, degree centrality measurements place policy process, legal, competition, and broadcast media as equal in centrality. While degree centrality is a mathematical measurement, the results are not helpful in providing insight into answering the research question.

The centrality measure, on the other hand, providing some helpful insights is the Bonacich's Power Centrality. By looking at the connection of nodes connected to other strong nodes, Bonacich's degree centrality provides help in isolating the strongest of the strong, and in so doing, reveals key ideologies at work in the policy texts. Additionally, this measure normalizes the data helpful in comparison across all the data. Consequently, the findings presented will be that of the Bonacich's Power Centrality.

4.2.4.1. Policy Texts

The following chart reveals legal to be the top node followed closely by broadcast media, and competition.

Bonacich Power		
Policy, win4		
	Power	Normali
legal	314.977	9.45
broadcast_media	312.452	9.374
competition	311.961	9.359
policy_process	311.902	9.358
reasoned_analysis	311.002	9.331
localism	309.026	9.271
record	300.739	9.023
broadcast_content	286.17	8.586
broadcast_ownership	284.938	8.549
diversity	284.12	8.524

Table 10: Policy Text Centrality

Taking a look at the diagram of the ego network for the node legal helps to see how strongly connected it is to the majority of nodes within the graph[21]. It contains a total of 32 nodes resulting in 568 connections. These connections result in 992 pairs. The density is not incredibly

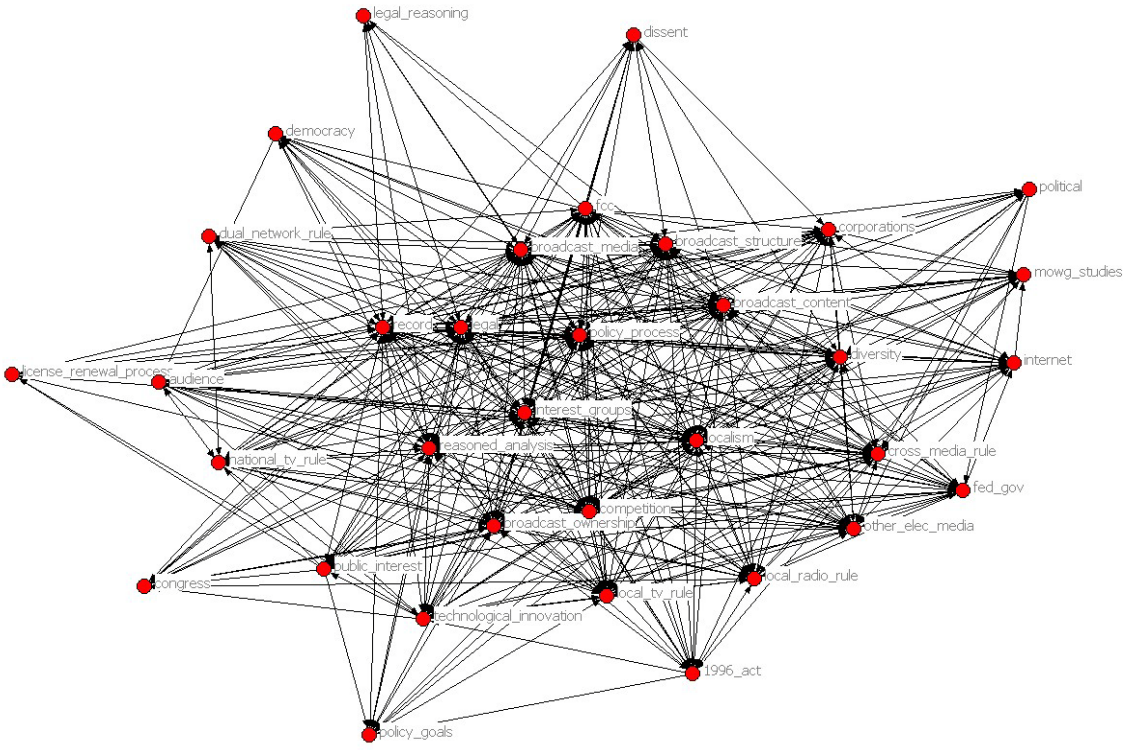


Figure 4: Legal Ego Network

[21] The node legal is positioned at the left center of the graph.

high, 57.26% (compared to other densities), though higher than the overall graph. Finally, the average distance within this subgraph is 1.43. Distance ". . . is the number of relations in the shortest possible walk from one actor to another (or, from an actor themselves . . ." (Hanneman). This measurement of distance simply reveals this is a very well connected ego network.

For comparison, broadcast media, the second most "powerful" node in the policy text, has 32 nodes in it's ego network resulting in 564 connections, 992 pairs, 56.85% density, and average path distance of 2. The competition node's ego network also has 32 nodes resulting 570 connections, 992 pairs, slightly higher density of 57.46%, and an average path distance of 2. While competition is more connected and has a higher density than legal, the average path distance is longer. This is consistent with the Bonacich Power centrality results.

In contrast, the analysis for the NPRM text results in competition as the top closely followed by legal. The normalized results show that the power or prestige of legal is a bit stronger in the policy text than in the NPRM: 9.45 to 9.193.

Bonacich Power		
NPRM, win4		
	Power	Normali
competition	312.972	9.329
legal	308.431	9.193
policy_process	307.886	9.177
broadcast_ownership	289.729	8.636
fcc	288.514	8.6
broadcast_media	280.494	8.36
record	278.113	8.289
reasoned_analysis	274.816	8.191
localism	262.904	7.836
Diversity	260.877	7.776

Table 11: NPRM Bonacich Centrality

The ego network diagram results provide consistent information with the Bonacich Power Centrality results. This ego node contains 30 nodes resulting in 477 connections, 870 pairs, a density of 54.83, and an average path distance of 1.45.

The legal ego node consists of 29 nodes, 466 connections, 812 pairs, a density of 57.39, and an average path distance of 1.43. The policy process ego node also has 30 nodes, 451 connections, 870 pairs, a density of 51.84%, and an average path distance of 1.50.

4.2.4.2. Commissioner's Comments

After running the centrality measurements, the general observation regarding the commissioner's comments is that competition tends to be the most central node. The Bonacich Power Centrality measures bear this out.

Bonacich Power		
Commish, win4		
	Power	Normali
Competition	274.429	10.288
Legal	263.877	9.893
broadcast_ownership	259.013	9.71
Localism	256.775	9.626
broadcast_media	253.211	9.493
Record	245.489	9.203
policy_process	218.317	8.185
reasoned_analysis	213.102	7.989
Diversity	209.742	7.863
broadcast_content	209.441	7.852

Table 12: Commissioner's Bonacich's Centrality

In spite of differences shown in other centrality measures, both democratic and republican graphs have competition as the central node. The ego network shows competition at the center well connected to 27 nodes, with 327 connections, 702 possible pairs, a density of 46.58% and an average walk distance of 1.

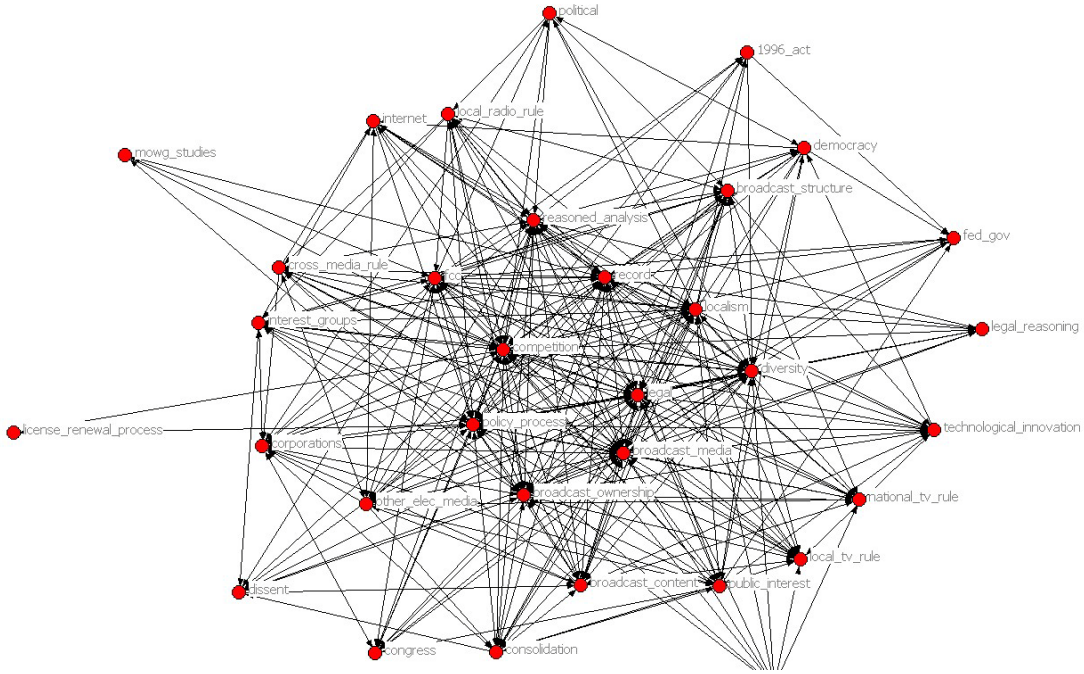


Figure 5: Ego Network for Competition

Bonacich Power		
DemCommish, win4		
	Power	Normali
Competition	240.902	10.599
broadcast_media	233.08	10.255
Legal	229.235	10.086
broadcast_ownership	213.066	9.375
Localism	211.114	9.289
Record	198.94	8.753
broadcast_content	186.842	8.221
reasoned_analysis	186.097	8.188
policy_process	181.621	7.991
Diversity	177.228	7.798

Table 13: Democratic Commissioner's Bonacich Centrality

Bonacich Power		
RepCommish, win4		
	Power	Normali
Competition	174.833	11.53
Localism	167.68	11.058
broadcast_media	164.79	10.867
policy_process	157.382	10.379
Record	156.442	10.317
broadcast_ownership	149.805	9.879
legal	134.909	8.897
diversity	132.765	8.756
reasoned_analysis	99.724	6.577
other_elec_media	98.086	6.469

Table 14: Republican Commissioner's Bonacich Centrality

The republican graph has a stronger normalized result for competition than the democratic graph. Looking at the ego network for both graphs does not necessarily help to explain the difference. Competition in the republican graph has 16 nodes, 107 connections, 240 pairs, a density of 44.58% and an average walk distance of 1. The democratic graph has 25 nodes, 273 connections, 600 pairs, a density of 45.5% and an average walk distance of 1.

The most interesting difference to this point comes in the republican commissioner's closeness centrality. While some of the same nodes are present, we have the addition of democracy, public interest, and consolidation.

Closeness Centrality Measures		
Rep, win4		
		outCloseness
33	Democracy	18.857
1	public_interest	16.837
5	Consolidation	15.789
6	Competition	15.64
8	Localism	15.64
11	policy_process	15.566
22	broadcast_ownership	15.566
4	Record	15.493
24	broadcast_media	15.421
15	Legal	15.349

Table 15: Republican Commissioner's Closeness Centrality

Closeness is the measurement of the distance of one node to others using geodesic distance (the shortest path from each actor to all the others).

4.2.4.3. Third Court

Initial observations show competition as the primary node in the overall court opinion, the dissenting opinion has legal as the primary node, and the majority opinion has policy process. The Bonacich Power measures have legal as the top node.

Bonacich Power		
Third Court, win4		
	Power	Normali
legal	265.041	10.691
broadcast_media	264.449	10.667
reasoned_analysis	254.068	10.248
competition	240.682	9.708
policy_process	234.859	9.473
localism	232.43	9.375
Fcc	213.757	8.622
broadcast_ownership	205.396	8.285
record	194.665	7.852
diversity	190.977	7.703

Table 16: Third Court Bonacich Centrality

The rest of the top ten is similar to previous centrality measures. The dissenting court has competition is the most powerful node in the graph. This is closely followed by legal and policy process.

Bonacich Power		
Third Court, Dissenting, win4		
	Power	Normali
competition	246.07	10.502
Legal	245.987	10.498
policy_process	241.98	10.327
broadcast_media	236.373	10.088
Fcc	226.579	9.67
reasoned_analysis	224.736	9.591
broadcast_ownership	205.263	8.76
localism	201.022	8.579
diversity	191.254	8.162
record	187.139	7.987

Table 17: Dissenting Third Court Bonacich Centrality

Bonacich Power		
Third Court, Majority, win4		
	Power	Normali
Legal	315.197	9.526
competition	314.198	9.496
broadcast_media	312.051	9.431
policy_process	311.027	9.4
reasoned_analysis	306.272	9.257
Fcc	301.299	9.106
diversity	277.772	8.395
localism	272.897	8.248
record	264.752	8.002
broadcast_ownership	261.279	7.897

Table 18: Majority Third Court Bonacich Centrality

The majority graph sees the return of legal to the most powerful node position. The legal ego network consists of 28 nodes, 308 connections out of a possible 756 resulting in a density of

40.74%, and an average walk distance of 1. For comparison, in the dissenting graph, the ego network for competition consists of 24 nodes, with 249 connections out of a possible 552 resulting in a density of 45.11%, and an average walk distance of 1.59.

While policy process came to the top in some of the centrality measures, it is in the top five of Bonacich measures. Reasoned analysis rises to a higher level than in previous graphs.

4.2.4.4. FCC Studies

The next body of documents, not as big, is the FCC studies. The density of this graph is about the same as previous graphs. Also, this graph is primarily made of dyads with a small percentage of triads.

Given that the focus of these studies is broadcast media it is not surprising it is one of the two top nodes in the three primary centrality measures. It is also the most central node in the Bonacich Power centrality measurements.

Bonacich Power		
FCC Studies, win4		
	Power	Normali
broadcast_media	288.625	12.287
Competition	279.098	11.882
other_elec_media	278.54	11.858
Record	266.626	11.351
Audience	257.624	10.967
technological_innovation	253.965	10.812
broadcast_structure	253.329	10.785
reasoned_analysis	252.544	10.751
Media	251.533	10.708
Localism	251.08	10.689

Table 19: FCC Studies Bonacich Centrality

Another node appearing in many of the centrality measures is audience. This is a node that has not surfaced in the top ten nodes of other graphs. The ego network for broadcast media consists

of 31 nodes, containing 436 connections out of a possible 930 resulting in a density of 46.88%, with an average walk distance of 1.55.

4.2.4.5. Public Record

The public record documents consist of three different hearings, Capitol Hill hearing, the en bank presentations, FCC roundtable, and all submitted ecomments. The size of the graphs is without question the largest of these studies, especially the ecomments.

There are some familiar nodes surfacing in the initial observations: reasoned analysis, broadcast media, competition, and policy process. A couple of new additions include the nodes interest groups and congress.

Reasoned analysis is the powerful node within the Bonacich Power measures. Broadcast media, competition, and policy process also are considered powerful nodes.

Bonacich Power		
Capitol Hill Hearing, win4		
	Power	Normali
reasoned_analysis	256.693	10.252
broadcast_media	247.881	9.9
Competition	243.137	9.711
policy_process	234.799	9.378
interest_groups	218.368	8.721
Record	206.36	8.242
Diversity	190.256	7.599
Ownership	184.81	7.381
Localism	179.358	7.163
Corporations	159.698	6.378

Table 20: Capitol Hearing Bonacich Centrality

The reasoned analysis ego network consists of 26 nodes making 296 connections out of a possible 650 resulting in a density of 45.54%, with an average walk distance of 1.56.

The next set of texts from the public record is the en banc presentations. Once again, reasoned analysis is the top Bonacich Power node in this measure, followed by competition, and policy process. The primary centrality measures have very similar results.

Bonacich Power		
En Banc Presentation, win4		
	Power	Normali
reasoned_analysis	304.32	10.8
competition	302.814	10.747
policy_process	298.066	10.578
broadcast_media	286.388	10.164
localism	257.353	9.133
corporations	243.817	8.653
record	229.839	8.157
interest_groups	228.843	8.122
diversity	223.61	7.936
other_elec_media	215.598	7.652

Table 21: En Banc Bonacich Centrality

The ego network for reasoned analysis consists of 33 nodes with 427 connections out of a possible 1,056 for a density of 40.44%, and an average walk distance of 1.62.

The FCC Roundtable is the next body of texts. In initial observations across the primary centrality measures, reasoned analysis, competition, and policy process again form the top nodes. Programming is a node that has not surfaced in the top ten of nodes in previous graphs.

The Bonacich Power measure keeps reasoned analysis at the top, followed by competition, diversity and policy process.

Bonacich Power		
FCC Roundtable, win4		
	Power	Normali
reasoned_analysis	264.005	11.944
competition	235.157	10.639
diversity	218.397	9.881

policy_process	211.372	9.563
localism	210.254	9.512
record	209.936	9.498
fcc	183.667	8.309
broadcast_media	182.186	8.242
ownership	173.811	7.863
programming	167.805	7.592

Table 22: FCC Roundtable Bonacich Centrality

This may be one of the highest rankings of diversity to this point. Because it has surfaced so highly in this graph, focusing on its ego network might provide some insight. The diversity ego network consists of 19 nodes with 220 connections out of a possible 342 resulting in a fairly high density of 64.33%, and an average walk distance of 1.36.

One interesting addition in closeness measures is telephony. Looking at the ego network of telephony reveals it is connected to one other node: competition. It surfaces in closeness measure simply because it is so close to competition. This illustrates why closeness for this analysis is not the strongest measurement.

The next sets of documents are all the comments filed electronically. The documents have all been analyzed together and separately according to the FCC docket number.

In the Bonacich power measure, reasoned analysis, policy process, and record are in the top positions. Audience is in the top ten and is equal in its power ranking with four other nodes: localism, FCC, other electronic media, and interest groups.

Bonacich Power		
ecomments, win4		
	Power	Normali
reasoned_analysis	444.785	7.545
policy_process	443.169	7.518
Record	443.169	7.518
Localism	440.625	7.474
Fcc	440.625	7.474
other_elec_media	440.625	7.474

interest_groups	440.625	7.474
Audience	440.625	7.474
competition	439.099	7.449
Diversity	439.099	7.449

Table 23: Ecomments Bonacich Centrality

The ego network for any of those five is very similar. For the ego network of audience, there are 39 nodes with 1,279 connections out of a possible 1,482 connections for a density of 86.3%, and an average walk distance of 1.14.

The next step is to drill down into the data by looking at each body of text; these are organized according to the FCC docket number. The first is 00-244: *Definition of radio markets*.

Reasoned analysis is the top node in Bonacich Power with FCC, record, localism, and policy process.

Bonacich Power		
00-244, win4		
	Power	Normali
reasoned_analysis	419.183	7.838
Fcc	415.611	7.772
record	415.611	7.772
localism	415.611	7.772
policy_process	415.611	7.772
competition	414.054	7.742
diversity	414.054	7.742
broadcast_media	413.114	7.725
other_elec_media	410.523	7.676
legal	408.966	7.647

Table 24: 00-244 Bonacich Centrality

The reasoned analysis ego network contains 41 nodes with 1,207 connections out of a possible 1,640 connections for a density of 73.6%.

The next set of comments is those filed under the docket number 01-235: *Cross-ownership of broadcast stations and newspapers*. Reasoned analysis is once again the top

Bonacich power node with the rest of the nodes being very close (0.106 separating the tenth node from the top node). Since this policy deals with cross-ownership of broadcast stations and newspapers it is not surprising newspaper is an addition to the top ten.

Bonacich Power		
01-235, win4		
	Power	Normali
reasoned_analysis	388.785	7.327
policy_process	386.669	7.287
Record	386.669	7.287
Fcc	386.669	7.287
Competition	385.284	7.261
Diversity	385.284	7.261
broadcast_media	383.168	7.221
Newspapers	383.168	7.221
Localism	383.168	7.221
other_elec_media	383.168	7.221

Table 25: 01-235 Bonacich Centrality

The newspaper ego network consists of 38 nodes with 1,218 connections out of a possible 1,406 connections resulting in a density of 86.63%, and an average walk distance of 1.13.

The next set of texts is 01-317: *Rules and policies concerning multiple ownership of radio broadcast stations in local markets*. Reasoned analysis is again the most central power node. FCC, record and policy process are equal in their normalized number followed by competition, diversity and broadcast media.

Bonacich Power		
01-317, win4		
	Power	Normali
reasoned_analysis	414.078	7.865
Fcc	410.21	7.792
record	410.21	7.792
policy_process	410.21	7.792
competition	408.378	7.757
diversity	408.378	7.757

broadcast_media	407.447	7.739
localism	406.133	7.714
legal	403.91	7.672
corporations	401.665	7.63

Table 26: 01-317 Bonacich Centrality

Corporations is the last of the top ten power nodes. Its ego networks consists of 37 nodes with 1,154 connections out of a possible 1,332 resulting in a density of 86.64%, and an average walk distance of 1.13.

The last set of electronically filed comments is 02-277: *2002 Biennial Regulatory Review – Review of the commission's Broadcast Ownership Rule and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996*. The most powerful node according to the Bonacich centrality measure is record closely followed by FCC and localism.

Bonacich Power		
02-277, win4		
	Power	Normali
Record	432.725	7.382
Fcc	430.445	7.343
Localism	430.445	7.343
reasoned_analysis	427.547	7.293
Competition	427.547	7.293
Legal	425.968	7.266
policy_process	425.968	7.266
broadcast_media	423.687	7.228
broadcast_structure	423.687	7.228
Corporations	423.687	7.228

Table 27: 02-277 Bonacich Centrality

Record has an ego network consisting of 40 nodes with 1,211 connections out of a possible 1,560 resulting in a density of 77.63%, and an average walk distance of 1.22.

What makes this body of ecomments interesting is that reasoned analysis is not the top node, but is actually two places away from the top compared to the previous bodies of

ecomments. In closeness measures, record is close to 100 percent of the nodes in this graph; it is connected as a source to every node in the graph.

4.2.5. Cliques and Sub-groups

As per the earlier discussion, looking at the graph structure can vary from a bottom-up approach or a top-down approach. The discussion in chapter three on methodology provides a complete discussion of the various approaches. Complete analyses were run for cliques and sub-groups with a selection of the results included in the appendix. Of the first four measures, cliques, ncliques, nclan, and kplex, cliques seem to provide the most insight. Generally, over the body of all graphs analyzed in this study, ncliques, and nclan, resulted in small numbers, and were not helpful in showing sub-groups. In other words, there existed one to two groups with 15-20 nodes or more in each group. The opposite problem occurred with kplex; there were hundreds of groups made up of a smaller number of nodes. The dense nature of the graphs, and the fact they are structured primarily in dyads are consistent with this result. The definition of cliques is that of the maximal sub-graph[22]; while it is too strict of a definition for many graphs, it has proved helpful in this study. The results however, did not provide any additional information beyond the centrality measures. The following charts are included to demonstrate the large number of cliques that the policy graphs contain.

[22] The analysis for the maximal sub-graph was run with a minimum of 3 nodes.

4.2.5.1. Policy Texts

	Policy, win4	NPRM, win4
# of Cliques	50	49
# of n-cliques	5 2-cliques	2 2-cliques
# of nClans	5 2-clans	2 2-clans
# of kPlexes	477	416

Table 28: Bottom-Up Sub-Graph Results

The policy text has 50 cliques with policy process being in every clique. The following graph shows the overlap of nodes within the various cliques.

Within this measure, policy process and broadcast media are the most connected nodes to create a sub-graph. Policy process exists in all 50 cliques while broadcast media is in 47 of the 50 cliques. Legal, record, and competition overlap along with the previous two at the next level: 43 cliques.

The NPRM contains 49 cliques with record being in 41. The overlap develops at the 40 clique level with competition joining record. Localism joins at 39.

4.2.5.2. Commissioner's Comments

	Commissioners, win4	Democratic Commissioners, win4	Republican Commissioners, win4
# of Cliques	64	67	37
# of n-cliques	3 2-cliques	2 2-cliques	3 2-cliques
# of nClans	2 2-clans	2 2-clans	3 2-clans
# of kPlexes	489	589	429

Table 29: Commissioner's Cliques/Sub-Groups

Of the 64 cliques that exist in the commissioners documents, competition is in 60 of them, and legal is in 54. The overlap for legal occurs at the 54 level and broadcast media joins the two at 52.

In contrast and comparison, within the democratic commissioner's graph, competition is in 57 of 67 maximal sub-graphs, followed by broadcast media at 54. In the republican commissioner's graph, legal exists in 23 of 37 graphs, joined by broadcast media at 20.

These are just a few of the results in running cliques and sub-graphs analysis. The appendix contains a sampling of the results obtained. The conclusion in running all the various analyses is that for the research questions asked, the Bonacich's Power Centrality measurements provide the most insight.

4.3.Media Contribution to FCC's Media Ownership Policy

The final research question involves exploring what knowledge maps exist in media reports about the biennial review. Once it is determined what primary maps exist, an attempt will be made to see what contribution those maps make to the FCC ownership policy. Like the previous research question, this analysis will follow the basics of social network analysis.

4.3.1. Basic Graph Properties

The following chart provides information on the densities in each graph.

	Window 4	Window 7	Window 10
Media Reports	42%	50%	55%
Broadcast Media	36%	43%	51%
Magazines	16%	23%	31%
Newspapers	33%	39%	46%
Websites	37%	47%	50%

Table 30: Media Reports Density

The densities in these graphs are on the low side compared to the graphs in the previous research questions. The graph for all the media reports is fairly consistent with previous graphs.

4.3.2. Embedded Graph Properties

	Window 4		Window 7		Window 10	
	Reciprocity	**Transitivity**	**Reciprocity**	**Transitivity**	**Reciprocity**	**Transitivity**
Media Reports	68%	16.44%	77%	24.56%	80%	29.67%
Broadcast Media	53%	10.15%	64%	16.63%	71%	23.68%
Magazines	35%	1.56%	42%	3.52%	43%	6.5%
Newspapers	60%	8.78%	65%	13.54%	70%	19.71%
Websites	62%	12.04%	71%	20.96%	74%	24.13%

Table 31: Media Reports Reciprocity and Transitivity

As has been seen in other graphs, these graphs are made up primarily of dyads and a very low percentage of triads.

4.3.3. Ego Networks

Ego Networks will be looked at in a bit more detail as centrality measures are discussed.

4.3.4. Centrality Measures

Once again, the primary graphs discussed in centrality measures will be those using a window size of 4. Additionally, only Bonacich's Power Centrality results will be discussed.

4.3.4.1. Media Reports

The top node is broadcast media, followed by competition, and policy process. These are the same results as degree centrality. As been mentioned earlier, it is not surprising that

broadcast media is the most powerful node given it is the subject of the policy. Competition and policy process have been seen throughout the corpus. One node/concept not seen as much is democracy.

Bonacich Power		
Media Reports, win4		
	Power	Normali
broadcast_media	326.189	9.959
Competition	325.045	9.924
policy_process	324.355	9.903
Ownership	315.532	9.633
Corporations	313.571	9.573
Fcc	294.825	9.001
Democracy	294.314	8.985
Localism	285.997	8.732
Diversity	285.775	8.725
media_ownership	267.646	8.171

Table 32: Media Reports Bonacich Centrality

The ego network for democracy consists of 28 nodes with 531 connections out of a possible 756 resulting in a density of 70.24%, and an average walk distance of 1.30.

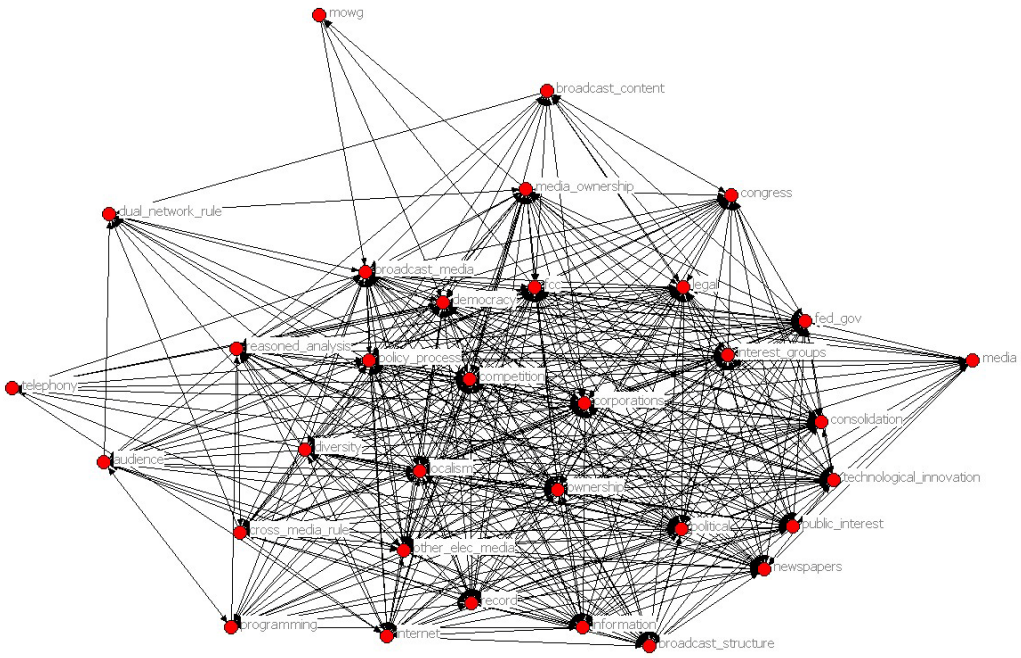


Figure 6: Democracy Ego Network

4.3.4.2. Broadcast Media

The Bonacich power measure reveals broadcast media to be the most powerful node followed by competition and corporations.

Bonacich Power		
Brdcst Media, win4		
	Power	Normali
broadcast_media	271.619	10.249
competition	256.5	9.679
corporations	238.177	8.987
Fcc	227.809	8.596
policy_process	227.73	8.593
localism	218.805	8.256
ownership	217.962	8.224
interest_groups	210.635	7.948
democracy	190.175	7.176
other_elec_media	177.469	6.696

Table 33: Broadcast Media Bonacich Centrality

The corporation ego network is displayed below. This network consists of 22 nodes with 252 connections out of a possible 462 for a density of 54.55% and an average walk distance of 1.46.

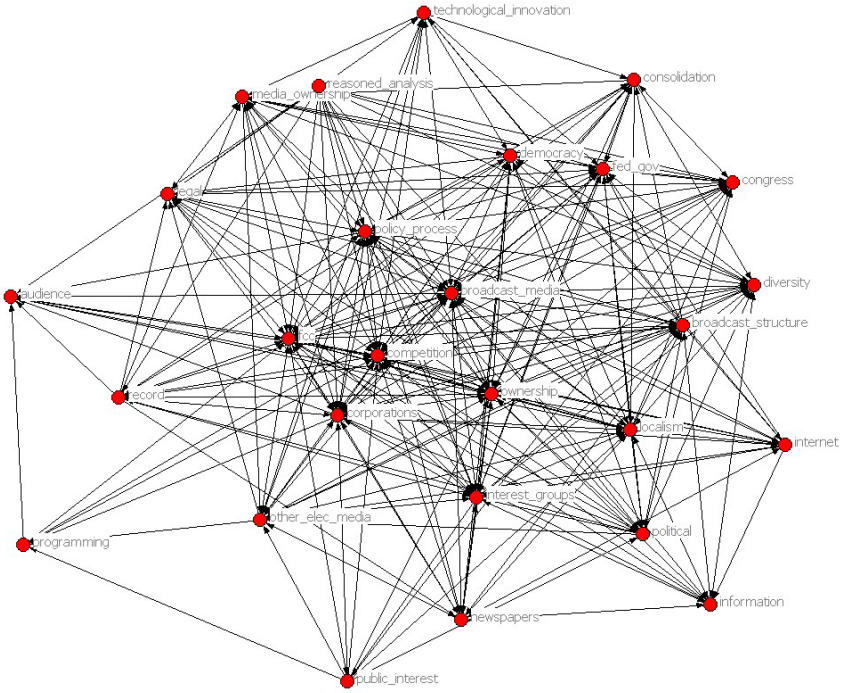


Figure 7: Corporations Ego Network

4.3.4.3. Magazines

In the Bonacich power measure, competition, FCC, and broadcast media are the top three nodes. Out of the other media text, magazines have the smallest corpus.

Bonacich Power		
Magazines, win4		
	Power	Normali
competition	136.826	11.521
Fcc	130.175	10.961
broadcast_media	129.178	10.877
policy_process	124.982	10.523
other_elec_media	121.802	10.256
newspapers	91.203	7.679
ownership	83.869	7.062
corporations	79.105	6.661

Localism	61.738	5.198
consolidation	47.874	4.031

Table 34: Magazine Bonacich Centrality

4.3.4.4. Newspapers

In the newspaper accounts of the Third Biennial Review, broadcast media, policy process, and competition are very close to each other. Within the top ten nodes, localism is ahead of diversity. The only two media containing diversity in the top ten are newspapers and websites.

Bonacich Power		
Newspapers, win4		
	Power	Normali
broadcast_media	280.662	10.736
policy_process	277.686	10.622
competition	270.679	10.354
corporations	260.167	9.952
localism	254.564	9.738
ownership	251.535	9.622
Fcc	244.758	9.362
legal	217.494	8.32
other_elec_media	209.639	8.019
diversity	195.961	7.496

Table 35: Newspapers Bonacich Centrality

The ego network for diversity consists of 16 nodes with 168 connections out of a possible 240 resulting in a 70% density, and with an average walk distance of 1.30.

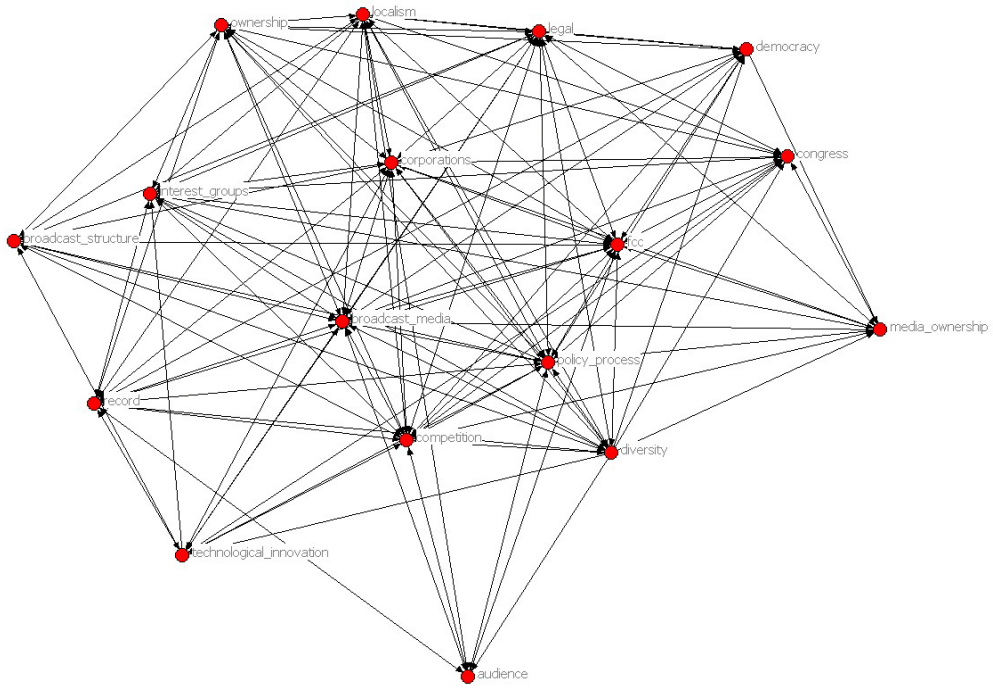


Figure 8: Diversity Ego Network

4.3.4.5. Websites

For the websites used in this study, broadcast media, competition, policy process, and ownership are the most powerful nodes/concepts.

Bonacich Power		
Websites, win4		
	Power	Normali
broadcast_media	327.62	10.782
competition	326.624	10.75
policy_process	312.615	10.289
ownership	311.407	10.249
fcc	295.385	9.722
corporations	278.044	9.151
democracy	272.561	8.97
localism	261.92	8.62
diversity	254.696	8.382
interest_groups	244.213	8.037

Table 36: Websites Bonacich Centrality

A node that has come towards the top is ownership. Its ego network consists of 30 nodes with 468 connections out of a possible 870 making for a density of 53.79% and an average walk distance of 1.46.

4.3.5. Cliques and Sub-Groups

While the various measures were run for cliques and sub-groups, none of the results added anything to the centrality measures. The results obtained were very similar to those for the policy texts.

4.4.Conclusion

The three research questions have been analyzed using a combination of network text analysis (NTA) and social network analysis (SNA). Without question the resulting graphs are very well connected, dense, and stable containing short distances. Additionally, the nodes are highly reciprocal in nature. Consequently, centrality measures in general and the Bonacich power centrality measure are able to identify the most powerful nodes. The following chapter will take these findings and discuss them in light of the research questions.

5. Discussion

Similar in structure to the preceding chapter, this chapter will discuss the findings presented in light of the research questions being asked. The preceding chapter presents the results of the analysis in quantitative form as determined by mathematical computation from graph theory. The numbers clearly reveal the central or powerful node/concept. What is not revealed are the nuances within the text. As covered in chapter three, the strength of network text analysis (NTA) and social network analysis (SNA) is the merging of both quantitative and qualitative data. The primary focus on this chapter will be to use qualitative data to draw out the deeper meaning of each node/concept.

5.1.Empirical Basis of the FCC's Media Ownership Policy

The goal of using a citation matrix, or a two-mode affiliation network, is to determine if the Report and Order in the Third Biennial Review has an empirical foundation. Simply looking at the citation matrix (table 4, Chapter Four) with the raw numbers reveals obvious results: the policy cites ecomments more than any other form of citation. And of those submitted ecomments, the majority has to do with competition. The bipartite graph visualizes the top degree centrality nodes as ecomments and FCC. The other top nodes in the graph are: MOWG, Federal Court, fact, and study. The transformation of the citation matrix from a two-mode affiliation network into a one-mode graph reinforces the results from the bipartite graph. The results from the bipartite graph and the one-mode network are identical. The strength of the one-mode graph centered on the citation types is that it provides more nuance to the results. Qualitative data provides insight into how these citations were used.

The following sentence from the policy provides an example of the type of ecomments cited when discussing competition.

> Several commenters propose that we eliminate the current rule or substantially modify the rule in order to permit more *same-market combinations*. (¶209).

The citation for this sentence refers to comments submitted by Alaska, Belo, Duhamel, Emmis, Fox, Granite, Gray, Hearst-Argyle, Media General, Paxson, Sinclair, and Westwind.

The second highest Bonacich power centrality in the one-mode network focused on the citation category of FCC documents. In the one-mode network focused on concepts policy process is the second most powerful node. The following quotes from the policy illustrate differences between policy process tied to FCC as opposed to ecomments.

> And we reiterate our 1984 statement that even if the national market were the relevant area to consider, the proliferation of media outlets nationwide renders the current rule unnecessary. (¶535).

> Many parties favor bright line rules and oppose case-by-case analysis because bright line rules provide certainty to outcomes, conserve resources, reduce administrative delays, lower transaction costs, increase transparency of our process, and ensure consistency in decisions. (¶82).

Both statements reference the policy process, the first however, cites an earlier FCC policy issued in 1984. The second statement cites comments submitted by NAB, Bonneville, Eure, HBC, and MMTC; each of which is either a broadcasting company or interest group.

While competition and policy process were the top cited actors in the one-mode network tied to concepts, programming was the third top Bonacich power centrality node. The following, from the policy, is indicative of the type of citation related to programming.

> Commenters advocating relaxation of the local TV ownership rule content that if the current rule has any relationship to localism, it is to hinder the achievement of this policy goal. According to these commenters, the current financial position of many television broadcasters and the high cost of producing local news and public affairs programming threatens existing local programming and precludes development of new programming. (¶157).

These two sentences cite Sinclair, Media General, Duhamel, Nexstar, Gray, Alaska, Belo, Coalition Broadcasters, Granite, and the NAB; ecomments.

One more example will be given to demonstrate the way items are cited. In this case it is an explanation of disagreement with various studies submitted during the process.

> We disagree with studies suggesting that broadcast television is not a relevant product market. A critical failing of these studies is the assumption that any exercise of market power would result in a general and uniform price increase to all advertisers. These studies argue that a significant number of advertisers have good substitutes for broadcast television and could defeat a general and uniform price increase. These studies fail to recognize that media markets are characterized by repeated interaction that enables broadcasters to identify advertisers that have good substitutes for broadcast television and those that do not have good substitutes for broadcast television. With this information, the exercise of market power in broadcast television markets would result in targeted and non-uniform price increases to those advertisers that do not have good substitutes for broadcast television, without raising prices for those advertisers that do have good substitutes for broadcast television. (¶152)

In this example, the policy cites a study submitted by Sinclair Broadcasting that was conducted by Robert W. Crandall, nonresident senior fellow in the economic studies program at the Brookings Institution. The same citation also lists another study submitted by Sinclair that was done by Michael G. Baumann and Joseph W. McAnneny, both of whom work for Economists Incorporated, an economic consulting firm located in Washington, D.C.

These examples demonstrate that the citations are used in both agreement and disagreement in the formation of the policy. While the FCC appears to have paid attention to electronically filed comments, almost all of the comments cited are from corporations or interest groups, not from individuals. This is consistent with the work of Stuart Shulman (2004) who found that various departments within the federal government, while open to ecomments, needed those comments to be substantive. By substantive, it is meant either based in empirical studies or grounded in case law. This is consistent with the literature presented in Chapter Two that discusses how policy is still grounded in positivism. What makes for an uneven playing field is

that corporations have the resources (legal and research) to provide information grounded in positivism.

By collapsing the citation categories into four major categories, studies, legal, FCC, and ecomments[23], and transforming the collapsed data into a one-mode network, measuring with centrality measures, it presents a similar picture.

Bonacich Power		
	Power	Normalized
Ecomments	558082.2	3.042
FCC	338320.2	1.844
Studies	294181.3	1.604
Legal	161382.3	0.88

Table 37: Bonacich Centrality for Collapsed Citation Matrix

Ecomments, even in a collapsed format, continue to be the most central event tied to actors. FCC documents continue to be second followed closely by the various studies that were cited. Least important are the legal citations.

This presents a scenario in which both sides might be correct in arguing how responsive the process was to the public. Because the majority of the citations are from electronically filed comments, the FCC is able to accurately claim they responded to the public. The opposition, primarily led by interest groups, claims the FCC was not responsive to the public because they cited primarily corporations. The key issue then is how the public is defined.

Finally, in answering the research question, the basis of this policy appears to be built on responding to comments filed electronically and while it does cite empirical studies, the policy does not appear to be based on that data. This is in contrast to the statement FCC chairman Michael Powell released detailing his reasons for voting for the policy. “I take pride in the fact

[23] Legal: CFR, Fed. Court, USC, Supreme Court, congress, SEC, DOJ, and OMB; Studies: book, MOWG, journal, paper, study, internet, magazine, and newspaper; Ecomments: ecomments, en banc, and ex parte; FCC: FCC.

that our decisions rest on an extraordinarily strong empirical record. For the agency charged with preserving the free flow of information in our democracy, the public should expect no less from us." (FCC, Powell, p. 3, 2003). The reaction of the public however, seems to suggest it expected something more.

5.2. Ideological Nature of the FCC's Media Ownership Policy

The benefit of employing NTA and SNA as a hermeneutic in analyzing the policy texts is the emergence of cognitive or knowledge maps. Additionally, these knowledge maps are visualized as a connected network. By looking at the nature of the networks and using centrality measures, the goal is to determine what concepts are central or most powerful. The analysis, presented in Chapter Four, also reveals that Bonacich Power centrality helps to cut through the lack of nuance in the primary centrality measures thus providing clear central nodes. The following table presents a summary of the top two nodes in each policy text.

	Top Node	Normalized	2nd Top Node	Normalized
Policy	Legal	9.45	Broadcast media	9.374
NPRM	Competition	9.329	Legal	9.193
Commissioners	Competition	10.288	Legal	9.893
Republican Commish	Competition	11.53	Localism	11.058
Democratic Commish	Competition	10.599	Broadcast media	10.255
Third Court	Legal	10.691	Broadcast media	10.667
Majority	Legal	9.526	Competition	9.496
Dissenting	Competition	10.502	Legal	10.498
FCC Studies	Broadcast media	12.287	Competition	11.882
Capitol Hill Hearing	Reasoned analysis	10.252	Broadcast media	9.9
En Banc	Reasoned analysis	10.8	Competition	10.747
FCC Roundtable	Reasoned analysis	11.944	Competition	10.639
Public Comments	Reasoned analysis	7.545	Policy process	7.518
00-244	Reasoned analysis	7.838	FCC, record, localism, policy process	7.772
01-235	Reasoned analysis	7.327	Policy process, record, FCC	7.287
01-317	Reasoned analysis	7.865	FCC, record, policy process	7.792
02-277	Record	7.382	FCC, localism	7.343

Table 38: Summary of Bonacich Power Centrality Measures

To facilitate the discussion regarding the ideological nature of the policy and various policy documents, the rest of the discussion will be organized around initial observations, the top nodes, the policy goals, and the place of reason.

5.2.1. Initial Observations

There are a number of initial observations that need to be made. First, there are a total of seventeen categories of documents representing the policy section of this study (see Table 38). The leading concept is reasoned analysis with seven, followed by competition with five, legal with three, broadcast media with one, and record with one. Competition and legal will be dealt with in more detail further in the analysis. As to record, the concept is the result of any reference made to empirical data, evidence, or data that is mentioned in the text. The fact that record is the top node for ecomments submitted on docket 02-277 makes sense. 02-277 is the docket covering the Biennial review. The following electronic submission from an individual illustrates the type of comments that make mention of the record[24].

> I encourage you to provide a detailed description of all proposed changes, their empirical basis, and a meaningful period of time for the public to review and comment on any proposed changes before a final rule is issued. The stakes for citizens and the nation are enormous. More information, not less, about proposed changes would best serve the public interest. Indeed, we hope the Commission would do everything in its power to keep the rulemaking process as open and inclusive as possible.

On the other side of this issue would be this example in which the NAB is providing information for the record.

> In recent meetings with several Commissioners' offices, we were asked whether we could provide a list of TV markets showing the average audience share rankings of the stations in those markets. Attached to this letter is such a list, showing audience shares for all commercial television stations in each of the 210 television markets, averaged over the four ratings periods ending in July 2002.

[24] This comment is also an example of form letters sent to the FCC that are generated by special interest groups but sent from individuals.

In this case the concept of record is really no different than from the individual who opposes rule changes. The difference gets down to what is considered empirical.

The high ranking of broadcast media perhaps makes the most sense of any the power concepts. Broadcast media is used to reference words like radio, TV, TV network, public airwaves, affiliates, etc. Given the policy is about broadcasting it makes sense the various policy texts would address broadcast media. Consequently, when looking at the results for the twelve FCC commissioned studies, perhaps the second top node of competition ought to be viewed as the more significant of the results.

Secondly, the intent of this research in its design was to measure the differences between graphs using hamming distance as well as the possibility of looking at structural equivalence. These measurements could not be conducted on the data because each graph is not identical to each other. Across the corpus the number of nodes varied based on the size and content of the text. To work at making the sizes of each matrix identical would harm the emerging nature of network text analysis. The number of concepts has emerged from the text and is also the result of the window size used in the analysis with AutoMap. The use of normalized numbers does help in comparison, but the primary point of comparison will have to be more qualitative in nature.

The third observation is SNA and NTA do not provide positive or negative correlation for the nodes/concepts. In other words, because competition is one of the top nodes in terms of centrality does not mean that within every body of text, the same thing is being said. The same concept could draw positive or negative comments. As stated in chapter two, the problem with a positivist approach to social science is the need to separate value from facts. In some cases, qualitative data will enable values to emerge from the text.

5.2.2. Policy Goals

As mentioned in chapter two, the policy goals set for the Third Biennial Review are diversity, competition, and localism. Part of discovering the ideological nature of the policy is to start with how these three policy goals surfaced in centrality measures. The following table provides the normalized number of the Bonacich power centrality for each of the policy goals. The numbers with asterisks indicate inclusion in the top two nodes for the specific policy text.

	Competition	**Localism**	**Diversity**
Policy	9.359	9.271	8.524
NPRM	9.329*	7.836	7.776
Commissioners	10.288*	9.626	7.863
Republican Commish	11.53*	11.058	8.756
Democratic Commish	10.599*	9.289	7.798
Third Court	9.708	9.375	7.703
Majority	9.496*	8.248	8.395
Dissenting	10.502*	8.579	8.162
FCC Studies	11.882*	10.689	9.845
Capitol Hill Hearing	9.711	7.163	7.599
En Banc	10.747*	9.133	7.936
FCC Roundtable	10.639*	9.512	9.881
Ecomments	7.449	7.474	7.449
00-244	7.742	7.772	7.742
01-235	7.261	7.221	7.261
01-317	7.757	7.714	7.757
02-277	7.293	7.343	7.084
MEAN[25]	9.49	8.66	8.09

Table 39: Bonacich Centrality for Competition, Localism, and Diversity

5.2.2.1. Competition

The concept competition is the result of any verbiage with words such as advertising(ers), concentration, marketplace forces, firm, etc.[26]. Competition is the most powerful node in the

[25] Running a simple z-test for differences between all three norms indicates that all three differences are statistically significant: at the .05 level between competition and localism, .10 level between localism and diversity, and .00 level between competition and diversity.
[26] See appendix for a more complete list

NPRM, Commissioner's comments (both Republican and Democratic), and the dissenting position for the Third Court. It is the second most powerful node in the majority position for the Third Court, FCC Studies, En Banc Presentations, and the FCC Roundtable. The following text from the NPRM is fairly typical of text discussing competition.

> In analyzing the relationship of the radio/TV cross-ownership rule and our goal of competition, the key issue under our traditional competition framework is the extent to which radio and television stations compete with each other to attract advertising revenue. The stronger the competition between these two outlets, the more relevant a cross- ownership limit may be. Relaxation or elimination of the rule may not harm competition if the record shows that there is weak substitution between radio and television advertising. We welcome comment, as well as any empirical studies, on the substitution between radio and television advertising. We also wish to consider what bearing advertising substitution between radio, television, and other outlets, such as newspapers, magazines, and Internet websites, may have on this rule. Any empirical work demonstrating such advertising substitution is strongly encouraged. (¶104)

The highest normalized score for competition comes from the FCC Studies. This is not surprising given that seven of the twelve studies have competition as the primary focus. At least three more, while focused on other topics, are heavily focused on competition issues like ratings. As was discussed in the opening chapter, competition issues have always been a bit easier to measure when compared to localism and diversity.

It is not surprising that the public record, in addition to reasoned analysis, has competition as a central node. The Capitol Hill hearing, the En Banc, and FCC Roundtable had as the presenters a number of people representing ownership and management of broadcasting companies. The primary concern for business owners is that the policies would allow them to own more stations in order to be more competitive. At the Capitol Hill hearing, Mr. L. Lowry Mays, chairman and CEO of Clear Channel Communications testified in favor of the policy in order to improve competition.

> All of that began to change with deregulation. With the ability to own more stations both locally and nationally, stations could cut costs and compete more effectively for media advertising dollars. Owners can reinvest more in their stations, improving their facilities, increasing the quantity and quality of their programming and hiring better on-air talent.

In contrast, Ms. Jenny Toomey, Executive Director, Future of Music Coalition, also speaking about competition, but against the argument that competition creates diversity of programming.

> But this misses the fundamental logic of the value of a station group. The primary goals of a radio station group are, one, to attract the largest number of listeners in the most attractive demographics, and two, to ensure that if a listener changes the station they will change to another station owned by the parent company. The economic incentive is not to provide diversity of programming, rather radio companies seek to assemble overlapping and economically lucrative audiences that will generate the most revenue.

The Commissioner's comments also have competition as the top node. The highest score for competition among the commissioner's text is the republican commissioners with an 11.53 as opposed to the democratic commissioners with a 10.599. The statement from republican commissioner Kevin Martin reveals his view of competition.

> The media marketplace is not stagnant. Factors such as rapidly improving technology and innovation have contributed to a media environment that is continually evolving—and considerably different from the one when most of the broadcast ownership rules were first adopted. . . . I am particularly pleased that, for the first time in 28 years, the Order we adopt today finally concludes a review of the newspaper/broadcast cross-ownership rule. Adopted in an era with little cable penetration, no local cable news channels, few broadcast stations, and no Internet, the rule was based on a market structure that bears almost no resemblance to the current environment. Indeed, because of these marketplace changes, we have revised all our other media rules at least once since the ban's adoption. As a result, newspapers have been the only media entities prohibited from owning a broadcast station in the markets they serve, regardless of how large the market was or how many newspapers or broadcast stations were present. For example, in the large markets, two broadcast television stations have been permitted to combine and could own up to six radio stations, as well. Yet, newspapers remained prohibited from owning even a single radio station. Today we correct this imbalance, finally giving newspapers the same opportunities other media entities enjoy in medium and large markets. In so doing, we recognize that newspaper/ broadcast combinations may result

> in a significant increase in the production of local news and current affairs, as well as an improvement in the quality of programming provided to their communities. (FCC, Martin, p.1, 2003).

In contrast, democratic commissioner Michael J. Copps is not opposed to competition; he simply does not see this policy as promoting competition.

> This decision further allows the already massive television networks to buy up even more local TV stations, so that they control up to an unbelievable 80 or 90 percent of the national television audience. Where are the blessings of localism, diversity and competition here? I see centralization, not localism; I see uniformity, not diversity; I see monopoly and oligopoly, not competition. (FCC, Copps, p. 3, 2003)

Copps includes discussion of the three policy goals – localism, diversity, and competition – yet, it is the republican commissioners that have localism as the second node. FCC Chairman Michael Powell defends how the new policy promotes localism.

> We again affirm the goal of promoting localism through limits on ownership of broadcast outlets. We sought to promote localism to the greatest extent possible through broadcast ownership limits that are aligned with stations' incentives to serve the needs and interests of their local communities. To analyze localism in broadcasting markets, we relied on two measures; local stations' selection of programming that is responsive to local needs and interests, and local news quantity and quality. Program selection is an important function of broadcast television licensees and the record contains data on how different types of station owners perform. A second measure of localism is the quantity and quality of local news and public affairs programming by different types of television station owners. (FCC, Powell, p. 6, 2003)

Powell is arguing his point on the benefits of competition to localism based on one study – study number seven: *The Measurement of Local Television News and Public Affairs Programs* (FCC, MOWG, Spavins, Denison, Roberts, and Frenette, 2001).

As the public interest literature details in chapter two it has been difficult to balance the public interest with private interests in large part because for the most part what benefits the private interests of business owners and shareholders does in the long run benefit the public

interest. The disagreement over competition evident in the policy texts is in fact, a disagreement over economic interest versus social welfare (Aufderheide, 1999).

5.2.2.2. Localism

Ending the previous section with Chairman Powell explaining how competition promotes localism is a good way to begin the discussion on localism. It is a good place to start because of the ambiguity of localism.

Similar to competition, no one is opposed to localism. The debate is whether lifting ownership restrictions helps or hurts localism. The following from Commissioner Adelstein's statement argues against the policy serving the local market.

> As big media companies get bigger, they may chase the bottom dollar ahead of serving the local needs of the community. They're likely to broadcast even more homogenized programming that increasingly appeals to the lowest common denominator.

The concept of localism is also used a great deal as an adjective. It is used this way in Media Ownership Working Group study three: *Consumer Substitution Among Media* (Waldfogel, 2001). This is fairly common throughout the policy corpus.

> It is well documented in a variety of studies that there are more local media outlets (and programming) in larger markets.

There is throughout the literature and the corpus of the texts studied for this research, the overwhelming sense that anything local is superior to national. There is also the implied belief that local means locally owned and thus locally programmed. During the Capitol Hill Hearing, Senator Ron Wyden (D-OR) talks about how consolidation has harmed localism.

> I think Congress ought to take a careful look at what the canary has to tell us and I will tell you that I am very reluctant to allow this train of consolidation that is going forward down at the Federal Communications Commission to go forward unchecked because I think it would allow the repeat of an experiment that was begun by the Congress in 1996 which has caused problems for competition,

> which has caused problems for localism, and the Congress should be reluctant to allow it to continue.

The problem is that he does not address how localism has been harmed.

5.2.2.3. Diversity

Diversity does not show up as a top or second highest centrality node. The goal of the policy is to promote competition, localism and diversity. The research findings suggest competition is the most important ideology facing the policymakers and stakeholders. Localism is also important to this discussion. Diversity does show up in the top ten nodes in many centrality measures; it simply does not have as high centrality as competition and localism. The following comment submitted by an individual summarizes the argument for source diversity and how it is related to consolidation.

> I'm an unaligned member of the public pressing to keep the ownership rules intact. I fear that lifting them would aid additional corporate consolidation that would diminish economic and creative opportunities for artists and create a sameness among media outlets. I understand that many of the large media companies provide different types of contents/channels, but I fear that the message, news and opinions from each one of those contents/channels will be the same. I want opinions from a variety of sources!

The FCC Roundtable texts produced the highest normalized diversity score with 9.881. The FCC Studies produced the second highest diversity normalized score with 9.845. Part of the reason diversity had its highest score in the FCC Roundtable can be explained by quoting the opening statement from Ken Ferree, Chief, Cable Services Bureau, FCC.

> In addition, we hope to have a lively and provocative debate in the second panel today on the meaning of diversity in this context and the relationship of diversity concerns to media ownership limits, as well as the extent to which outlet diversity actually produces source or viewpoint diversity.

Perhaps what is significant is that the FCC specifically purposed to discuss diversity. Diversity's lowest normalized score is 7.084 found in the group of ecomments filed under docket 02-277:

the overall biennial review. In contrast to this analysis, diversity is the fifth most powerful node in the one-mode network tied to the concepts conducted in the citation matrix.

5.2.3. Legal

The results of the collapsed citation matrix (Table 37) resulted in the category of legal citations (CFR, Fed. Court, USC, Supreme Court, congress, SEC, DOJ, and OMB) being in last place. In other words, legal citations are the least powerful of the nodes in that one-mode graph. In light of those results, it is surprising that legal is the most powerful node in the policy text when using NTA and SNA as well as the second most powerful node in the NPRM and Commissioner's comments. One possible explanation for the results is that the legal citations were not removed from the text when using NTA and SNA. The same was true of the other citations but they were coded differently. For example, in the citation matrix, the names of organizations which submitted comments as a part of the policy process were coded as ecomments. Within the NTA and SNA analysis, the same names were coded as either corporations or interest groups. Nevertheless, the qualitative data related to the node/concept legal ought to be explored further. The node/concept of legal resulted from words like: anti-trust, bright line, First Amendment, Fox-Sinclair, 284f (Sinclair), 280f (Fox), judicial review, legal framework, special disclosure rules, statutory mandate, 202(h), and rational basis test.

The first usage of the concept of legal is straightforward. The following sentences are typical of legal language within the policy.

> We conduct this biennial ownership review within the framework established by Section 202(h) of the 1996 Act . . . Two aspects of this statutory language are particularly noteworthy. First, as the court recognized in both Fox Television and Sinclair, "Section 202(h) carries with a presumption in favor of repealing or modifying ownership rules." That is, Section 202(h) appears to upend the traditional administrative law principle requiring an affirmative justification for the modification or elimination of a rule. ¶10, 11.

This policy is the result of a legal mandate and is also a legal document. Consequently, there is a legal reasoning that has been utilized within the policy.

Related to its legal mandate, another concern reflected in the node/concept legal is that the policy must pass judicial review.

> These comments contain many creative proposals to advance minority and female ownership. Clearly, a more thorough exploration of these issues, which will allow us to craft specifically tailored rules that will withstand judicial scrutiny, is warranted. Therefore, we will issue a Notice of Proposed Rulemaking to address these issues and incorporate comments on these issues received in this proceeding into that proceeding. ¶50.

> Hearst-Argyle contends that its proposal also is likely to survive judicial scrutiny because its 30% hard cap and AMI analysis are both based on antitrust law and analysis. In addition, Hearst-Argyle contends that its proposal avoids several pitfalls of the NAB 10/ 10 proposal. ¶218.

In this second quote from the policy, it becomes apparent even stakeholders understand the legal environment in which the policy must be written. In both cases, there is an understanding that the legal basis must have a process and be grounded. When contrasting these results with the results for ecomments, there is a striking difference. Legal has a normalized value of 7.345 compared to the policy: 9.45, and the Third Court: 10.691. Within ecomments, legal is tied for sixteenth with corporations. Throughout the ecomments, corporations make legal arguments (among others) whereas individuals make an argument like the following:

> Dear FCC:
> The potential for loss of accountability and competitiveness of ideas via the elimination of "cross-ownership" prohibitions (owwnership of both a TV station and a newspaper in the same market) is too great! Don't allow the stage to be set for the control of the communications industry by a powerful few.
> Sincerely, Reine Wonite

This individually submitted comment is more reflective of reasoned analysis – that which will be discussed further in the next section of this chapter.

It is not surprising to see legal as the top node in the Third Court decision. Legal is the top node in the majority opinion and is the second node in the dissenting vote; competition is the top node in the dissenting court. The following section from the Third Court's decision gives insight into their use of legal as well as the policy process.

> Lastly, the Commission attempts to justify its refusal to employ actual-use data by arguing that collecting "information on viewing/listening/reading of local news and current affairs material" would make it "necessary first to determine which programming constituted news and current affairs," which in turn "would present both legal/Constitutional and data collection problems." With respect to "legal/Constitutional" problems, the Commission is apparently concerned about categorizing programming as news or "non-news." But the Commission obtained actual-use data in MOWG Study No. 8 without any "legal/Constitutional problems." There it avoided having to make content-distinguishing judgments simply by asking respondents where they got their local news. And the Commission's reference here to data collection problems is vague and unexplained; there is no suggestion that obtaining actual-use data for outlets within a media type would be prohibitively more onerous than obtaining the same data for the media types themselves, as it did in MOWG Study No. 8. Because the Commission's reasons for eschewing actual-use data in assigning market shares to outlets within a media type and assuming equal market shares are unrealistic and inconsistent with the Commission's overall approach to the Diversity Index and its proffered rationale, we remand for the Commission's additional consideration of this aspect of the Order.

The interesting part of this argument from the Third Court is the use of the FCC's desire to ground the policy on empirical data against the FCC. The court is taking the FCC to task for rejecting one set of data out of legal concerns when not having those same concerns with another set of data. This again points to the problems with a positivist approach.

5.2.4. The Place of Reason

It is also very interesting that all but one of the public record documents has reasoned analysis as the top node. Reasoned analysis is the concept when coding words like analyze, correlate, modify, eliminate, FCC majority, etc. It is communicating the idea of arguing a point.

The results are not necessarily surprising given this explanation. In terms of normalized numbers, the FCC Roundtable has the largest value at 11.944 followed by the Capitol Hill Hearing at 10.252.

At the beginning of the FCC Roundtable, FCC Chair, Michael Powell explains his desire and argument for how the roundtable discussion as well as the formation of the Media Ownership Working Group will assist in good policy.

> And it has been my conclusion and those of many of my colleagues here that increasingly the debate over the proper regulatory media foundation is ultimately unsatisfying if there isn't a concomitant effort to build and substantiate through a better record and a better development of an analytical basis for having those debates.

At the En Banc presentation, David Croteau, Ph.D., Associate Professor, Department of Sociology and Anthropology, Virginia Commonwealth University argued consolidation has resulted in negative consequences.

> Here in Richmond, this translated into Clear Channel owning six local stations resulting in a loss of competition and the loss of local content in favor of homogenized national programming. For example, WRVA—a Richmond institution long known for its focus on local news and talk—was gutted after the Clear Channel takeover. Nearly every on-air personality was fired or resigned and public outcry filled local newspaper columns. As one local columnist put it, "In its embrace of nationally syndicated personalities, to the exclusion of locals, Clear Channel has made it clear that it has no use for this community's talents, viewpoints and flavor." In short, the deregulation of radio ownership has been a disaster for Richmond and many other communities across the country. This experience should be a cautionary tale in considering any future rule changes.

He also provided empirical evidence in his argument.

> There is other empirical evidence indicating that the public interest is not served by more concentrated ownership. For example: The elimination of the Financial Interest and Syndication rules have resulted in the broadcast networks owning nearly 80% of their prime-time programming—four times as much as they did when the rules were in place. This has clearly discouraged the development of programming from multiple, independent producers.

The majority of the electronically filed comments were from individuals like Nickolaus E. Leggett N3NL Amateur Radio Operator. Mr. Leggett's comments are arguing against the policy on the basis of diversity from his own experience.

> The Commission has considered diversity as shown by the aspects of viewpoint diversity, outlet diversity, and source diversity. There is another aspect of diversity which is size diversity. My colleagues and I have noted that small stations are more open-minded than large stations. The small stations are more likely to take a risk on covering unusual topics or providing programming outside of the mainstream. This open-mindedness is an important factor for the health of American democracy. The small station allows the minority viewpoints to be presented to the community in the American marketplace of ideas.

Given Mr. Leggett's reasoned analysis, it is not surprising the FCC ignored comments like this. It lacks an argument based on empiricism or case law. It is merely the opinion of one stakeholder.

In contrast, the following comments were filed on behalf of Media General, Inc. in addressing the cross ownership rule. Not surprisingly, Media General, Inc. owns television stations as well as newspapers.

> The empirical work in Professor Waldfogel's paper has such flaws that the quantitative results do not provide a meaningful basis for governmental review of a regulation. Moreover, even if the empirical work had been flawless, the structure of that work would not reveal the underlying measures of substitution, complementarity, or any other useful information to evaluate the economic merit of a regulation. Consequently, the study does not inform the FCC's evaluation of the newspaper cross-ownership rule and, if taken seriously, could even mislead that evaluation. In short, "certainly none of the results provides any support for continuation of the newspaper cross-ownership rule."

It is this kind of reasoned analysis that carries more weight with the FCC and in fact, carries more weight in society.

It has been stated repeatedly that the problem of a positivist approach to policy decision-making leaves policy work to the experts while ignoring in this case, the consumer.

5.3.Media Contribution to FCC's Media Ownership Policy

The last research question looks to discover knowledge maps utilized in media reports and then determine how that might have contributed to the policy. Discovering the knowledge maps to the various media reports is the easiest part of this research question. Determining contribution or influence to the policy is difficult for two reasons.

First, the vast majority of media reports came within the last week before the report was released; the week of May 26, 2003. The searching process yielded these results: searching on 10/29/2001 – 12/31/2002 resulted in 59 transcripts. Searching on 01/01/2003 – 03/31/2003 resulted in 54 transcripts. Searching on 04/01/03 – 05/01/03 resulted in 7 transcripts. The final date search was 05/01/03 – 06/01/03 resulting in 284 transcripts. In other words, 70% of the transcripts came from the final month of the policy process. This is consistent with Schudson (1998) and Zallar (2003) in the concept of news that simply alerts the public to issues. Given the length of the policy process and lack of media reports during the months of deliberation and writing, it is doubtful the media had any influence in the final policy.

The second difficulty in addressing influence is the result again of comparison across matrices of different sizes. Nevertheless, with the ability to normalize centrality measures and a qualitative approach to the research, discussion can occur.

The discussion will begin with a summary of the top two nodes in Bonacich Power centrality measure across the corpus of media reports.

	Top Node	Normalized	2nd Top Node	Normalized
Media Reports	Broadcast media	9.959	Competition	9.924
Broadcast	Broadcast media	10.249	Competition	9.679
Magazines	Competition	11.521	FCC	10.961
Newspapers	Broadcast media	10.736	Policy process	10.622

Websites	Broadcast media	10.782	Competition	10.75

Table 40: Summary of Bonacich Power Centrality Measures for Media

Like the previous bodies of text, there are a number of initial observations to be made. First, broadcast media is the dominate node/concept across the various media with the exception of magazines. To begin with, there were only three magazines that met the searching criteria within the search parameters: Business Week, The Economist, and The Weekly Standard. All of their reports came primarily during the month of March 2003. Due to the nature of each of these magazines, it is not surprising competition is the top node. The normalized value of competition for magazines is 11.521 – the third highest value throughout all texts (.01 behind Republican commissioners). These magazines are reporting the business aspect of the policy. The following paragraph from The Economist outlines a discussion on telephony focused on competition.

> The first point that Mr Powell makes about his agenda is a practical one. As a matter of urgency, says Mr Powell, a trained lawyer who cut his teeth as a judge's clerk, the FCC's rules must comply with the 1996 act. This is not just stating the obvious. The act made ambitious attempts to inject *competition* into the "last mile" of telephone lines running into homes and businesses by forcing the local "Baby Bell" operating companies to lease these networks to competitors at discounted prices. Nearly seven years after the passage of the 1996 act, says Mr Powell, the FCC has neglected to demonstrate that its network-opening rules are, in fact, legal. On the contrary, the courts have twice thrown the FCC's rules out and told it to start again.

Broadcast media is the top node throughout all these media reports with competition being the second top node throughout. Given the explanation for broadcast media as mentioned earlier, it is not surprising to see it as the top node – broadcast media is the focus of the media reports.

Given the results, it is perhaps more important to look at the second top nodes found within the media reports. Those are: competition (3), FCC (1), and policy process (1). The focus

on competition is consistent with earlier examples. This selection is from the Consumer Union's website dated February 3, 2003.

> The groups said the very data that media companies have given the FCC in support of relaxing the rules actually demonstrates the need for preserving them. The industry's own information shows that 70 percent of all *markets* have four or fewer sources of original TV news production. Newspaper circulation data shows extremely high levels of market concentration, with a single firm usually dominating the ownership of a community's sources of printed information. Scaling back ownership rules would only lead to greater control by fewer media outlets, the groups argued.

The conclusion regarding media influence is that the media had very little influence on the policy. It is possible the media may have been influenced by the policy debate as evidenced by similar central nodes/concepts though it is more likely they simply picked up on the key issues.

5.4.Conclusion

This chapter (along with chapter four and the Appendix) contains a great deal of analytical information regarding the empirical nature of the policy, the ideological nature of the policy, and media influence in the policy. There are top concepts consistent throughout the corpus of the Third Biennial Review. The basis of the policy is not empirical, but is formed by responses to electronically filed comments. Specifically, this basis is responding to the concept of competition.

Competition surfaces as a powerful ideological knowledge map. Competition appears to be the overwhelming goal of the policy in spite of being one of three stated goals. When studying the history of media ownership rules, there has always been a conflict between the basis for limiting ownership – diversity – and competition. The reality is that even when discussing

diversity and localism, these two policy goals are mentioned in light of being competitive. Not a single document within the corpus is against competition. The disagreement is to the nature of competition. The rest of the ideological map is reasoned analysis, legal, policy process.

The media does appear to function as a burglar alarm for citizens. With the lateness of the traditional media reports (radio, TV, and newspapers) in the policy process, it is doubtful media coverage influenced the policy. Websites appear to have sounded the alarm a bit earlier, but with similar central nodes, it is doubtful they had much influence.

The concluding chapter takes the discussions from this chapter and places them into the context raised by the literature review and the FCC's Third Biennial Review as discussed in chapter two. The next chapter also provides policy recommendations and discusses the future direction in research.

6. Conclusion

This has been a case study; one instance with one methodology intended to provide insight into the problem of the role of information within policy decision-making among policy

elites. The concluding chapter will reflect on the findings of this study in light of issues raised in the literature review, policy recommendations, and future research.

6.1.Issues Raised in the Literature Review

The policy problem – FCC media ownership limits – was spelled out in the first chapter as well as additional background information on the concept of public interest and the policy goals of competition, localism, and diversity in chapter two. The literature review regarding the role of information within policy decision-making was discussed in chapter two. The two areas, information within policy decision-making and media ownership, have a number of areas of connection or overlap making this an ideal case study.

First, the FCC desired to make a policy based on empirical data. The literature points to limitations of making policy decisions based on empiricism within social science research. It may be possible to empirically test the goal of competition, but as the literature shows, attempting to define and measure diversity and localism have proven to be extremely difficult. By employing a methodology in line with social construction holds out the potential for emerging knowledge.

Second, the methodology employed in this study, network text analysis (NTA) and social network analysis (SNA), is consistent with social construction and Habermas' hermeneutic. Both NTA and SNA have the potential to reveal knowledge maps through emerging concepts; concepts that come from the text rather than brought to the text by the researcher.

Third, the Third Biennial Review attracted much public attention providing a form of participatory democracy. The information gathered from public input had the potential to provide an additional perspective not provided by the other sources of information. In other words, much of the information appears to be from a certain perspective; namely, that of the owners. Public

comments provide the possibility of the perspective of consumers of media; a very different target audience with different knowledge. There could be valuable information available to the policymakers even if some of the information may be non-empirical. By employing NTA and SNA, there is the possibility that non-empirical data may surface.

Fourth, this study provides an interesting opportunity to explore how the media covers its own regulatory body and perhaps policy issues in general. While Barber (1984) and others view the media as essential for participatory democracy, it is necessary for this information to be disseminated in a timely and thorough fashion. Emerging mental maps within the policy process have the potential to reveal the role media plays in communicating policy information.

These areas of connection have raised three primary research questions:

Q1: How empirical is the FCC media ownership policy in its basis?
Q2: How ideological is the FCC media ownership policy in its basis?
Q3: How much do media reports contribute to the FCC media ownership policy in its basis?

Chapters four and five present the findings and discuss the results of network text analysis (NTA) and social network analysis (SNA) conducted on the policy documents, Third Court decision, FCC Studies, and the public record. While the results provide an answer to the research questions, the results also raise issues discussed in the literature review.

6.1.1. Social Science Research

The primary problem with social science research from a positivist framework is threefold: values are separated from fact, all aspects of research are viewed as linear, and experts are responsible to produce knowledge (Innes, 1990). What is left out of the policy process are values and facts, the non-linear nature of the process and knowledge, and public opinion. Critical Theory has provided possibilities to improve policy making and policy decision-making. Within

this framework the work of Habermas (1984) has encouraged researchers to view the world as a text that must be interpreted as well as to redefine what public means.

Network Text Analysis (NTA) and Social Network Analysis (SNA) hold promise in helping to discover new ways of looking at the policymaking and decision making process. Because the Third Biennial Review of the FCC's media ownership policy is all text, NTA and SNA fit perfectly as a new method to provide a hermeneutic in order to interpret the work of the FCC. Because the researcher allows the concepts to emerge from the text, as opposed to bringing concepts to the text, there is potential that the text will interact with itself and the researcher to allow new constructs of knowledge to emerge. There is little question that the concepts emerged from the text in this study. The difficulty is that the researcher still brings knowledge to the text that can minimize the emerging nature of NTA.

Additionally, the numbers generated from NTA and SNA do not make a distinction between value and fact. As concepts emerge from the text, those concepts could be both value and fact. It is the qualitative aspect of text analysis that holds promise in discovering values. Within this research, the number of concepts varied from thirty-two concepts to forty-two concepts; dependent on the text. While none of the concepts specifically could be considered a value, being able to illustrate knowledge maps with a qualitative research approach, shed light on the varying values inherent within the corpus. For example, localism is one of the policy goals – that is a fact and surfaced as a node/concept. Chapter five illustrates that localism is highly valued; the concept has value to everyone involved in the process. The problem is that empirical research has not been successful in demonstrating harm[27] to localism as a result of consolidation. This research has shown that localism is important – it is a central node – it is valued.

[27] Localism has been harmed was the charge Senator Ron Wyden (D-OR) made in the Capitol Hill Hearing, Chpt Five.

The very nature of NTA and SNA is not linear. The connections between concepts with the text are not to be viewed as subject – verb connections. Nodes are simply connected by adjacency, albeit directed, but not linear. Centrality measurements do not deal with linearity but being in the center of a complex web of concepts. If there is anything that stands out about this research, it is that these texts are a dense network of non-linear nodes. The results are consistent across the various texts indicating that there are definite concepts emphasized throughout. These concepts do provide insight into the most central or powerful concept within the text.

Finally, the large number of electronically submitted comments[28] strongly suggests keen public awareness and interest in the policymaking process. The problem is that while the FCC responded to these ecomments, they responded only to those that fit their positivist notions. In other words, the words used were identical but the usage or framing was different. This study suggests that the public can make a reasoned analysis and argue from a similar concept base as well as the more "substantive" commenters.

6.1.1.1. Knowledge Acquisition

Information acquisition did occur in the policy process. The acquisition was done in the traditional avenue of research and was also accomplished using current technologies that provided access to the policy makers. What this study does not reveal is the complexity of that acquisition. The literature review outlined those complexities: public administration environment, collective action of people, legal realities, design and structures.

While SNA has the potential to be very helpful within a public administration environment by studying relationships between people, this research does not provide any insight into the FCC and its environment. Ideally, access to the members of the MOWG could provide

[28] What is unknown regarding this large number of electronically submitted comments is how many were the same comments generated from a website. The work of Shulman (2004) identifies software being tested to aid policymakers in weeding out repetitive comments.

insight into that environment. This access was unfortunately denied. Previous studies using SNA have provided significant insight into communication and power brokers within a work environment (Krackhardt, 1990).

The citation matrix as well as results of the analysis within the policy text suggests legal realities are very important within the FCC's media ownership policy review. This section from the policy helps to illustrate the centrality and reality of the legal environment.

> Neither from a policy perspective nor a legal perspective can rules premised on such a flawed foundation be defended as necessary in the public interest. Not surprisingly, therefore, several of the existing rules have been questioned, reversed, and in some cases vacated by the courts. Our current rules are, in short, a patchwork of unenforceable and indefensible restrictions that, while laudable in principle, do not serve the interests they purport to serve.

Section 5.2.3 in chapter five further demonstrates how NTA and SNA helped to reinforce the importance of legal realities.

This study does not provide insight into organizational design. While the FCC does provide information on reporting structure, policy process, and making the electronically filed comments available, NTA and SNA do not provide explicit insight into the communication process and how the design of the organization affects that communication. The amount of information that is available however is consistent with the problem of knowledge acquisition: bounded rationality. Much of the criticism regarding the policy process was aimed at the limitation of the twelve FCC commissioned studies. Having commissioned only twelve studies does not seem adequate for such a complex issue.

This study provides limited insight into the nature of network structures within the FCC and its environment. While the study does not give an in-depth, explicit look within the FCC, it does reveal the networked nature of the knowledge and the variety of sources of information.

The results of this study are consistent with Feldman and March's (1981) conclusion that information is being used within the policymaking process. Unfortunately, this study does not reveal explicitly how the information was used. The citation matrix does reveal that the policy was most responsive to comments made by corporations and interest groups.

6.1.1.2. Knowledge Utilization

This study does not appear to shed light on knowledge utilization. While there is no question knowledge acquisition occurred, without insight into the deliberation of the MOWG, we cannot be certain as to its utilization. The citation matrix does contribute some to this aspect of knowledge management by revealing what the policymakers thought important to cite. The problem is that the citation matrix reveals that much of the policymaker's concern was to respond to stakeholders. This response is a form of knowledge management; it is not an empirical basis.

6.1.2. Methodology

The preceding discussion in 6.1.1 illustrates the value of NTA and SNA to policy analysis and perhaps policymaking. The quantitative aspect of NTA and SNA reveal characteristics of a body of text that fits within a positivist framework. The data reveals a number of significant and consistent findings: 1) that among the policy goals competition is the most important; 2) legal is the most powerful concept in the policy itself; 3) the role of argument (reasoned analysis) is important for public comments; and 4) the policy process is also important. Additionally, the qualitative data provides further insight/knowledge into the numbers: 1) While competition is important, there is disagreement as to the nature of competition for broadcasters; 2) concern over judicial review is a boundary throughout the process; 3) even if an argument is

faulty, people have reasons for opposing this policy decision; and 4) there was great debate over the legitimacy of the Third Biennial review process.

In the literature review policy analysis and policymaking are defined. “Policy analysis is the activity of creating knowledge *of* and *in* the policymaking process.” (Dunn, 1994, p.1). Policymaking is a process which “. . . includes the manner in which problems get conceptualized and brought to government for solution; governmental institutions formulate alternatives and select policy solutions; and those solutions get implemented, evaluated, and revised.” (Sabatier, 1999, p. 3). NTA and SNA, in this research, have provided knowledge *of* and *in* the policymaking process; albeit, not all of it empirical.

One strength of this methodology is its ability to produce both quantitative and qualitative results. The FCC wanted empirical data on which to build the policy; because NTA and SNA are based on mathematical graph theory, there are quantitative results that cannot be disputed. Additionally, the qualitative data provides insight into the nature of the numbers. When taken together, the results have the potential to bring a wholeness to the policy process.

The citation matrix or two-mode affiliation network assists greatly in helping to answer the first research question. The basis of the policy appears to be a response to publicly submitted comments. Granted, this could be explained as a result of such a large number of comments, but Chairman Powell’s quote expressing pride in the “deep record” seems to indicate the large number of responses garnered attention. Further study should be conducted on how this citation matrix compares to previous citation matrices in FCC policy.

Another benefit to this methodology is the employment of the citation matrix as well as standard NTA and SNA analysis on the policy. By looking at the two-mode affiliation network, legal citations are the weakest, yet within standard NTA and SNA analysis, it is the most

powerful. The citation matrix shows the type of citation that is central, whereas NTA and SNA methodologies and measures cast a larger net to capture the complete picture. The language throughout the policy expresses concern over passing judicial review since it is a legal document. Looking at the citation network alone would not have provided a balanced perspective.

6.1.3. Public Participation

There is little debate that the public participated at a very high level in this proceeding. It has been discussed throughout the last few chapters that while the policy is responsive in its citation network to electronically submitted comments, the comments were from corporations and interest groups with little to no input from individuals. Chapter five quotes Michael Powell from his statement on the policy. By including the first sentence of that paragraph, a bit more is revealed.

> For the first time, we took on the challenge of updating and reconciling years of piecemeal, decades old, ownership regulations in a rigorous and comprehensive way. We put out five Notices of Proposed Rulemakings and Public Notices during that time and gave the public over fifteen months of open comment time to assist the Commission in its fact-gathering efforts. Approximately ten public fora were held on the subject, thanks in large measure to the efforts of Commissioners Copps and Adelstein, who could then bring those perspectives to the Commission's internal deliberations. I am enormously pleased the public accepted our challenge. I take pride in the fact that our decisions rest on an extraordinarily strong empirical record. For the agency charged with preserving the free flow of information in our democracy, the public should expect no less from us." (FCC, Powell, p. 3, 2003).

Powell commends the public for taking the challenge of commenting and appears to equate that with the empirical record. Unfortunately, the citation matrix as well as NTA and SNA analysis cannot support his claims.

The overall focus of this comment is also referencing the policy process. Within the corpus of public comments, policy process is the second highest node. The following comment submitted by an individual is typical of those commenting on the policy process:

> I thank you for the recent hearing you did on this topic but this must be nationwide, entirely open and made public in advance so everyone has the opportunity to attend and state their opinions.

It was not only individuals who complained regarding the process. Commissioner Copps also expressed his displeasure with the process.

> The Commission's decision-making process and record development was deeply flawed. Good, sustainable rules are the result of an open administrative process and a serious attempt to gather all the relevant facts. Bad rules and legal vulnerability result from an opaque regulatory process and inadequate data. Unfortunately, today's rules fall into the latter camp. (FCC, Copps, p. 5)

The analysis in this research has again shown that public participation is valued. The problem comes down to how participation or the process is defined.

6.1.4. Media Coverage

There is not much more to be said regarding media coverage of the Third Biennial review than what was stated in chapter five. The media does appear to function as a burglar alarm within society. While this has value, especially in situations of national security, it does have some drawbacks for national, regional, or local conversation. The problem related to the role of information in the policy process is not just making the information available to people it is also the complexity of the information. The poor arguments made by individuals in this process are not necessarily reflective of a poorly informed citizenry. It is more likely the challenge of framing. "Framing is about getting language that fits your worldview. It is not just language. The ideas are primary – and the language carries those ideas, evokes those ideas." (Lakoff, 2004, p.

4). The media, both traditional and new, still possess the potential to be an intermediary between policymakers and the public by making sure issues are framed correctly for both sides.

6.2.Policy Recommendations

The FCC is to be applauded for the attempt to make the policy process as transparent as possible by placing all available documents and electronic comments on-line. The interest this policy received made it possible for a conversation to take place on what kind of media ownership policy our democracy desires. Unfortunately, the findings of this research reveal an unwillingness or inability to engage the public in conversation if the public does not adhere to the FCC's criteria. In light of the results of this research there are a number of policy recommendations that can be made.

6.2.1. New Methodologies

First, there is a need to utilize new methodologies not necessarily grounded in positivism. Positivist methodologies involved in policy decision making have limitations, especially in social science. The use of NTA and SNA in this study shows promise in trying methodological approaches outside the norm. NTA and SNA should continue to be used in analyzing the policy process with an eye towards use in policy analysis.

The difficulty even with methodologies like NTA and SNA is the constraint of passing judicial review. The thinking among the policymakers at the FCC seems to be that empiricism leads to good law, or at least passes judicial review. Insight from the dissenting opinion of the Third Court does indicate there is not agreement from all judges on their role in the policy process.

> Whether or not we agree with this particular set of rules, it is not our role to overturn the Commission's reasoned policy judgments. See Chevron, U.S.A., Inc

> . v. Natural Res. Def. Council, 467 U.S. 837, 866 (1984) ("The responsibilities for assessing the wisdom of such policy choices and resolving the struggle between competing views of the public interest are not judicial ones: 'Our Constitution vests such responsibilities in the political branches.'") (quoting TVA v. Hill, 437 U.S. 153, 195 (1978)). Questions of media diversity and ownership command strongly divergent views. But those questions should be answered by officials within our legislative and executive branches of government. (Third Court dissenting, 2003).

This provides hope that non-positivist methodologies might pass judicial review if other circumstances are met.

Rosenbloom and O'Leary (1987) argue that the changes in public administration due to legal challenges have transformed American public administration. There is now a significant legal dimension to management. While scientific management values efficiency, individual rights protected by the Constitution are not necessarily efficient. This has created a tension within public administration: encourage flexibility, efficiency, and effectiveness, but within legal structures. Tension is not necessarily a bad thing.

6.2.2. Conversation

Second, there is a need to develop a conversation between all stakeholders: Congress, the FCC, station owners, musicians and artists, advertisers, and consumers. Again, this conversation must take place within the boundaries of legal constraints. The Third Court decision is the result of unhappy stakeholders (Prometheus Radio) filing suit against the FCC and their policy decisions. Perhaps judicial review would not be necessary if a conversation was to have taken place that includes interaction, storytelling, intermediaries, and definitions.

6.2.2.1. Interaction

The ability to make available all data being used in policy decision-making does not mean a conversation is taking place. As stated earlier, the Third Biennial review had the

possibility for conversation but the analysis shows this was not a complete conversation. There was not interaction with all stakeholders.

Judith Innes (1990) provides a model she calls the Interactive Model of Knowledge. Her suggestions within this model are five-fold:

1. Knowledge that is influential is socially constructed in the community in which it is effective.
2. Knowledge becomes influential as it becomes internalized in the shared understanding of the community.
3. There is an intermingling between professional inquiry and ordinary knowledge.
4. Knowledge that does motivate is often in the form of myth and stories.
5. Mythic forms of knowledge package facts, theories, values, and means and ends.

This model is far more focused on the community in which a policy is being considered. Since the research outcomes in this study seem to suggest the consumer was to fit the FCC's world in order to be heard, it is appropriate to look at a model in which the policymaker must enter their world. These five points fit well within the Third Biennial review. Many comments submitted by individuals come from the result of an influential community in which they live; even if that community is virtual. The knowledge may start out as mythic but as the individual intermingles on a website or listens to a talk show, the knowledge becomes influential. The thinking that dismisses public opinion because it is not substantive does not understand how knowledge is socially constructed within a community. There is a need for a policy process that understands this kind of interaction and meets people at that level.

6.2.2.2. Storytelling

Innes' model has some overlap with Fisher's Narrative paradigm (1989). Fisher's main thesis is that humans are essentially storytellers and all communication should be interpreted as such. He is concerned with why people make decisions, seemingly counter to good reason. He is firm in arguing that his narrative paradigm is grounded in narrative rationality; a rationality that

is “good reasons”. These reasons fit within the context of who the person is as well as their assessment of narrative probability and coherence. The backdrop for this argument is rhetoric and the overall concern of logic.

The narrative paradigm is contrasted with the rational-world paradigm. The rational-world paradigm presupposes:

1) humans are essentially rational beings
2) primary paradigm of human decision-making and communication is argument
3) argument is ruled by dictates of situations; ie, legal, scientific, legislative, etc.
4) rationality is determined by subject matter knowledge, argumentative ability
5) the world is a set of logical puzzles that can be solved rationally

“Actualization of the rational-world paradigm depends on a form of society that permits, if not requires, participation of qualified persons in public decision making.” (Fisher, 1989, p. 60).

In contrast to the rational-world paradigm, the narrative paradigm contains the following presuppositions:

1) humans are essentially storytellers
2) primary paradigm of human decision-making and communication is “good reasons” (quotes his)
3) good reasons are ruled by dictates of situations; ie, legal, scientific, legislative, etc.
4) rationality is determined by the nature of persons as narrative beings, specifically narrative probability and narrative fidelity
5) the world is a set of stories from which are selected those that assist in the process of continual re-creation.

“The operative principle of narrative rationality is *identification* rather than deliberation.” (Fisher, 1989, p. 66).

“The principle of coherence brings into focus the integrity of a story as a whole, but the principle of fidelity pertains to the individuated components of stories – whether they represent accurate assertions about social reality and thereby constitute good reason for belief or action.” (Fisher, 1989, p. 105). The issue then becomes how to assess this fidelity. This new logic he employs helps to get to the issue of values. “Humans as rhetorical beings are as much valuing as

they are reasoning animals." (Fisher, 1989, p. 105). His logic of reasons is not a tight set of structures specific to a field of study but rather provides a means to assess rhetorical competence. While technical rhetorical competence is important, being reasonable and rational (key components in narrative fidelity) are essential for any rhetorical competence. This is especially true in any democratic, pluralistic setting.

6.2.2.3. Intermediaries

To come back to the issue at hand, there is a need for the FCC to engage in a conversation with all stakeholders regarding media ownership. Acknowledging that people are essentially storytellers set within a community in which shared knowledge becomes internalized is important.

The media, both traditional and new, can play a significant role because they engage in storytelling. A journalist is assigned to cover a "story", albeit an event, a person, or facts. A Knight Commission report (2009) details creating a system in which the information needs of communities can be met. What this means is:

- assuring that individuals have access to quality information
- strengthening the capacity of individuals to engage with information
- promoting individual engagement with information and the public life of the community (p. 2)

Engagement, according to the report, requires information intermediaries. "News is a critical element of the information flow on which individuals and communities depend, and effective intermediaries are critical in the gathering and dissemination of news." (Knight Commission, 2009, p.7). The news media, often referred to as the fourth estate, has historically functioned as an intermediary by holding government accountable. It must continue to function in this capacity as well as providing information needed for public engagement.

There is a need even for the FCC to act as an intermediary. The Government Accountability Office (GAO) issued a report (September 2007) in which they evaluated FCC rule proceedings from 2002 to 2006 as well as interviewed FCC officials, industry representatives, and members of interest groups. From this they identified four proceedings. While the report is quick to say the findings in no way can be generalized, what they did find is of concern. They found that in some cases stakeholders had access to nonpublic information. ". . . we also were told by 9 of 12 stakeholders . . . they knew when proposed rules were scheduled for an upcoming vote well before FCC released the agenda to the public because they hear this information from FCC bureau staff and commissioner staff." (GAO, 2007, p.4). The recommendation of the report is that the FCC should safeguard nonpublic information and provide equal access.

Commissioner Copps addresses the equal access concern in his statement on the policy.

> I was also saddened last Fall that we failed to open our own studies to public scrutiny by not releasing the methodology or underlying data, notwithstanding that some of the studies were based on proprietary data that parties criticized as being created for and manipulated by the media industry. Finally, a month later, while the clock for comments continued to run, we provided limited release of the underlying data, but only to those who could come to our headquarters in Washington, D. C. Requests for further extensions of time to assess these studies and provide additional record data were denied. (FCC, Copps, p. 5)

The FCC can function as an intermediary by doing a better job than as was done in the Third Biennial review. The public, in this case, the individual consumer needs someone to step in between them and the government. Even though the FCC is a governmental agency, they could fulfill that role. The FCC is attempting to function in this role but needs to go one step further by understanding how the public frames the debate.

6.2.2.4. Definitions

To accomplish something in the conversation, there is a need for the FCC to define key terms to the media ownership debate. There appears to be a consistent problem throughout the Third Biennial review process – no one disagrees with the goals, and yet there is sharp disagreement. The problem is that the stakeholders are arguing from a different understanding of the goals.

6.3.Future Direction

While this research does provide an answer to the role of information with policy decision-making, there is more work that ought to be done. Employing NTA and SNA in the policy analysis stage also warrants further research. The final aspect to be discussed in this chapter is the focus of future research.

6.3.1. Dynamic Network Analysis

The next step is to add another layer to NTA and SNA for further understanding: Dynamic Network Analysis (DNA). Traditional sociology measurements have looked at the aggregated attributes of individuals often analyzed through a form of multi-variate regression. What is assumed but missing in this measurement are the various forms of relationships that occur between individuals. Relationships between actors can be social, knowledge or information based, limited to events, centered on tasks, or relationships can be defined between organizations. Relationships are important because they can constrain or enable behavior (Carley, 2005a). SNA, based on graph theory, is able to measure and assess how relationships affect information, knowledge, tasks, events, and organizations. The resulting quantitative measurement provides insight into three key characteristics: centrality (who has the power in a network), groups/sub-groups (cliques or sub-groups within a network), and roles/equivalence

(position and role). These measurements are accomplished by looking at the actor, a node and the tie or link between nodes. The relationship is referred to as a dyad.

Relationships do not have to be between people but can also be between ideas, skills, events, tasks, nation-states, and organizations. If, in fact, you look at the interaction between these in a three-dimensional "hyper-cube" you are dealing with DNA. It literally, "combines social networks with multi-agent modeling which results in multi-agent network modeling" (Carley, 2005a). The table shows the meta-matrix that results:

	People/Agent	Knowledge/Resource	Task/Event	Group/Organization
People/ Agent				
Knowledge/ Resource				
Task/ Event				
Group/ Organization				

Table 41: Dynamic Network Analysis Meta-Matrix

The strength of DNA is that it more realistically measures complexity than other types of measures. Policy analysis is not linked to a single moment in time or conducted in isolation. DNA provides the ability to analyze the interaction of these multiple networks.

6.3.2. Graber's Types of Information

To take full advantage of DNA, a matrix could be developed plotting information used in the process according to the four aspects of DNA: people/agents, knowledge/resources, tasks/events, and group/organizations. Within knowledge/resources additional attributes could be added based on Graber's types of information: technical (T) and political (P), and symbolic (S) and tactical (T). The analysis should provide further insight into both how and where cognitive maps were introduced in the process, and how utilized. Graber's types of information

as additional knowledge attributes should provide insight into the centrality of varying types of information in the process and how that is used in the decision-making process.

AutoMap has the ability to export matrix information to SNA software UCINET 6 to perform network analysis. The meta-matrix approach is an analysis technique for multi-dimensional data that is the combination of knowledge management, operations research, and SNA (Diesner and Carley, 2004).

6.3.3. Narrative Paradigm

Since communication is seen as crucial to the policy making process, perhaps communication theory can provide insight into this process. Applying the narrative paradigm coupled with DNA to policy analysis could give more credibility to electronically submitted comments like Nickolaus E. Leggett. His were the comments mentioned in chapter five. Those comments lack credibility within a positivist approach, but according to Fisher, as a storyteller, Mr. Leggett values the small, locally-owned station. This value is consistent with the values expressed within the localism node/concept. Perhaps NTA, SNA, and DNA can give credibility to individuals by acknowledging its value and applying quantifiable data to the text.

With DNA future research could either utilize Graber's information type or take narrative components (i.e., characters, goals, conflicts, resolution) and map these to the generalization concepts. The resulting analysis would provide more complexity than SNA.

6.3.4. Methodology Study

To support the policy recommendation of using a variety of methodologies not grounded in positivism alone, future research needs to be done on the use of NTA and SNA within the policy analysis stage. Is it possible to take textual information, run NTA and SNA analysis before making the policy decisions?

Additionally, it would be beneficial to apply NTA and SNA to other policy issues. The kind of policy research that would be helpful with this methodology would a controversial issue that received significant media coverage such as health-related policies. For example, the use of silicone breast implants in treatment of breast cancer patients, although now approved, was a case of science versus public belief grounded in story.

6.3.5. Citation Matrix Study

In answering how empirical the policy in this study a citation matrix was used with interesting results. What could enhance the results would be to engage in a comparative citation matrix study. How does the citation matrix generated in this study compare with the citation matrix from the Telecomm Act of 1996?, or other biennial reviews? Are other citation matrices as centered on public comments or is the center different? These would be but a few of the questions answered by employing a comparative citation matrix study.

6.3.6. Policy and Media

The role of information within the policymaking process continues to be a topic of interest. The role media plays in informing the public contains a great deal to be studied. Very specifically, how well does the media communicate accurate and helpful information. The current health care reform debate is a case in point. A great deal of misinformation has been communicated that is not helping the debate. Of course, much of this gets back to the issue of how a policy is framed.

More research is needed exploring the role media plays. Is it an intermediary helping to enhance the policy process or does it simply function as a burglar alarm? Additionally, future research ought to be done exploring the role of media in policy related to the poor. This would cover issues like affordable housing, health care, education, jobs, and racial injustice to name but a few.

Related to this is the growing presence of "new media"; that is, the convergence of traditional media with Internet based information technologies. These new forms of media have the potential to provide a forum for debate and participation in the policy process. The assumption is that all citizens have access to these newer forms of media. Research would be needed in the area of communication policy that bridges the digital divide.

6.3.7. Local Policy

While this research has had a national focus, and much policy debate of late that has garnered attention has a national focus, there are still a great deal of local policy issues being debated; i.e., property taxes, school financing, etc. There is the need for research on the local policy process. How does the local process compare to the national process? Does local media contribute to the policy process or are they still stuck in a burglar alarm mode? Focusing on these questions could also enhance FCC policy discussion on localism.

6.4.Conclusion

Ultimately, it is difficult to fully determine the role of information in the decision-making process among policy elites without the ability to talk to key stakeholders allowing them to describe what occurred in the deliberations. This research has provided insight into our understanding of what information is represented in cognitive maps and how influential those maps may be in policy foundation. Unfortunately, the research revealed how unresponsive the

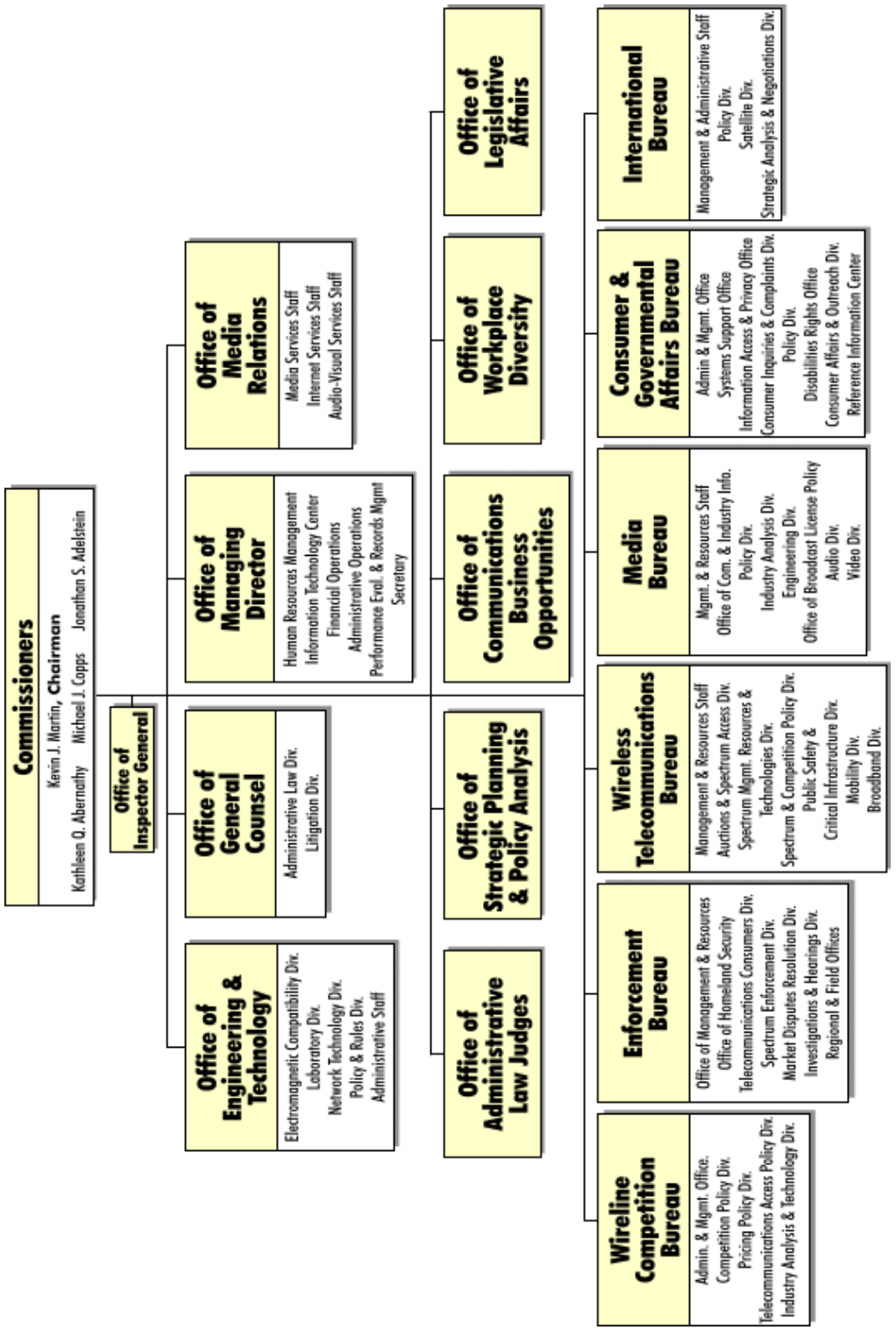
FCC was to the individual American – the end user of broadcasting. The research also revealed that the strength of NTA and SNA as a policy research methodology is that it can bridge the desire for quantitative data with the attempted conversation discovered in the qualitative aspect.

As to the role of media, the Lexis search revealed little broadcast media coverage before June 2003. It is discouraging to see the field in which I have worked my entire adult life not cover itself more adequately. It is doubtful the broadcast media, as an information source, plays much of any role within the larger policy process. That is, however, a question to be answered with future research.

Overall, I expected to find and did in fact, find that the results do support Weiss' idea that information does "creep" into the policymaking process. I am hopeful this research will provide further insight into new methodologies of policy research and analysis that will advance our ability to govern in a manner that is just and equitable.

APPENDIX

FCC Organizational Chart



FCC Rulemaking Steps

1. Notice of Inquiry (NOI): this is in essence a call for information initiated by the FCC following an internal study or outside request.
2. Notice of Proposed Rulemaking (NPRM): this is considered the first step in the rulemaking process which comes as a result of information gleaned from the NOI. The FCC is desiring comments on the proposed rule.
3. Further Notice of Proposed Rulemaking (FNPRM): after reviewing comments from the NPRM a further request for comments on specific aspects of a proposed rule is requested.
4. Report and Order (R&O): after considering comments from the NPRM and FNPRM a ruling is issued. The FCC may develop new rules, amend existing rules or choose to do nothing. A summary of the R&O is published in the Federal Register.
5. Petitions for Reconsideration: if citizens are not satisfied with the R&O, one can file a petition for reconsideration within 30 days from when it appears in the Register.
6. Memorandum Opinion and Order (MO&O): this is the response to a petition either amending the new rule or stating the rule will not change.
7. Public Notice (PN): this is issued to inform the public of an action taken or an upcoming event. If comments are requested, information will be provided on specifics.
8. En Banc: this is a meeting of the FCC to hear presentations on various topics usually in the form of a panel. Specific witnesses are invited to present information usually after a PN is issued. These presentations can be used in the decision-making process.
9. Ex Parte: these are rules ensuring everyone gets a fair opportunity to present information after an NPRM is issued. Specific rules govern these proceedings.

History of FCC Media Ownership Regulation[29]

- 1938: FCC denial of the Genessee Radio Corp license for a second station in the same market
- 1941: FCC Report on Chain Broadcasting limiting a network ownership to one station in a market
- 1954: Rule of Sevens – group ownership rule limiting ownership to 7 AM stations, 7 FM stations, and 7 TV stations (no more than 5 can be VHF)
- 1964: Duopoly Rules – limiting ownership in one market to one station within the same service (AM, FM, TV)
- 1968: Top 50 Rule – limited the number of TV stations owned by a single entity in the major markets
- 1970: One-to-a-market Rule – prevention of anyone purchasing more than one station of any type in each market
- 1970: Broadcast-Cable Cross-Ownership Rule – prohibited the ownership of both a TV station and cable station in the same market
- 1975: Newspaper-TV Cross-Ownership Rule – prohibited, except when grandfathered, ownership of TV station and newspaper in the same market
- 1977: Regional concentration rules
- 1979: Top 50 Rule repealed
- 1984: Regional Concentration rule repealed
- 1984: Rule of Sevens revised to the Rule of 12
- 1995: Elimination of Fin-Syn Rules
- 1996: Telecommunication Act of 1996 – removed national radio ownership limits, local radio ownership determined by the size of the market so no one owner can own half the market, TV ownership may not exceed 35 percent of the national audience, top 50 markets allow for ownership of more than one TV station or a radio and TV station, allowed ownership of TV station and cable company in the same market, cross-ownership of TV networks and cable companies, and finally, allowed ownership of more than one TV network.

[29] Ownership History from the following sources:
Besen, S.M., & Johnson, L. L., Regulation of Media Ownership by the Federal Communications Commission: An Assessment, 1984.
Einstein, Mara, Media Diversity: Economics, Ownership, and the FCC. 2004.
http://www.hearusnow.org/no_cache/print/mediaownership/25/
Aufderheide, Patricia. Communications Policy and the Public Interest: The Telecommunications Act of 1996, 1999.

History of Biennial Reviews

- Mandated by 1996 Act Section 202(h) which directs, ". . . the Commission to re-examine its broadcast ownership rules every two years and repeal or modify any regulation it determines to be no longer in the public interest." (FCC 02-249, p. 3).
- There have been 4 reviews: 1998, 2000, 2002, and 2004.
- 1998:
  - Dual Network Rule
  - Experimental broadcast station multiple ownership rule: eliminated
  - Newspaper/broadcast cross-ownership rule
  - Local radio ownership rule
  - National TV ownership rule (incl UHF discount)
  - Cable/broadcast cross-ownership rule
  - Local TV ownership rule
  - Radio/TV cross-ownership rule
- 2000:
  - Comprehensive wide review
  - MMB: endorsed the results of the 1998 review
- Court Proceedings
  - Fox: cable/broadcast cross-ownership rule and national TV ownership rule
    - Court vacated cable rule, and remanded the national TV rule
  - Sinclair: local TV ownership rule
    - Court said FCC adequately explained how the rule furthers diversity and is necessary in the public interest
    - Upheld the rule against a First Amendment challenge, applying "rational-basis" standard of review
    - Invalidated FCC's definition of voices in the rule, and remanded
- 2002:
  - Newspaper/broadcast cross-ownership rule
  - Local radio/TV ownership rules
  - Definition of radio markets
  - National TV ownership rules
- 2004:
  - The Mass Media Bureau did not release a report as a part of the review; the only who didn't. The following did:
    - Consumer & Governmental Affairs Bureau
    - Enforcement Bureau
    - International Bureau
    - Office of Engineering and Technology
    - Wireline Competition Bureau
    - Wireless Telecommunications Bureau

3rd Biennial Review of Media Ownership Rules Timeline

Panel Presentation	10/29/2001
Formation of Media Ownership Working Group	10/29/2001
NPRM (Intiating) Third Biennial Ownership Rules Review	09/12/2002
NPRM (Review) Third Biennial Ownership Rule	09/23/2002
PN for Comments on Ownership Studies w/deadline	10/01/2002
Releases 12 studies (“critical first step”)	10/01/2002
Order, Dismissed a petition for reconsideration	10/30/2002
Order, Denied in part, and granted in part the Petitioners' Motions to extend the comments and reply comments in this proceeding respectively	11/05/2002
Order, Established procedures for review by interested parties of the proprietary underlying data for four of those twelve studies	11/05/2002
PN for procedures for public access to data underlying media ownership studies and extends comment deadlines	11/05/2002
Report, New versions of Media Bureau Studies	11/05/2002
Order, Denied Motion for Extension of Time	12/23/2002
Order, Denied the grant of NASA's and NAB's request	12/31/2002
En Banc Hearing	02/27/2003
News Release, Unprecedented Public Record Results in Enforceable and Balanced Broadcast Ownership Rules	06/02/2003
PN for notice of prohibited presentations in the review	06/05/2003
R&O, Completed 2002 biennial review of FCC's media ownership rules. Initiated review of definition of radio markets in non-Arbitron defined areas. NPRM	07/02/2003
Erratum, The Report and Order and Notice of Proposed Rulemaking released on July 2, 2003, FCC 03-127 has been corrected as indicated in this Erratum	07/11/2003

Erratum, Erratum correcting FCC 03-127, released July 2, 2003, Appendix H, "Rule Changes," of the Report and Order and Notice of Proposed Rulemaking ("R&O/NPRM") 07/31/2003

Order, Granted Petitioners' Motion to extend page limits on Reconsideration 08/15/2003

PN, Media bureau seeks additional comment on UHF discount in light of recent legislation affecting national television ownership cap 02/19/2004

PN, Comment and Reply Comment Dates Set for Comments on UHF Discount in Light of Recent Legislation Affecting National TV Ownership Cap 02/27/2004

Summary of FCC Commissioned Studies

Study 1: *A Comparison of Media Outlets and Owners for Ten Selected Markets*
Authors: Roberts, Frenette, and Stearns

This is a fairly simple study on specific market structures of number of media outlets and owners from 1960 to 2000 (twenty year increments). Ten randomly selected markets looked at all media (TV, radio, cable, DBS, and newspapers). The number of outlets increased 200 percent through all 10 markets, and the number of owners increased 140 percent in all 10 markets.

Study 2: *Viewpoint Diversity in Cross-Owned Newspapers and Television Stations: A Study of News Coverage of the 2000 Presidential Campaign*
Author: David Pritchard

This study focuses on the result of structure: content diversity. Specifically, it looks at 10 newspaper-TV cross ownership to determine if there is diversity. Five combinations were found to be very different in their "slants", and five were found to be similar. With a study of only 10, it is hard to generalize, but the author feels there is no predictable pattern of what happens in cross-ownership.

Study 3: *Consumer Substitution Among Media*
Author: Joel Waldfogel

Consumer substitution is a market structural issue being addressed among five media: television, daily and weekly newspapers, radio, internet, and cable from mid 1990s to current. Substitution definitely occurs leading to two conclusions: 1) reject the view that media are distinct, and 2) there is evidence of substitution, but not complete substitution.

Study 4: *Consolidation and Advertising Prices in Local Radio Markets*
Authors: Brown, Williams

A study on the structural issue of advertising rates in light of radio ownership consolidation. Using fixed effects regression the authors found that increased consolidation from 1996-2001 accounts for a 3-4% increase in advertising rates. Economic growth accounts for 65% of the increase. A greater presence of national owners tends to decrease advertising rates in local markets.

Study 5: *Program Diversity and the Program Selection Process on Broadcast Network Television*

Author: Mara Einstein

Another structural issue is diversity of programming. This study specifically focuses on TV programming diversity in light to the FCC elimination of "fin-syn" rules. The conclusion is that while program diversity has remained constant, it is unrelated to the number of firms producing the programming. Einstein also analyzes the program selection process with the same conclusion: changes in fin-syn rules have not affected program diversity.

Study 6: *A Theory of Broadcast Media Concentration and Commercial Advertising*

Authors: Cunningham and Alexander

This is a highly technical economic study on the interaction of broadcasters, advertisers, and consumers and how it affects non-advertising (programming). The model looks at how ownership concentration effects broadcast programming. The key is how consumers react (on a variety of elasticities). The conclusion: an increase in concentration may lead to a decrease in the total amount of non-advertising broadcasting.

Study 7: *The Measurement of Local Television News and Public Affairs Programs*

Authors: Spavins, Denison, Roberts, and Frenette

This study looks at the output of news and public affairs and station performance between network O&O's and affiliates. Using four different categories of output: ratings, amount, and awards (2 types of awards). The analysis shows no difference in ratings between O&Os and affiliates, O&Os outperform in amount and awards. Additionally, affiliates co-owning newspapers outperformed in all categories than other affiliates.

Study 8: *Consumer Survey on Media Usage*

Author: Nielsen Media Research

This is simply a paper containing questions used to research media usage and the results. No analysis has been provided.

Study 9: *Radio Market Structure and Music Diversity*

Authors: Williams, Brown, and Alexander

In order to look at product diversity, the authors used R&R playlists (1996 & 2001) to develop a unique measurement of diversity called distance. They found slight decrease in song diversity within format across markets, but a slight increase within format in the same market. Including concentration yielded no definitive results.

Study 10: *On the Substitutability of Local Newspaper, Radio, and Television Advertising in Local Business Sales*

Author: C. Anthony Bush

To help determine if there is a single local media market or distinct markets for media advertising, the author looks at the estimation of elasticities of demand. The findings suggest weak substitutability between local media. Ordinary own and cross price elasticities are also calculated. Due to the limitations of the data used, the author cautions using this for any conclusive policy issue.

Study 11: *Radio Industry Review 2002: Trends in Ownership, Format, and Finance*

Authors: Williams and Roberts

This report is an update on the status of the radio industry since the Telecomm Act of 1996 through March 2002 (previous reports were released in 1998, Jan 2001, and Sept 2001). The trend in ownership consolidation continues though slowing. The number of formats has held steady with slight variations. Financially things can best be described as volatile due mainly to high debt loads. Radio listening has declined and ad rates have increased almost 90 percent since 1996.

Study 12: *Broadcast Television: Survivor in a Sea of Competition*

Authors: Levy, Ford-Livene, and Levine

This working paper is an update from working paper 26 (1991) which predicted difficult days for television. While it has seen many challenges, TV ad prices and revenues have continued to grow because the audience size is significantly larger than that of cables. "The future of broadcasting will depend on its ability to continue to provide valuable programming on a cost-effective basis and to respond to the challenges and grasp the opportunities that new technology has to offer." (p. 139).

AutoMap

The process from text to SNA data is as follows:

1. *Pre-processing of text*: the point of this step is to rid the text of non-conceptual words such as conjunctions, definite articles, etc. A number of iterative steps are involved in pre-processing of text:
    a. Deletion: eliminates non-content bearing words such as conjunctions and articles. The list of deleted words can be created by the user or use a pre-defined list.
    b. Stemming: AutoMap contains two different stemmers designed to reduce words to its stem or root. The program utilizes the Porter and KSTEM stemmers.
    c. Named Entity Extraction: retrieves proper names and numbers by selecting capitalized words and adjacent words.
    d. Collocation Identification: a words collocate's are those that are near to it. Collocations are a strong indicator of a relationship (tie) between words/concepts.
    e. Thesaurus: the creation of a thesaurus is for the purpose of taking specific words and relating it to more generalized concepts; ie, industry/economy

2. *Perform Map Analysis*: another term used for this step is statement formation. This is the process of determining how relevant concepts are to be linked together. The linking should be done according to the research question asked. This step also involves a number of steps:
    a. Meta-Matrix Thesaurus/Analysis: the meta-matrix thesaurus ought to be created during the pre-processing stage, but only if a meta-matrix analysis is to be conducted. This thesaurus takes individual concepts and relates them to the meta-matrix level concepts of agents, knowledge, task/events, or organizations. The analysis that is done uses the thesaurus resulting in linked concepts placed in the meta-matrix.
    b. Sub-Matrix Selection/Analysis: the inverse of the meta-matrix thesaurus. The focus is on the retranslation of the matrix categories into individual concepts used in the formation of the meta-matrix. The analysis takes an individual category and retranslates it into individual concepts making for better analysis of cell level information.
    c. CompareMap: the final analysis could be to compare mental maps extracted from texts according to the theory being utilized.

3. *Output Analysis*: AutoMap has the ability to output the analysis to other SNA programs for further analysis.

Steps involved in Analysis

1. Run pre-processing steps in order to develop gen thesaurus. Once the gen thesaurus has been developed, running AutoMap includes a few steps:
    a. Run Kstemming
    b. Load Deletion list, select Rhetorical Adjacency, and apply
    c. Load Gen Thesaurus, select Thesaurus Content, Rhetorical Adjacency, and apply
    d. Open Highest Level of Pre-Processing to Load Meta-Matrix
2. Set Output Settings
    a. Bi-directional ties/uni-directional (select uni-directional)
    b. Window Size = 4, 7, 10
    c. Ignore punctuation (leave default)
    d. Change the location of saving the output data
3. Run the Analysis. Set the output DyNetML.
    a. Run the DyNetML file merger to create one file (use AutoMap 2.6.40)
    b. Convert the unified file to a DL File
4. Load the DL file into UCINET for analysis.
5. Units of Analysis:
    a. Policy Documents
        i. FCC Commissioners
            1. Republicans
            2. Democrats
        ii. The Policy
            1. NPRM
            2. The Policy
        iii. Third Court Decision
            1. Majority
            2. Dissenting
    b. FCC Studies
    c. Media Reports
        i. Broadcast
        ii. Newspapers
        iii. Magazines
        iv. Web Sites
    d. Public Comments
        i. Public Comments
            1. 00-244
            2. 01-235
            3. 01-317
            4. 02-277
        ii. En Banc Presentations
        iii. FCC Roundtable
        iv. Capitol Hill Hearing

6. The rest of the analysis should follow the four major aspects of network analysis:

a. Dichotimize the data. This will take the raw data and transform it into binary data – a very simple, yet effective matrix approach.
b. More than likely, the graph/matrix will be directed. Given that, take a visual look at the directed matrix in order to make observations. At this point, it is time to determine basic graph properties:
    i. Basic Properties of Networks (asymmetric means directed)
        1. Size, density, and degree: for density, run with valued data. Valued data provides the sum of the total number of ties divided by the number of possible ties. Using binary data only provides the proportion of the ties present
            a. Run Univariate Stats for the whole matrix, row-wise (measures the source of a cognitive map), and column-wise. Must use directed ties for this stat.
                i. The mean when looking at the entire matrix provides a percentage of all possible ties
                ii. Row-wise provides us with information on how many ties a concept has with others (receivers); in other words, the source. The sum is the out-degree of the point.
                iii. Column-wise lets us look at the in-degree or receivers of information. Again, it is the sum that is the in-degree point. In this work, it is what cognitive maps receive connection from other cognitive maps.
        2. Reachability: how reachable are members with each other
        3. Reciprocity and Transitivity: are two members connecting with their adjacent neighbor; and transitivity is that if A is tied to B, and B is tied to C, then A is tied to C
        4. Distance
            a. Diameter and geodesic distance
        5. Flow/cohesion
c. Centrality, run multiple measures function in order to get an overview; once that is done, go back to run specific measures for added insight.
    i. Degree: a measure of how many ties an actor has to other actors.
        1. The first approach is the Freeman Degree Centrality. Use binary data for this analysis.
    ii. Closeness: a measurement of the distance of one cognitive map to others using geodesic distance. Geodesic distance is using the shortest path from each actor to all the others.
    iii. Betweenness: is the measurement that ". . . views an actor as being in a favored position to the extent that the actor falls on the geodesic paths between other pairs of actors in the network." (Hanneman, 2001, p.67). It has also been referred to as the measure which can discover structural holes; in other words, a low betweenness shows an actor is not strongly connected to the network, and consequently, can be a good predictor of power.
    iv. Eigenvector
d. Cliques and sub-groups

Pre-Processing of Data

The following is a description of the pre-processing of data for the corpus of policy texts. This was repeated for each set of texts. The longer the body of text, the more time was invested in the data preparation. Without question, the most time consuming text set were the ecomments.

Having read through the policy[30], I made adjustments to the Gen Thesaurus categories. The adjustments I made were very minor (the analysis notebook will show the stages of categories). Nevertheless, when I run the initial analysis, I will run a positive list to determine if I am missing categories.

Outline of Pre-Processing:

1. Split file
2. Run the various utilities:
    a. Named entity recognition
    b. Collocation/bi-gram
    c. Parts of speech (POS) extraction
    d. Numerical extraction
    e. Time/date extraction
    f. Stemming (KSTEM; no capitalization)
    g. Deletion
3. Work on developing Generalization Thesaurus
    a. This pre-processing of text is an iterative process for the purpose of determining the most used and significant terms that can be generalized into concepts for the analysis. I decided to create a policy gen thesaurus; meaning, I created a gen thesaurus for the following documents: the NPRM, R&O, Commissioners Comments, and the Third Court of Appeals decision. They will be analyzed separately, but all will use the same thesaurus given the common topic.
    b. To begin to compile the Thesaurus, I loaded the union concept list (after deletion and stemming are applied; there are 7,069 unique concepts) into a spreadsheet, and began the process of cleaning up words. The big decision is to determine how many mentions of a word ought to allow it to stay in the concept list. Looking through those words that are used once in the document is enlightening. While some need to be eliminated, many are words that have been used previously; they show up as used once because of symbols surrounding them; ie, paragraph markings, quotations markings, etc.
    c. After running deletion and stemming, I recreated the ngram and named entities files. The next process is to pare these file down. With the ngram file I made the decision to eliminate pairs that were mentioned once; these concepts are not very significant if paired together once. That eliminate close to 45,000 concepts. If the concepts are significant they will get picked up as a single word. For instance, 1996 was paired with close to 20 different words. Keeping them as a pair wasn't significant, but 1996 will get generalized as 1996_act which is significant. Even

[30] This analysis while labeled Policy includes the following documents: the Policy, the NPRM, the Commissioners comments, and the Third Court Decision.

after eliminating the single mentions, I still have 9,553 concepts. What I started to see at the 11 mention was repeats of words followed by other descriptors. It started to become the norm at 7 mentions of a pair of words.

d. After looking at the named entities filed, I determined that because what is picked out contains stemmed and deleted concepts, the words are not helpful. These words do get picked up however, in the ngrams as well as union concepts.

After following the above procedure, I compiled a complete list of 3,425 words. The task is to then assign a general concept to each word. After going through the list once and assigning concepts to obvious words, I then went through the list 2-3 more times either adding categories, assigning existing categories, or eliminating the word. Decisions to eliminate were based on not being relevant to the research. For instance, in the policy gen thesaurus, I eliminated all geographic references. Though used as a part of the record, geographic location is not germane to this policy. The final generalization thesaurus contains 2,518 words tied to 40 concepts.

Generalization Thesaurus Concepts

1996_act
- Radio deregulation
- Section 202
- Biennial review

Audience
- Arbitron and Nielsen measurements
- Metro
- November sweeps
- Demographics
- Media usage
- DMAs

Behavioral_rules (requested, but denied)
- TV viewing has negative health consequences
- PEG
- payola

broadcast_content
- censoring
- Indecency

broadcast_media
- TV
- Radio
- Network TV
- Public airwaves
- Affiliates
- Big three
- Media industry
- O&O
- telecommunications

broadcast_ownership
- Combinations
- Ownership rules

broadcast_structure
- broadcast industry
- DVP
- Distribution

- Technical structure (signal, etc.)
- Studio
- Broadcast signals
- Spectrum
- Commercial radio
- Non-commercial station

Competition

- Advertising (ers)
  - Substitutability between media
- Concentration
- Duopolies
- Economic efficiencies
- HHI
- Horizontal/vertical concentration
- Marketplace forces
- Measure competitiveness
- Merger evaluation ???
- Market power
- Audience share
- Firm
- Competition
- Revenue share
- Performance
- Transaction cost
- Promotion
- Payola
- Public good
- Media monopoly
- Small business
- Private interest

congress

- congressional
- congressional mandate
- legislative
- commerce committee
- specific senator or congressman

consolidation

- radio mergers

corporations

- corporate giants

- media elite
- mass media
- network executives
- media conglomerations

cross_media_rule
- cross media limits (ownership)/CML
- newspaper/broadcast cross-ownership rule
- radio/television cross-ownership rule
- editorial views (cf. viewpoint diversity)
- grandfathering (or separate category??)

democracy
- information access
- citizen
- political
- American people/public
- Civil rights
- Elected officials
- Community
- Free press
- Public domain
- Governing

deregulation
- radical deregulation

dissent
- substance dissent
- minority

diversity
- American diversity
- DI: empirical measure of viewpoint diversity
- Ownership diversity
- Viewpoint diversity: ". . . refers to the availability of media content reflecting a variety of perspectives." (3rd Biennial R&O).
- Program diversity: ". . . refers to a variety fo programming formats and content."
- Outlet diversity: ". . . in a given market, there are multiple independently-owned firms."; not an outright goal.
- Source diversity: ". . . refers to the availability of media content from a variety of content producers."; not an objective
- Minority and female ownership diversity: NPRM issued in this policy
- Equal share

- Music diversity (MOWG-9); radio formats
- Marketplace of ideas

dual_network_rule
- top four networks
- vertical integration

grandfathering

FCC

fed_gov
- paperwork reduction
- federal regulators
- White House
- Washington
- The President

fin_syn

- production companies

interest_groups

internet

legal
- Anti-trust
- Bright line
- First amendment
- Fox-sinclair
  - 284f (Sinclair)
  - 280f (fox)
- Judicial review
- Legal framework
- Special disclosure rules
- Statutory mandate: 202(h); maybe separate category????
- Rational basis test
- Sunset provision
- f3d
- arbitrary
- capricious
- petitioners
- FTC
- DOJ

- APA
- Contravene
- Prometheus radio

legal_reasoning

license-renewal_process

localism
- News
- Localism measures
- Local broadcasters
- affiliates
- preemption levels
- public affairs

local_radio_rule
- Market definition
- Market size
- Arbitron
- MSAs
- Numerator-denominator
- JSAs
- LMAs
- Contours
- Numerical limits
- Brokered station
- Equal sized

Local_TV_rule
- Top four-ranked
- DMAs
- Eight voices
- Duopoly
- carriage

media
- media outlets

minority_female_ownership

MOWG

MOWG_studies
- MOWG_1

- MOWG_12
- MOWG_7

national_TV_rule
- 25%
- 35%
- 45%
- UHF discount
- syndication
- program acquisition
- audience research
- independent producer
- program producers

newspapers (includes magazines)

other_elec_media (non-digital, non-broadcast media)
- Cable/satellite
- Hsd
- Consumer electronics
- Gaming systems
- Dbs
- DVD

ownership
- general ownership

policy_goals

political_pressure
- political
- partisan

policy_process
- Arbitrary methodologies
- En banc
- Processing dissent
- Public feedback
- Commenters
- ex parte
- report order
- FCC rcd
- ECFS
- mm docket

- NPRM
- Specific polices (sans 1996)
- Public comment
- Current rules
- Old rules
- Media policy
- Policy makers
- Mr. Chairman
- Decision
- debate

Programming
- Non-advertising broadcasting
- Content producers
- Broadcast time (primetime, etc.)

public_interest
- Trustee
- Benefit public

reasoned_analysis
- FCC majority
- Analyze
- Correlate
- Modify
- Eliminate
- Coefficient
- Spectrum scarcity

record
- empirical evidence
- evidence
- data
- opinion
- supra
- research
- researchers
- report
- study
- methodology
- ideological
- statistical significance
- transcripts

substitution (MOWG-3; economic principle of substitution of goods)

technological_innovation

- digital TV
- digital spectrum
- channel capacity
- spectrum 3ghz
- satellite radio
- converge or convergence

telephony

- anything having to do with phone companies

Citation Matrix Events/Citation Categories[31]

FCC: FCC documents

CFR: Code of Federal Regulations

Fed_Court: legal documents from Federal Courts

Fact: factual information cited from sources like almanacs, census bureau, etc.

Ecomments: electronically filed comments to the FCC's website

USC: United States Code

Sup_Court: Supreme Court rulings

Book: any book cited

MOWG: FCC's Media Ownership Working Group

Journal: an academic journal

Paper: a study that was not cited from an academic journal

Study: a study conducted and submitted for this policy review

Congress: anything containing a congressional citation

Internet: websites URLs

Magazine: magazine article

Newspaper: newspaper article

SEC: Securities and Exchange Commission

en Banc: policy hearings conducted by the FCC

ex parte: information submitted during the ex parte phase of the policy process

DOJ: Department of Justice

OMB: Office of Management and Budget

[31] The citation categories are listed in the order they are presented left to right in the Citation Network Graph

Selected Results of the Analysis

Commissioner's Comments

1. Basic Graph Properties

The graph is the same size as the NPRM – 36 nodes with a matrix of 1,296 possible connections. This graph is not as dense as the first two: 36% (4), 50% (7), and 57% (10).

Graph Connectivity: The following charts show the row-wise univariate stats:

Window = 4

	Mean	Std	Sum
Competition	0.778	0.416	28
Legal	0.75	0.433	27
broadcast_ownership	0.722	0.448	26
Localism	0.694	0.461	25
Record	0.667	0.471	24
broadcast_media	0.667	0.471	24
policy_process	0.611	0.487	22
reasoned_analysis	0.556	0.497	20
Diversity	0.528	0.499	19
broadcast_content	0.5	0.5	18
Fcc	0.444	0.497	16
other_elec_media	0.444	0.497	16
local_radio_rule	0.389	0.487	14
cross_media_rule	0.389	0.487	14
interest_groups	0.389	0.487	14
public_interest	0.361	0.48	13
Consolidation	0.361	0.48	13
national_tv_rule	0.361	0.48	13
Corporations	0.361	0.48	13

Window = 7

	Mean	Std	Sum
Competition	0.944	0.229	34
policy_process	0.889	0.314	32
Legal	0.833	0.373	30
Record	0.778	0.416	28
Localism	0.778	0.416	28
broadcast_ownership	0.778	0.416	28
broadcast_media	0.778	0.416	28
broadcast_content	0.75	0.433	27
Diversity	0.722	0.448	26
reasoned_analysis	0.722	0.448	26
Fcc	0.694	0.461	25
other_elec_media	0.639	0.48	23

Consolidation	0.583	0.493	21
national_tv_rule	0.583	0.493	21
Corporations	0.583	0.493	21
interest_groups	0.556	0.497	20
Democracy	0.556	0.497	20
public_interest	0.528	0.499	19
technological_innovation	0.528	0.499	19

Window = 10

	Mean	Std	Sum
Competition	0.944	0.229	34
policy_process	0.889	0.314	32
Record	0.861	0.346	31
Diversity	0.861	0.346	31
Legal	0.861	0.346	31
broadcast_media	0.861	0.346	31
Localism	0.833	0.373	30
broadcast_ownership	0.806	0.396	29
reasoned_analysis	0.778	0.416	28
Fcc	0.75	0.433	27
broadcast_content	0.75	0.433	27
Corporations	0.694	0.461	25
other_elec_media	0.694	0.461	25
Consolidation	0.667	0.471	24
technological_innovation	0.639	0.48	23
Democracy	0.611	0.487	22
public_interest	0.583	0.493	21
national_tv_rule	0.583	0.493	21
interest_groups	0.583	0.493	21

Unlike the previous documents, the commissioner's comments collectively reveal competition as the highest source of connectivity as a source. There are some nodes/concepts surfacing within this text that were outliers in the previous documents such as democracy. There are also nodes/concepts that have a stronger connectivity than previous documents (and more specific concepts) such as national TV rule and local radio rule (4).

The column-wise results follow:

Window = 4

	Mean	Std	Sum
broadc	0.833	0.373	30
compet	0.75	0.433	27
policy	0.75	0.433	27
legal	0.75	0.433	27
divers	0.639	0.48	23
broadc	0.611	0.487	22
fcc	0.583	0.493	21
locali	0.583	0.493	21

record	0.556	0.497	20
reason	0.528	0.499	19
broadc	0.444	0.497	16
consol	0.417	0.493	15
broadc	0.417	0.493	15
corpor	0.389	0.487	14
local_	0.389	0.487	14
nation	0.361	0.48	13
cross_	0.361	0.48	13
local_	0.306	0.461	11
other_	0.306	0.461	11
intere	0.306	0.461	11
techno	0.306	0.461	11

Window = 7

	Mean	Std	Sum
legal	0.861	0.346	31
broadc	0.861	0.346	31
fcc	0.806	0.396	29
compet	0.806	0.396	29
locali	0.806	0.396	29
policy	0.806	0.396	29
broadc	0.806	0.396	29
divers	0.75	0.433	27
broadc	0.722	0.448	26
record	0.694	0.461	25
corpor	0.694	0.461	25
reason	0.667	0.471	24
public	0.611	0.487	22
broadc	0.611	0.487	22
nation	0.556	0.497	20
cross_	0.556	0.497	20
local_	0.556	0.497	20
other_	0.5	0.5	18

Window = 10

	Mean	Std	Sum
compet	0.889	0.314	32
policy	0.889	0.314	32
broadc	0.889	0.314	32
broadc	0.889	0.314	32
fcc	0.861	0.346	31
divers	0.861	0.346	31
locali	0.861	0.346	31
legal	0.861	0.346	31
reason	0.833	0.373	30
record	0.806	0.396	29
broadc	0.778	0.416	28

corpor	0.722	0.448	26
consol	0.694	0.461	25
public	0.667	0.471	24
broadc	0.639	0.48	23
local_	0.611	0.487	22
cross_	0.583	0.493	21
intere	0.583	0.493	21

Many of the same nodes/concepts are also present in the column-wise analysis.

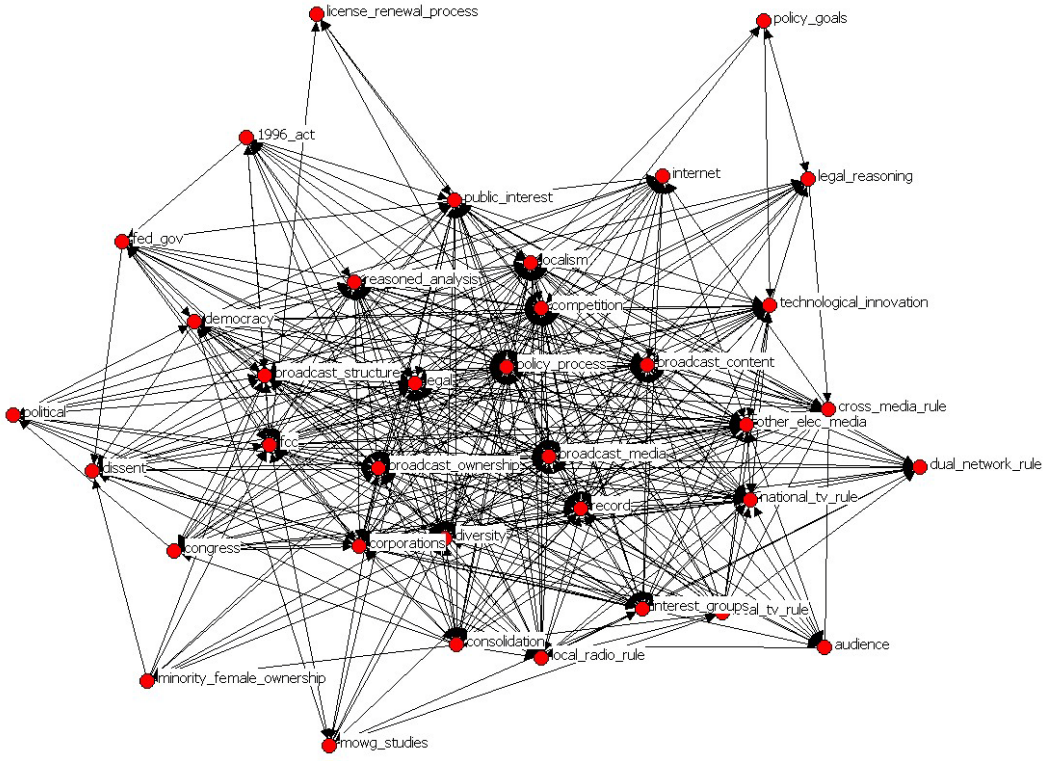
Reachability: This graph is totally reachable regardless of window size.

Point Connectivity: The vulnerable nodes are consistent with the visualization of the graph. Policy goals is without question the most vulnerable at any window size. MOWG studies is the second most vulnerable. Some of the others that surface are audience, political, legal reasoning, minority female ownership, and license renewal process. Public interest is an interesting node because of how selective it is as a source. In other words, many well connected sources stay so through all nodes. Public interest is not consistently well connected.

Geodesic Distance: Given the lack of density of the graph with a window size of 4, it is not surprising to see longer geodesic distances (3, 4 and 5). Window sizes of 7 and 10 produce geodesic distances of 1 to 2.

Maximum Flow: Again, these results are consistent with point connectivity.

Graphs 7 and 10 are well connected while graph 4 contains a certain amount of looseness. The visualization and hard data reveal a denser core with not as well connected outliers.



2. Embeddedness

	Window = 4	Window = 7	Window = 10
Reciprocity	Dyad-based Reciprocity: 0.5423	Dyad-based Reciprocity: 0.6560	Dyad-based Reciprocity: 0.7171
Transitivity:	Number of non-vacuous transitive ordered triples: 4015 Number of triples of all kinds: 42840 Percentage of all ordered triples: 9.37% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 58.01%	Number of non-vacuous transitive ordered triples: 8534 Number of triples of all kinds: 42840 Percentage of all ordered triples: 19.92% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 68.50%	Number of non-vacuous transitive ordered triples: 11222 Number of triples of all kinds: 42840 Percentage of all ordered triples: 26.20% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 72.20%
Clustering:	Overall graph clustering coefficient: 0.639 Weighted Overall graph clustering coefficient: 0.527	Overall graph clustering coefficient: 0.719 Weighted Overall graph clustering coefficient: 0.644	Overall graph clustering coefficient: 0.763 Weighted Overall graph clustering coefficient: 0.691
Krackhardt GTD:	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.5815 LUB 1.0588	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.4286 LUB 1.0588	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.3697 LUB 1.0588

Again, this graph has high reciprocity, though not as high as previous graphs. The graph has a far stronger dyad composition than triad. Transitivity is not very high, especially in graph 4. The clustering coefficient certainly indicates neighborhoods exist. While connectedness is high, the statistics reveal there is no hierarchy to this graph.

3. Ego Networks

Ego Density:

Window = 4

		Size	Ties	Pairs	Densit	AvgDis
25	internet	9.00	68.00	72.00	94.44	1.06
28	dissent	4.00	11.00	12.00	91.67	1.08
30	fed_gov	4.00	11.00	12.00	91.67	1.08
13	congress	7.00	37.00	42.00	88.10	1.12

3	mowg_studies	3.00	5.00	6.00	83.33	1.17
27	dual_network_rule	7.00	35.00	42.00	83.33	1.17
34	minority_female_ownership	4.00	10.00	12.00	83.33	1.17
9	local_radio_rule	13.00	129.00	156.00	82.69	1.17
36	technological_innovation	8.00	45.00	56.00	80.36	1.20
12	national_tv_rule	12.00	103.00	132.00	78.03	1.22
14	corporations	12.00	103.00	132.00	78.03	1.22
26	cross_media_rule	13.00	121.00	156.00	77.56	1.22
32	interest_groups	13.00	115.00	156.00	73.72	1.26
18	broadcast_content	17.00	198.00	272.00	72.79	1.27
1	public_interest	12.00	94.00	132.00	71.21	1.29
23	broadcast_structure	10.00	64.00	90.00	71.11	1.29
29	local_tv_rule	10.00	63.00	90.00	70.00	1.30
31	1996_act	5.00	14.00	20.00	70.00	1.30

Window = 7

		Size	Ties	Pairs	Densit	AvgDis
29	dissent	8.00	53.00	56.00	94.64	1.05
26	cross_media_rule	15.00	192.00	210.00	91.43	1.09
27	dual_network_rule	11.00	100.00	110.00	90.91	1.09
25	internet	13.00	141.00	156.00	90.38	1.10
30	fed_gov	10.00	80.00	90.00	88.89	1.11
3	mowg_studies	7.00	37.00	42.00	88.10	1.12
16	political	10.00	79.00	90.00	87.78	1.12
35	minority_female_ownership	6.00	26.00	30.00	86.67	1.13
28	local_tv_rule	13.00	135.00	156.00	86.54	1.13
31	1996_act	11.00	95.00	110.00	86.36	1.14
13	congress	12.00	113.00	132.00	85.61	1.14
23	broadcast_structure	12.00	111.00	132.00	84.09	1.16
36	license_renewal_process	3.00	5.00	6.00	83.33	1.17
9	local_radio_rule	17.00	223.00	272.00	81.99	1.18
33	interest_groups	19.00	274.00	342.00	80.12	1.20
1	public_interest	18.00	238.00	306.00	77.78	1.22
32	technological_innovation	18.00	238.00	306.00	77.78	1.22
20	other_elec_media	22.00	356.00	462.00	77.06	1.23

Window = 10

		Size	Ties	Pairs	Densit	AvgDis
36	license_renewal_process	5.00	20.00	20.00	100.00	1.00
3	mowg_studies	9.00	69.00	72.00	95.83	1.04
29	dissent	12.00	125.00	132.00	94.70	1.05
25	internet	14.00	172.00	182.00	94.51	1.05
30	fed_gov	11.00	102.00	110.00	92.73	1.07
13	congress	15.00	194.00	210.00	92.38	1.08
28	local_tv_rule	16.00	221.00	240.00	92.08	1.08
31	1996_act	14.00	167.00	182.00	91.76	1.08
27	dual_network_rule	13.00	143.00	156.00	91.67	1.08
35	minority_female_ownership	7.00	38.00	42.00	90.48	1.10

9	local_radio_rule	19.00	300.00	342.00	87.72	1.12
16	political	13.00	136.00	156.00	87.18	1.13
26	cross_media_rule	19.00	289.00	342.00	84.50	1.15
33	interest_groups	20.00	320.00	380.00	84.21	1.16
17	legal_reasoning	12.00	111.00	132.00	84.09	1.16
10	audience	9.00	60.00	72.00	83.33	1.17
19	policy_goals	3.00	5.00	6.00	83.33	1.17
32	technological_innovation	22.00	383.00	462.00	82.90	1.17

Compared to previous graphs analyzed, this graph does not have 100% ego network density until graph 10. The results seem to be very consistent with the visualization of the graph. These top half ego networks are the outliers of the graph. The strongly connected out-degree nodes/concepts are not highly represented in these charts.

Structural Holes:

4. Centrality

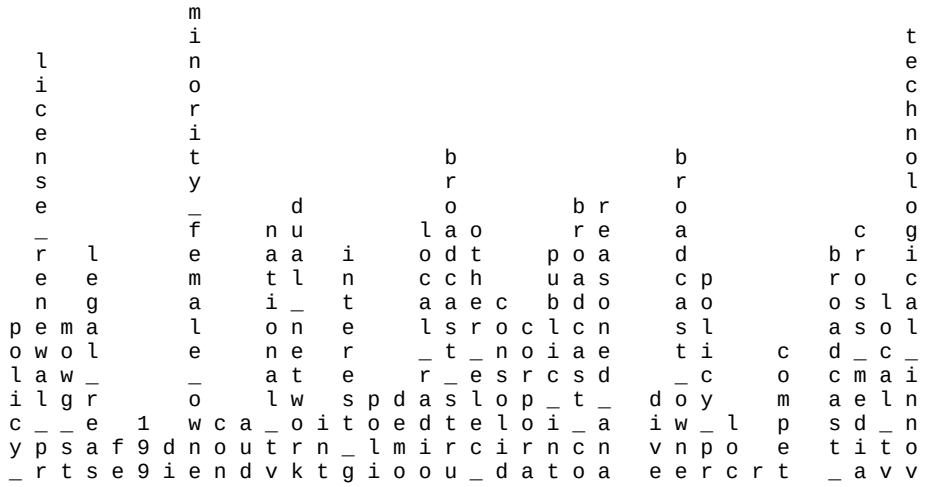
5. Cliques and Sub-Groups

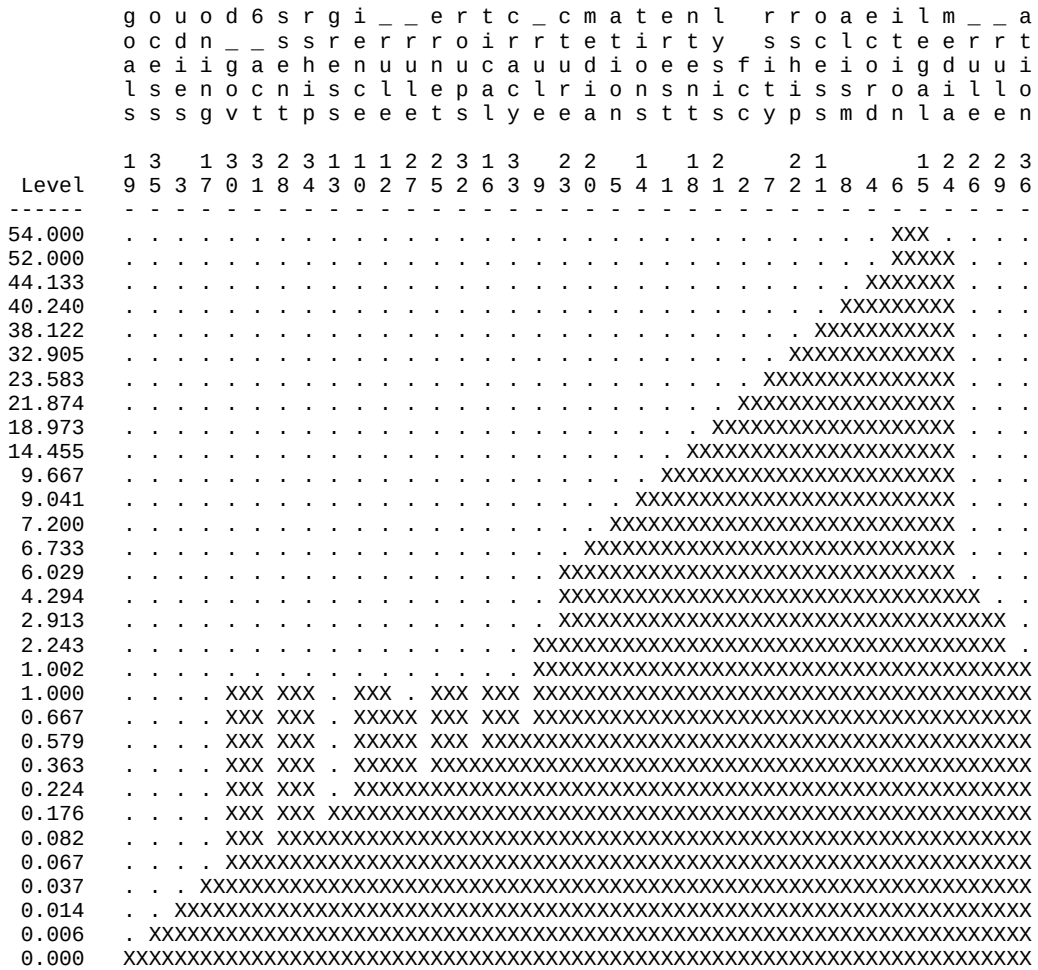
Summary of Results

	Window = 4	Window = 7	Window = 10
# of Cliques	64	74	65
# of n-cliques	3 2-cliques	2 2-cliques	2 2-cliques
# of n-Clans	2 2-clans	2 2-clans	2 2-clans
# of k-Plexes	489	531	390

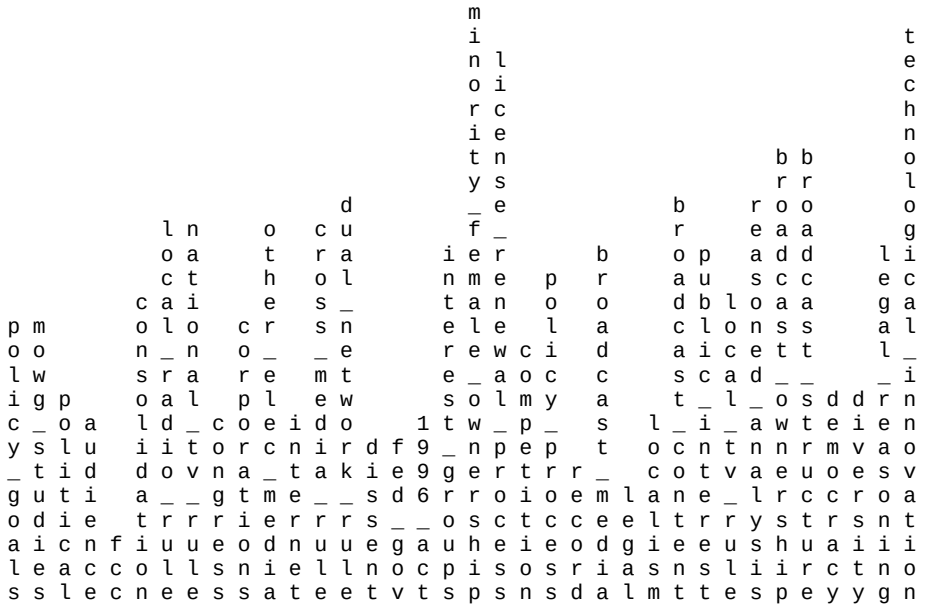
Clique: win4

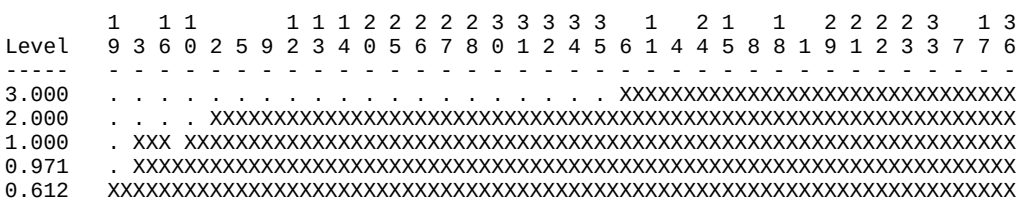
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX





nclique: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX





nclans: win4
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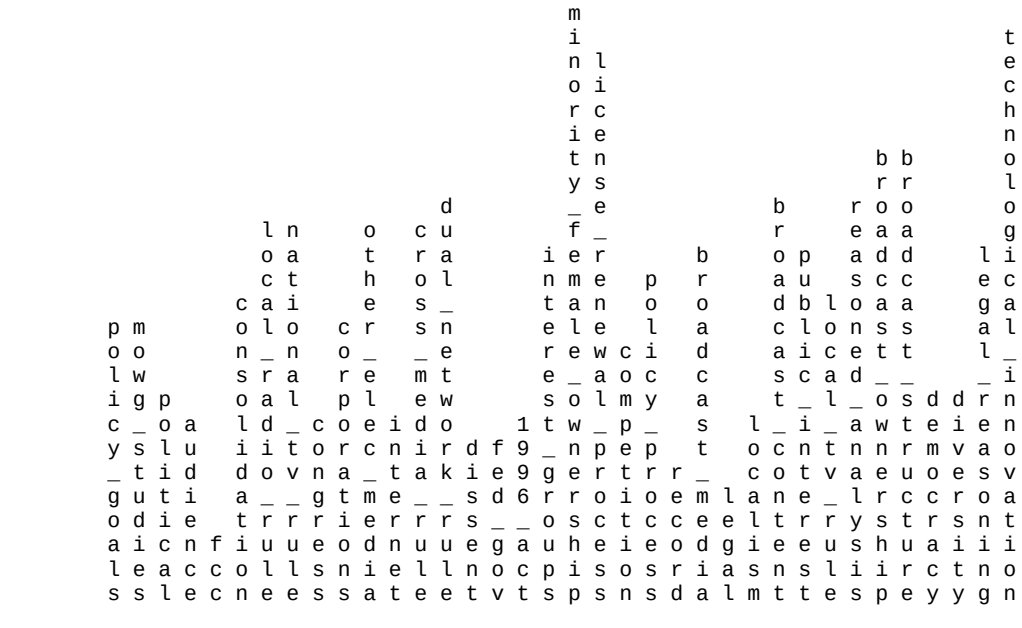
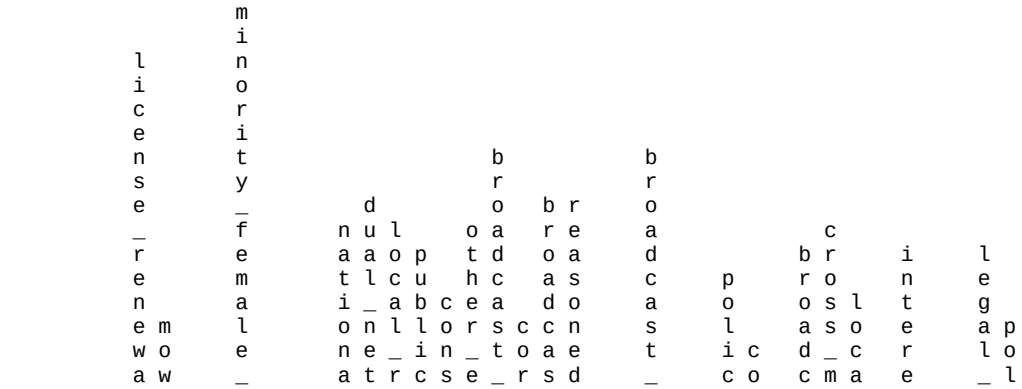
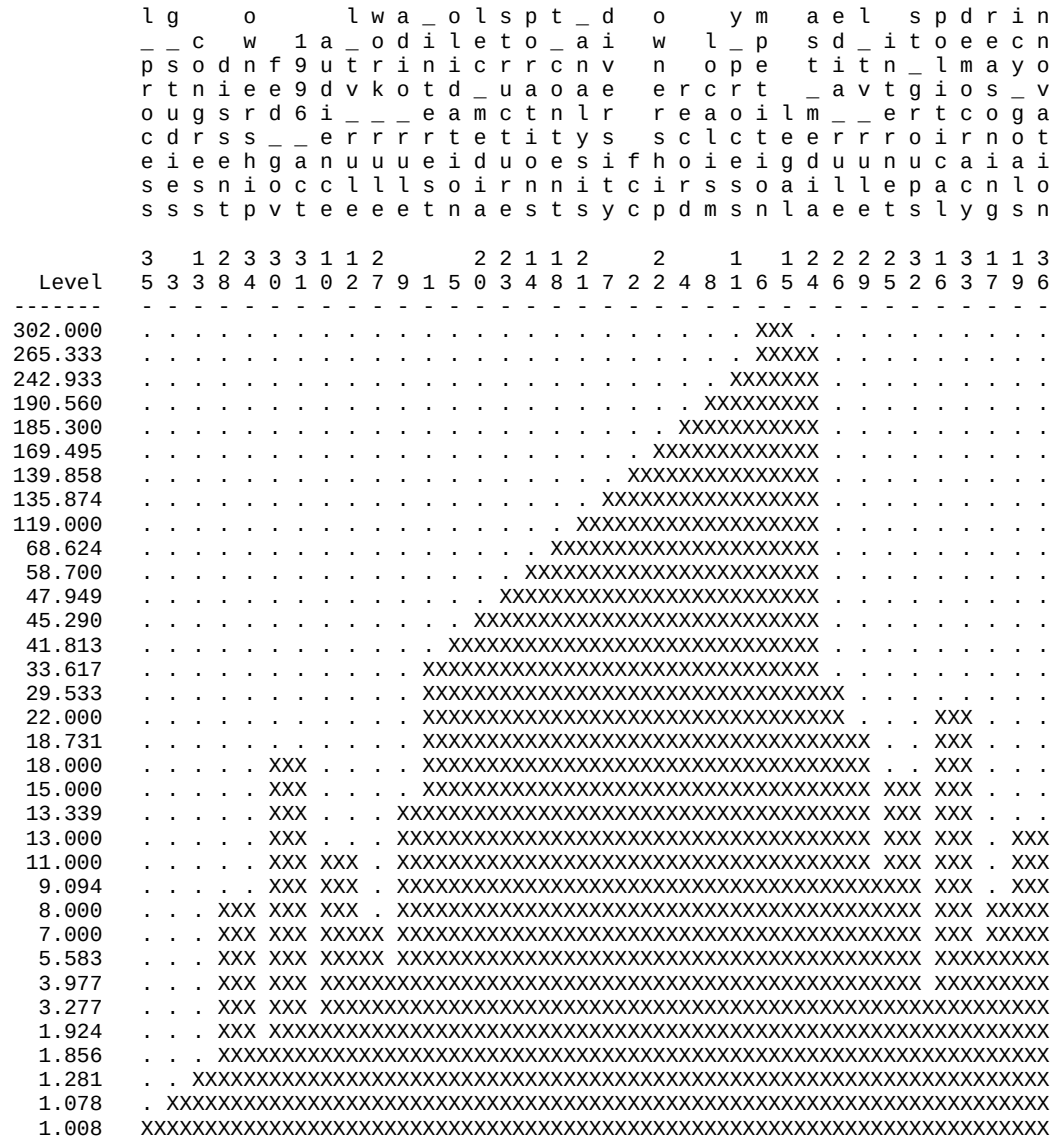


kplex: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX





Cliques and kplex provide the most reveling insight into the graph. In the clique, competition is in 60 out of the 64 cliques. Adding to competition is legal with broadcast media closely behind. In the kplex, there are similar results: competition and legal overlap the most followed by broadcast media.

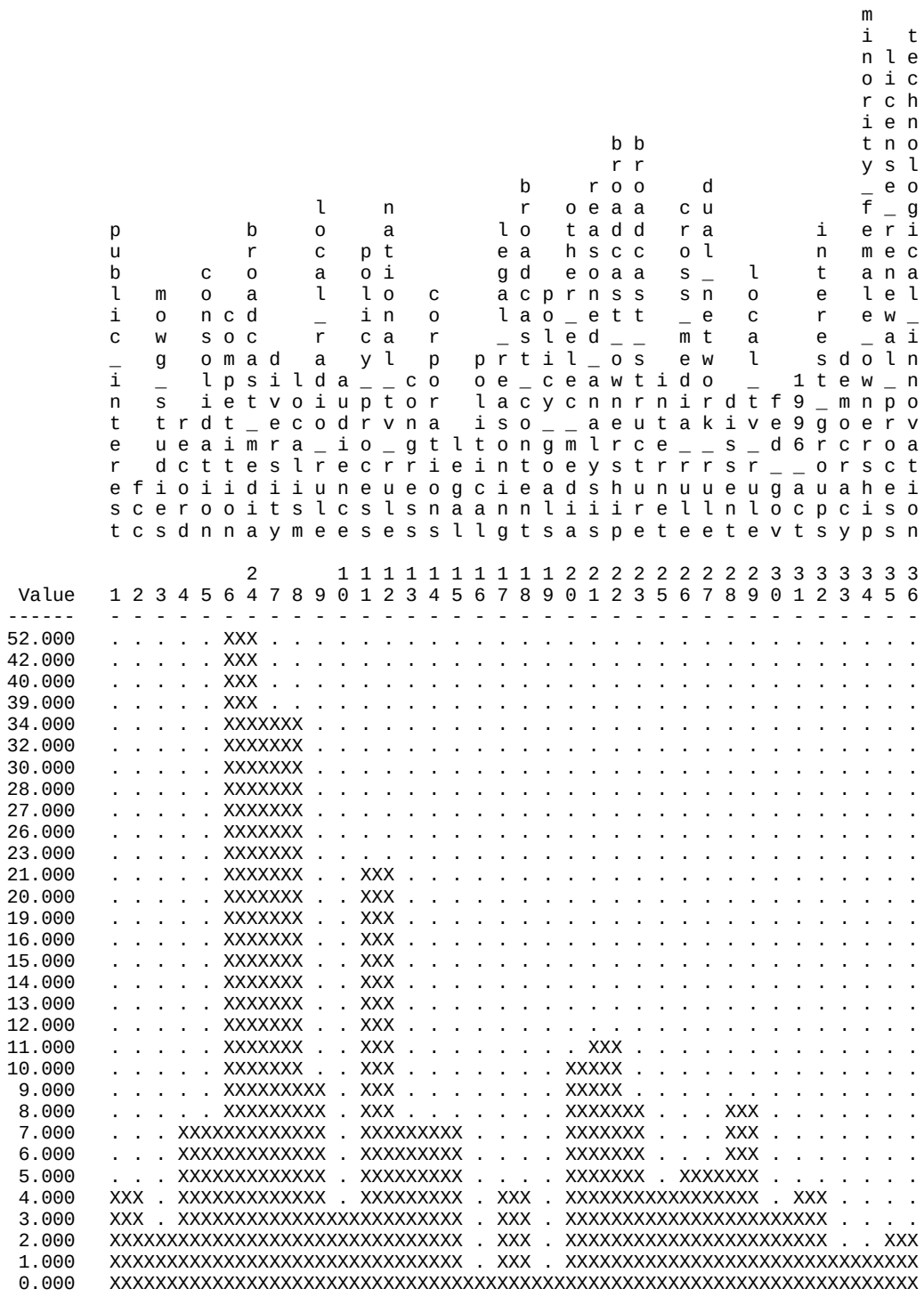
b. Top-Down Approaches:

Components:

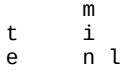
	Window = 4	Window = 7	Window =10
Simple Weak	1 component	1 component	1 component
Simple Strong	1 component	1 component	1 component

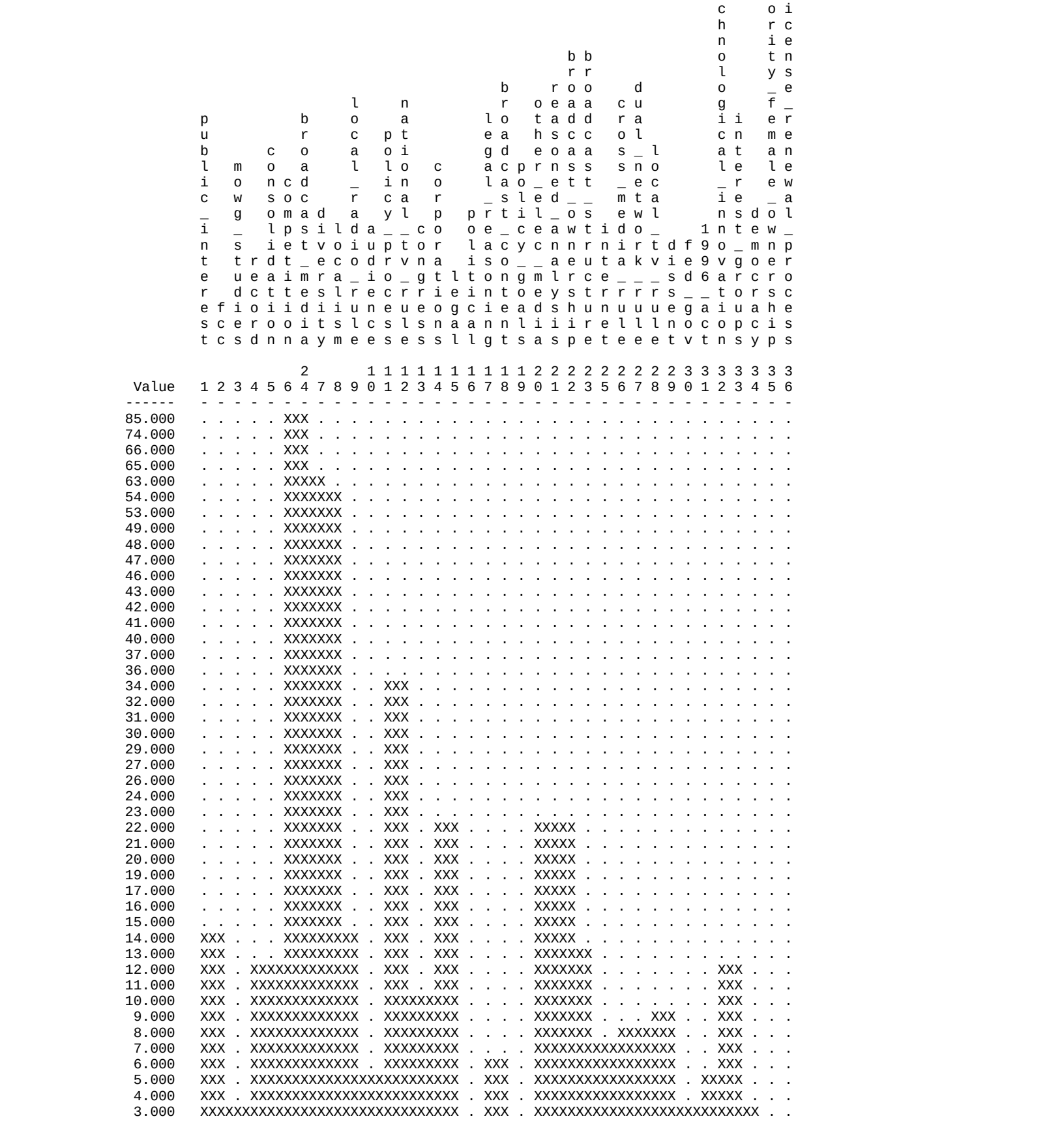
Valued:

HIERARCHICAL COMPONENTS (win4)



HIERARCHICAL COMPONENTS (win7)





Value	1	2	3	4	5	6	24	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
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13.000	XXX	.	.	.	.	XXXXXXXXX	.	.	XXX	.	XXX	.	.	.	.	XXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXX	.	XXX	.	.	.	.	XXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
11.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXX	.	XXX	.	.	.	.	XXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
10.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXXXXXXXX	.	.	.	.	.	.	XXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
9.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXXXXXXXX	.	.	.	.	.	.	XXXXXX	.	.	.	XXX	.	.	XXX	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
8.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXXXXXXXX	.	.	.	.	.	.	XXXXXX	.	XXXXXX	.	.	XXX	.	.	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
7.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXXXXXXXX	.	.	.	.	.	.	XXXXXXXXXXXXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
6.000	XXX	.	XXXXXXXXXXXXX	.	.	.	XXX	.	XXXXXXXXX	.	XXX	.	.	.	.	XXXXXXXXXXXXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	XXX	.	.	.	.	.
5.000	XXX	.	XXXXXXXXXXXXXXXXXXXXXXXXX	.	XXX	.	XXXXXXXXXXXXXXXX	.	.	XXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4.000	XXX	.	XXXXXXXXXXXXXXXXXXXXXXXXX	.	XXX	.	XXXXXXXXXXXXXXXX	.	.	XXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3.000	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	.	XXX	.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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HIERARCHICAL COMPONENTS (win10)

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                            l     n           r   o e a a   c u         g     f _
            p         b     o     a         l o   t a d d   r a         i i   e r
            u         r     c   p t         e a   h s c c   o l         c n   m e
            b     c   o     a   o i         g d   e o a a   s _ l       a t   a n
            l m   o   a     l   l o   c     a c p r n s s   s n o       l e   l e
            i o   n c d     _   i n   o     l a o _ e t t   _ e c       _ r   e w
            c w   s o c     r   c a   r     _ s l e d _ _   m t a       i e   _ a
            _ g   o m a d   a   y l   p   p r t i l _ o s   e w l       n s d o l
            i _   l p s i l d a _ _ c o   o e _ c e a w t i d o _     1 n t e w _
            n s   i e t v o i u p t o r   l a c y c n n r n i r t d f 9 o _ m n p
            t t r d t _ e c o d r v n a   i s o _ _ a e u t a k v i e 9 v g o e r
            e u e a i m r a _ i o _ g t l t o n g m l r c e _ _ _ s d 6 a r c r o
            r d c t t e s l r e c r r i e i n t o e y s t r r r r s _ _ t o r s c
          f e i o i i d i i u n e u e o g c i e a d s h u n u u u e g a i u a h e
          c s e r o o i t s l c s l s n a a n n l i i i r e l l l n o c o p c i s
          c t s d n n a y m e e s e s s l l g t s a s p e t e e e t v t n s y p s

                      2       1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3
  Value   1 2 3 4 5 6 4 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 5 6 7 8 9 0 1 2 3 4 5 6
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131.000   . . . . . XXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
118.000   . . . . . XXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 91.000   . . . . . XXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 84.000   . . . . . XXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 81.000   . . . . . XXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 77.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 70.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 68.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 66.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 65.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 64.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 62.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 57.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 55.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 54.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 53.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 52.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 51.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 50.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 46.000   . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . .
 45.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 44.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 41.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 40.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 39.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 38.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 35.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 33.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 32.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 31.000   . . . . . XXXXXXX . . XXX . . . . . . . . . . . . . . . . . . . . . . .
 30.000   . . . . . XXXXXXX . . XXX . . . . . . . XXXXX . . . . . . . . . . . . .
 27.000   . . . . . XXXXXXX . . XXX . XXX . . . . XXXXX . . . . . . . . . . . . .
 26.000   XXX . . . XXXXXXX . . XXX . XXX . . . . XXXXX . . . . . . . . . . . . .
 25.000   XXX . . . XXXXXXX . . XXX . XXX . . . . XXXXX . . . . . . . . . . . . .
 24.000   XXX . . . XXXXXXX . . XXX . XXX . . . . XXXXX . . . . . . . . . . . . .
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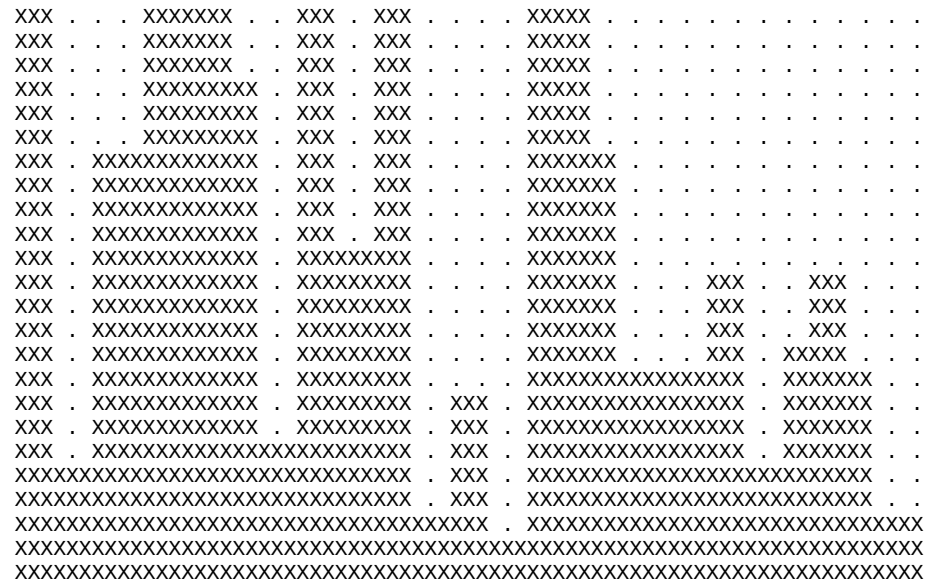


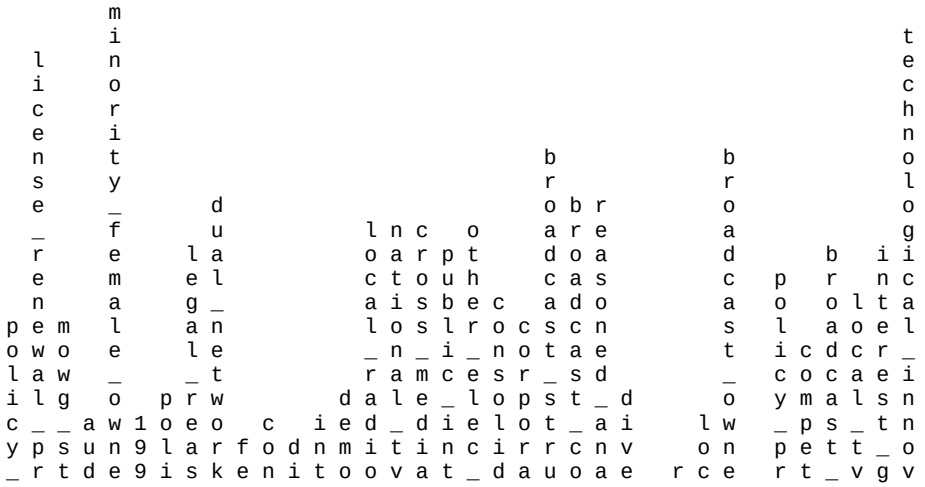
Simple components are of little value. The valued components are intriguing because it reveals far more sub-graphs than other approaches. This analysis also tends to reveal different nodes/concepts coming to the forefront. Competition and broadcast media are the top nodes followed closely by diversity and then localism.

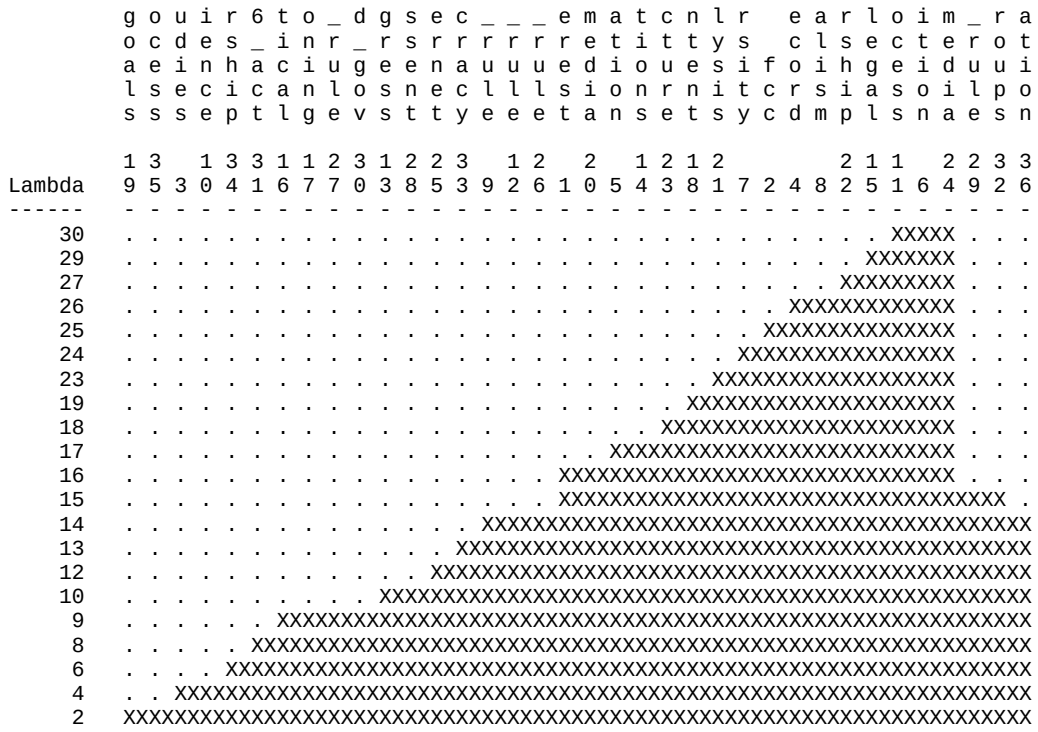
Bi-Components:

win4: 1 block with no cutpoints
win7: 1 block with no cutpoints
win10: 1 block with no cutpoints

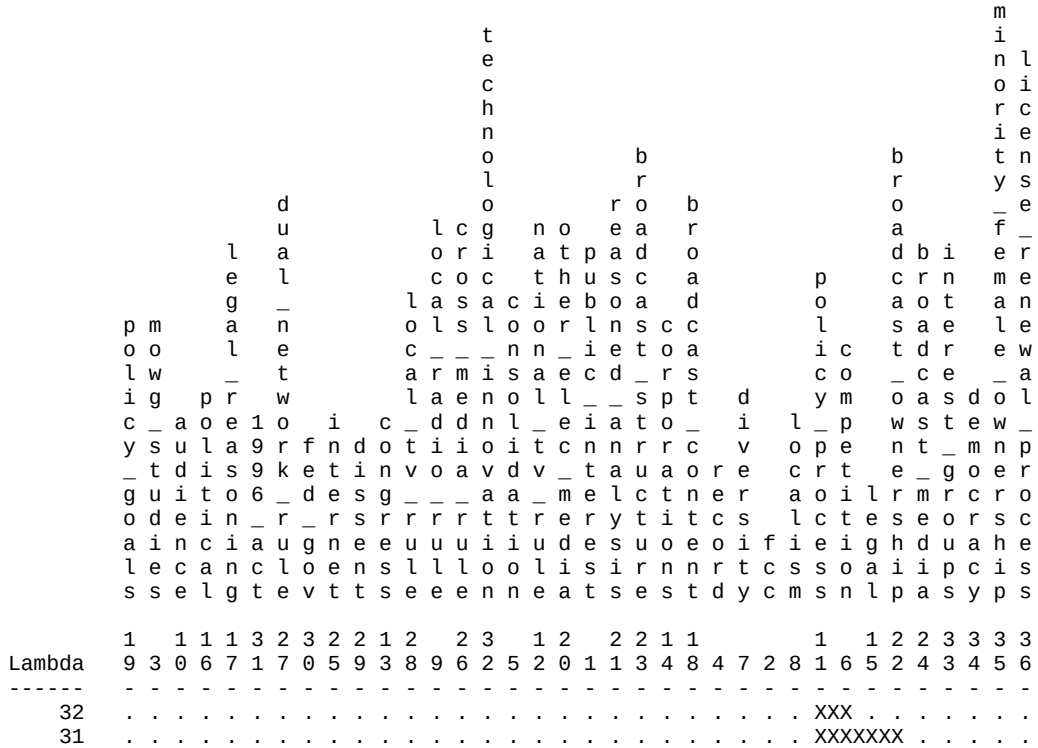
This graph is connected enough that there exist no nodes that can be removed (cutpoints) that would create blocks of sub-graphs.

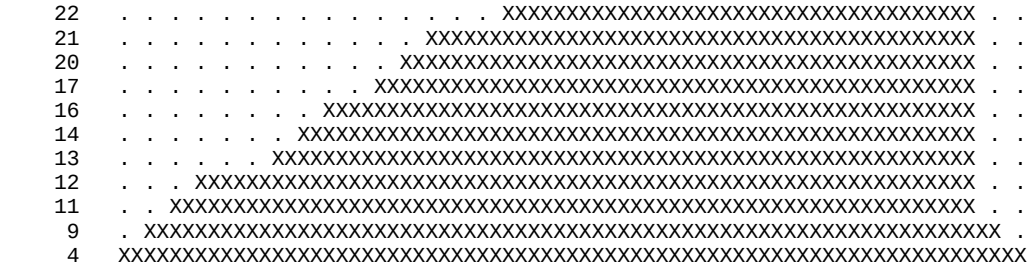
Lambda Sets and Bridges:
HIERARCHICAL LAMBDA SET PARTITIONS (win4)



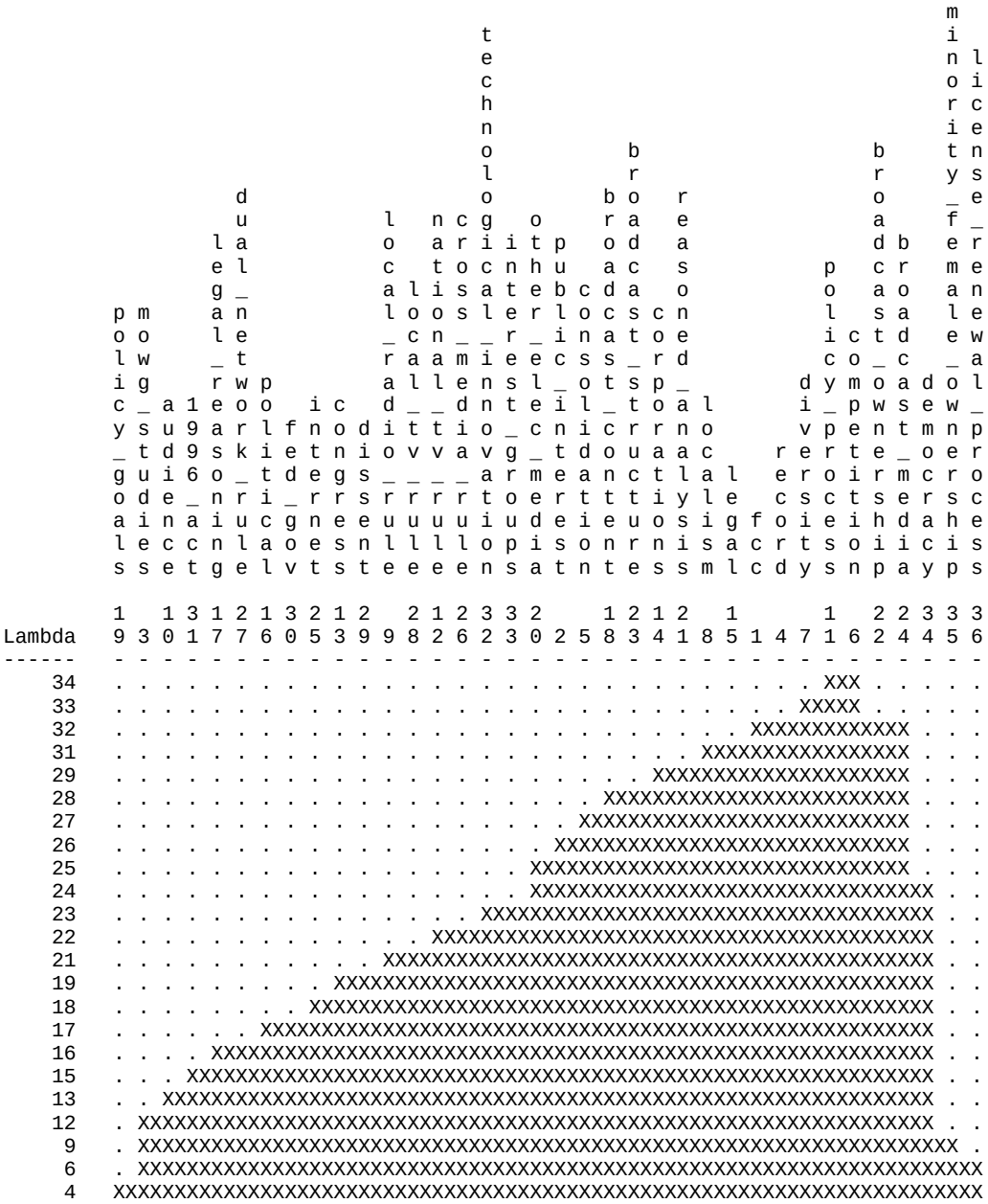


HIERARCHICAL LAMBDA SET PARTITIONS (win7)





HIERARCHICAL LAMBDA SET PARTITIONS (win10)



The results are not significantly different than other top-down approaches. Subgraphs that have the most flow are policy process, competition, and broadcast media. Window size 7 results contain a little bit different shape to the graph than 4 and 10 with legal and broadcast ownership with a higher lambda value.

Factions:

Democratic Commissioners

1. Basic Graph Properties

The commissioner's comments have been further analyzed by political affiliation. The democratic commissioners are Copps and Adelstein while the republican commissioners are Powell, Abernathy, and Martin. This discussion will begin with the democratic commissioners.

Graph Connectivity: The size of the graph is the same as the last few graphs – 36 nodes producing a possible 1,296 connections. The graphs are not as dense as some of the previous graphs; 32% (4), 46% (7), and 53% (10).

The row-wise univariate stats are presented as follows:

Window = 4

	Mean	Std	Sum
competition	0.722	0.448	26
legal	0.694	0.461	25
broadcast_media	0.667	0.471	24
broadcast_ownership	0.611	0.487	22
localism	0.583	0.493	21
record	0.556	0.497	20
policy_process	0.528	0.499	19
reasoned_analysis	0.528	0.499	19
diversity	0.472	0.499	17
broadcast_content	0.472	0.499	17
fcc	0.389	0.487	14
other_elec_media	0.389	0.487	14
interest_groups	0.389	0.487	14
public_interest	0.361	0.48	13
consolidation	0.361	0.48	13
national_tv_rule	0.361	0.48	13
local_radio_rule	0.333	0.471	12
corporations	0.333	0.471	12
cross_media_rule	0.333	0.471	12

Window = 7

	Mean	Std	Sum
competition	0.917	0.276	33
legal	0.833	0.373	30
policy_process	0.75	0.433	27
broadcast_media	0.75	0.433	27
localism	0.722	0.448	26
record	0.694	0.461	25
diversity	0.694	0.461	25
broadcast_content	0.694	0.461	25
broadcast_ownership	0.667	0.471	24
other_elec_media	0.639	0.48	23
reasoned_analysis	0.639	0.48	23

fcc	0.583	0.493	21
consolidation	0.583	0.493	21
national_tv_rule	0.583	0.493	21
corporations	0.583	0.493	21
interest_groups	0.556	0.497	20
technological_innovation	0.528	0.499	19
public_interest	0.472	0.499	17

Window = 10

	Mean	Std	Sum
competition	0.917	0.276	33
legal	0.861	0.346	31
record	0.833	0.373	30
policy_process	0.833	0.373	30
diversity	0.806	0.396	29
localism	0.806	0.396	29
broadcast_media	0.806	0.396	29
broadcast_ownership	0.75	0.433	27
broadcast_content	0.722	0.448	26
corporations	0.694	0.461	25
reasoned_analysis	0.694	0.461	25
consolidation	0.667	0.471	24
other_elec_media	0.667	0.471	24
fcc	0.639	0.48	23
technological_innovation	0.611	0.487	22
national_tv_rule	0.583	0.493	21
interest_groups	0.583	0.493	21
public_interest	0.556	0.497	20
broadcast_structure	0.556	0.497	20
democracy	0.556	0.497	20

What hasn't been seen on previous graphs is a lone highly connected source. Competition is accomplishing that. Legal is the second highest connected source node, also by itself. Beyond that, some of the same nodes/concepts have risen to the top again: broadcast media, broadcast ownership, localism, and diversity, to name a few. Legal holds a higher source connectivity. Public interest is in the top half of source connectivity for 4 and 10 but not 7.

The column-wise univariate charts follow:

Window = 4

	Mean	Std	Sum
broadc	0.806	0.396	29
policy	0.75	0.433	27
legal	0.722	0.448	26
compet	0.639	0.48	23
broadc	0.611	0.487	22
locali	0.556	0.497	20
record	0.528	0.499	19

divers	0.528	0.499	19
fcc	0.472	0.499	17
reason	0.444	0.497	16
consol	0.417	0.493	15
broadc	0.417	0.493	15
corpor	0.361	0.48	13
broadc	0.361	0.48	13
cross_	0.333	0.471	12
nation	0.306	0.461	11
local_	0.306	0.461	11
intere	0.306	0.461	11

Window = 7

	Mean	Std	Sum
legal	0.833	0.373	30
broadc	0.833	0.373	30
policy	0.806	0.396	29
broadc	0.778	0.416	28
fcc	0.75	0.433	27
compet	0.75	0.433	27
locali	0.75	0.433	27
divers	0.722	0.448	26
record	0.694	0.461	25
broadc	0.694	0.461	25
corpor	0.611	0.487	22
reason	0.611	0.487	22
broadc	0.556	0.497	20
cross_	0.556	0.497	20
public	0.5	0.5	18
consol	0.472	0.499	17
nation	0.472	0.499	17
local_	0.472	0.499	17

Window = 10

	Mean	Std	Sum
compet	0.861	0.346	31
policy	0.861	0.346	31
fcc	0.833	0.373	30
divers	0.833	0.373	30
locali	0.833	0.373	30
legal	0.833	0.373	30
broadc	0.833	0.373	30
broadc	0.833	0.373	30
record	0.778	0.416	28
reason	0.778	0.416	28
broadc	0.75	0.433	27
consol	0.694	0.461	25
corpor	0.694	0.461	25

public	0.611	0.487	22
broadc	0.611	0.487	22
cross_	0.583	0.493	21
intere	0.583	0.493	21
local_	0.5	0.5	18
nation	0.5	0.5	18
other_	0.5	0.5	18
local_	0.5	0.5	18

There is not real strong consistency across the various window sizes. The same nodes/concepts do surface near the top however. Broadcast media is at the top by itself in the 4 graph, ties with another in 7, and is tied for second in 10. As with previous graphs, many of the same nodes/concepts strong as sources are also receiving many connections.

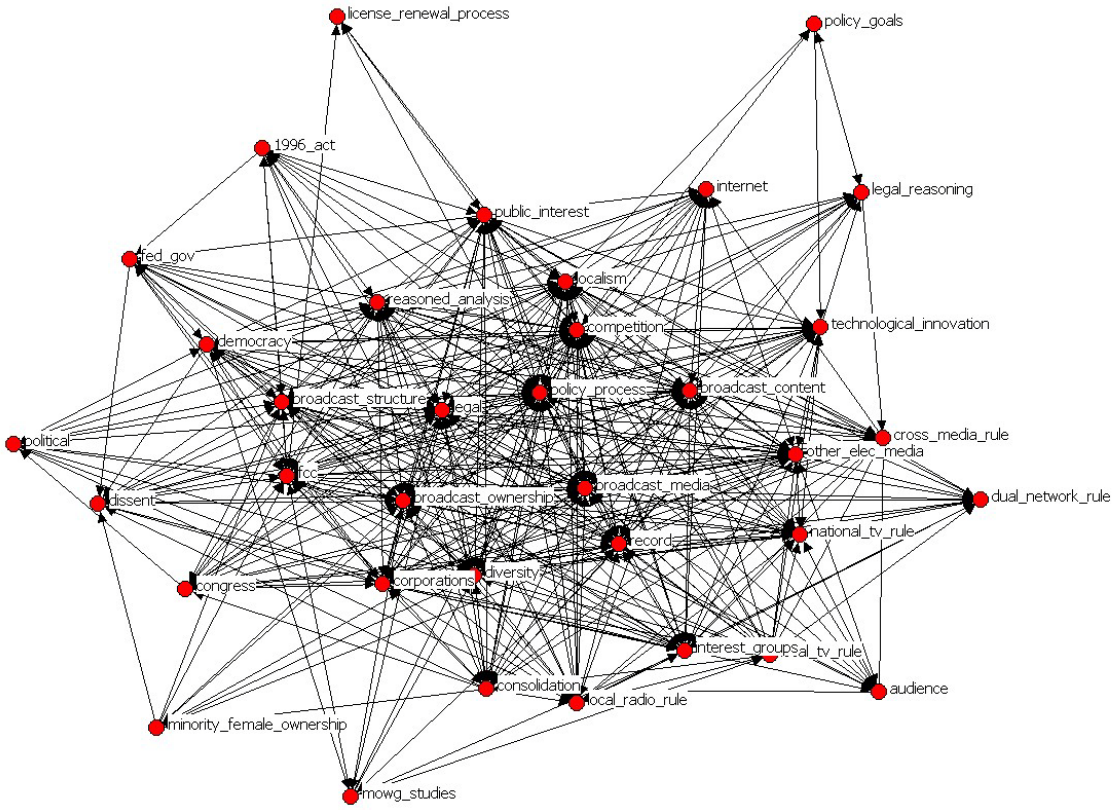
Reachability: This graph is totally reachable by all nodes with each other with the exception of one. Policy goals does not receive any connections.

Point Connectivity: The low density of graph 4 is evident in the point connectivity analysis. Sixteen of the thirty-six nodes are in a vulnerable position with policy goals and license renewal process needing only 1 node eliminated before unconnected. In graphs 7 and 10 a core of nodes becomes vulnerable: MOWG studies, audience, political, legal reasoning, policy goals, minority female ownership, license renewal process, federal government, and dual network rules.

Geodesic Distance: Again, because of the low density of graph 4, there are 2 nodes with no geodesic distance as a receiver – MOWG studies and policy goals. For the most part distances consist of 1 -2 nodes, but there are a couple of instances of distances of 3 and 4 nodes; namely, policy goals as a source as well as MOWG studies. Even in graphs 7 and 10, there is no geodesic distance for policy goals as a receiver.

Maximum Flow: Once again, this matrix looks very similar to point connectivity in terms of which nodes have minimal connections.

This graph consists of a well connected core with a loose outer edge. The graph of window size 4 is without question much looser than the graphs of 7 and 10. The following is the graph of window size 7:



2. Embeddedness

	Window = 4	Window = 7	Window = 10
Reciprocity	Dyad-based Reciprocity: 0.5000	Dyad-based Reciprocity: 0.6108	Dyad-based Reciprocity: 0.6951
Transitivity:	Number of non-vacuous transitive ordered triples: 3166 Number of triples of all kinds: 42840 Percentage of all ordered triples: 7.39% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 56.23%	Number of non-vacuous transitive ordered triples: 7069 Number of triples of all kinds: 42840 Percentage of all ordered triples: 16.50% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 66.29%	Number of non-vacuous transitive ordered triples: 9828 Number of triples of all kinds: 42840 Percentage of all ordered triples: 22.94% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 71.01%
Clustering:	Overall graph clustering coefficient: 0.630	Overall graph clustering coefficient: 0.695	Overall graph clustering coefficient: 0.750

Krackhardt GTD:	Weighted Overall graph clustering coefficient: 0.506 Connectedness 1.0000 Hierarchy 0.1081 Efficiency 0.6252 LUB 0.9429	Weighted Overall graph clustering coefficient: 0.618 Connectedness 1.0000 Hierarchy 0.0556 Efficiency 0.4672 LUB 1.0000	Weighted Overall graph clustering coefficient: 0.675 Connectedness 1.0000 Hierarchy 0.0556 Efficiency 0.4084 LUB 1.0000

The dyad reciprocity is lower than previous graphs, and it is interesting how graph 4 has only 50% dyad reciprocity. The transitive triads are also low as well as the possibility for transitivity. There is clustering occurring though lower than other graphs. This is not a hierarchical graph, but certainly comes closer than previous graphs.

3. Ego Network

Ego Density:

Window = 4

		Size	Ties	Pairs	Densit	AvgDis
16	legal_reasoning	3.00	6.00	6.00	100.00	1.00
29	fed_gov	3.00	6.00	6.00	100.00	1.00
35	dual_network_rule	3.00	6.00	6.00	100.00	1.00
27	dissent	4.00	11.00	12.00	91.67	1.08
23	internet	8.00	50.00	56.00	89.29	1.11
12	congress	7.00	36.00	42.00	85.71	1.14
25	minority_female_ownership	4.00	10.00	12.00	83.33	1.17
28	local_tv_rule	8.00	45.00	56.00	80.36	1.20
13	corporations	11.00	87.00	110.00	79.09	1.21
31	technological_innovation	8.00	43.00	56.00	76.79	1.23
8	local_radio_rule	11.00	84.00	110.00	76.36	1.24
33	democracy	5.00	15.00	20.00	75.00	1.25
32	interest_groups	13.00	110.00	156.00	70.51	1.29
11	national_tv_rule	12.00	93.00	132.00	70.45	1.31
17	broadcast_content	16.00	169.00	240.00	70.42	1.30
24	cross_media_rule	11.00	77.00	110.00	70.00	1.30
1	public_interest	12.00	90.00	132.00	68.18	1.33
9	audience	3.00	4.00	6.00	66.67	1.33

Window = 7

		Size	Ties	Pairs	Densit	AvgDis
16	legal_reasoning	6.00	29.00	30.00	96.67	1.03
35	mowg_studies	5.00	19.00	20.00	95.00	1.05
27	dual_network_rule	7.00	39.00	42.00	92.86	1.07
29	local_tv_rule	11.00	102.00	110.00	92.73	1.07
30	fed_gov	7.00	38.00	42.00	90.48	1.10
23	internet	12.00	119.00	132.00	90.15	1.10

28	dissent	8.00	50.00	56.00	89.29	1.11
24	cross_media_rule	14.00	161.00	182.00	88.46	1.12
25	minority_female_ownership	6.00	26.00	30.00	86.67	1.13
26	license_renewal_process	3.00	5.00	6.00	83.33	1.17
21	broadcast_structure	11.00	91.00	110.00	82.73	1.17
12	congress	12.00	107.00	132.00	81.06	1.20
15	political	8.00	45.00	56.00	80.36	1.20
31	1996_act	10.00	71.00	90.00	78.89	1.21
8	local_radio_rule	15.00	163.00	210.00	77.62	1.22
33	interest_groups	19.00	260.00	342.00	76.02	1.24
18	other_elec_media	22.00	342.00	462.00	74.03	1.26
32	technological_innovation	18.00	226.00	306.00	73.86	1.26

Window = 10

		Size	Ties	Pairs	Densit	AvgDis
26	license_renewal_process	5.00	20.00	20.00	100.00	1.00
28	local_tv_rule	13.00	152.00	156.00	97.44	1.03
30	fed_gov	9.00	70.00	72.00	97.22	1.03
23	internet	12.00	128.00	132.00	96.97	1.03
35	mowg_studies	6.00	29.00	30.00	96.67	1.03
17	legal_reasoning	11.00	105.00	110.00	95.45	1.05
27	dual_network_rule	9.00	68.00	72.00	94.44	1.06
29	dissent	12.00	124.00	132.00	93.94	1.06
12	congress	15.00	190.00	210.00	90.48	1.10
25	minority_female_ownership	7.00	38.00	42.00	90.48	1.10
31	1996_act	13.00	137.00	156.00	87.82	1.12
24	cross_media_rule	18.00	265.00	306.00	86.60	1.13
8	local_radio_rule	18.00	261.00	306.00	85.29	1.15
33	interest_groups	20.00	313.00	380.00	82.37	1.18
15	political	11.00	90.00	110.00	81.82	1.18
32	technological_innovation	21.00	336.00	420.00	80.00	1.20
18	other_elec_media	23.00	403.00	506.00	79.64	1.20
1	public_interest	19.00	267.00	342.00	78.07	1.22
21	broadcast_structure	19.00	267.00	342.00	78.07	1.22

This graph does have 100% ego network density unlike the main graph (Commissioners). Again, it is the outliers who have a strong ego density; outliers that are also loosely connected to other parts of the graph.

Structural Holes:

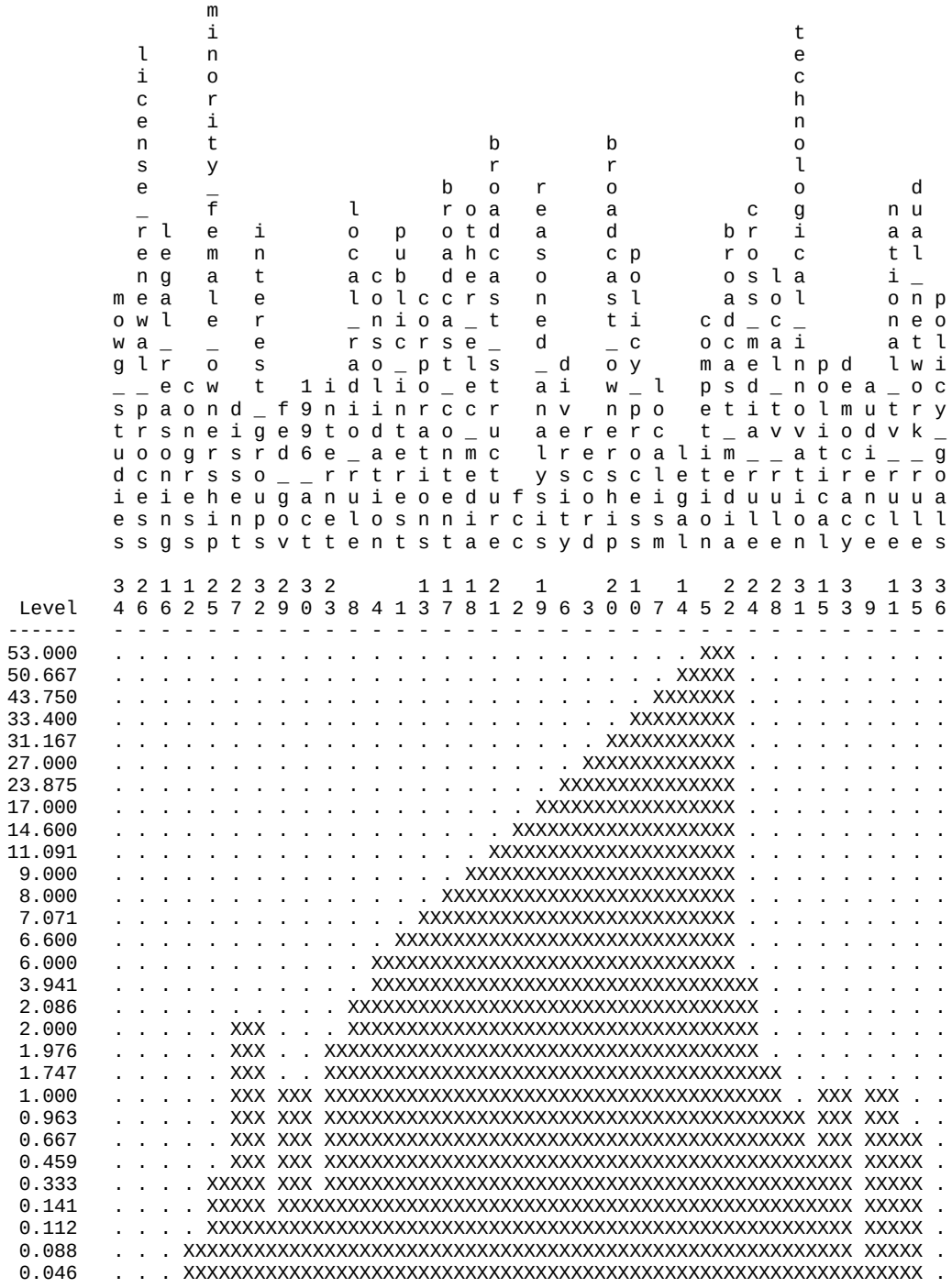
4. Centrality

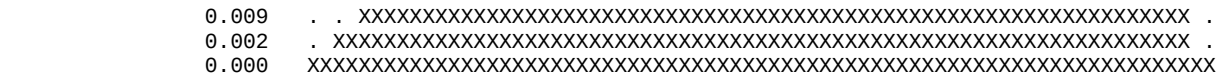
5. Cliques and Sub-Groups

Summary of Results

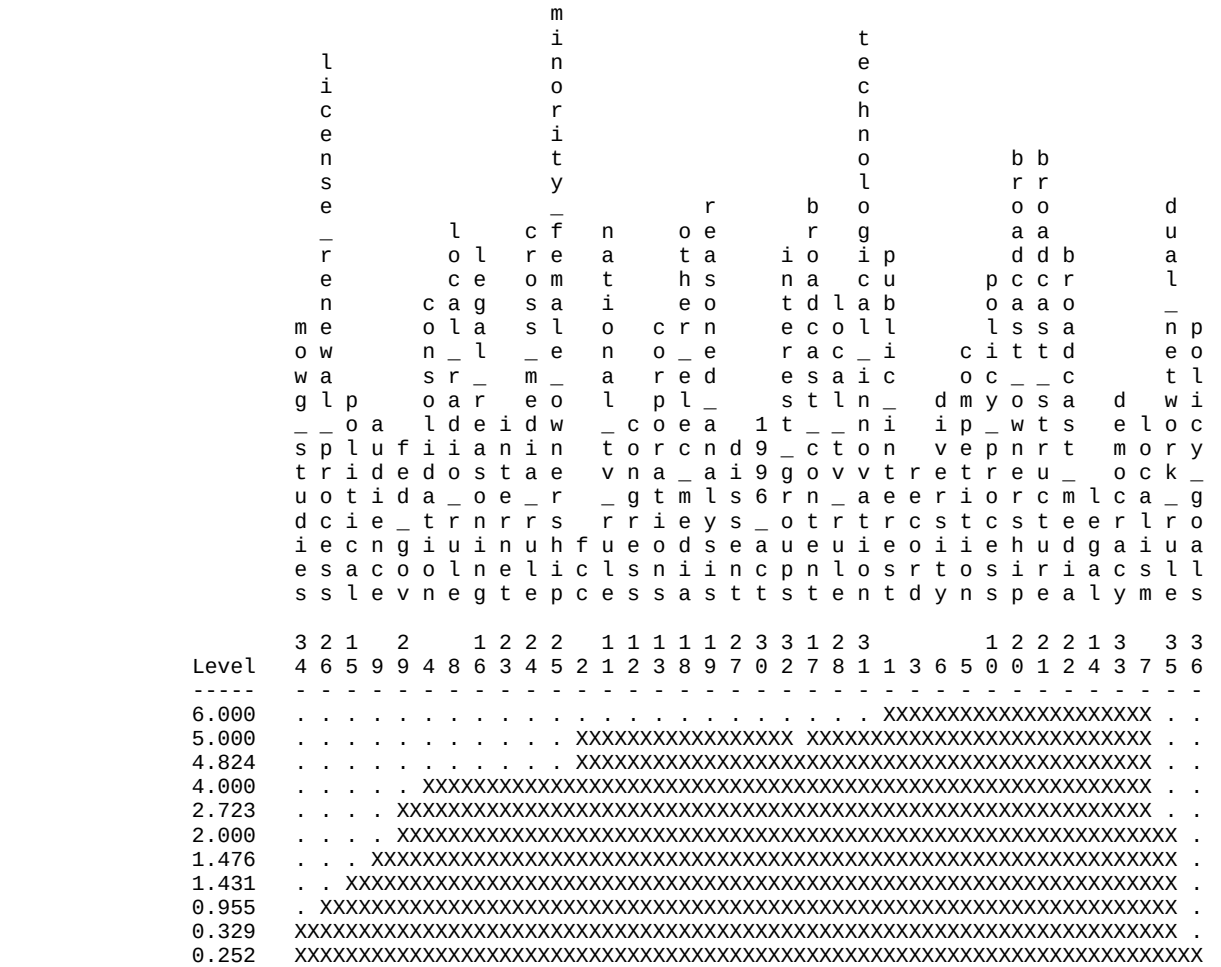
	Window = 4	Window = 7	Window = 10
# of Cliques	67	63	53
# of n-cliques	6 2-cliques	2 2-cliques	2 2-cliques
# of n-Clans	6 2-clans	2 2-clans	2 2-clans
# of k-Plexes	527	589	410

cliques: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX

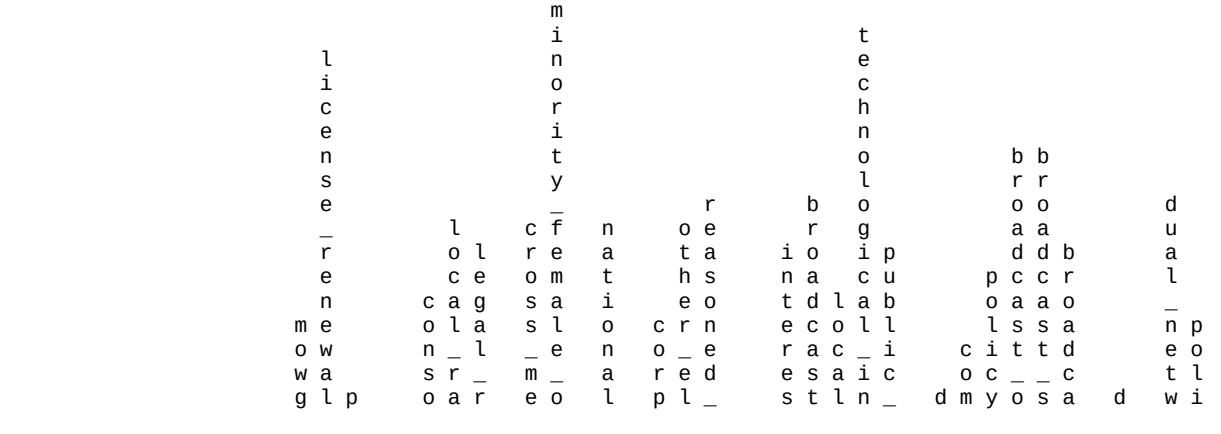


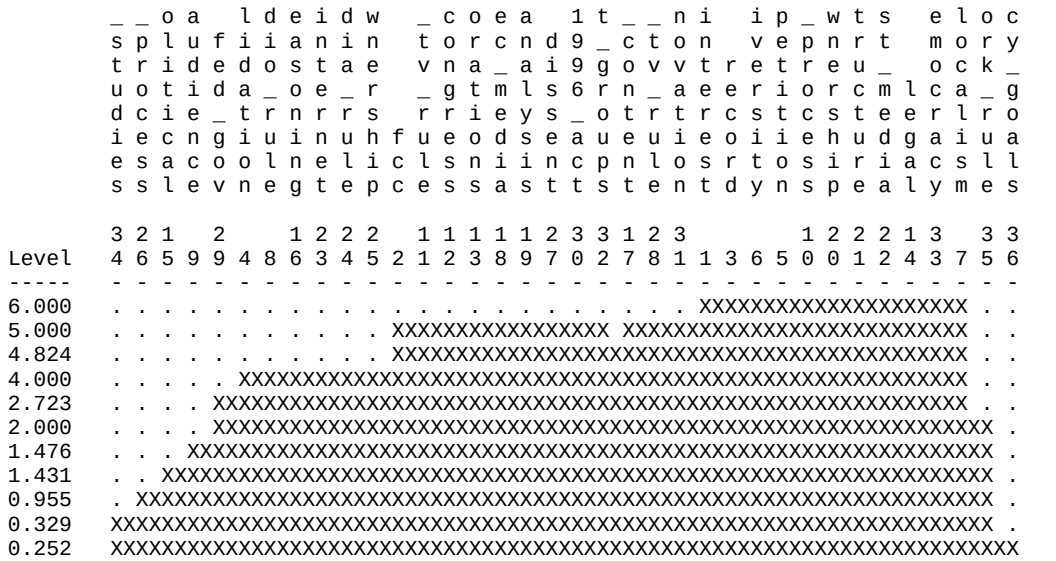


ncliques: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX



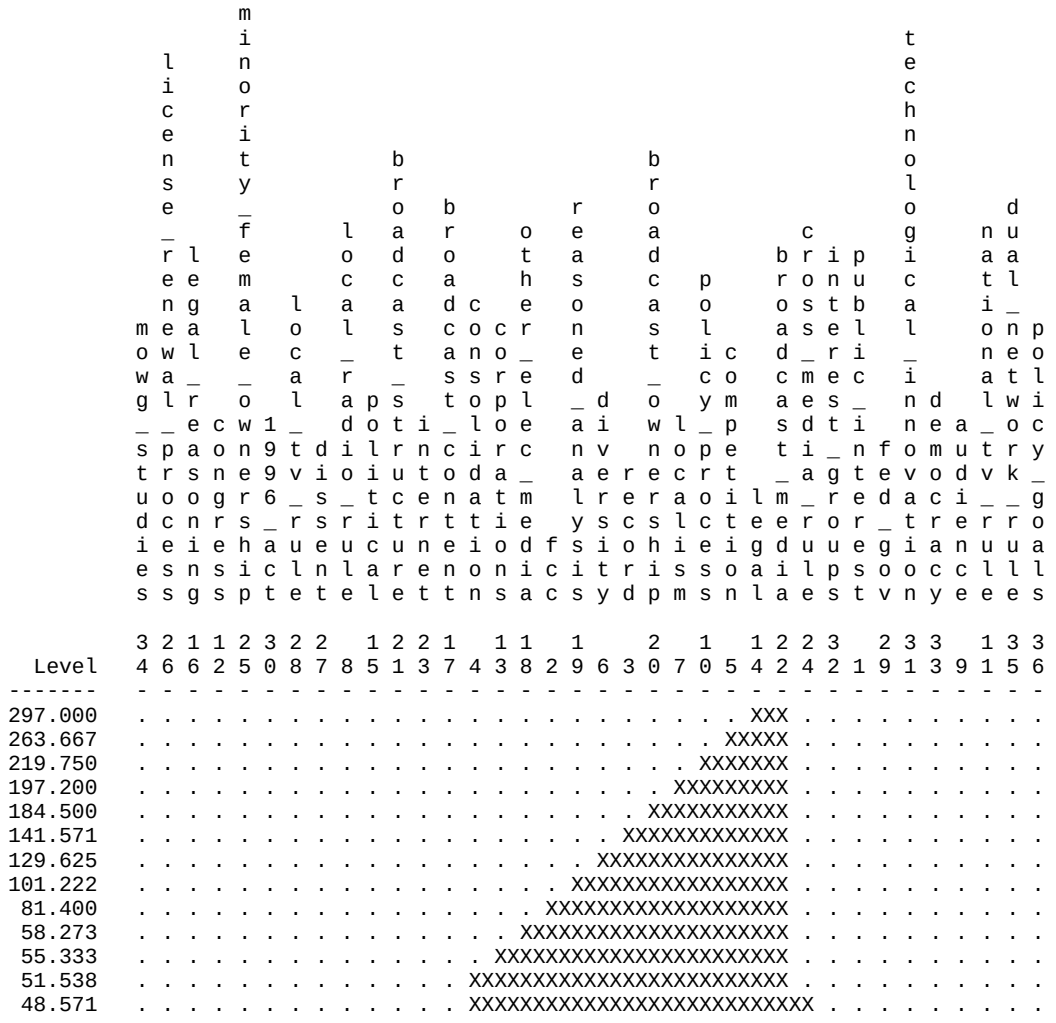
nclans: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX





kplex: win4

HIERARCHICAL CLUSTERING OF OVERLAP MATRIX



```
25.000   . . . . . . . . . XXX . . XXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . .
23.127   . . . . . . . . . XXX . XXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . . .
22.292   . . . . . . . . . XXX . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . .
17.667   . . . . . . . . XXXXX . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . . . .
16.000   . . . . . . . . XXXXX . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . XXX .
15.101   . . . . . . . . XXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . . . . . XXX .
14.000   . . . . . . . . XXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXX XXX . XXX .
13.741   . . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXX XXX . XXX .
 9.667   . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXX XXX . XXX .
 8.449   . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXX XXX . XXX .
 8.333   . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXX . XXX .
 5.907   . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX .
 4.000   . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX .
 3.029   . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX .
 2.232   . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX .
 2.032   . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 1.469   . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 1.345   . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.820   . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
 0.401   . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
 0.243   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

The number of nclans (6) is unique. Up to this point in the analysis, there have been primarily two and three nclans. The six nclans are still “long, stringy” subgroups, but nevertheless a unique number. Competition and broadcast media are the two most often concepts in cliques while legal and broadcast media are the top overlapping in kplexes.

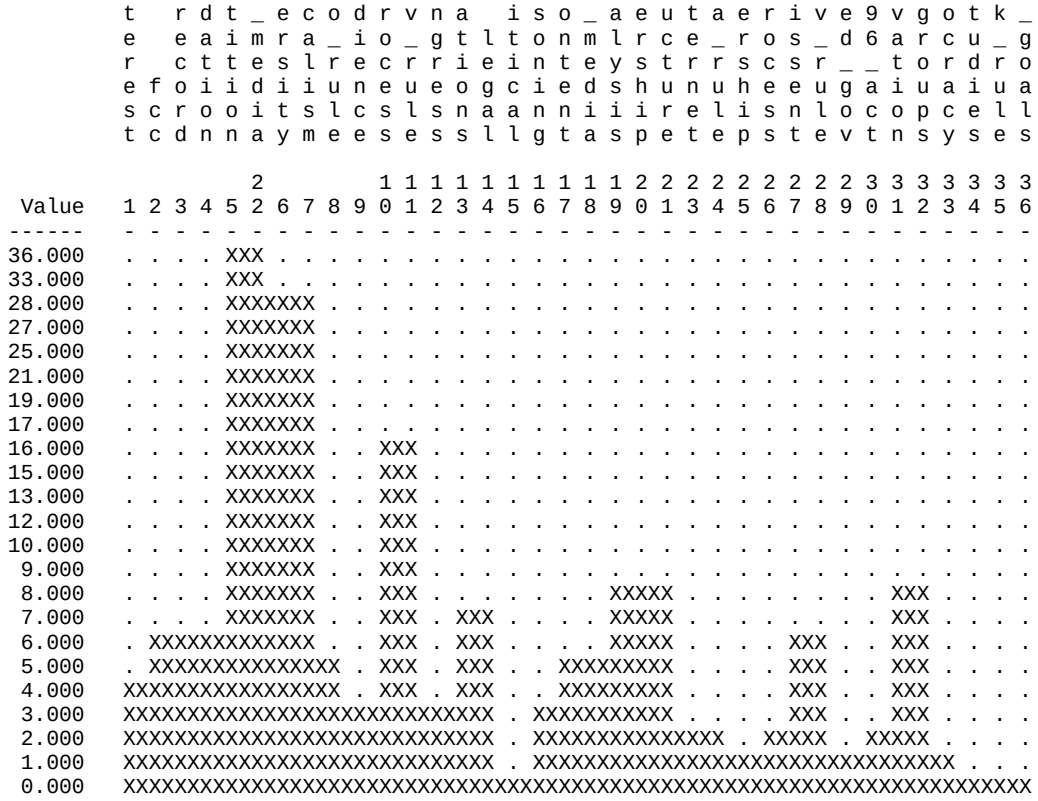
b. Top-Down Approaches:

Components:

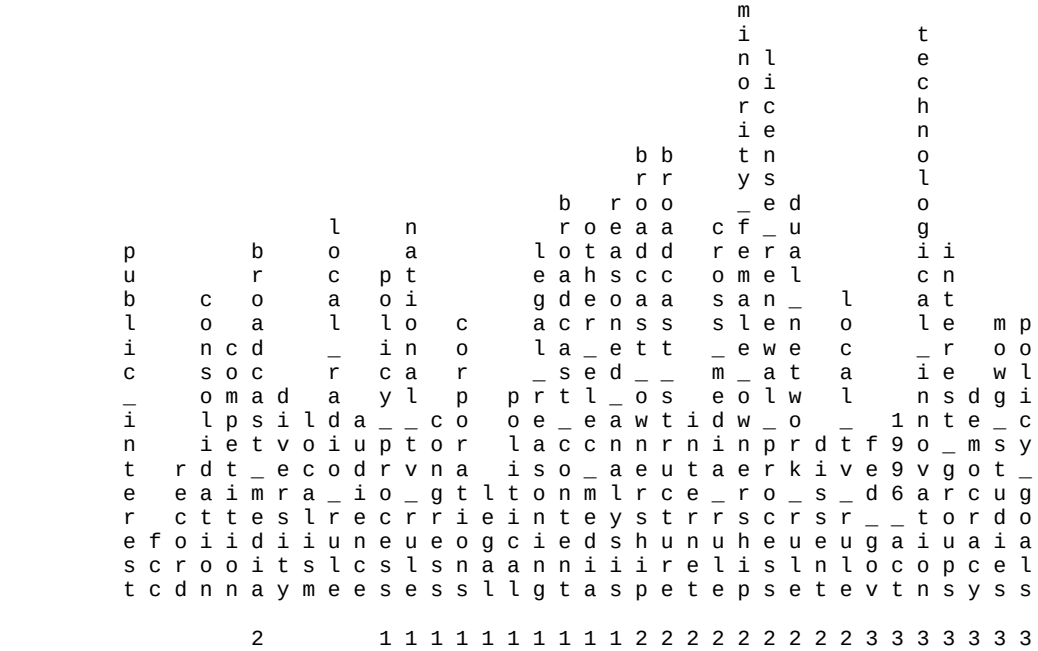
	Window = 4	Window = 7	Window =10
Simple Weak	1 component	1 component	1 component
Simple Strong	3 components; 2 consisting of one node: MOWG and policy goals	2 components; 1 consisting of one node: policy goals	2 components; 1 consisting of one node: policy goals

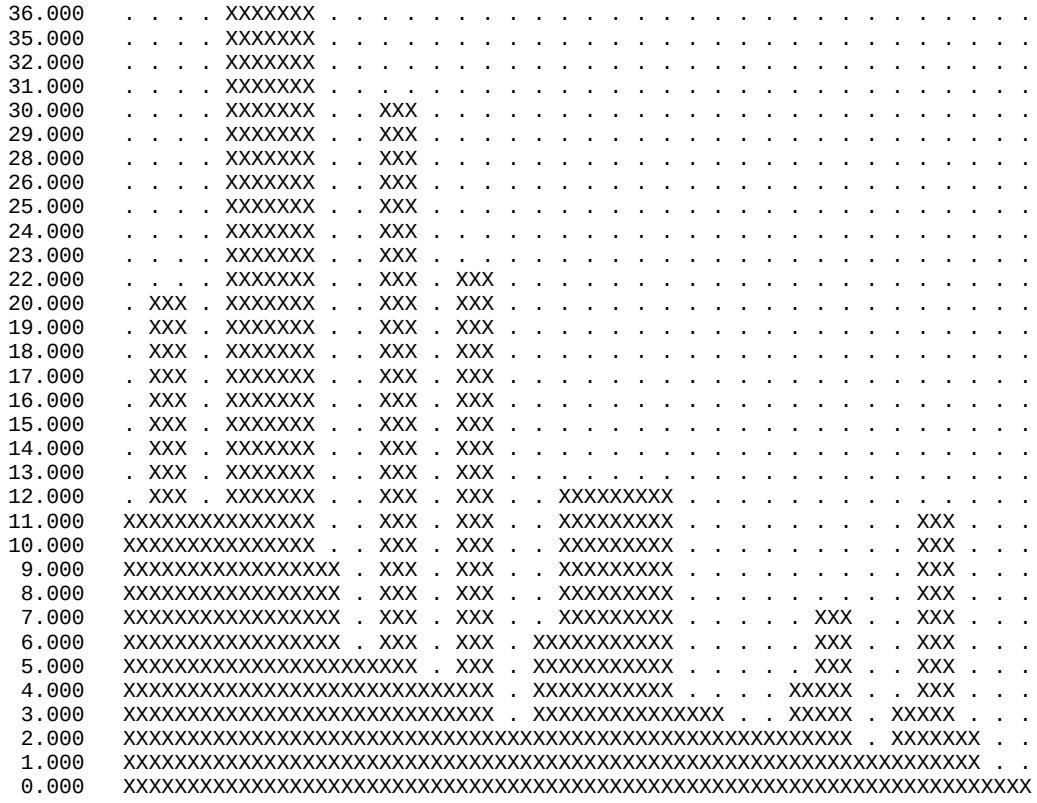
Valued:
HIERARCHICAL COMPONENTS (win4)

```
                                                m
                                                i           t
                                                n l         e
                                                o i         c
                                                r c         h
                                                i e         n
                                        b b     t n         o
                                        r r     y s         l
                                  b   r o o     _ e         o       d
                l     n           r o e a a   c f _         g       u
p         b     o     a         l o t a d d   r e r         i i     a
u         r     c   p t         e a h s c c   o m e         c n     l
b     c   o     a   o i         g d e o a a   s a n   l     a t     _
l     o   a     l   l o   c     a c r n s s   s l e   o     l e   m n p
i     n c d     _   i n   o     l a _ e t t   _ e w   c     _ r   o e o
c     s o c     r   c a   r     _ s e d _ _   m _ a   a     i e   w t l
_     o m a d   a   y l   p   p r t l _ o s   e o l   l     n s d g w i
i     l p s i l d a _ _ c o   o e _ e a w t i d w _   _   1 n t e _ o c
n     i e t v o i u p t o r   l a c c n n r n i n p d t f 9 o _ m s r y
```

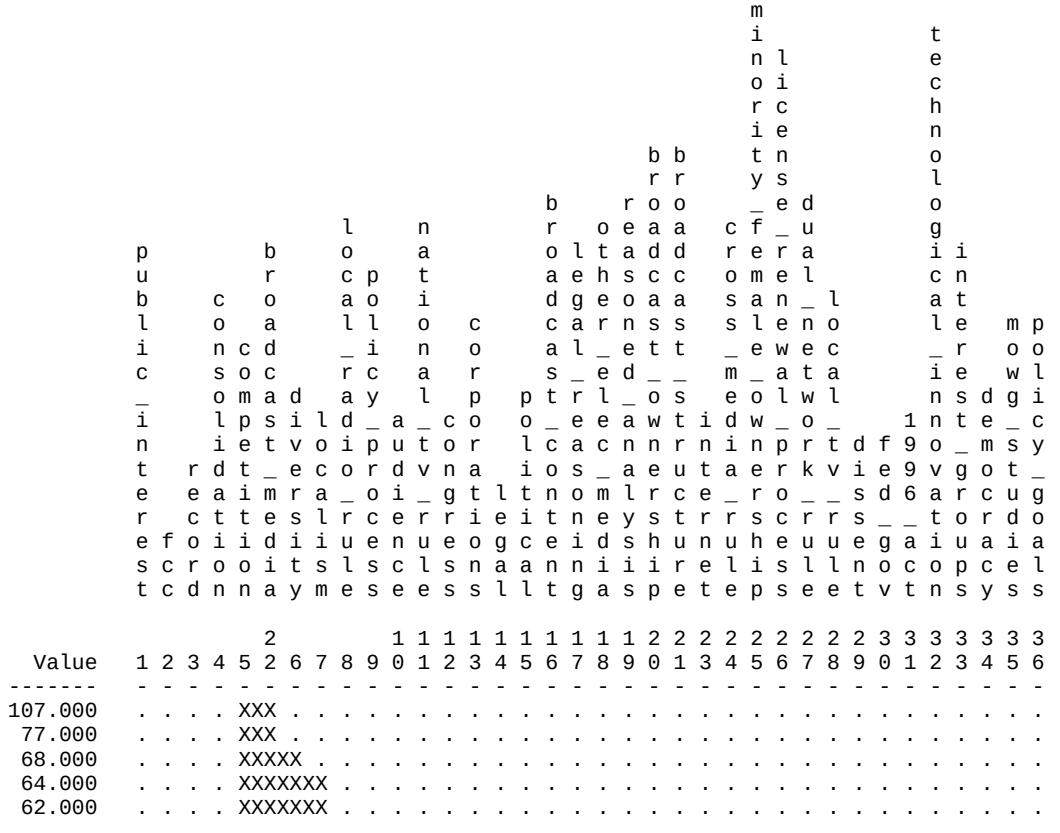


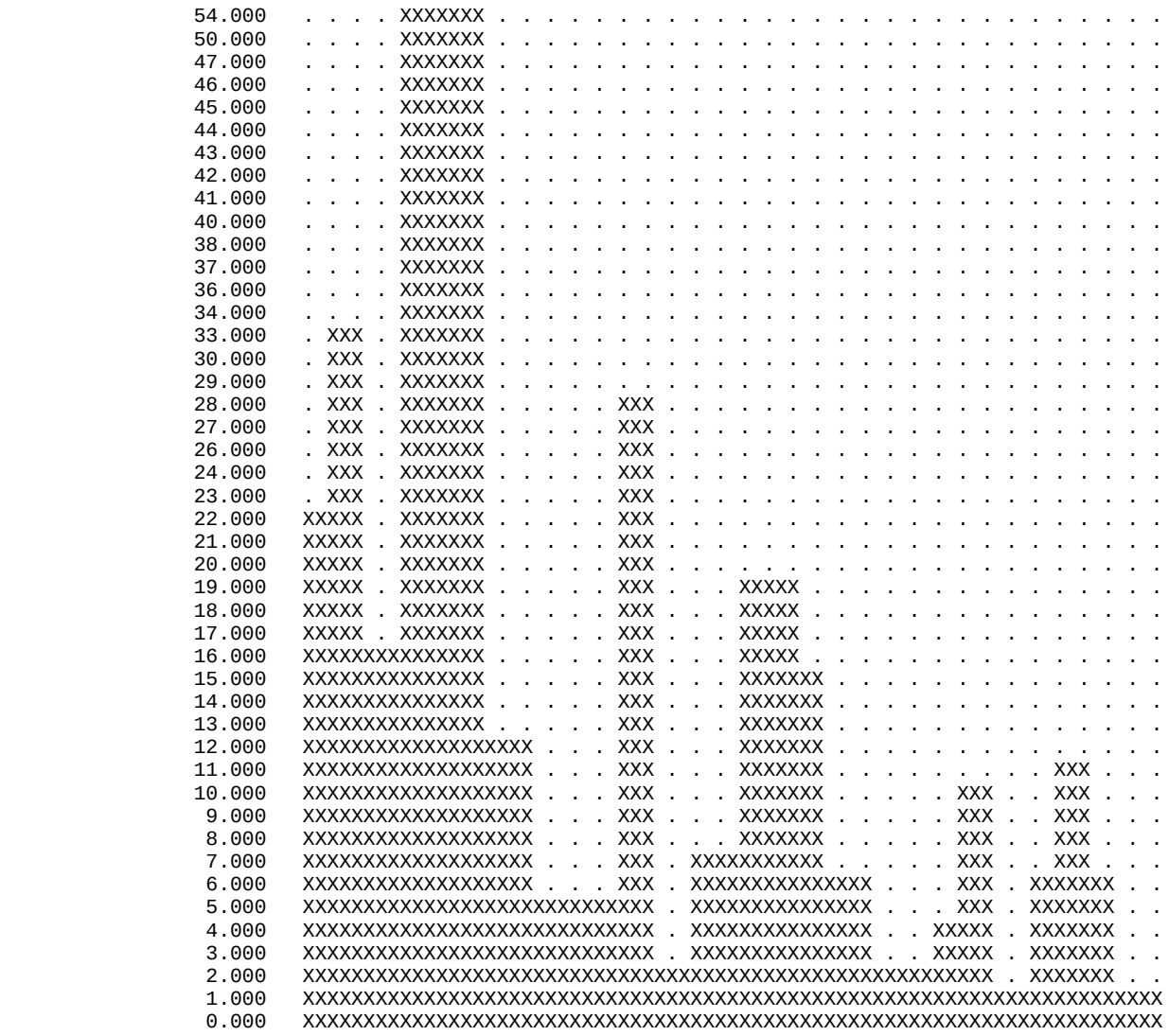
HIERARCHICAL COMPONENTS (win7)





HIERARCHICAL COMPONENTS (win10)





Strong simple component analysis did yield more than one component although they are components of one node rather than a sub-graph of 3 or more. Policy goals appears to being close to an isolate rather than a component. Nevertheless, it did meet the criteria in this analysis. The valued graphs have once again produced some interesting results. Competition and broadcast media are (like it's parent) the top two nodes/concepts forming a non-isolated subgraph followed by diversity and localism.

Bi-Components:
win4
Block 1: technological_innovation policy_goals
Block 2: fcc mowg_studies
Block 3: public_interest fcc record consolidation competition diversity localism local_radio_rule audience policy_process national_tv_rule congress corporations legal political legal_reasoning broadcast_content other_elec_media reasoned_analysis broadcast_ownership broadcast_structure broadcast_media internet cross_media_rule minority_female_ownership

license_renewal_process dissent local_tv_rule fed_gov 1996_act technological_innovation interest_groups democracy dual_network_rule

FCC and technological innovation are the two cutpoints.

win7
Block 1: technological_innovation policy_goals
Block 2: public_interest fcc record consolidation competition diversity localism local_radio_rule audience policy_process national_tv_rule congress corporations legal political legal_reasoning broadcast_content other_elec_media reasoned_analysis broadcast_ownership broadcast_structure broadcast_media internet cross_media_rule minority_female_ownership license_renewal_process dual_network_rule dissent local_tv_rule fed_gov 1996_act technological_innovation interest_groups democracy mowg_studies

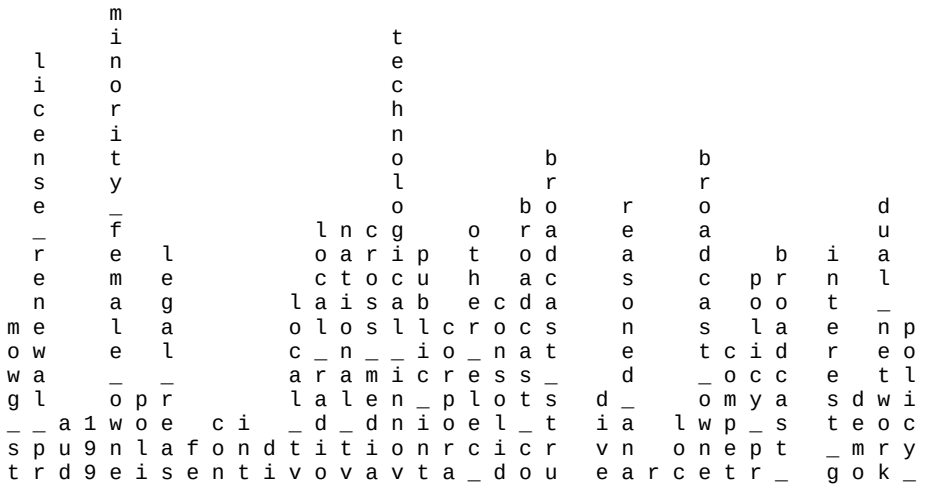
Technological innovation is the cutpoint.

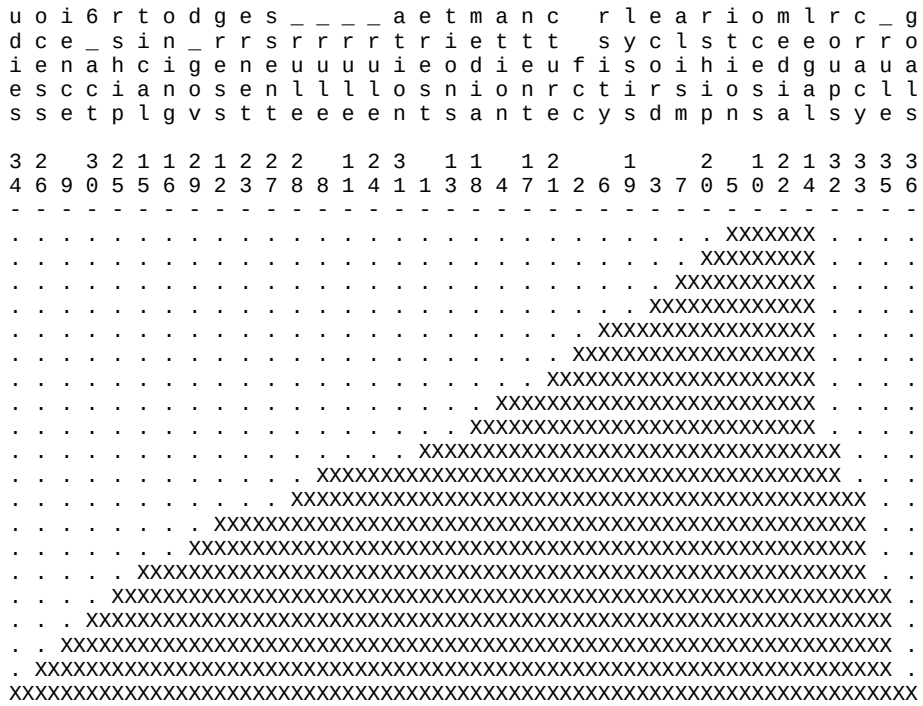
win10
Block 1: technological_innovation policy_goals
Block 2: public_interest fcc record consolidation competition diversity localism local_radio_rule policy_process audience national_tv_rule congress corporations legal political broadcast_content legal_reasoning other_elec_media reasoned_analysis broadcast_ownership broadcast_structure broadcast_media internet cross_media_rule minority_female_ownership license_renewal_process dual_network_rule local_tv_rule dissent fed_gov 1996_act technological_innovation interest_groups democracy mowg_studies

Technological innovation is the cutpoint.

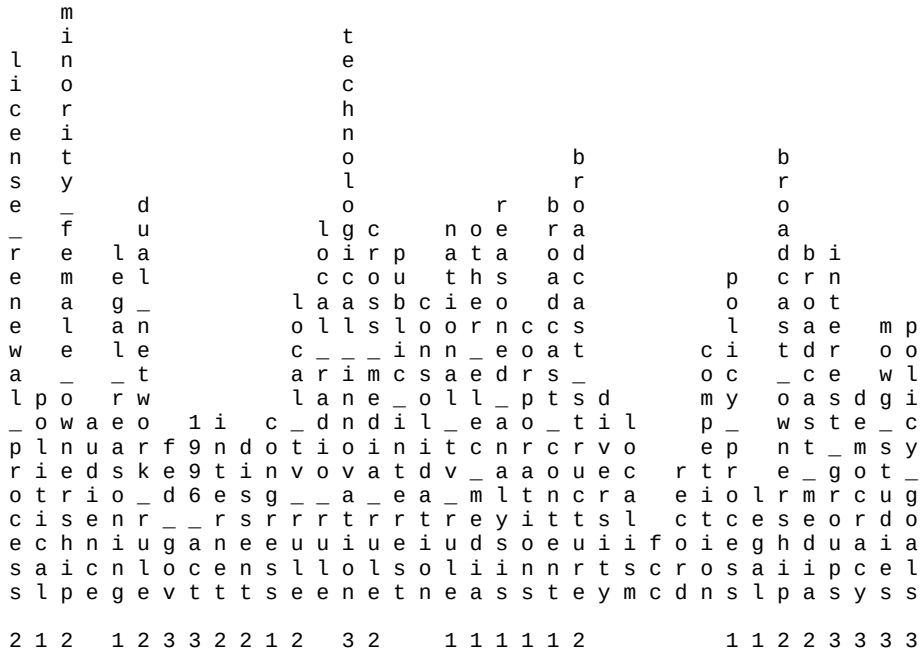
Using a different analysis method, the results are similar to components in so far as policy goals ends up a block with technological innovation. Window size 4 does produce a second block with FCC being the cutpoint.

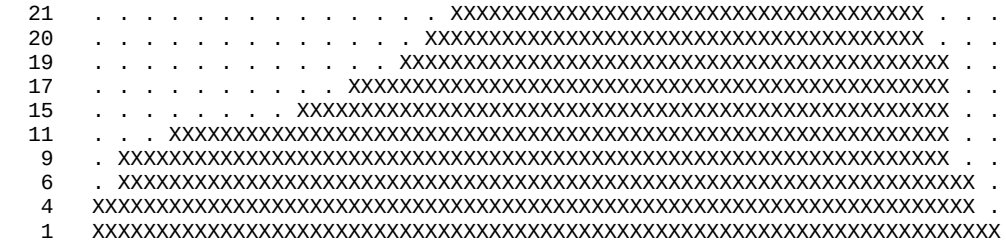
Lambda Sets and Bridges:
HIERARCHICAL LAMBDA SET PARTITIONS (win4)



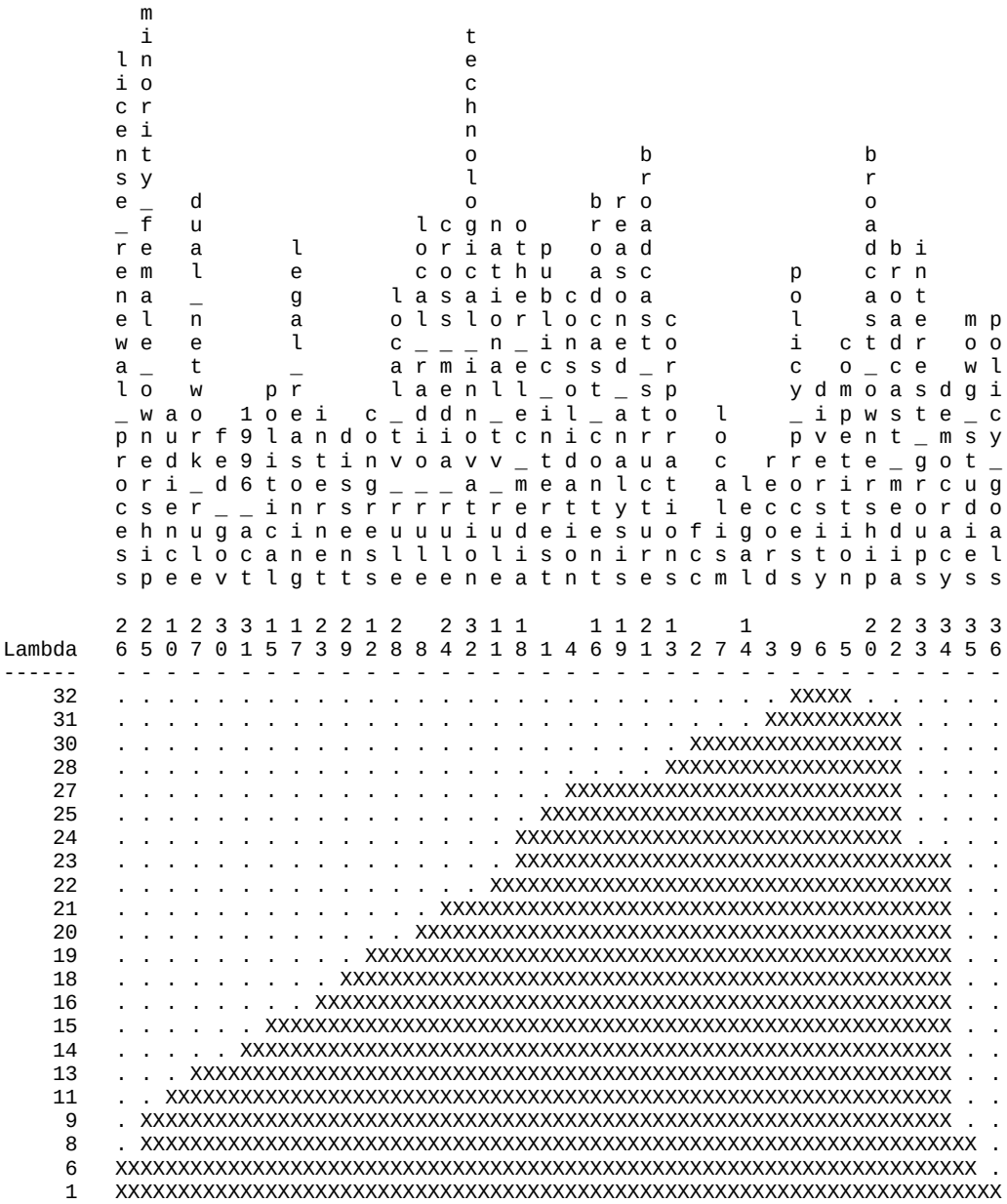


HIERARCHICAL LAMBDA SET PARTITIONS (win7)





HIERARCHICAL LAMBDA SET PARTITIONS (win10)



Broadcast ownership, interest groups, and record are revealed to have a high lambda value, something not seen in other aspects of analysis. The major nodes/concepts of competition,

diversity, and localism continue to be at the top. This analysis does cause some interesting subgroups.

Factions:

Republic Commissioners
1. Basic Graph Properties

The matrix is a bit smaller than that of the democratic commissioners. There are 34 nodes with a total of 1,156 possible connections. The density is extremely light: 19% (4), 30% (7), and 36% (10). The republican commissioner's comments are those of Powell, Abernathy, and Martin.

Graph Connectivity: The row-wise univariate charts are as follows:

Window = 4

	Mean	Std Dev	Sum
competition	0.5	0.5	17
localism	0.5	0.5	17
record	0.471	0.499	16
policy_process	0.471	0.499	16
broadcast_ownership	0.471	0.499	16
broadcast_media	0.441	0.497	15
legal	0.382	0.486	13
diversity	0.353	0.478	12
other_elec_media	0.265	0.441	9
reasoned_analysis	0.235	0.424	8
broadcast_content	0.206	0.404	7
cross_media_rule	0.206	0.404	7
fcc	0.176	0.381	6
local_radio_rule	0.176	0.381	6
dual_network_rule	0.176	0.381	6
local_tv_rule	0.176	0.381	6
national_tv_rule	0.147	0.354	5
broadcast_structure	0.147	0.354	5

Window = 7

	Mean	Std Dev	Sum
competition	0.676	0.468	23
record	0.618	0.486	21
broadcast_ownership	0.618	0.486	21
broadcast_media	0.618	0.486	21
localism	0.588	0.492	20
policy_process	0.588	0.492	20
legal	0.588	0.492	20
diversity	0.471	0.499	16
fcc	0.412	0.492	14
broadcast_content	0.412	0.492	14

reasoned_analysis	0.412	0.492	14
local_radio_rule	0.353	0.478	12
other_elec_media	0.324	0.468	11
cross_media_rule	0.324	0.468	11
public_interest	0.294	0.456	10
democracy	0.294	0.456	10
national_tv_rule	0.265	0.441	9
local_tv_rule	0.265	0.441	9

Window = 10

	Mean	Std Dev	Sum
competition	0.824	0.381	28
broadcast_media	0.765	0.424	26
policy_process	0.706	0.456	24
record	0.676	0.468	23
legal	0.676	0.468	23
localism	0.647	0.478	22
broadcast_ownership	0.647	0.478	22
diversity	0.559	0.497	19
broadcast_content	0.529	0.499	18
fcc	0.5	0.5	17
reasoned_analysis	0.471	0.499	16
other_elec_media	0.412	0.492	14
cross_media_rule	0.412	0.492	14
local_radio_rule	0.382	0.486	13
local_tv_rule	0.353	0.478	12
national_tv_rule	0.324	0.468	11
democracy	0.324	0.468	11

That which stands out, related to density, is the low mean for graphs 4 and 7. Competition and localism, while the most connected as source in graph 4, are only connected to 50% of the graph. A visual inspection of the graph(s) certainly reveals the looseness and lack of density. Competition does continue to rank high as a source of connectivity as in other graphs. There are not major differences in nodes/concepts that rank in the top half of source connectivity.

The column-wise univariate charts follow:

Window = 4

	Mean	Std	Sum
legal	0.618	0.486	21
broadc	0.529	0.499	18
policy	0.5	0.5	17
compet	0.471	0.499	16
broadc	0.471	0.499	16
locali	0.382	0.486	13
divers	0.353	0.478	12
fcc	0.294	0.456	10
record	0.294	0.456	10

reason	0.294	0.456	10
local_	0.265	0.441	9
local_	0.235	0.424	8
broadc	0.176	0.381	6
other_	0.176	0.381	6
dual_n	0.176	0.381	6
cross_	0.147	0.354	5
intere	0.147	0.354	5

Window = 7

	Mean	Std	Sum
legal	0.765	0.424	26
compet	0.676	0.468	23
broadc	0.676	0.468	23
policy	0.618	0.486	21
broadc	0.529	0.499	18
divers	0.5	0.5	17
locali	0.5	0.5	17
fcc	0.441	0.497	15
reason	0.441	0.497	15
record	0.412	0.492	14
local_	0.382	0.486	13
local_	0.324	0.468	11
broadc	0.324	0.468	11
cross_	0.324	0.468	11
corpor	0.294	0.456	10
other_	0.294	0.456	10
broadc	0.265	0.441	9

Window = 10

	Mean	Std	Sum
compet	0.794	0.404	27
legal	0.765	0.424	26
broadc	0.735	0.441	25
policy	0.706	0.456	24
broadc	0.676	0.468	23
divers	0.588	0.492	20
fcc	0.559	0.497	19
reason	0.559	0.497	19
record	0.529	0.499	18
locali	0.529	0.499	18
local_	0.471	0.499	16
broadc	0.441	0.497	15
corpor	0.353	0.478	12
other_	0.353	0.478	12
cross_	0.353	0.478	12
public	0.324	0.468	11
local_	0.324	0.468	11

nation	0.324	0.468	11
broadc	0.324	0.468	11

There are far more nodes/concepts as receivers in this graph than sources. Embeddedness analysis should begin to reveal dyads and triads of interest in this phenomenon. Legal is the top connected receiver node with competition being close in graphs 7 and 10. It is interesting to see dual network rules surface in the top half of both in-degree (receiver) and out-degree (source); this node/concept has consistently been in the lower half of connectivity in the previous policy texts. The same is true with cross media rules.

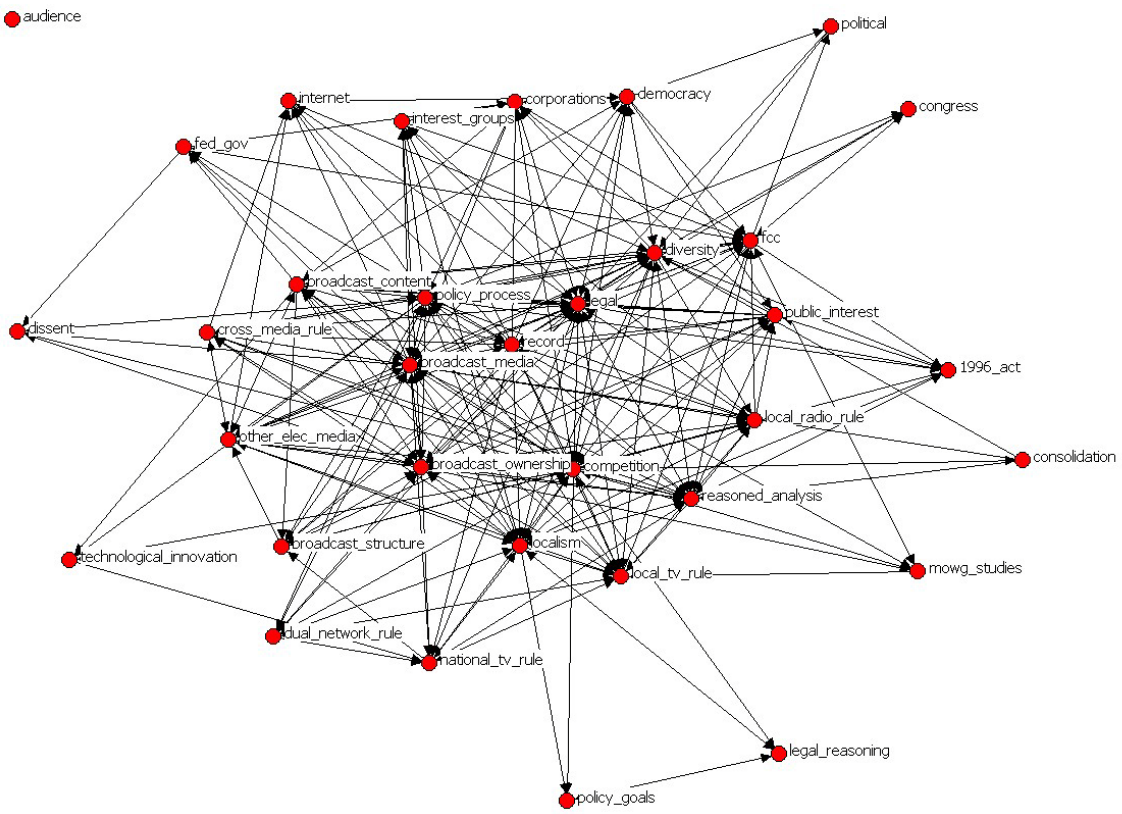
Reachability: The low density of graph 4 reveals two nodes not reachable at all: audience and technological innovation. In graph 7 only audience is unreachable, and in graph 10 all are reachable.

Point Connectivity: The graph of 4 reveals most of the graph's vulnerability to being isolates as minimal number of nodes removed. With graphs 7 and 10 the graphs become a bit more stable. In graph 10, consolidation, audience, political, legal reasoning, and policy goals would be isolates with the removal of 3 nodes or less.

Geodesic Distance: On the average, geodesic distances are longer in all three graphs compared to previous graphs. Graph 4 has four nodes that no geodesic distance as both source or receiver. By graph 10 all nodes have a geodesic distance.

Maximum Flow: NA

The visualization of the graph reinforces what the data has revealed regarding its connectivity:



2. Embeddedness

	Window = 4	Window = 7	Window = 10
Reciprocity	Dyad-based Reciprocity: 0.3933	Dyad-based Reciprocity: 0.4837	Dyad-based Reciprocity: 0.5772
Transitivity:	Number of non-vacuous transitive ordered triples: 921 Number of triples of all kinds: 35904 Percentage of all ordered triples: 2.57% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 46.33%	Number of non-vacuous transitive ordered triples: 2188 Number of triples of all kinds: 35904 Percentage of all ordered triples: 6.09% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 53.11%	Number of non-vacuous transitive ordered triples: 3332 Number of triples of all kinds: 35904 Percentage of all ordered triples: 9.28% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 57.11%

Clustering:	Overall graph clustering coefficient: 0.544 Weighted Overall graph clustering coefficient: 0.412	Overall graph clustering coefficient: 0.628 Weighted Overall graph clustering coefficient: 0.493	Overall graph clustering coefficient: 0.672 Weighted Overall graph clustering coefficient: 0.534
Krackhardt GTD:	Connectedness 0.8841 Hierarchy 0.2874 Efficiency 0.7784 LUB 0.8239	Connectedness 0.9412 Hierarchy 0.0000 Efficiency 0.6553 LUB 1.0000	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.5966 LUB 1.0625

The reciprocity in this graph is fairly low until you get to graph 10. The same is true with transitive triads. The actual percentage of triads is very low, but the possibility of more is fairly normal. The clustering coefficient is interesting since its density is higher than the overall graph density. This graph is also not hierarchical.

6. Ego Network

Ego Density:

Window = 4

		Size	Ties	Pairs	Densit	AvgDis
3	mowg_studies	2.00	2.00	2.00	100.00	1.00
23	broadcast_structure	5.00	18.00	20.00	90.00	1.10
26	cross_media_rule	7.00	37.00	42.00	88.10	1.12
12	national_tv_rule	5.00	17.00	20.00	85.00	1.15
13	congress	3.00	5.00	6.00	83.33	1.17
31	1996_act	4.00	10.00	12.00	83.33	1.17
1	public_interest	4.00	9.00	12.00	75.00	1.25
21	reasoned_analysis	8.00	41.00	56.00	73.21	1.27
27	dual_network_rule	6.00	21.00	30.00	70.00	1.30
14	corporations	4.00	8.00	12.00	66.67	1.33
32	interest_groups	3.00	4.00	6.00	66.67	1.33
9	local_radio_rule	5.00	12.00	20.00	60.00	1.45
29	local_tv_rule	6.00	18.00	30.00	60.00	1.40
20	other_elec_media	8.00	32.00	56.00	57.14	1.48
18	broadcast_content	7.00	23.00	42.00	54.76	1.52
7	diversity	11.00	59.00	110.00	53.64	1.50
25	internet	2.00	1.00	2.00	50.00	1.00

Window = 7

		Size	Ties	Pairs	Densit	AvgDis
5	consolidation	3.00	6.00	6.00	100.00	1.00
16	political	2.00	2.00	2.00	100.00	1.00
29	dissent	3.00	6.00	6.00	100.00	1.00
32	technological_innovation	2.00	2.00	2.00	100.00	1.00

27	dual_network_rule	7.00	38.00	42.00	90.48	1.10
14	corporations	5.00	18.00	20.00	90.00	1.10
31	1996_act	6.00	26.00	30.00	86.67	1.13
33	interest_groups	5.00	17.00	20.00	85.00	1.15
1	public_interest	10.00	76.00	90.00	84.44	1.16
13	congress	4.00	10.00	12.00	83.33	1.17
26	cross_media_rule	10.00	72.00	90.00	80.00	1.20
12	national_tv_rule	8.00	44.00	56.00	78.57	1.21
3	mowg_studies	4.00	9.00	12.00	75.00	1.25
23	broadcast_structure	7.00	31.00	42.00	73.81	1.29
20	other_elec_media	10.00	65.00	90.00	72.22	1.28
28	local_tv_rule	9.00	50.00	72.00	69.44	1.31
9	local_radio_rule	11.00	74.00	110.00	67.27	1.34

Window = 10

		Size	Ties	Pairs	Densit	AvgDis
5	consolidation	4.00	12.00	12.00	100.00	1.00
10	audience	2.00	2.00	2.00	100.00	1.00
16	political	2.00	2.00	2.00	100.00	1.00
19	policy_goals	2.00	2.00	2.00	100.00	1.00
29	dissent	5.00	20.00	20.00	100.00	1.00
14	corporations	7.00	41.00	42.00	97.62	1.02
3	mowg_studies	5.00	19.00	20.00	95.00	1.05
13	congress	5.00	19.00	20.00	95.00	1.05
33	interest_groups	5.00	19.00	20.00	95.00	1.05
2	public_interest	10.00	84.00	90.00	93.33	1.07
12	national_tv_rule	10.00	80.00	90.00	88.89	1.11
31	1996_act	9.00	64.00	72.00	88.89	1.11
27	dual_network_rule	8.00	49.00	56.00	87.50	1.13
32	technological_innovation	4.00	10.00	12.00	83.33	1.17
26	cross_media_rule	13.00	120.00	156.00	76.92	1.23
23	broadcast_structure	9.00	55.00	72.00	76.39	1.24
9	local_radio_rule	12.00	100.00	132.00	75.76	1.24

There is quite a bit of ego network density at the one hundred percent level in all three graphs. This may be related to the clustering that is also occurring.

Structural Holes:

4. Centrality

5. Cliques and Sub-Groups

Summary of Results

	Window = 4	Window = 7	Window = 10
# of Cliques	37	37	43
# of n-cliques	13 2-cliques	3 2-cliques	3 2-cliques
# of n-Clans	13 2-clans	3 2-clans	3 2-clans
# of k-Plexes	353	379	429

cliques: win4

HIERARCHICAL CLUSTERING OF OVERLAP MATRIX

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                                                                            t
                                                                            e
                                                                            c
                                                                            h
                                                                            n
                                      b               b                     o
                                      r               r                     l
                                    d o b     r       o                     o
                            o   c n u a r   l e       a                     g
                  l         t   r a a d o   o a       d     b       i   p   i
                  e         h   o t l c a   c s     p c     r       n   u   c
          c       g         e   s i _ a d   a o     o a     o   l   t   b   a
          o   p   a m       r   s o n s c   l n     l s     a   o c e   l   l
          n   o   l o       _   _ n e t a   _ e     i t   c d   c o r   i   _
          s   l   _ w       e   m a t _ s   r d     c _   o c   a r e   c   i
          o   i   r g       l   e l w s t   a _ d   y o   m a   l p s p _ d n
          l a c   e _ c   1 e i d _ o t _   d a i   _ w l p s   _ o t o i e n
          i u y d a s o f 9 c n i t r r c   i n v   p n o e t   t r _ l n m o
          d d _ i s t n e 9 _ t a v k u o   o a e r r e c t _   v a g i t o v
          a i g s o u g d 6 m e _ _ _ c n   _ l r e o r a i m l _ t r t e c a
          t e o s n d r _ _ e r r r r t t   r y s c c s l t e e r i o i r r t
          i n a e i i e g a d n u u u u e f u s i o e h i i d g u o u c e a i
          o c l n n e s o c i e l l l r n c l i t r s i s o i a l n p a s c o
          n e s t g s s v t a t e e e e t c e s y d s p m n a l e s s l t y n

            1 1 2 1   1 3 3 2 2 2 1 2 2 1     2     1 2     2 1 2 1 3 1   3 3
 Level    5 0 9 8 7 3 3 0 1 0 5 6 2 7 3 8 2 9 1 7 4 1 2 8 6 4 5 9 4 2 6 1 3 4
------    - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
16.000    . . . . . . . . . . . . . . . . . . . . . . . . . XXX . . . . . . .
15.000    . . . . . . . . . . . . . . . . . . . . . . . . XXXXX . . . . . . .
12.750    . . . . . . . . . . . . . . . . . . . . . . . XXXXXXX . . . . . . .
12.000    . . . . . . . . . . . . . . . . . . . . . . XXXXXXXXX . . . . . . .
 9.167    . . . . . . . . . . . . . . . . . . . . . XXXXXXXXXXX . . . . . . .
 7.143    . . . . . . . . . . . . . . . . . . . . XXXXXXXXXXXXX . . . . . . .
 5.625    . . . . . . . . . . . . . . . . . . . XXXXXXXXXXXXXXX . . . . . . .
 4.556    . . . . . . . . . . . . . . . . . . XXXXXXXXXXXXXXXXX . . . . . . .
 2.700    . . . . . . . . . . . . . . . . . . XXXXXXXXXXXXXXXXXXX . . . . . .
 2.189    . . . . . . . . . . . . . . . . . XXXXXXXXXXXXXXXXXXXXX . . . . . .
 1.656    . . . . . . . . . . . . . . . . XXXXXXXXXXXXXXXXXXXXXXX . . . . . .
 1.039    . . . . . . . . . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXX . . . . . .
 1.000    . . . . . . . . . XXX . XXX . XXXXXXXXXXXXXXXXXXXXXXXXX XXX . XXX .
 0.776    . . . . . . . . . XXX . XXX XXXXXXXXXXXXXXXXXXXXXXXXXXX XXX . XXX .
 0.667    . . . . . . . . . XXX . XXX XXXXXXXXXXXXXXXXXXXXXXXXXXX XXX XXXXX .
 0.605    . . . . . . . . . XXX . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXX XXXXX .
 0.492    . . . . . . . . . XXX . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX .
 0.333    . . . . . . . . . XXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX .
 0.206    . . . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX .
 0.064    . . . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.030    . . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.028    . . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.022    . . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.016    . . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.010    . . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.010    . . . XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX .
 0.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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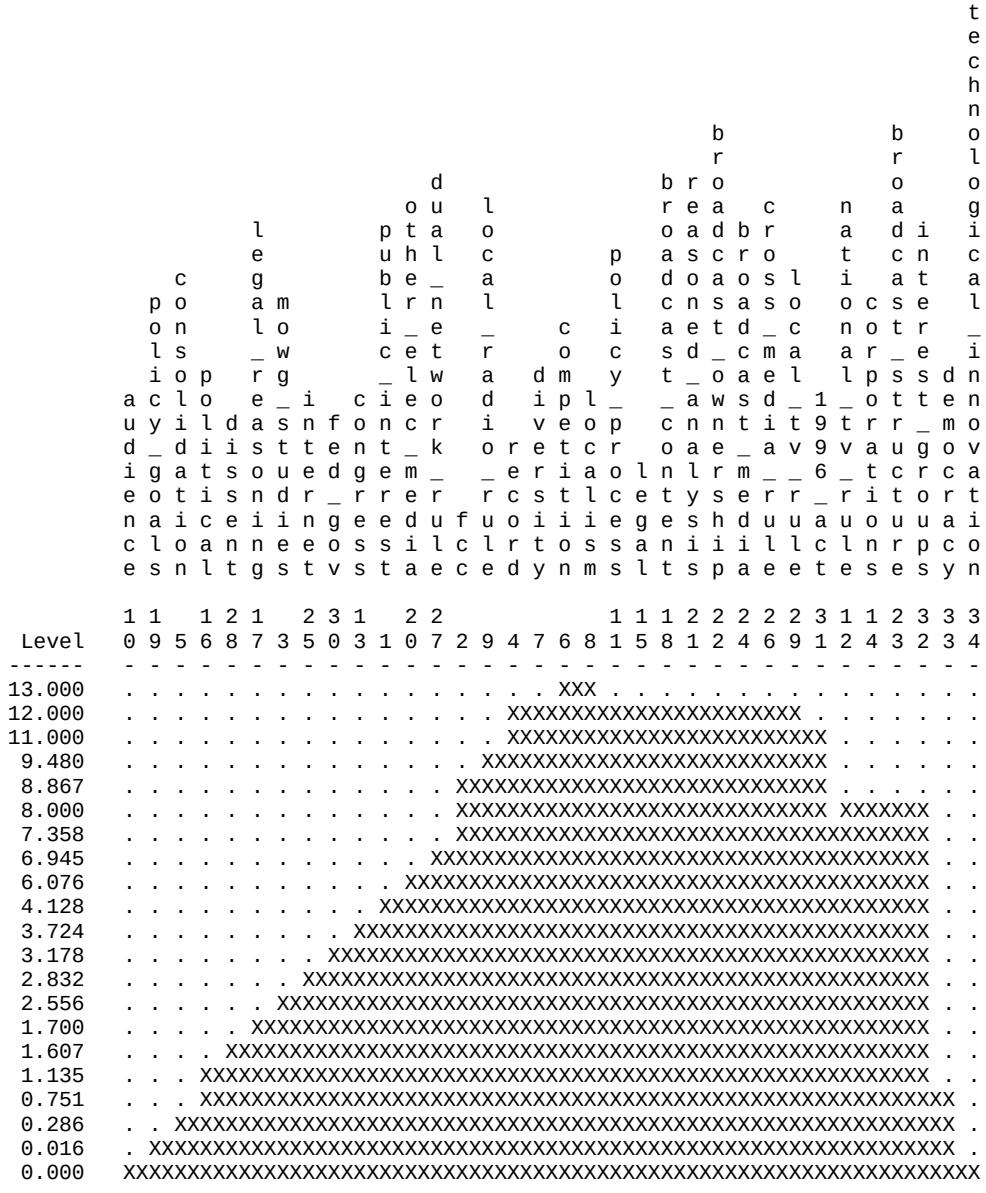
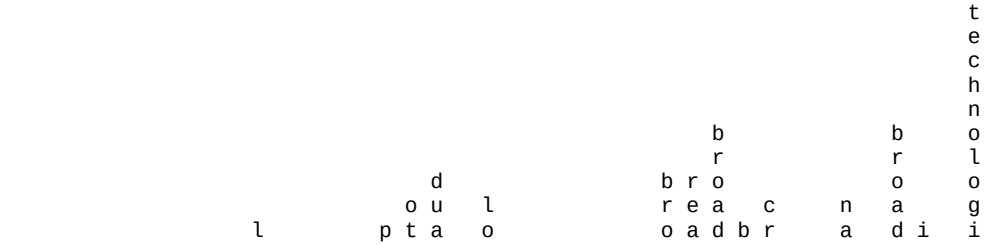
ncliques: win4

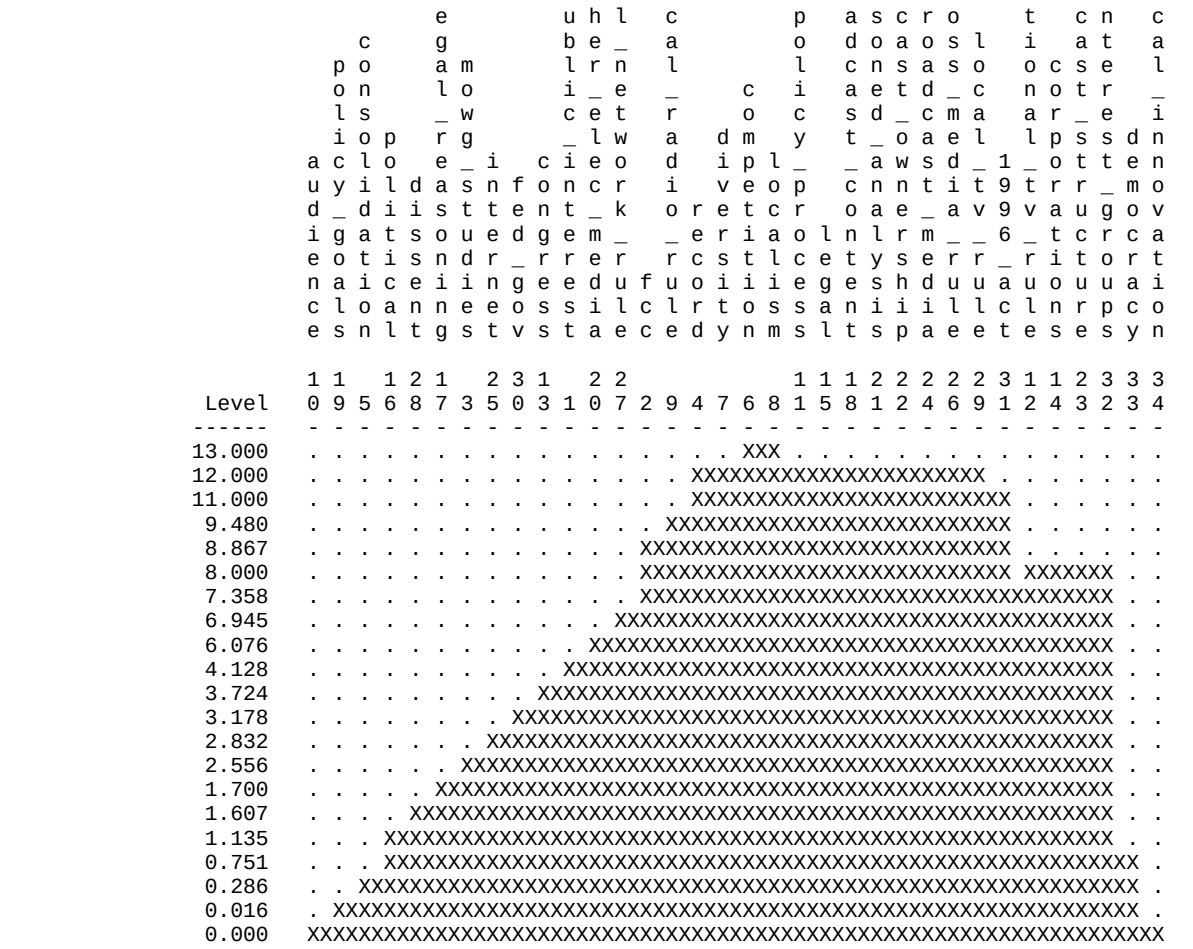
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX



nclans: win4

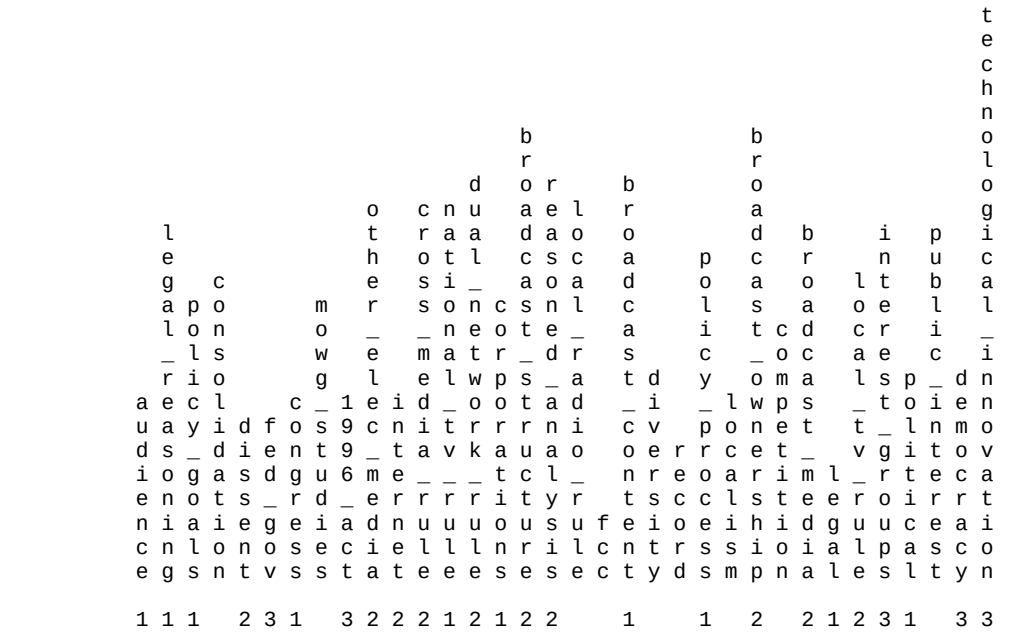
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX

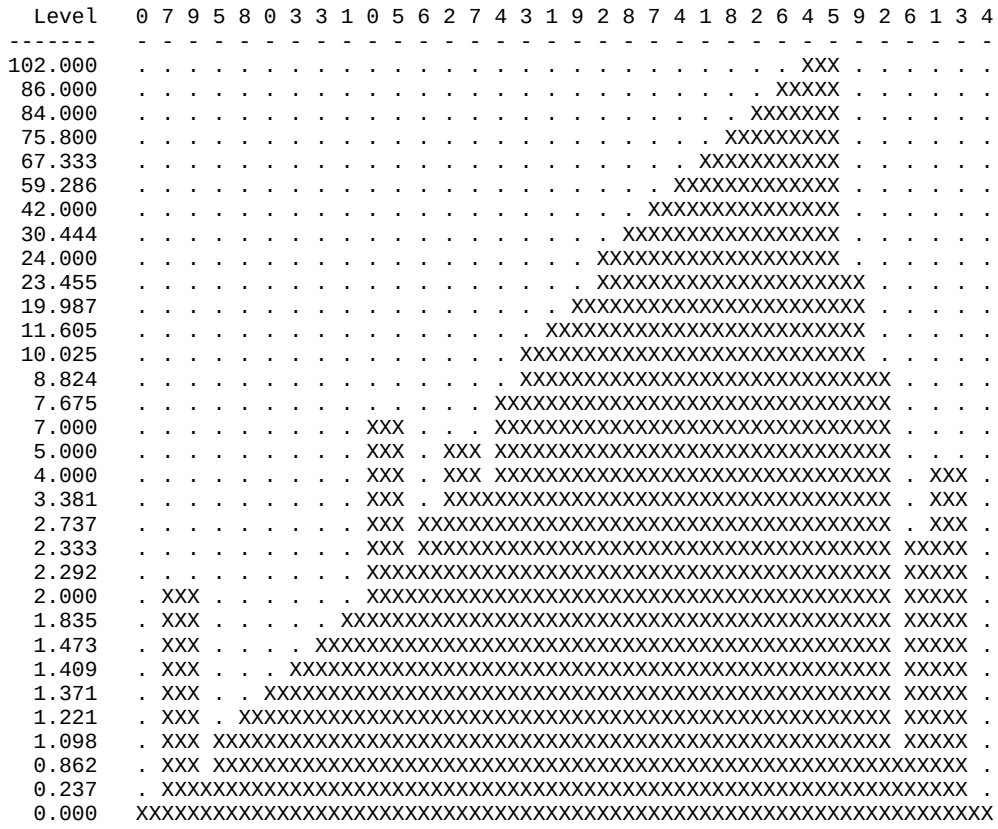




kplex: win4

HIERARCHICAL CLUSTERING OF OVERLAP MATRIX





Legal is in 23 out of 37 cliques followed by legal. This graph has significantly fewer nodes/concepts in cliques compared to previous graphs. The same can be said of kplex as well. Legal is in 193 of 353 cliques. The number of ncliques and nclans for window size four appears to be very significant. These two measures may be helpful in contrast to other graphs.

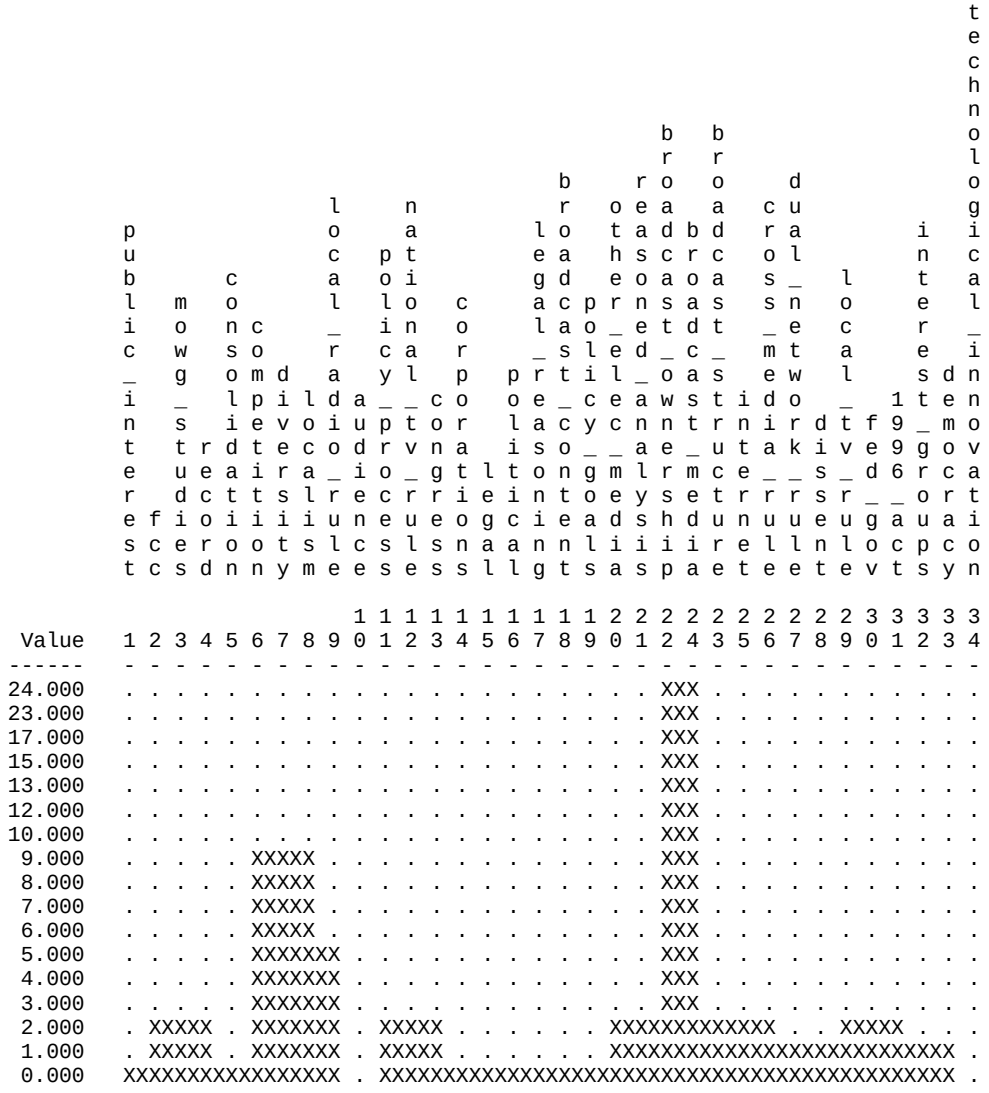
b. Top-Down Approaches:

Components:

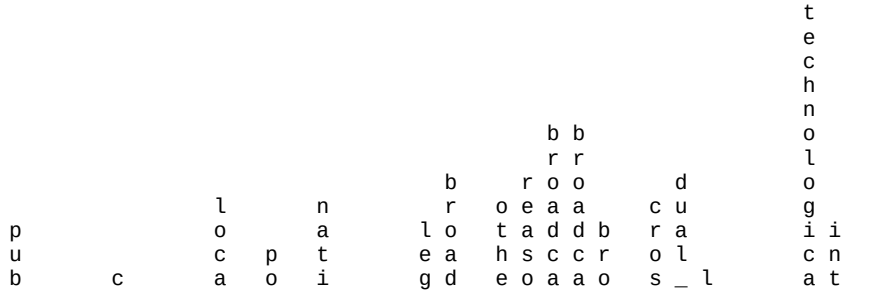
	Window = 4	Window = 7	Window =10
Simple Weak	3 components: 2 are single nodes: audience, technological innovation	2 components: 1 contains a single node: audience	1 component
Simple Strong	7 components: 1 contains 2 nodes (legal reasoning and policy goals), 5 are single nodes: public interest, consolidation, audience,	2 components: 1 contains a single node: audience	1 component

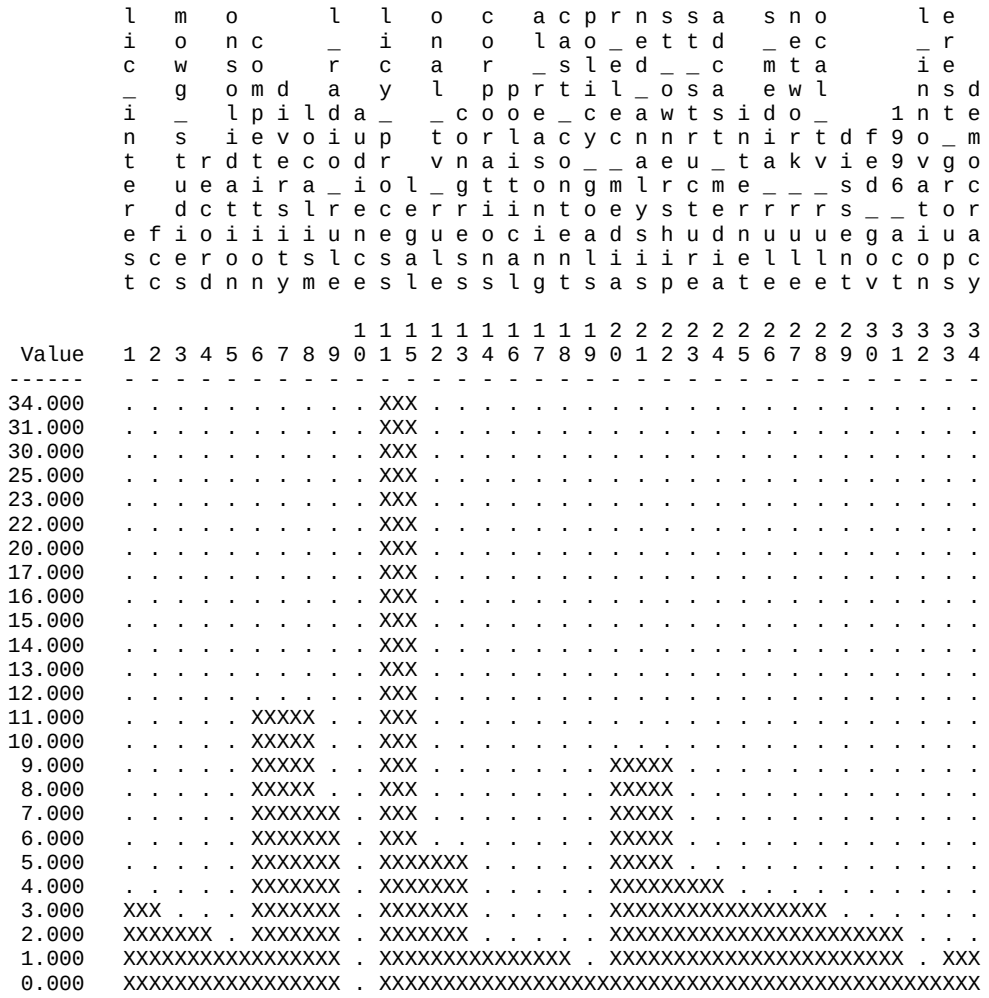
democracy, and
technological
innovation

Valued Components:
HIERARCHICAL COMPONENTS (win4)

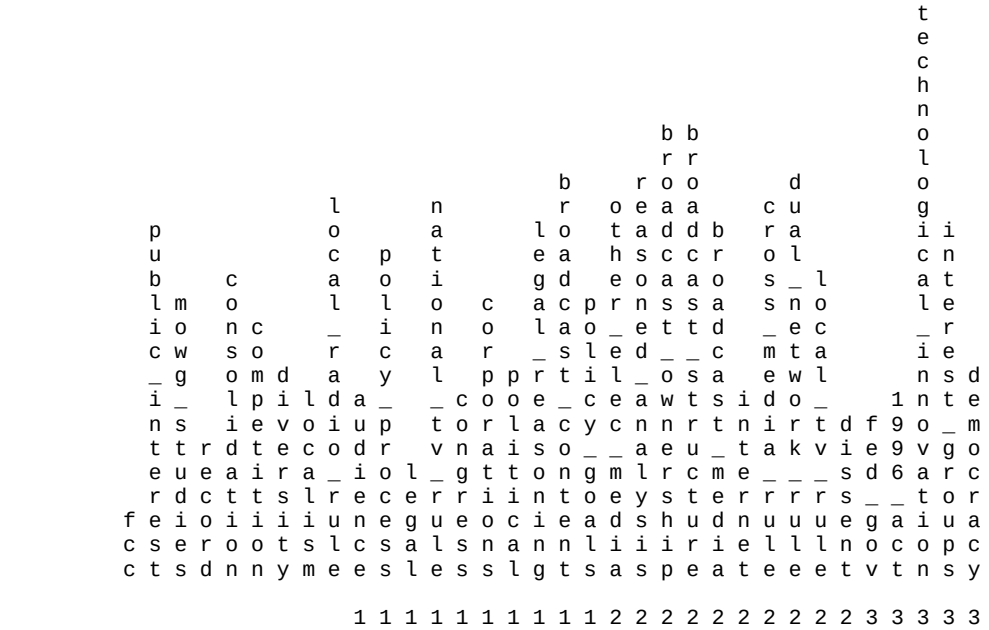


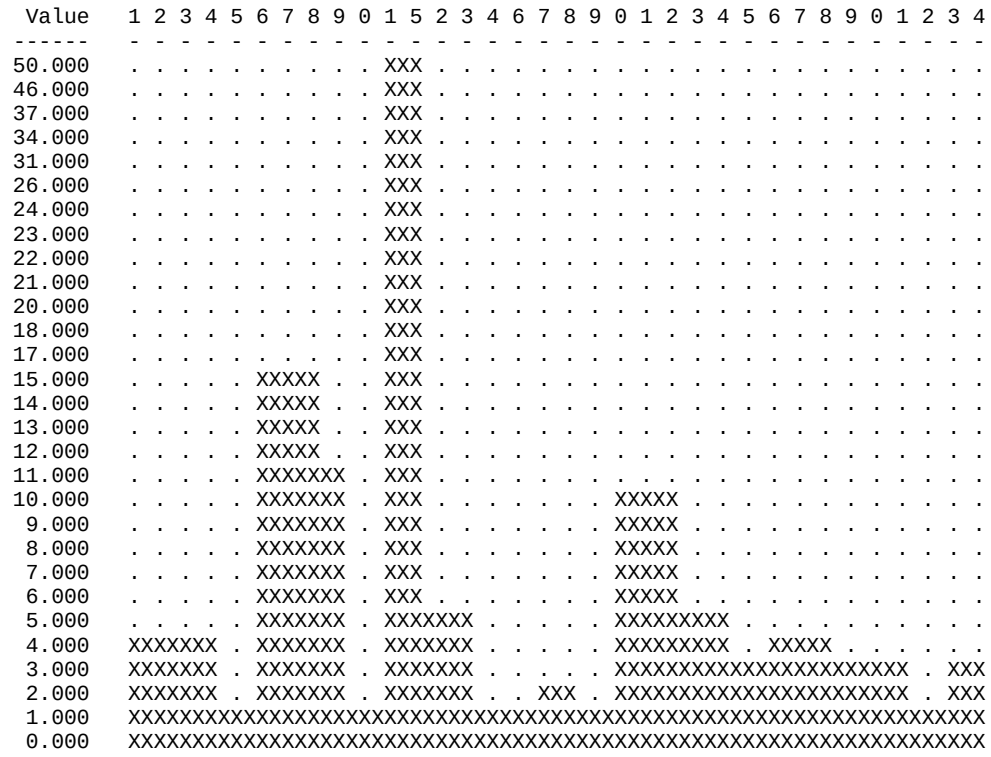
HIERARCHICAL COMPONENTS (win7)





HIERARCHICAL COMPONENTS (win10)





This is the first of the policy texts in which there are some interesting results with the simple component test. Given that audience is an isolate, it is not surprising to see it as a simple component. The most significant aspect is that there is one of the components made up of two nodes: legal reasoning and policy goals. On the valued components, these nodes don't show up until the bottom row indicating the strength of ties is extremely weak. Window sizes 7 and 10 produce policy process and legal as the strongest components.

Bi-Components:
win4
Block 1: consolidation broadcast_media
Block 2: legal_reasoning policy_goals
Block 3: public_interest fcc mowg_studies record competition diversity localism local_radio_rule policy_process national_tv_rule congress corporations legal political legal_reasoning broadcast_content other_elec_media reasoned_analysis broadcast_ownership broadcast_structure broadcast_media internet cross_media_rule dual_network_rule dissent local_tv_rule fed_gov 1996_act interest_groups democracy

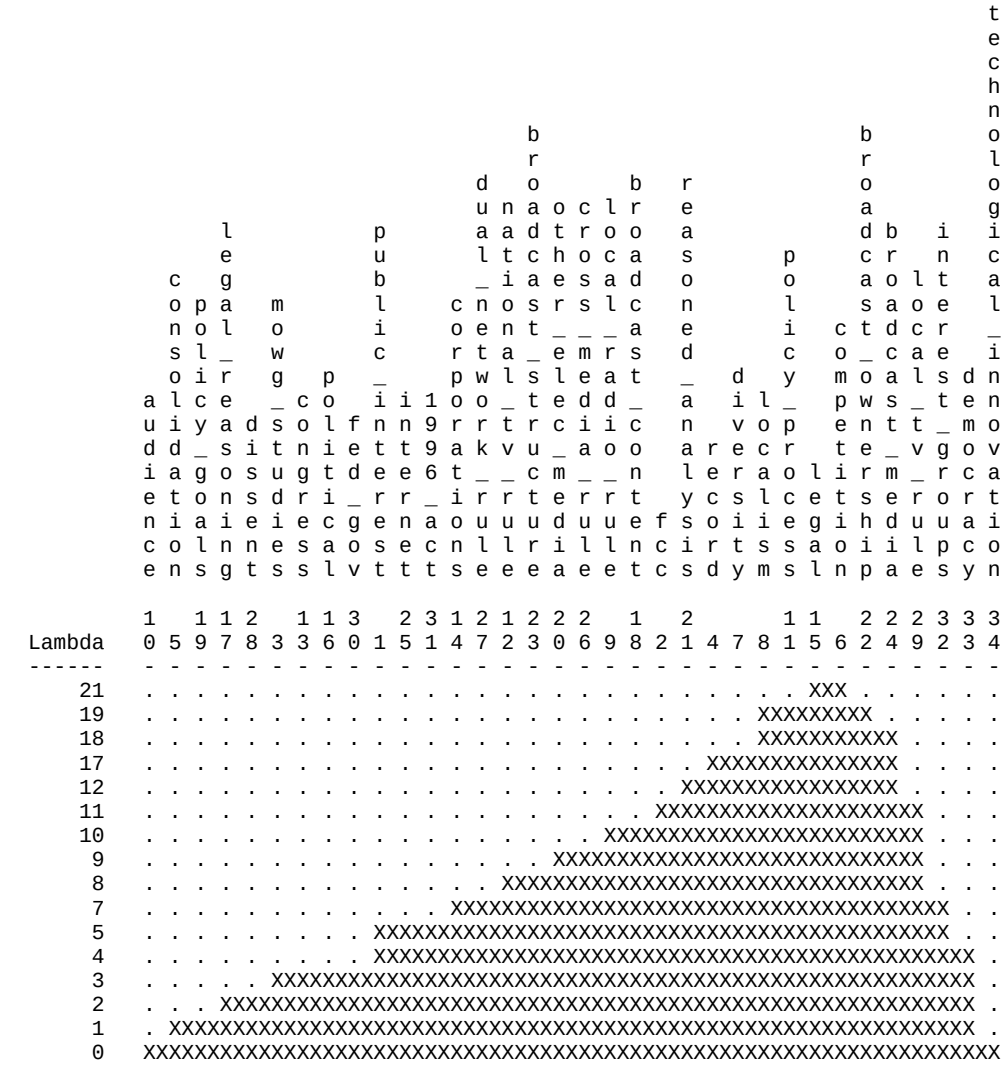
Cutpoints: legal reasoning and broadcast media

win7
1 block with no cutpoints

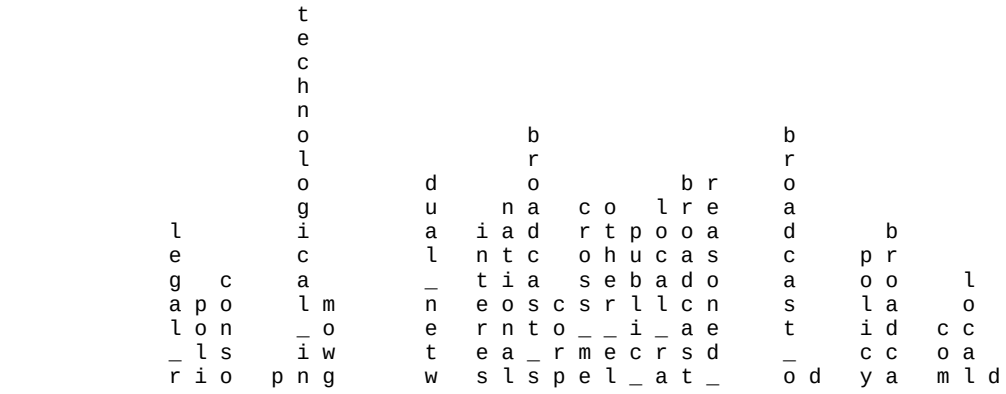
win10
1 block with no cutpoints

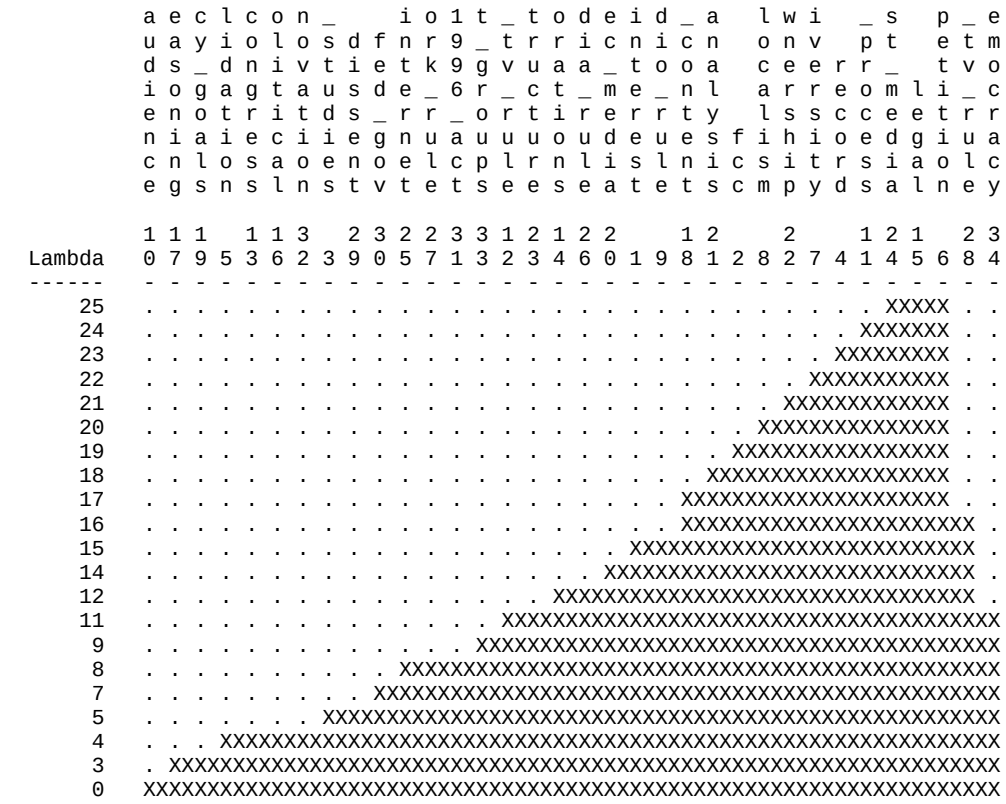
Lambda Sets and Bridges:

HIERARCHICAL LAMBDA SET PARTITIONS (win4)

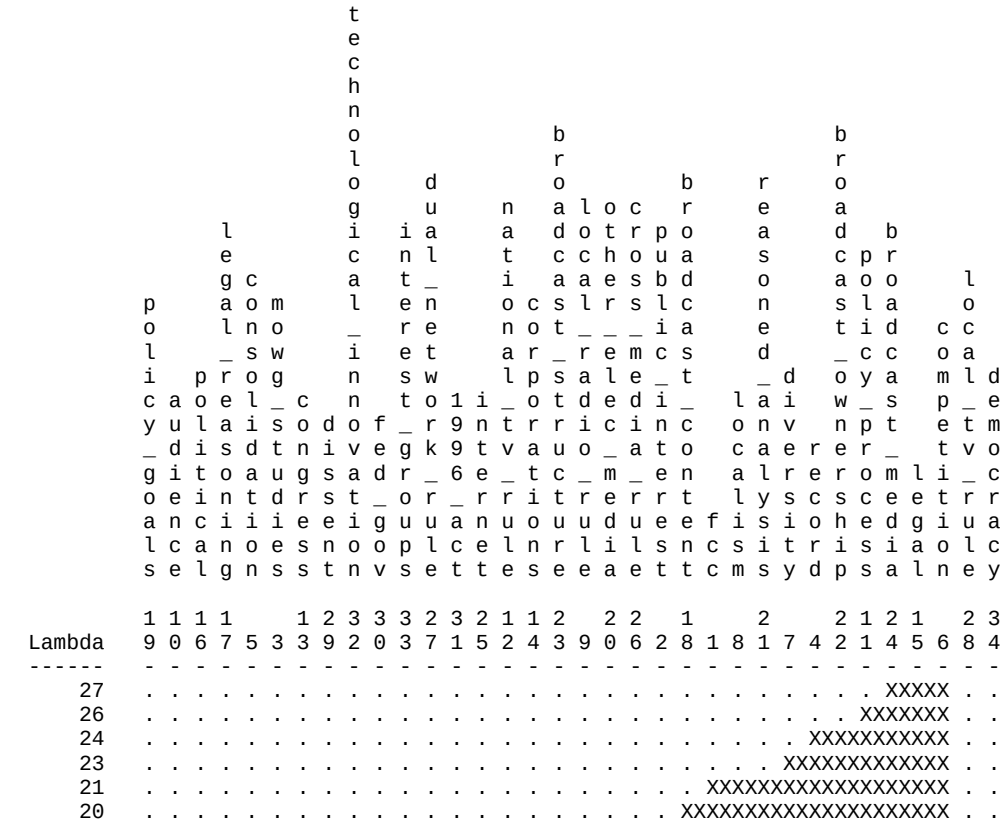


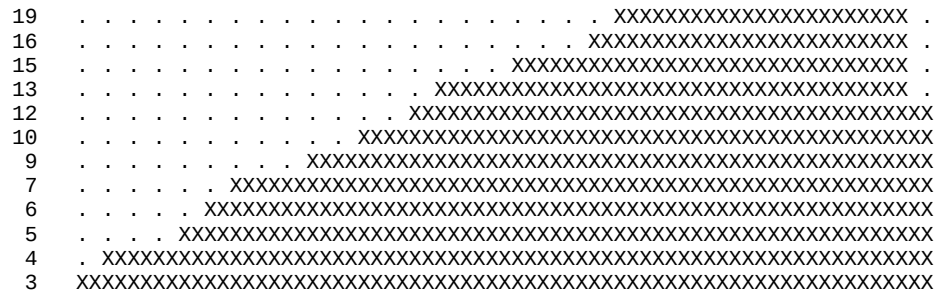
HIERARCHICAL LAMBDA SET PARTITIONS (win7)





HIERARCHICAL LAMBDA SET PARTITIONS (win10)





The first observation on these results is that the graphs are not as deep as other lambda results. Most likely that is due to the overall size of the graph. Other than that, the resulting subgraphs are fairly similar to other results in that some of the same nodes/concepts such as legal, competition, and broadcast media form the top subgroup.

Public Comments (all)

1. Basic Graph Properties

The graph is one of the larger graphs within this study. Graph 4 has 43 nodes for a matrix with a possible 1,806 connections. Graphs 7 and 10 have 44 nodes for a matrix with a possible 1,892 connections. The density of the graph is: 76% (win4), 78% (win7), and 80% (win10). These graphs a very dense.

Graph Connectivity:

The out-degree univariate charts are as follows:

Window = 4

		Mean	Std	Sum
4	reasoned_analysis	0.976	0.152	41
6	policy_process	0.952	0.213	40
7	record	0.952	0.213	40
2	competition	0.929	0.258	39
5	broadcast_media	0.929	0.258	39
15	localism	0.929	0.258	39
17	diversity	0.929	0.258	39
19	fcc	0.929	0.258	39
21	other_elec_media	0.929	0.258	39
27	interest_groups	0.929	0.258	39
28	audience	0.929	0.258	39
1	democracy	0.905	0.294	38
8	corporations	0.905	0.294	38
10	newspapers	0.905	0.294	38
16	ownership	0.905	0.294	38

18	broadcast_structure	0.905	0.294	38
22	legal	0.905	0.294	38
24	fed_gov	0.905	0.294	38
12	programming	0.881	0.324	37
23	broadcast_ownership	0.881	0.324	37

Window = 7

		Mean	Std	Sum
8	reasoned_analysis	0.977	0.151	42
9	broadcast_media	0.953	0.211	41
14	newspapers	0.953	0.211	41
3	diversity	0.93	0.255	40
5	competition	0.93	0.255	40
10	policy_process	0.93	0.255	40
11	record	0.93	0.255	40
17	localism	0.93	0.255	40
19	fcc	0.93	0.255	40
28	audience	0.93	0.255	40
1	democracy	0.907	0.29	39
2	broadcast_ownership	0.907	0.29	39
12	corporations	0.907	0.29	39
16	programming	0.907	0.29	39
18	ownership	0.907	0.29	39
20	broadcast_structure	0.907	0.29	39
22	other_elec_media	0.907	0.29	39
23	legal	0.907	0.29	39
24	fed_gov	0.907	0.29	39
27	interest_groups	0.907	0.29	39

Window = 10

		Mean	Std	Sum
4	reasoned_analysis	0.977	0.151	42
5	broadcast_media	0.953	0.211	41
10	newspapers	0.953	0.211	41
2	competition	0.93	0.255	40
6	policy_process	0.93	0.255	40
7	record	0.93	0.255	40
15	localism	0.93	0.255	40
17	diversity	0.93	0.255	40
18	fcc	0.93	0.255	40
19	broadcast_structure	0.93	0.255	40
24	fed_gov	0.93	0.255	40

28	audience	0.93	0.255	40
1	democracy	0.907	0.29	39
8	corporations	0.907	0.29	39
12	programming	0.907	0.29	39
16	ownership	0.907	0.29	39
20	broadcast_ownership	0.907	0.29	39
22	other_elec_media	0.907	0.29	39
23	legal	0.907	0.29	39
27	interest_groups	0.907	0.29	39

The in-degree univariate charts are as follows:

Window = 4

		Mean	Std	Sum
4	reason	0.952	0.213	40
6	policy	0.952	0.213	40
19	fcc	0.952	0.213	40
2	compet	0.929	0.258	39
5	broadc	0.929	0.258	39
7	record	0.929	0.258	39
8	corpor	0.929	0.258	39
15	locali	0.929	0.258	39
17	divers	0.929	0.258	39
16	owners	0.905	0.294	38
27	intere	0.905	0.294	38
31	techno	0.905	0.294	38
3	media	0.881	0.324	37
10	newspa	0.881	0.324	37
12	progra	0.881	0.324	37
18	broadc	0.881	0.324	37
21	other_	0.881	0.324	37
22	legal	0.881	0.324	37
24	fed_go	0.881	0.324	37
28	audien	0.881	0.324	37

Window = 7

		Mean	Std	Sum
5	compet	0.977	0.151	42
8	reason	0.953	0.211	41
19	fcc	0.953	0.211	41
9	broadc	0.93	0.255	40

10	policy	0.93	0.255	40
11	record	0.93	0.255	40
12	corpor	0.93	0.255	40
27	intere	0.93	0.255	40
2	broadc	0.907	0.29	39
3	divers	0.907	0.29	39
14	newspa	0.907	0.29	39
17	locali	0.907	0.29	39
18	owners	0.907	0.29	39
24	fed_go	0.907	0.29	39
6	media	0.884	0.321	38
16	progra	0.884	0.321	38
28	audien	0.884	0.321	38
32	techno	0.884	0.321	38
1	democr	0.86	0.347	37
7	public	0.86	0.347	37

Window = 10

		Mean	Std	Sum
2	compet	0.977	0.151	42
4	reason	0.953	0.211	41
18	fcc	0.953	0.211	41
5	broadc	0.93	0.255	40
6	policy	0.93	0.255	40
7	record	0.93	0.255	40
8	corpor	0.93	0.255	40
11	cross_	0.93	0.255	40
24	fed_go	0.93	0.255	40
27	intere	0.93	0.255	40
10	newspa	0.907	0.29	39
12	progra	0.907	0.29	39
15	locali	0.907	0.29	39
16	owners	0.907	0.29	39
17	divers	0.907	0.29	39
20	broadc	0.907	0.29	39
1	democr	0.884	0.321	38
3	media	0.884	0.321	38
9	inform	0.884	0.321	38
19	broadc	0.884	0.321	38

Not surprisingly, reasoned analysis, broadcast media, policy process, competition, localism, diversity, and record are the top source nodes. One surprise is the presence of newspapers in

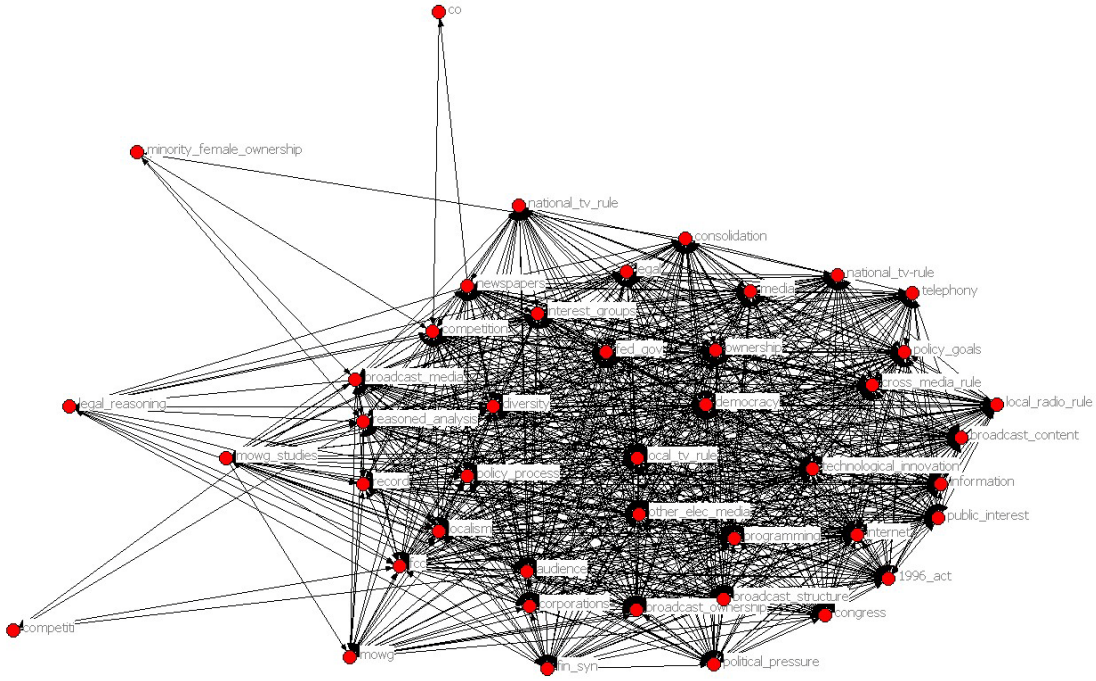
graphs 7 and 10. There are the same nodes showing up as receivers, though competition is the top node in graphs 7 and 10.

Reachability: All three graphs are totally reachable.

Point Connectivity: These are very stable graphs. The only node showing some vulnerability is minority female ownership. There are a couple of typos that ended up in the gen theasaurus which show great vulnerability (as it should).

Geodesic Distance: All three graphs are very reachable graphs with geodesic distances of primarily 1. The average distance throughout all three graphs is approximately 1.2. These are very reachable graphs.

Maximum Flow: NA



2. Embeddedness

	Window = 4	Window = 7	Window = 10
Reciprocity	Dyad-based Reciprocity: 0.9109	Dyad-based Reciprocity: 0.9396	Dyad-based Reciprocity: 0.9433
Transitivity:	Number of non-vacuous transitive ordered triples: 42160 Number of triples of	Number of non-vacuous transitive ordered triples: 49046 Number of triples of	Number of non-vacuous transitive ordered triples: 51385 Number of triples of

	all kinds: 74046 Percentage of all ordered triples: 56.94% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 90.29%	all kinds: 79464 Percentage of all ordered triples: 61.72% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 92.91%	all kinds: 79464 Percentage of all ordered triples: 64.66% Transitivity: % of ordered triples in which i-->j and j-->k that are transitive: 93.85%
Clustering:	Overall graph clustering coefficient: 0.906 Weighted Overall graph clustering coefficient: 0.888	Overall graph clustering coefficient: 0.930 Weighted Overall graph clustering coefficient: 0.916	Overall graph clustering coefficient: 0.937 Weighted Overall graph clustering coefficient: 0.925
Krackhardt GTD:	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.2149 LUB 1.0000	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.2049 LUB 1.0000	Connectedness 1.0000 Hierarchy 0.0000 Efficiency 0.1883 LUB 1.0000

Without question, all the public comments and their subsets have an extremely high reciprocity. Unlike other graphs throughout this study, these graphs have a very high number of transitive triads. The graph is very clustered. Not surprisingly, this is not a hierarchical graph. The following graphs follow similar numbers.

3. Ego Networks

Ego Density:

Window = 4

		Size	Ties	Pairs	Densit	AvgDis
40	legal_reasoning	5	20	20	100	1
41	minority_female_ownership	2	2	2	100	1
43	mowg	10	90	90	100	1
35	telephony	27	701	702	99.86	1
34	fin_syn	25	597	600	99.5	1
38	local_radio_rule	27	694	702	98.86	1.01
37	national_tv_rule	18	302	306	98.69	1.01
29	internet	32	971	992	97.88	1.02
20	1996_act	31	910	930	97.85	1.02
26	political_pressure	31	910	930	97.85	1.02
9	information	34	1085	1122	96.7	1.03
13	consolidation	34	1082	1122	96.43	1.04
30	national_tv-rule	28	723	756	95.63	1.04

14	public_interest	35	1128	1190	94.79	1.05
11	cross_media_rule	35	1116	1190	93.78	1.06
31	technological_innovation	35	1111	1190	93.36	1.07
25	broadcast_content	35	1110	1190	93.28	1.07
39	mowg_studies	17	252	272	92.65	1.07
33	policy_goals	35	1099	1190	92.35	1.08
32	congress	33	975	1056	92.33	1.08
36	local_tv_rule	33	971	1056	91.95	1.08
12	programming	37	1222	1332	91.74	1.08

Window = 7

		Size	Ties	Pairs	Densit	AvgDis
40	legal_reasoning	8	56	56	100	1
41	minority_female_ownership	3	6	6	100	1
43	mowg	17	272	272	100	1
35	telephony	31	929	930	99.89	1
37	national_tv_rule	25	599	600	99.83	1
38	local_radio_rule	32	988	992	99.6	1
7	public_interest	36	1234	1260	97.94	1.02
31	national_tv-rule	33	1034	1056	97.92	1.02
39	mowg_studies	22	449	462	97.19	1.03
26	political_pressure	35	1155	1190	97.06	1.03
13	information	36	1220	1260	96.83	1.03
25	broadcast_content	36	1220	1260	96.83	1.03
30	policy_goals	37	1283	1332	96.32	1.04
32	technological_innovation	37	1283	1332	96.32	1.04
21	1996_act	36	1213	1260	96.27	1.04
15	cross_media_rule	36	1209	1260	95.95	1.04
33	congress	37	1274	1332	95.65	1.04
29	internet	37	1272	1332	95.5	1.05
34	fin_syn	32	946	992	95.36	1.05
6	media	38	1329	1406	94.52	1.05
36	local_tv_rule	38	1301	1406	92.53	1.07
1	democracy	39	1369	1482	92.38	1.08
20	broadcast_structure	39	1369	1482	92.38	1.08

Window = 10

		Size	Ties	Pairs	Densit	AvgDis
34	telephony	33	1056	1056	100	1
40	legal_reasoning	11	110	110	100	1
41	minority_female_ownership	3	6	6	100	1
43	mowg	19	342	342	100	1

37	national_tv_rule	30	869	870	99.89	1
38	local_radio_rule	35	1187	1190	99.75	1
32	national_tv-rule	34	1112	1122	99.11	1.01
26	political_pressure	35	1167	1190	98.07	1.02
30	technological_innovation	37	1303	1332	97.82	1.02
31	policy_goals	37	1303	1332	97.82	1.02
25	broadcast_content	36	1231	1260	97.7	1.02
9	information	36	1229	1260	97.54	1.02
39	mowg_studies	24	538	552	97.46	1.03
35	fin_syn	35	1145	1190	96.22	1.04
3	media	38	1352	1406	96.16	1.04
21	1996_act	38	1344	1406	95.59	1.04
33	congress	38	1344	1406	95.59	1.04
29	internet	38	1336	1406	95.02	1.05
13	public_interest	38	1328	1406	94.45	1.06
22	other_elec_media	39	1394	1482	94.06	1.06
36	local_tv_rule	39	1394	1482	94.06	1.06
1	democracy	39	1393	1482	93.99	1.06

Structural Holes:

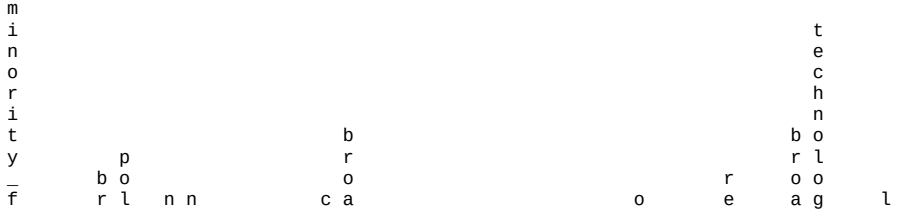
4. Centrality

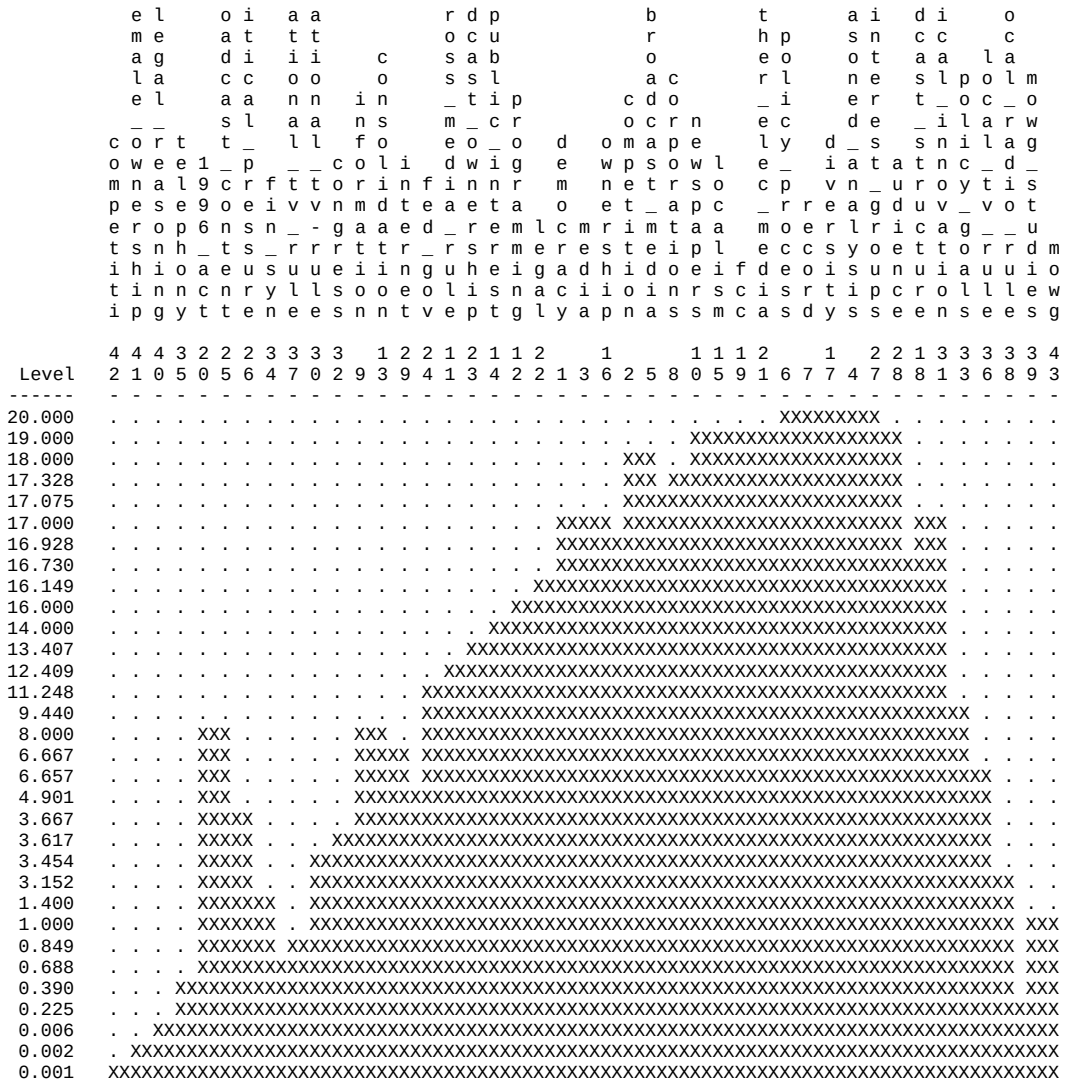
5. Cliques and Sub-Groups

Summary of Results

	Window = 4	Window = 7	Window = 10
# of Cliques	22	15	11
# of n-cliques	2 2-cliques	2 2-cliques	2 2-cliques
# of n-Clans	2 2-clans	2 2-clans	2 2-clans
# of k-Plexes	Too big to run	To big to run	To big to run

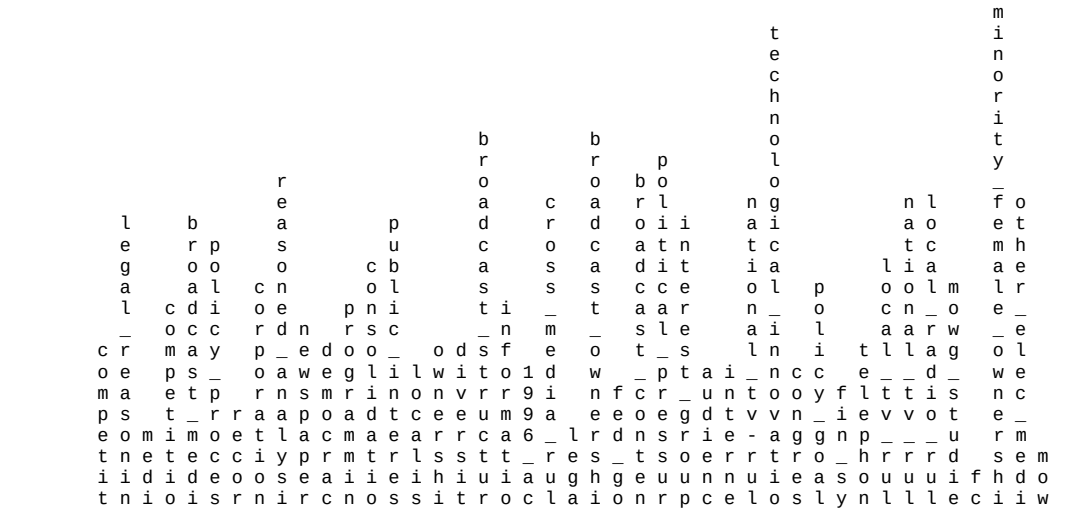
cliques: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX

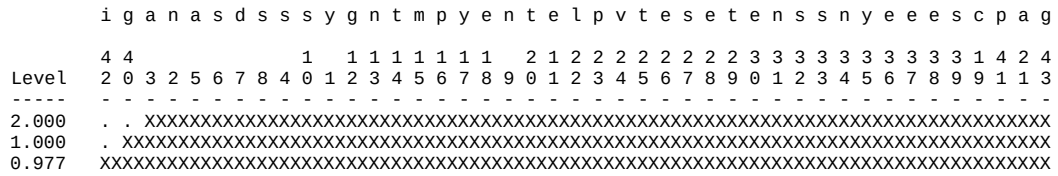




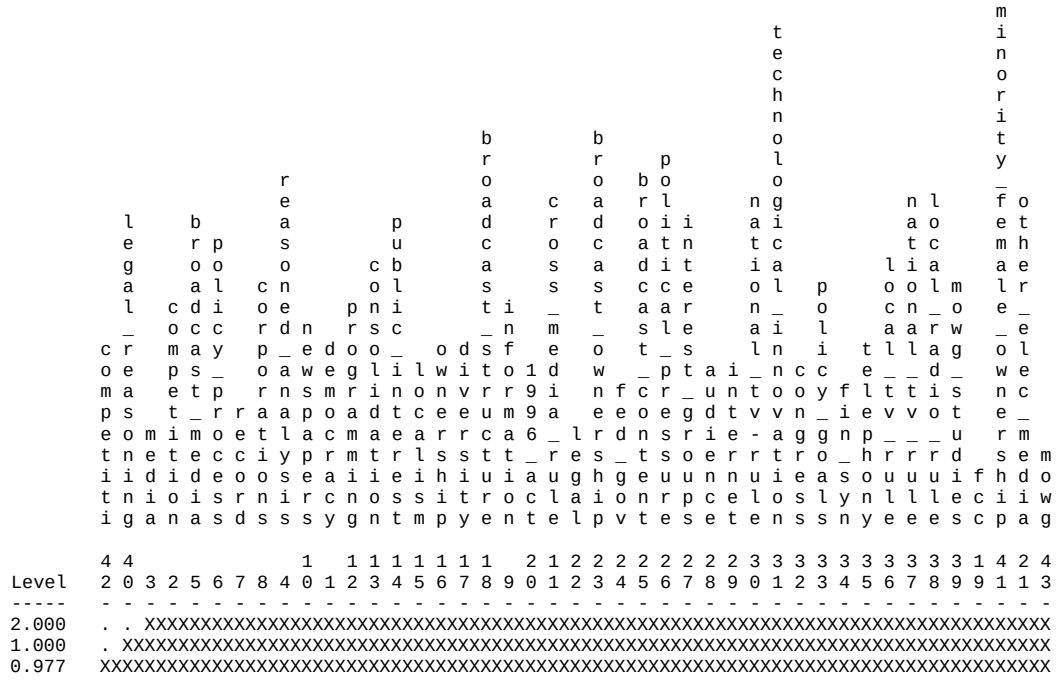
ncliques: win4

HIERARCHICAL CLUSTERING OF OVERLAP MATRIX





nclans: win4
HIERARCHICAL CLUSTERING OF OVERLAP MATRIX



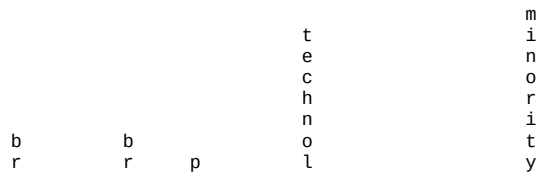
kplex: win4
(too big to run)

b. Top-Down Approaches:

Components:

	Window = 4	Window = 7	Window =10
Simple Weak	1 component	1 component	1 component
Simple Strong	1 component	1 component	1 component

Valued Components:
HIERARCHICAL COMPONENTS (win4)



Value	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
41297.000	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
33222.000	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
30616.000	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
26616.000	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
25329.000	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
25216.000	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
23980.000	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
20152.000	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
19388.000	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
17809.000	.	.	.	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15962.000	.	.	.	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15622.000	.	.	.	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15439.000	.	.	.	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14863.000	.	.	.	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14705.000	.	.	.	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13726.000	.	.	.	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12314.000	.	.	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11957.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11928.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11756.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11071.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10967.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10843.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10645.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10511.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10434.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10129.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10056.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9845.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9806.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9502.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9207.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9076.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8966.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	.	.	.	.	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8750.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8255.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8176.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8172.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7894.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7571.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7534.000	.	.	.	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7456.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7451.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7269.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6948.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6947.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6890.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6842.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6694.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6627.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
6427.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
6193.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
6188.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
6018.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
5953.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
5914.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
5895.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
5726.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
5608.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.
5320.000	X	X	X	.	X	X	X	X	X	X	X	X	.	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	X	X	.	.	.	.	.	.	.

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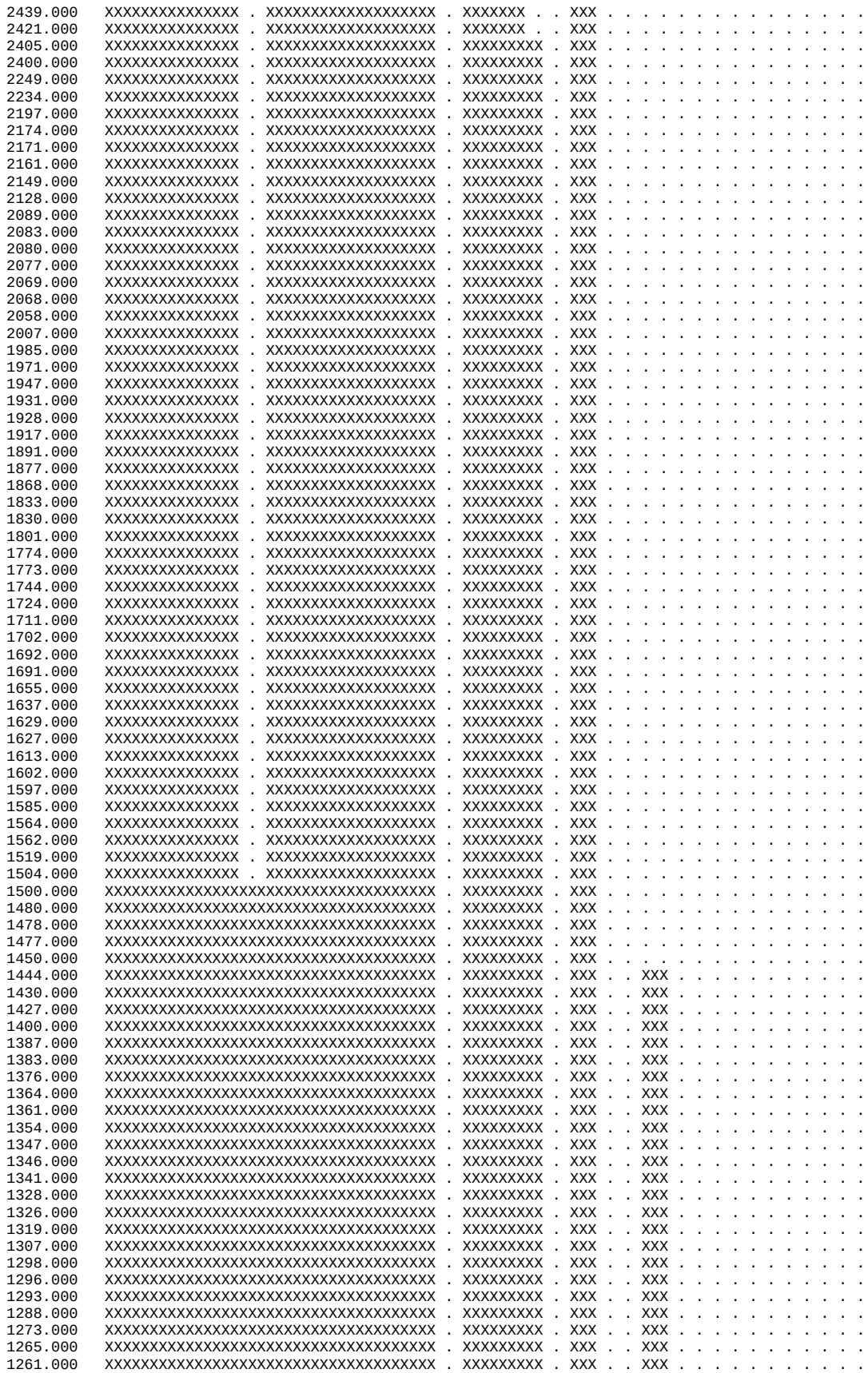
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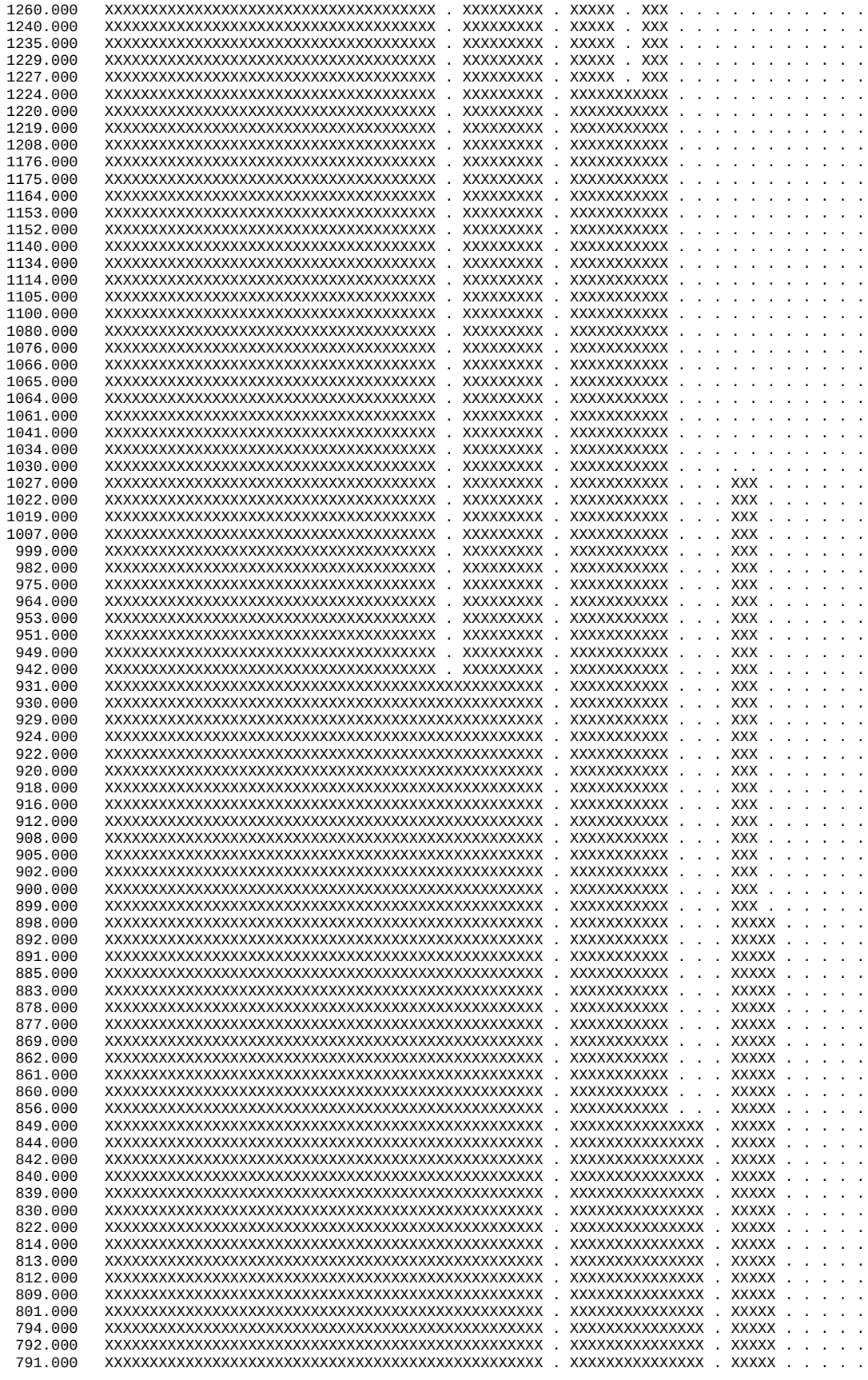

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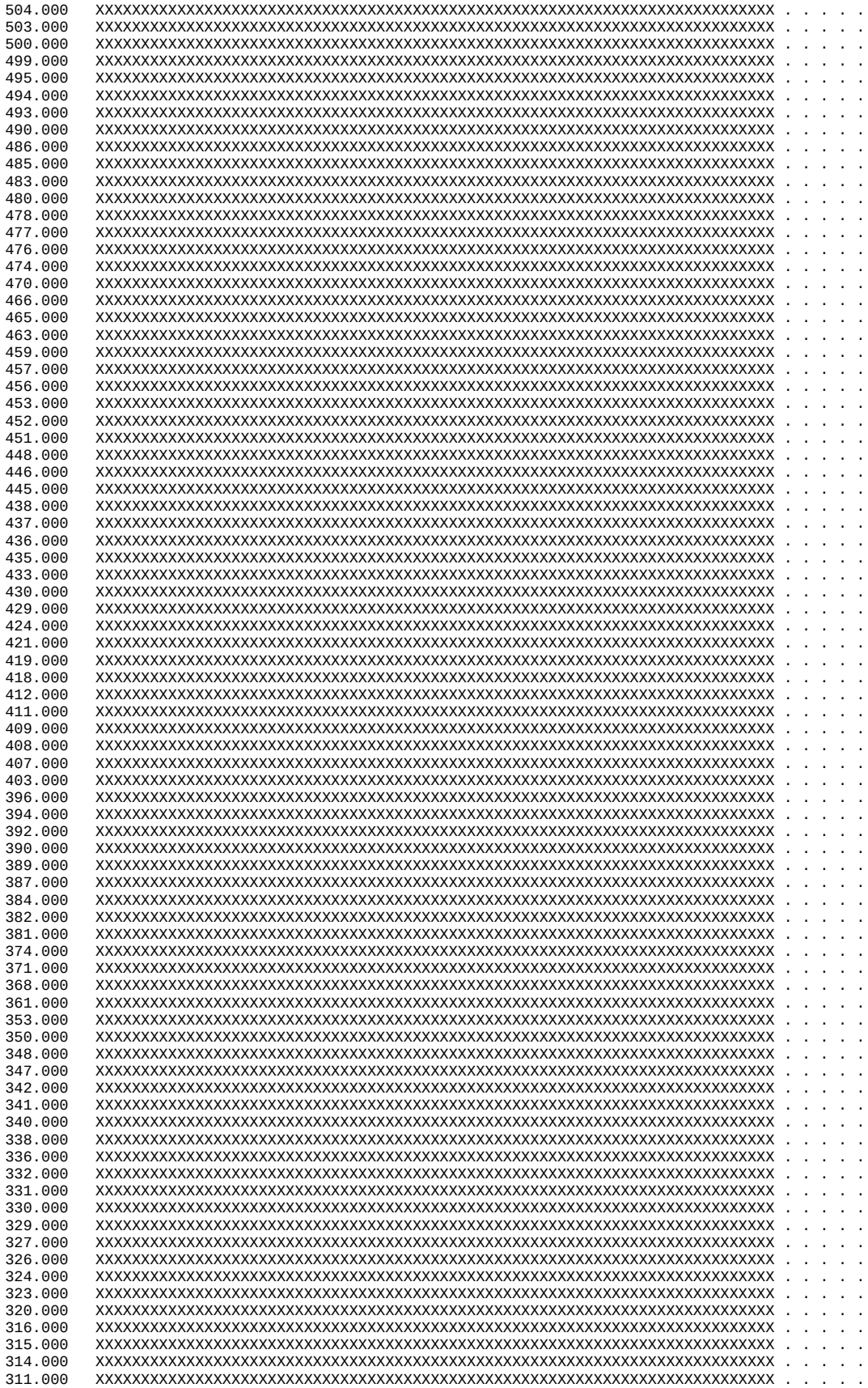
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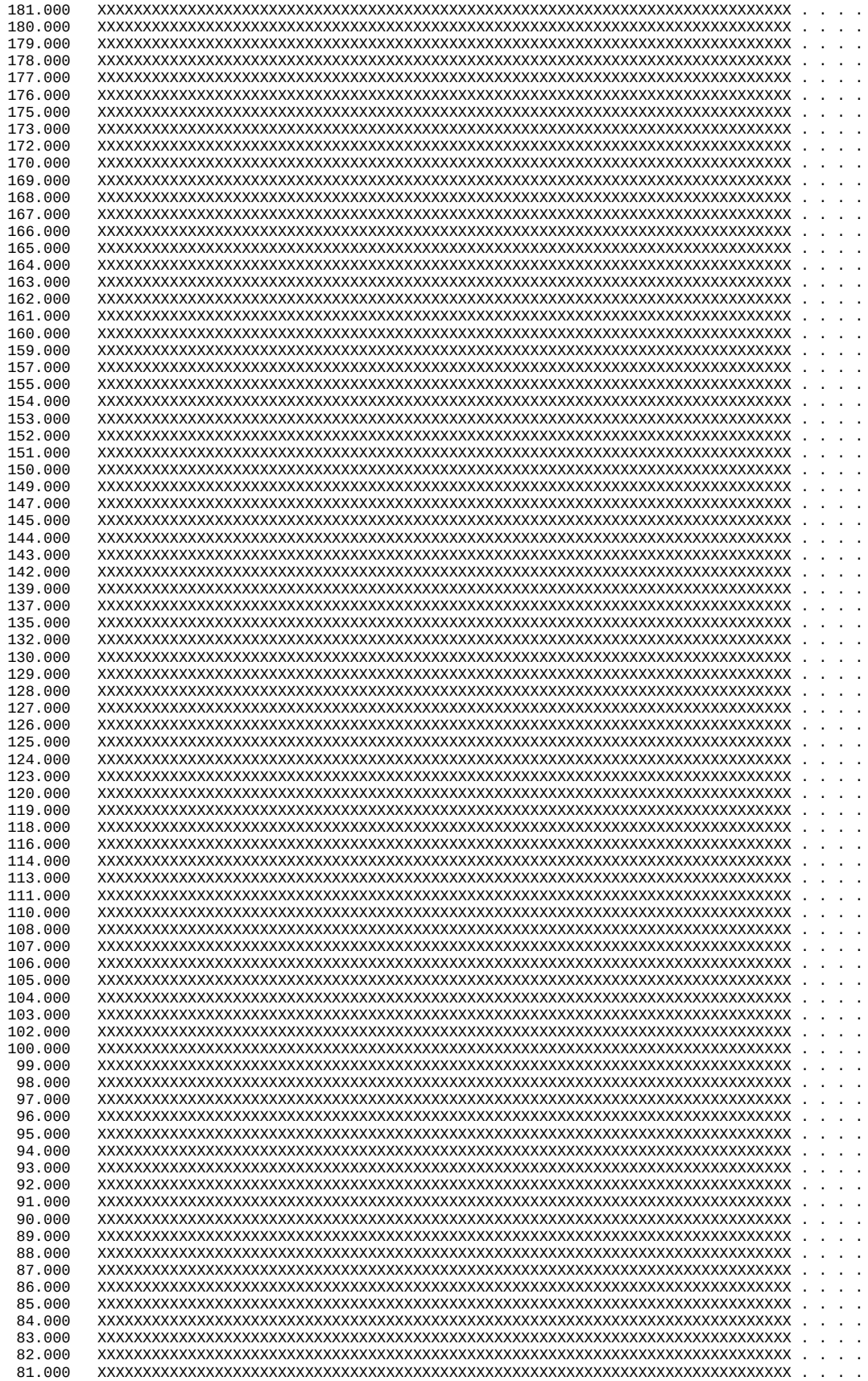
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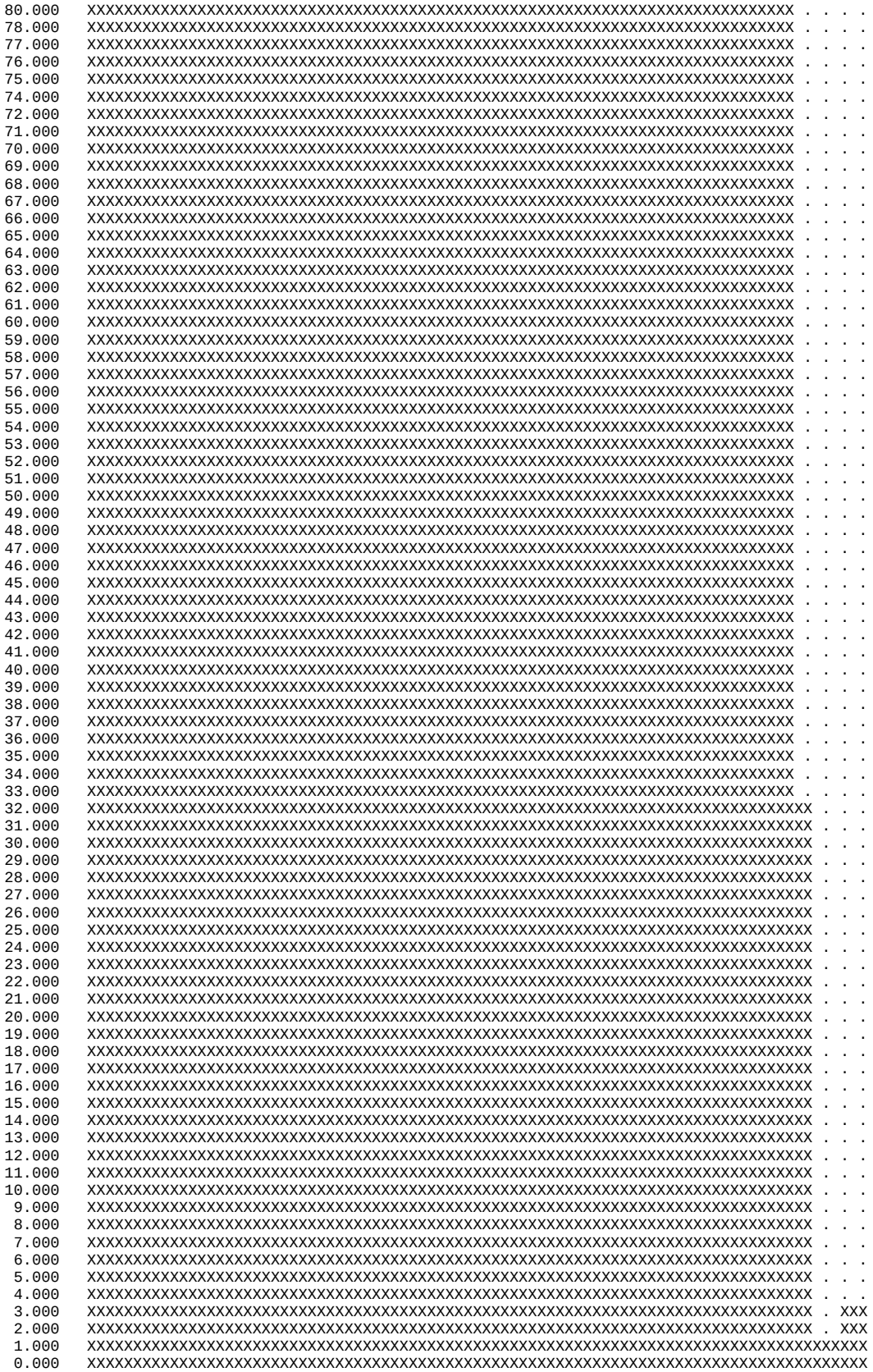
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52002.000   . . . . . . . XXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
50453.000   . . . . . . . XXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
50391.000   . . . . . . . XXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
43808.000   . . . . . . . XXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
42340.000   . . . . . . . XXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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35397.000   . . . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
34580.000   . . . . . . . XXXXXXX . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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11369.000   XXXXX . XXX . XXXXXXXXX . . . XXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
11053.000   XXXXX . XXX . XXXXXXXXX . . . XXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10867.000   XXXXX . XXX . XXXXXXXXX . . . XXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10505.000   XXXXX . XXX . XXXXXXXXX . . . XXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10440.000   XXXXX . XXX . XXXXXXXXX . . . XXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10393.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10176.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10090.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
10075.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9939.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9914.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9730.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9466.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9313.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9205.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9135.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9051.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9049.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 9013.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 8966.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 8964.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . . . . . . .
 8845.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8844.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8777.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8771.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8578.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8408.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8399.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8361.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8221.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8173.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8132.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 8051.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7992.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7926.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7646.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7600.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7598.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7489.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7439.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7353.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7297.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7170.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 7097.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6978.000   XXXXX . XXX . XXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6856.000   XXXXX . XXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6702.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6634.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6499.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6486.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6474.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6449.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6444.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6432.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6270.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6265.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6258.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6229.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6100.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6094.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6079.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 6039.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 5954.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 5924.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 5907.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 5858.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 5843.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
 5793.000   XXXXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . . . . . . .
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5739.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5645.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5642.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5623.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5542.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5476.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5469.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5370.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5359.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5335.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5195.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5182.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5180.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5146.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5133.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
5059.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4954.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4868.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4844.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4807.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4730.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4727.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4708.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4643.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4640.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4605.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4604.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4530.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4479.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4404.000   XXXXXXXXXXXXXXXXXXXXX . XXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4391.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4308.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4234.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4216.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4181.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4179.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4140.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4091.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4053.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4046.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
4035.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3967.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3909.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3873.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3731.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3652.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3648.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3611.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3600.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3584.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3511.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3475.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3468.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3331.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3304.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3277.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3242.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3237.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3231.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3206.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3205.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . .
3193.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3183.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3181.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3162.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3133.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3075.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3060.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3058.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3044.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3030.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
3001.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
2980.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
2978.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
2955.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
2951.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
2945.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXXXX . XXX . . . . . .
2933.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . .
2923.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . .
2905.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . .
2893.000   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . .
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2883.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2869.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2866.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2850.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2832.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2826.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2818.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2809.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2782.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2760.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2743.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2716.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2710.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2708.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2694.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2685.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2681.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2669.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXX . . . . . . . . . . . . . . . .
2631.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . .
2612.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . .
2600.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . .
2598.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . . . . . . . . . . . . . .
2585.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2553.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2544.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2539.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2533.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2522.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2520.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2515.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2503.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2469.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2466.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2463.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2443.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2442.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2441.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2437.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2416.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2407.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2380.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2379.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2363.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2362.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2361.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2356.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2355.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2348.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2341.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2336.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2324.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2316.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2295.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2232.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2203.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2194.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2170.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2149.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2133.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2121.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2114.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2112.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2093.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2067.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2064.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2047.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2046.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2008.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
2000.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1997.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1980.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1958.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1952.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1948.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1942.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1919.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
1913.000    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX . XXXXX . . XXX . . . . . . . . . . .
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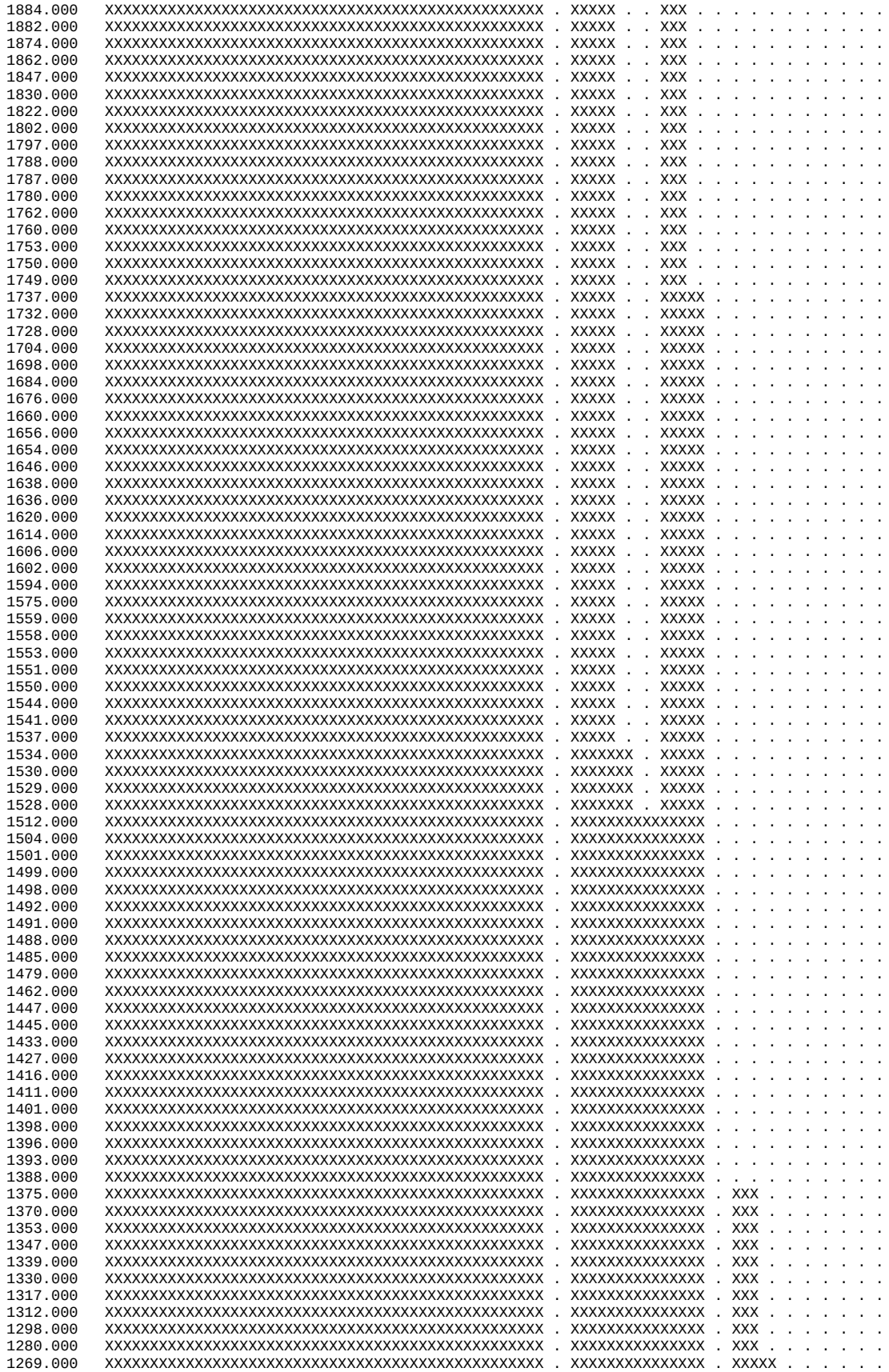
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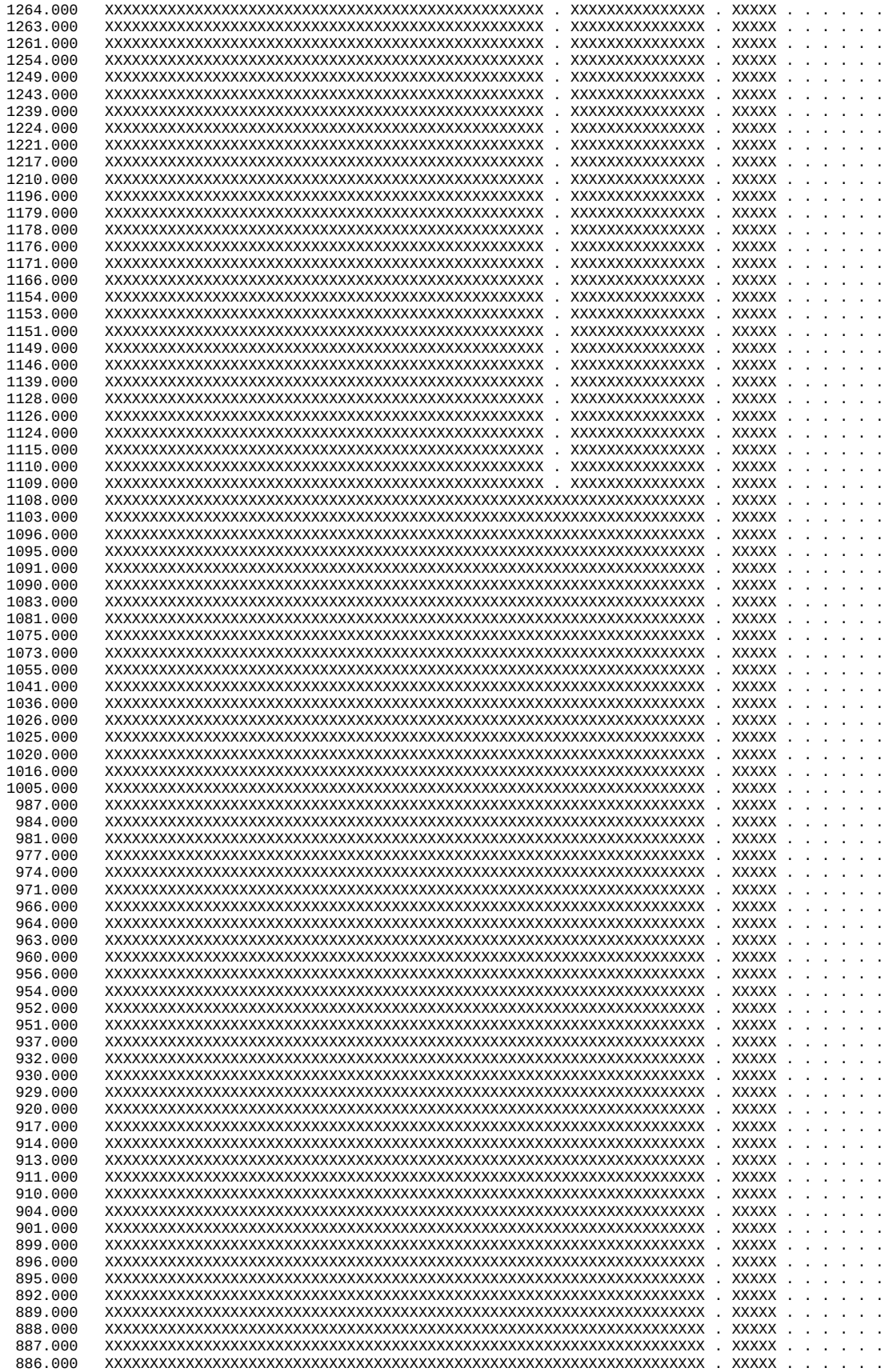
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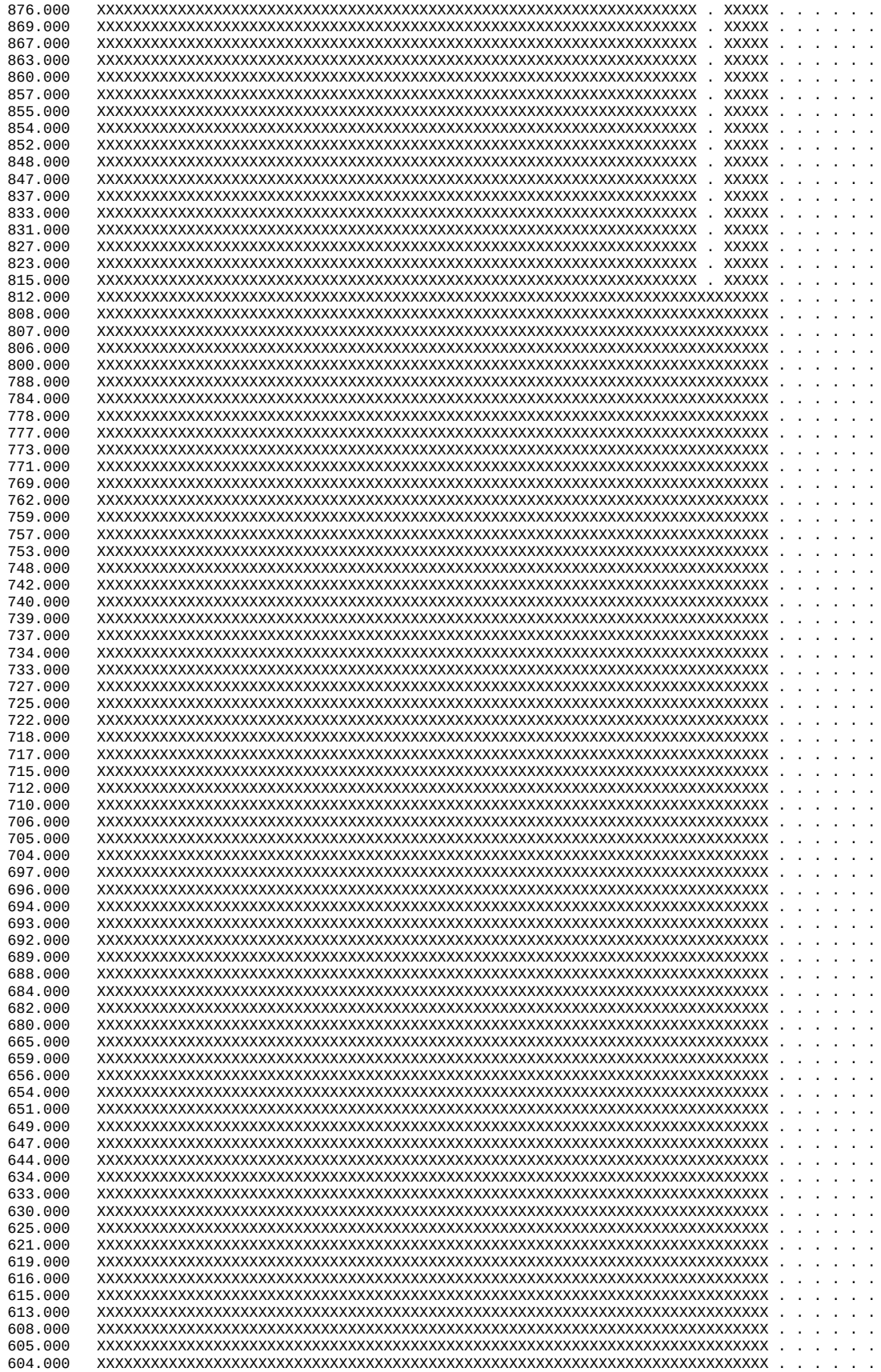
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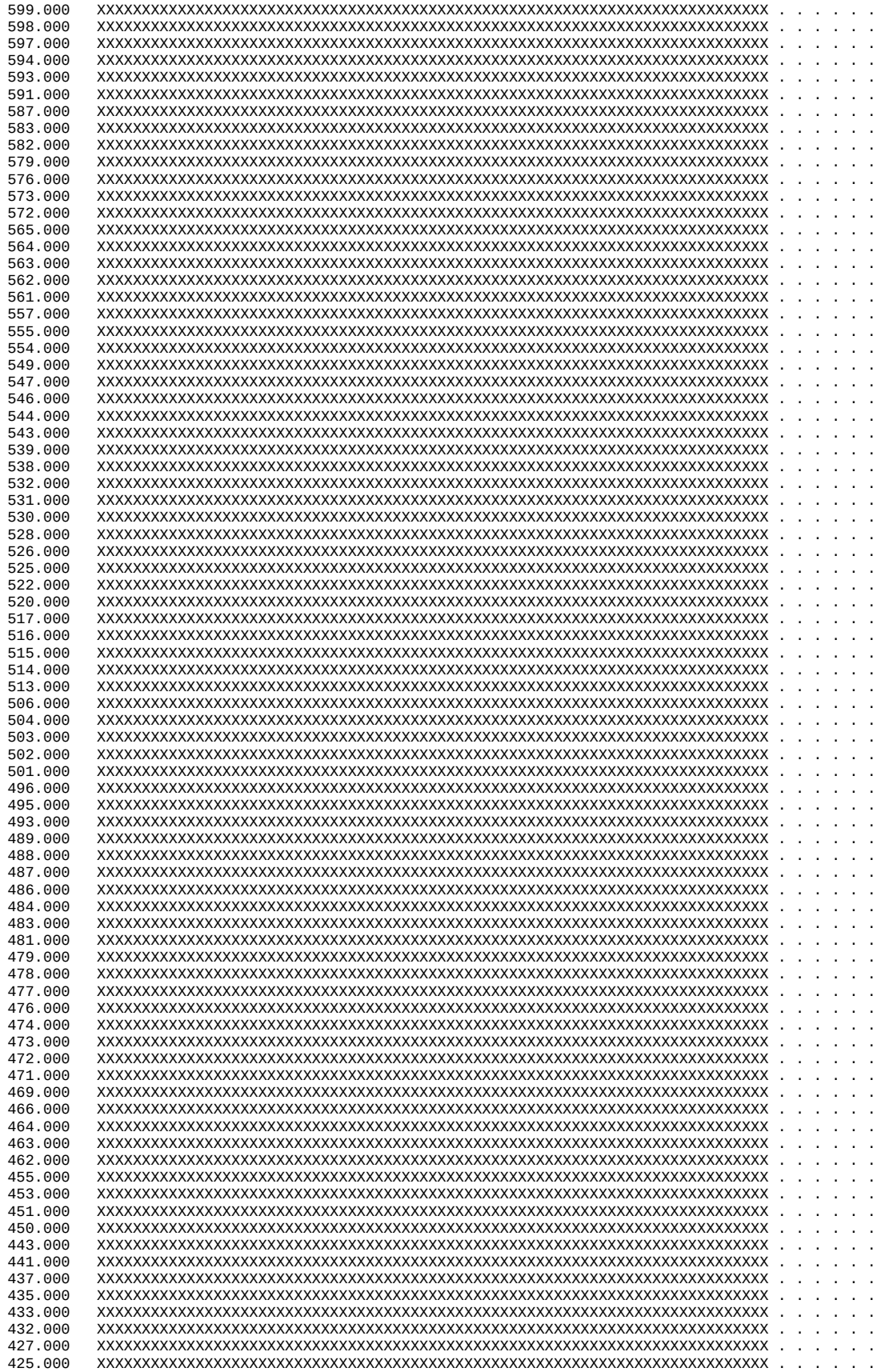
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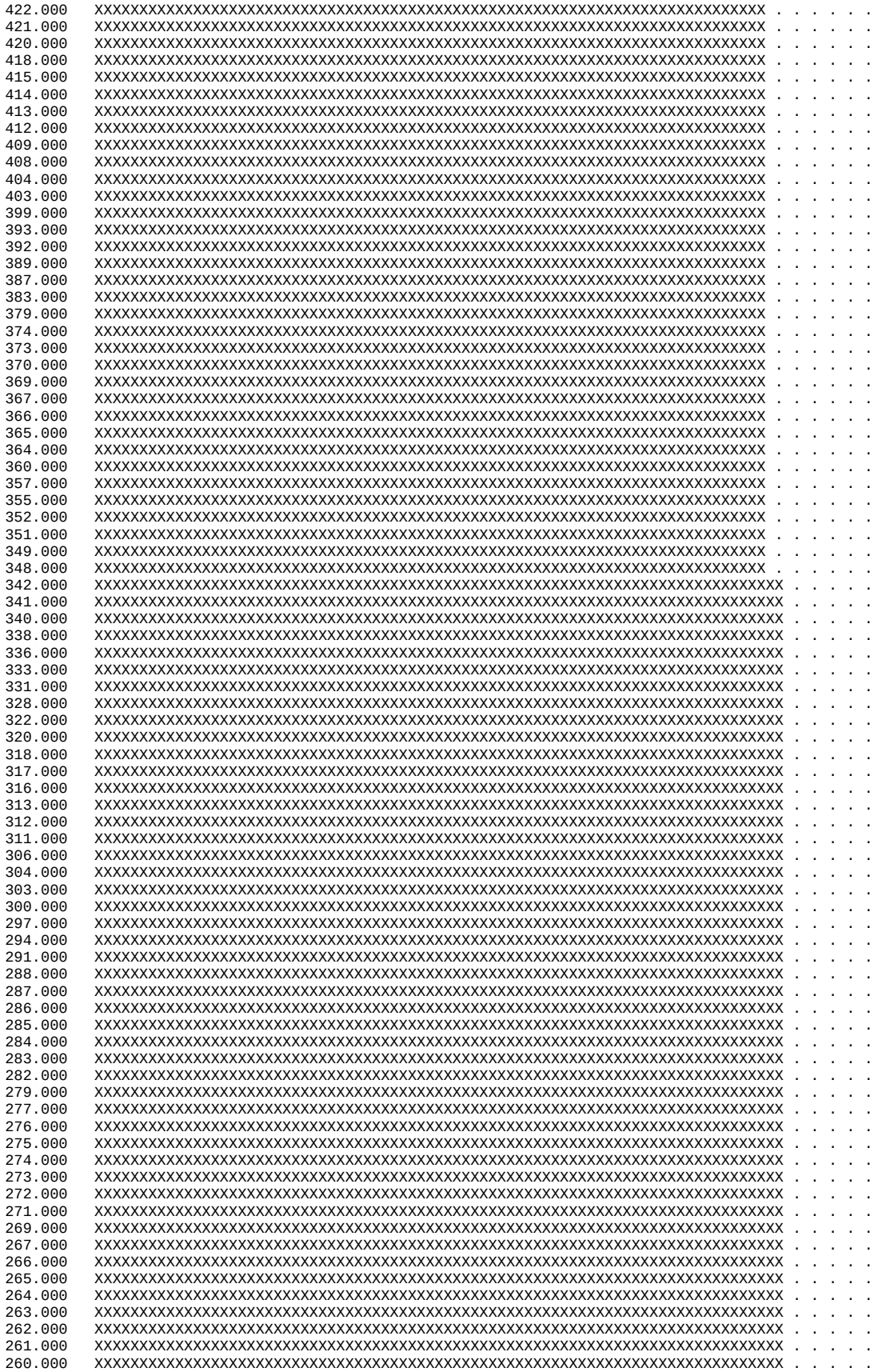
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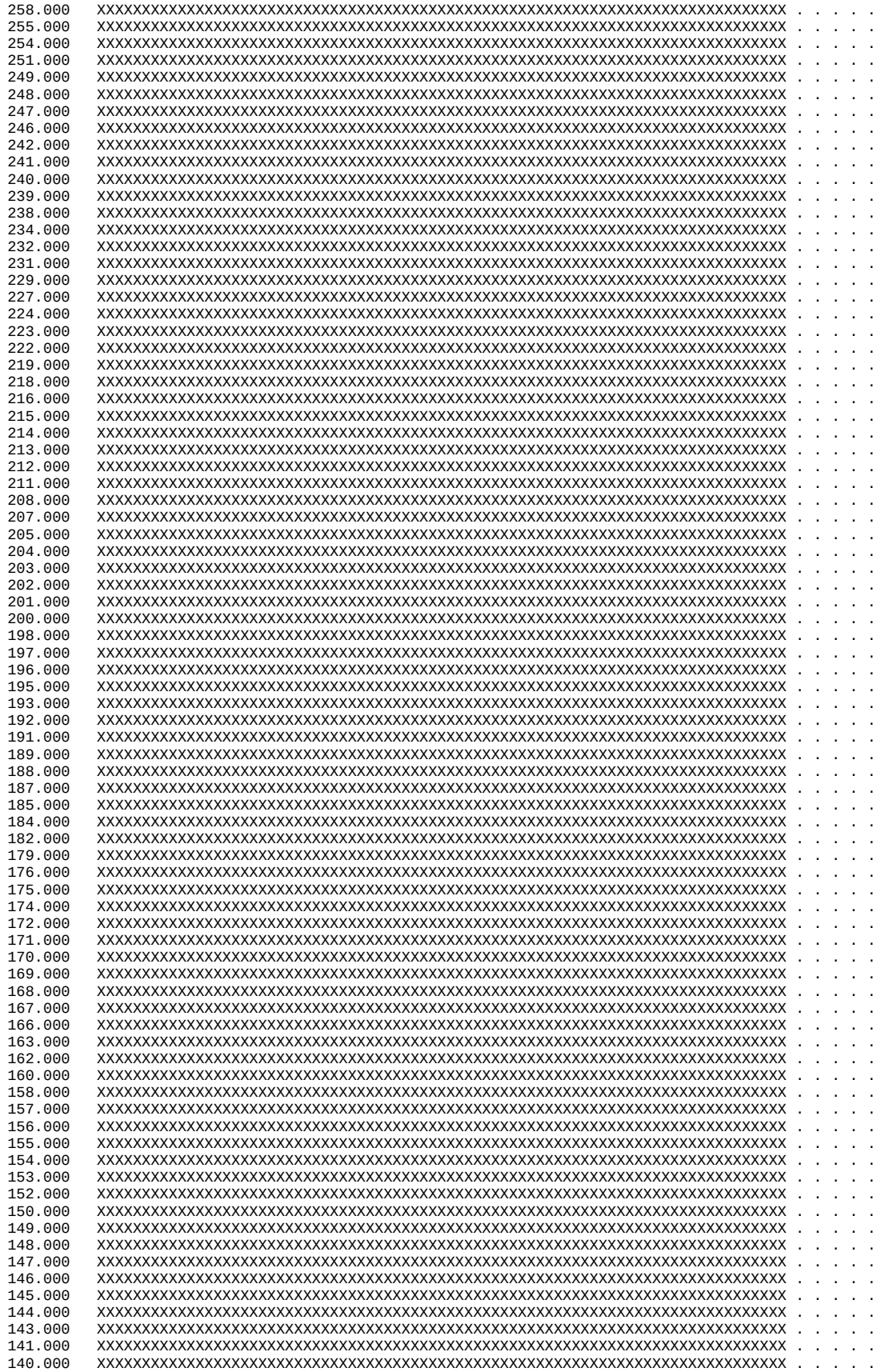
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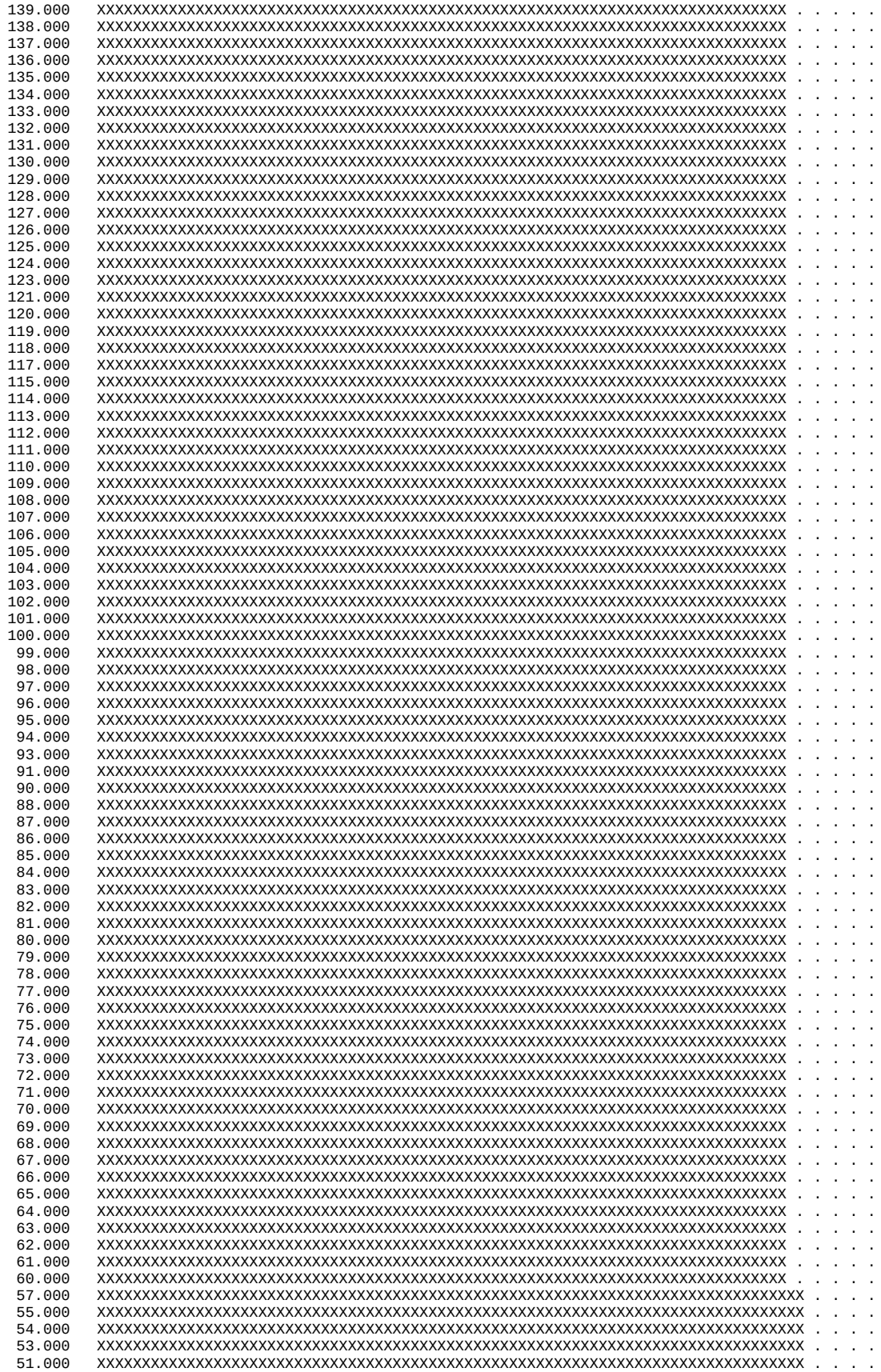
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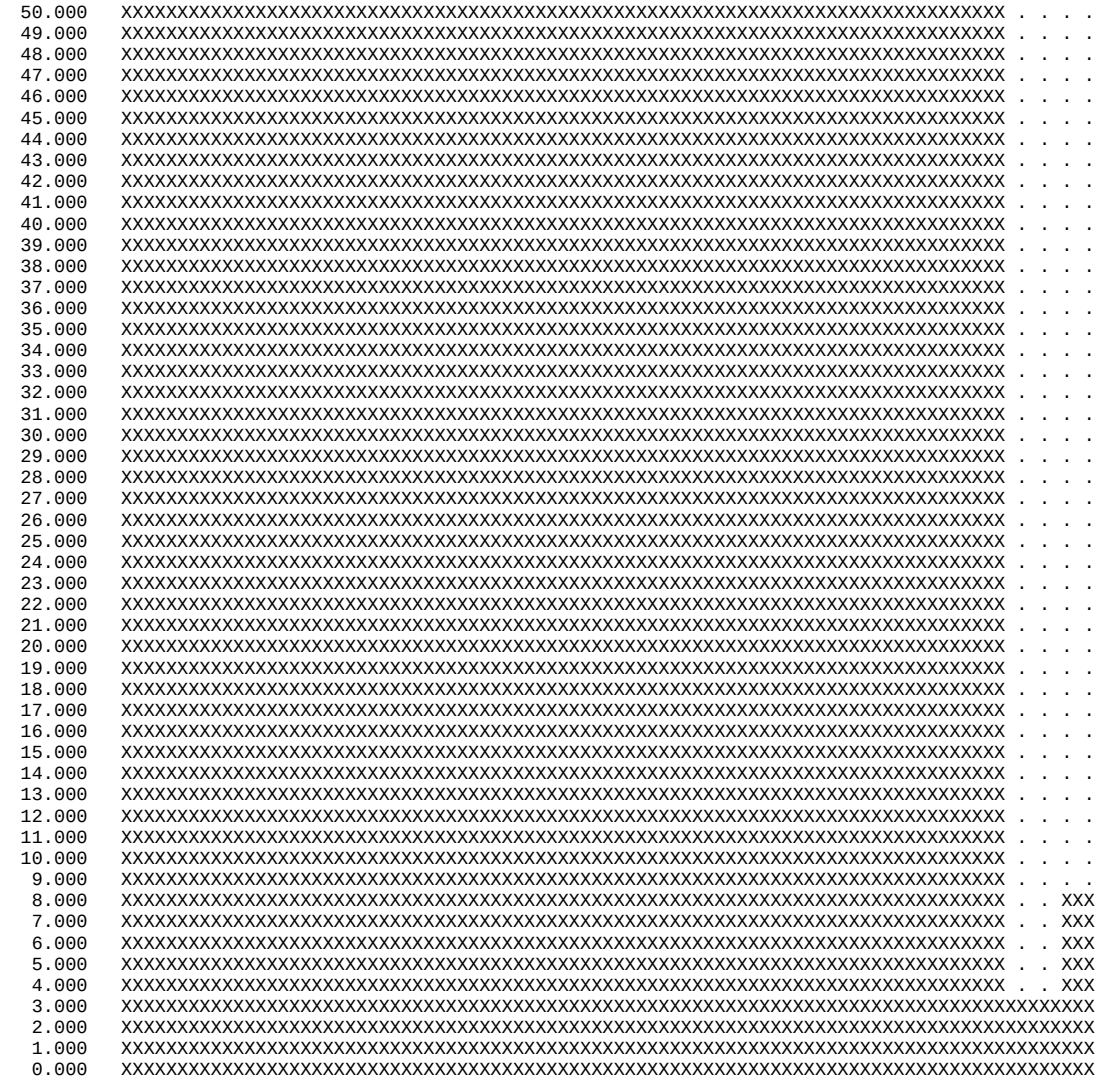
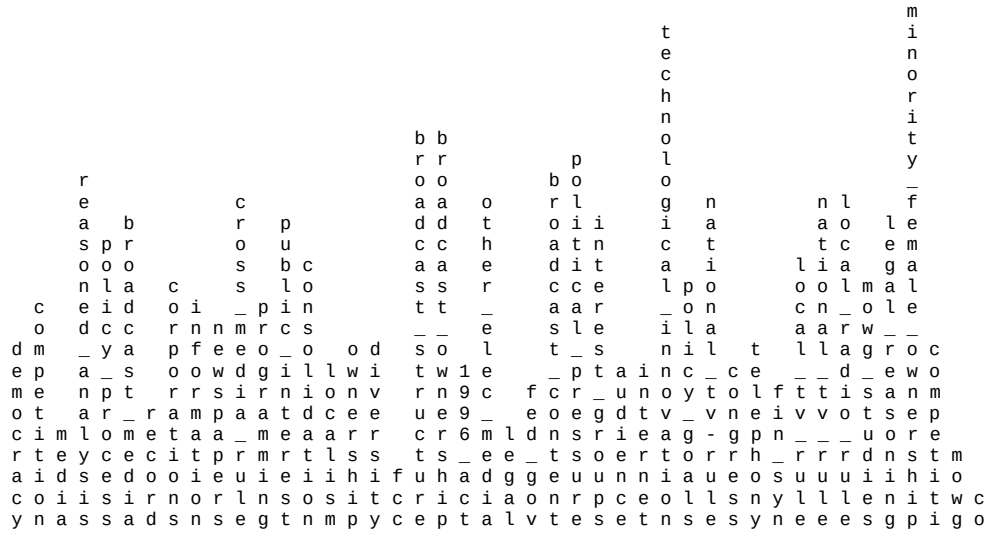
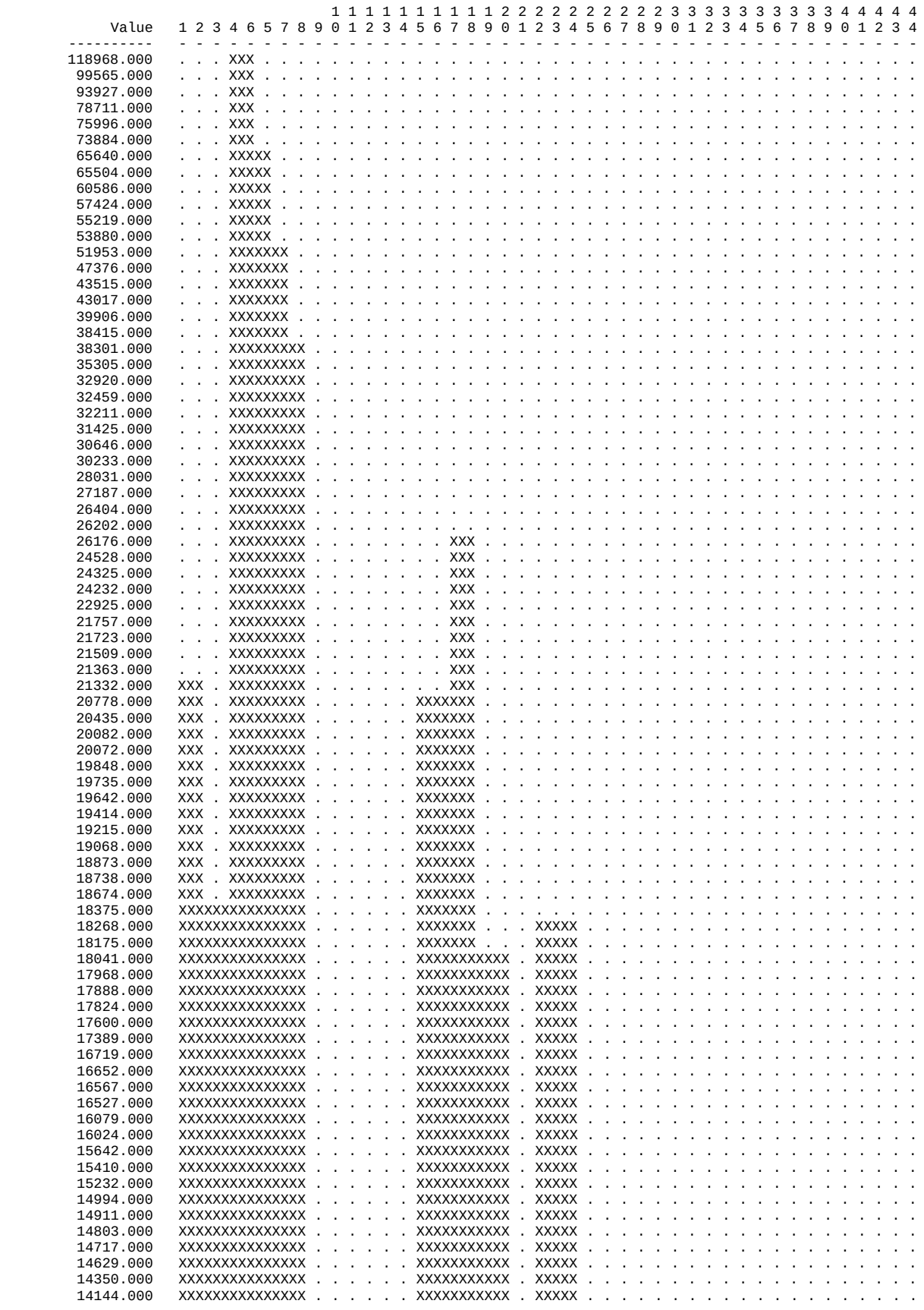


HIERARCHICAL COMPONENTS (win10)

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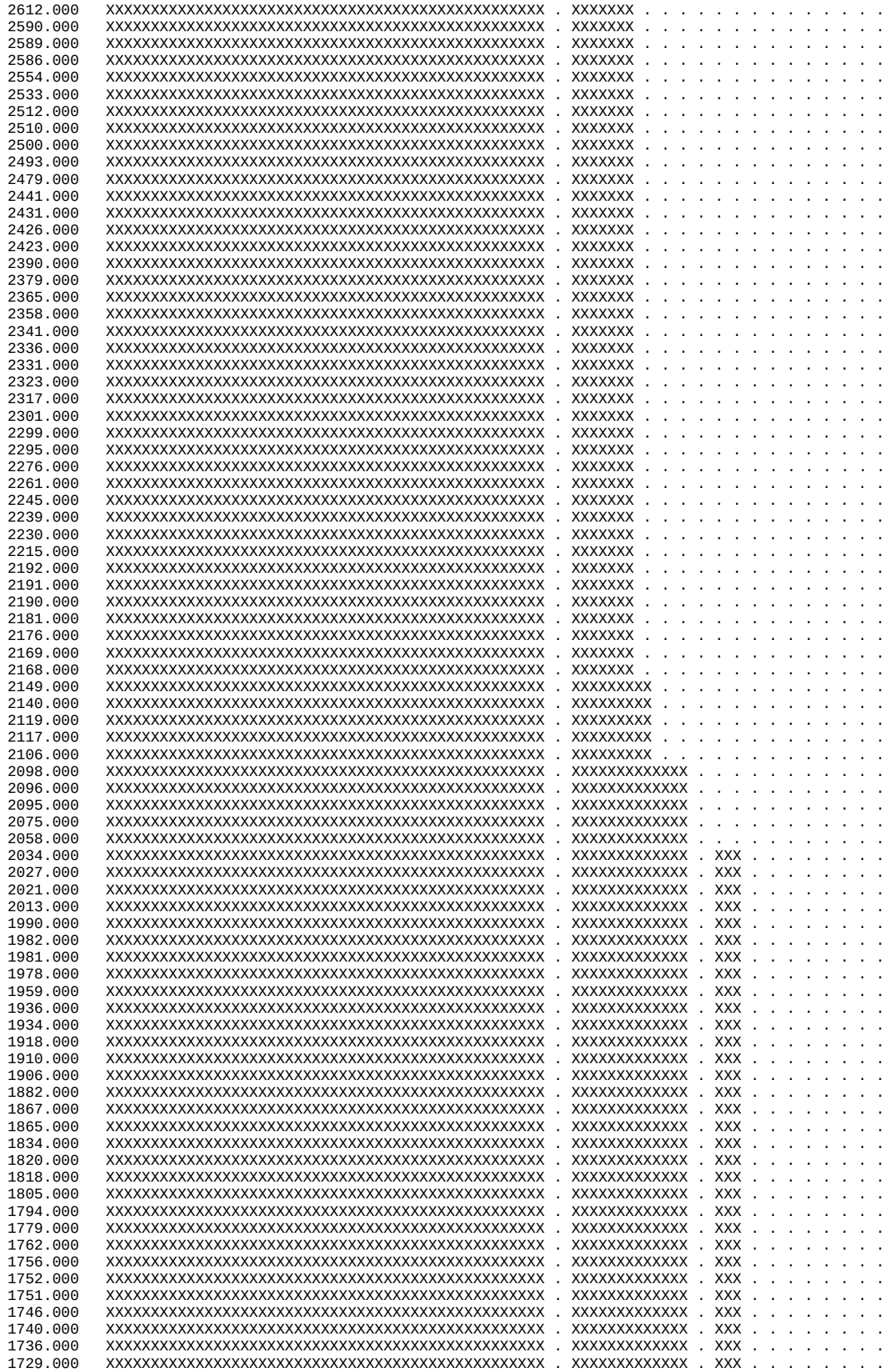
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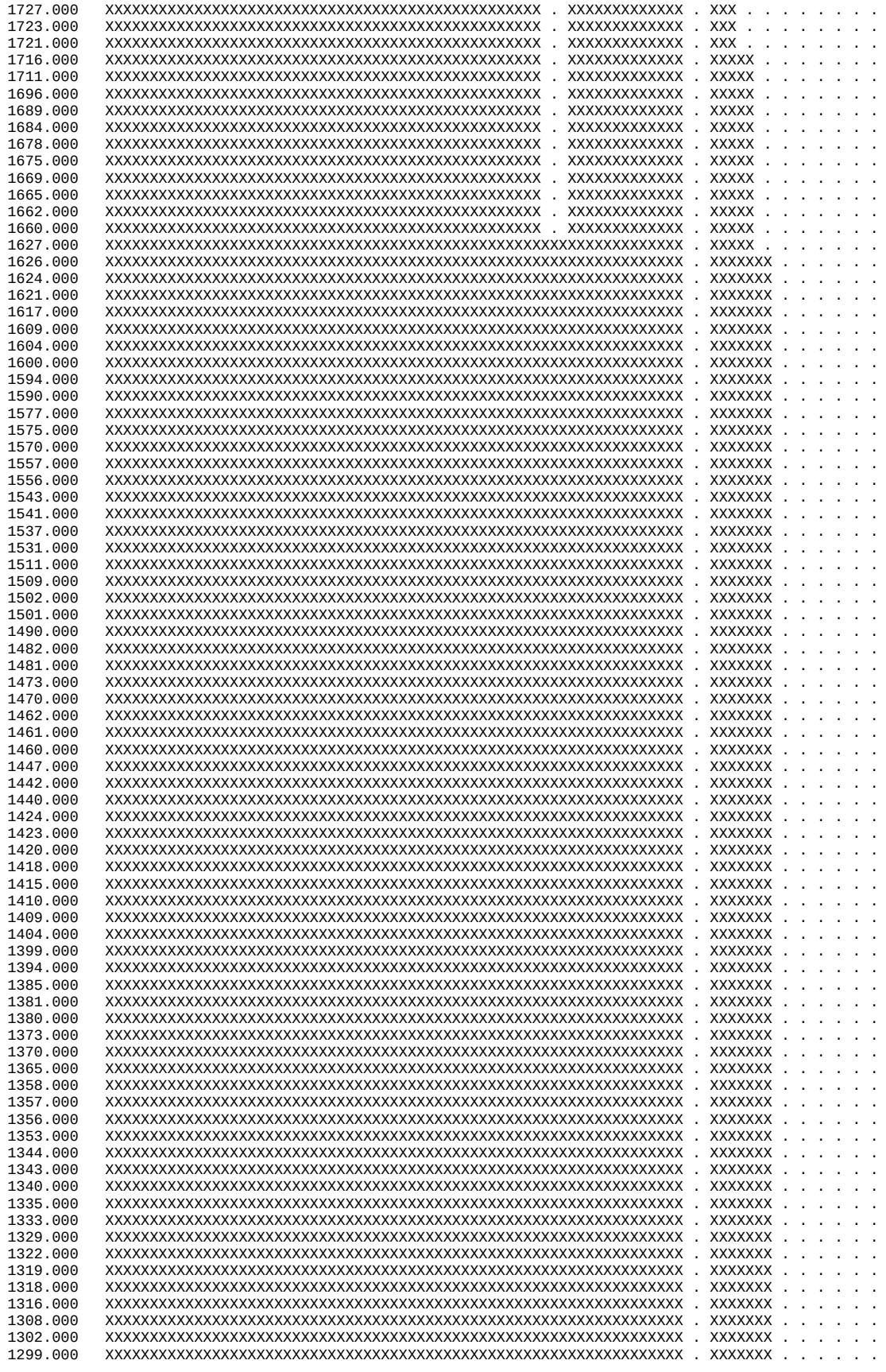
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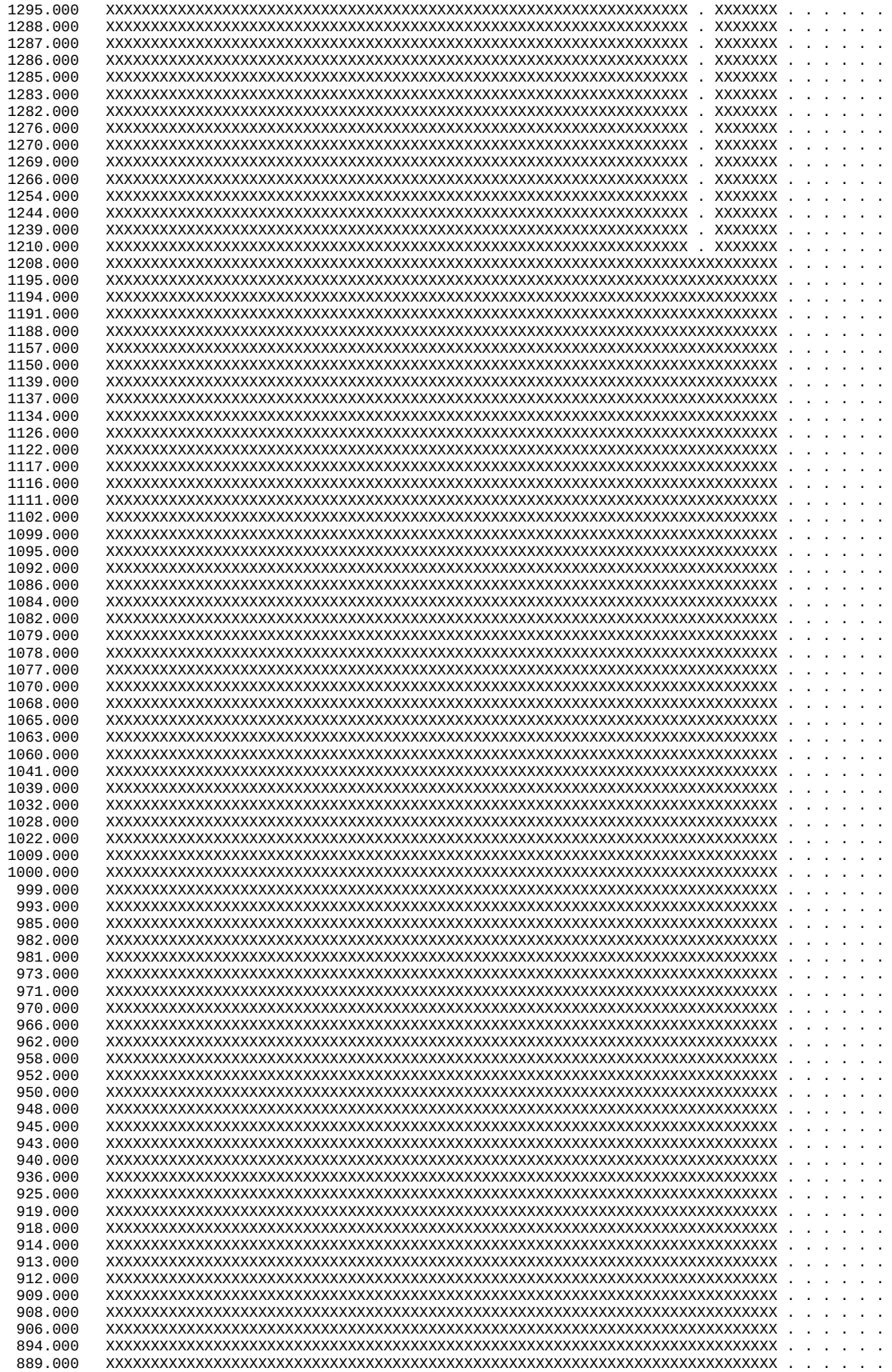

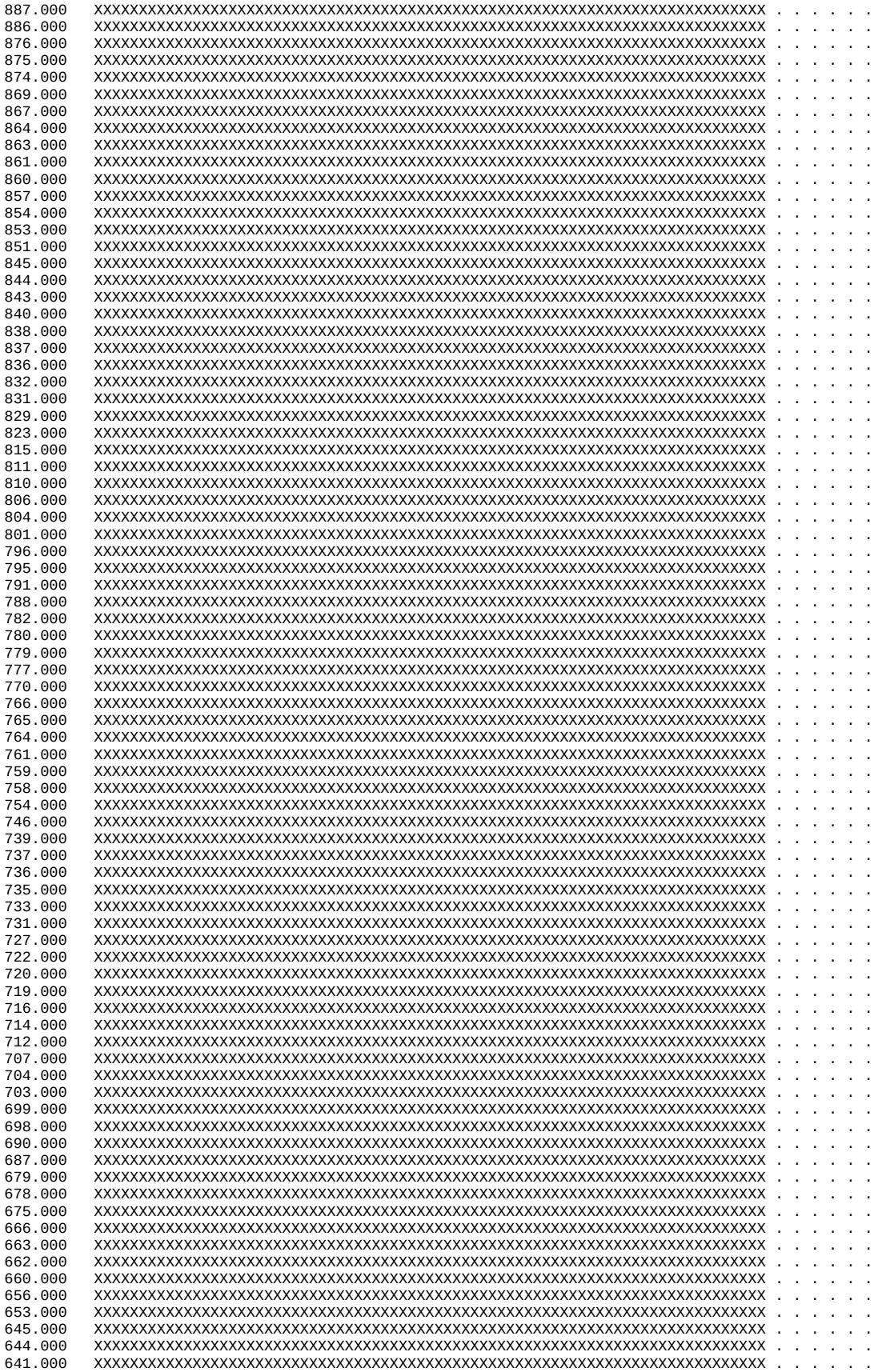
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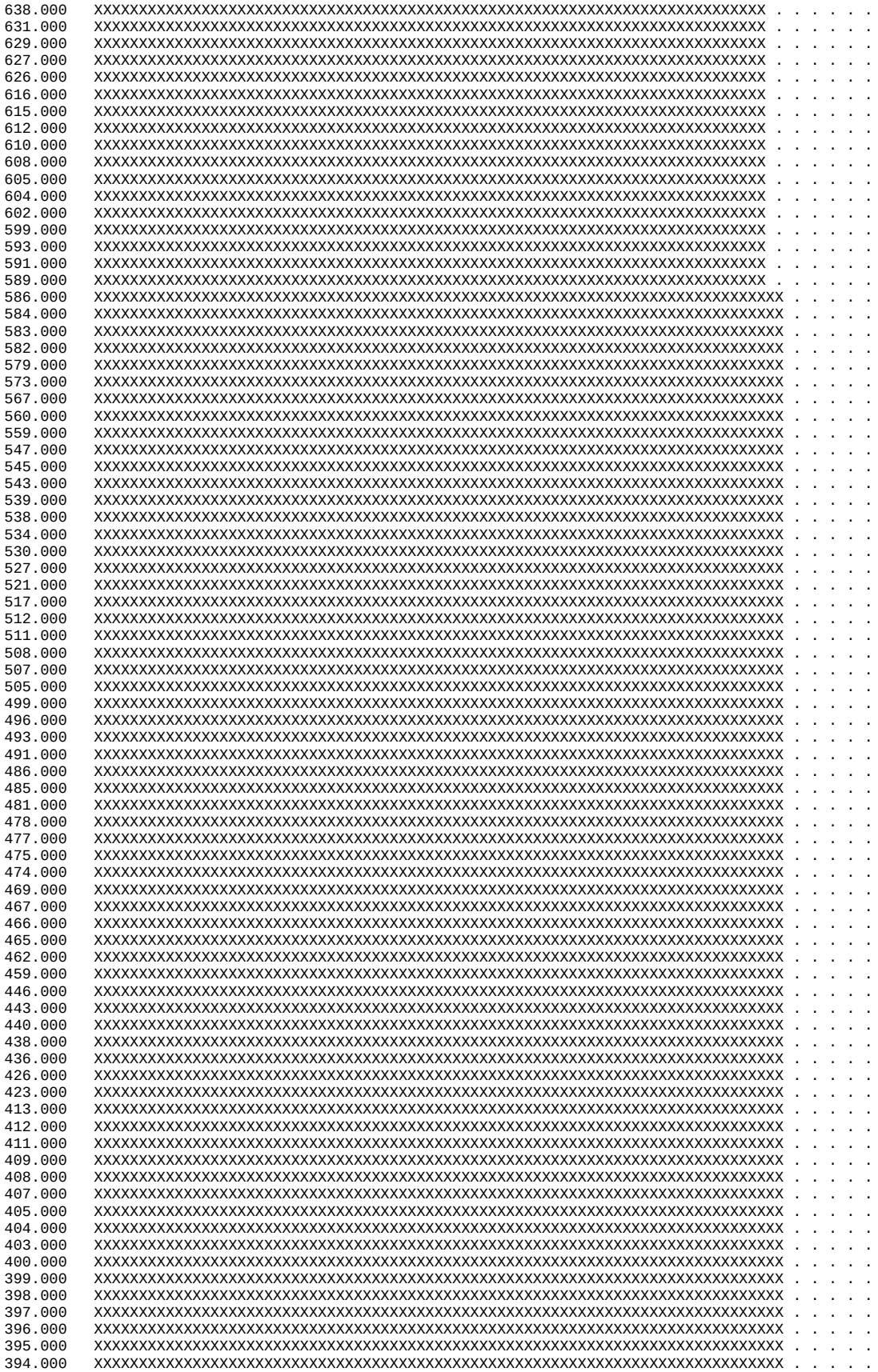
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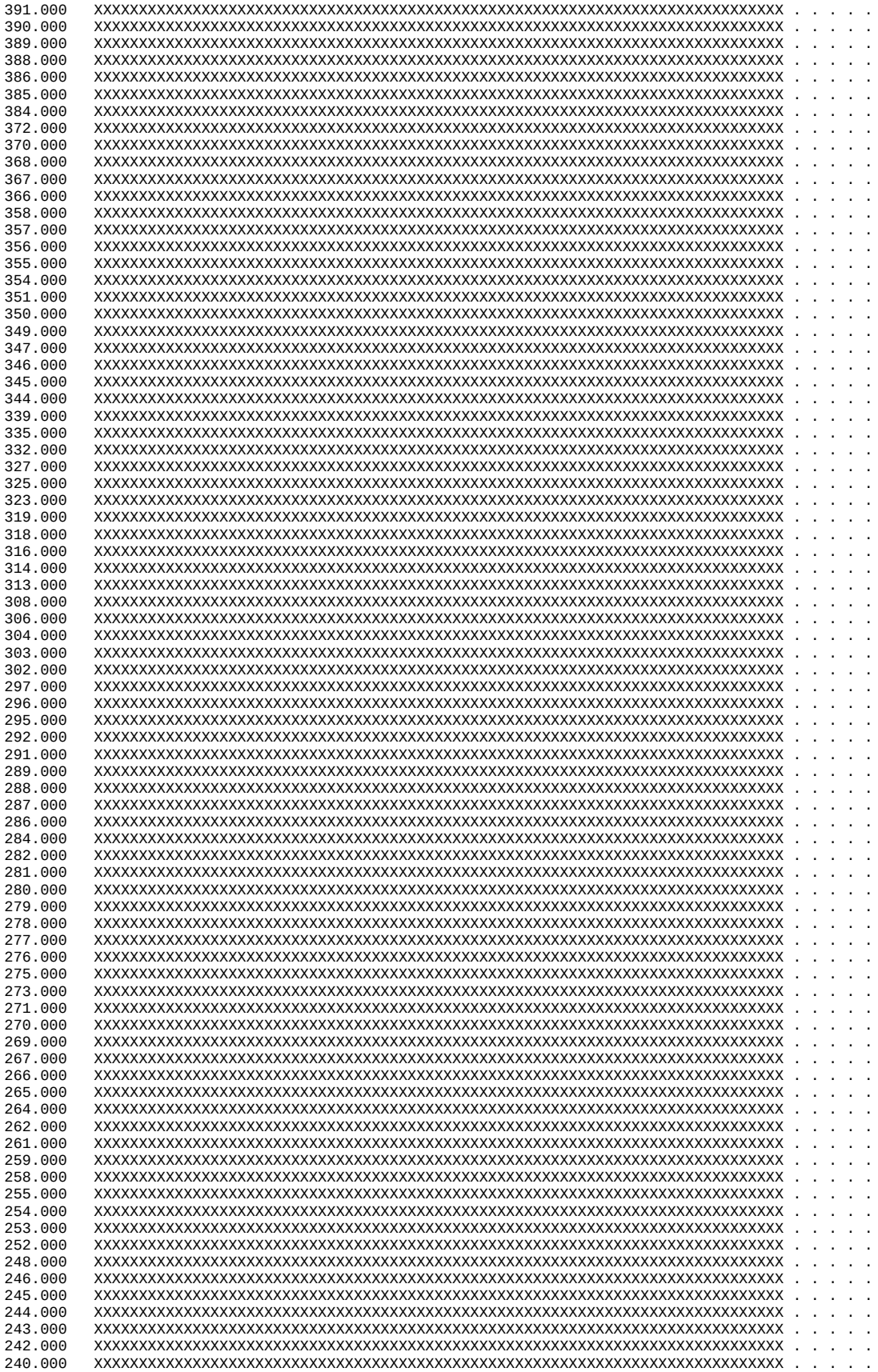
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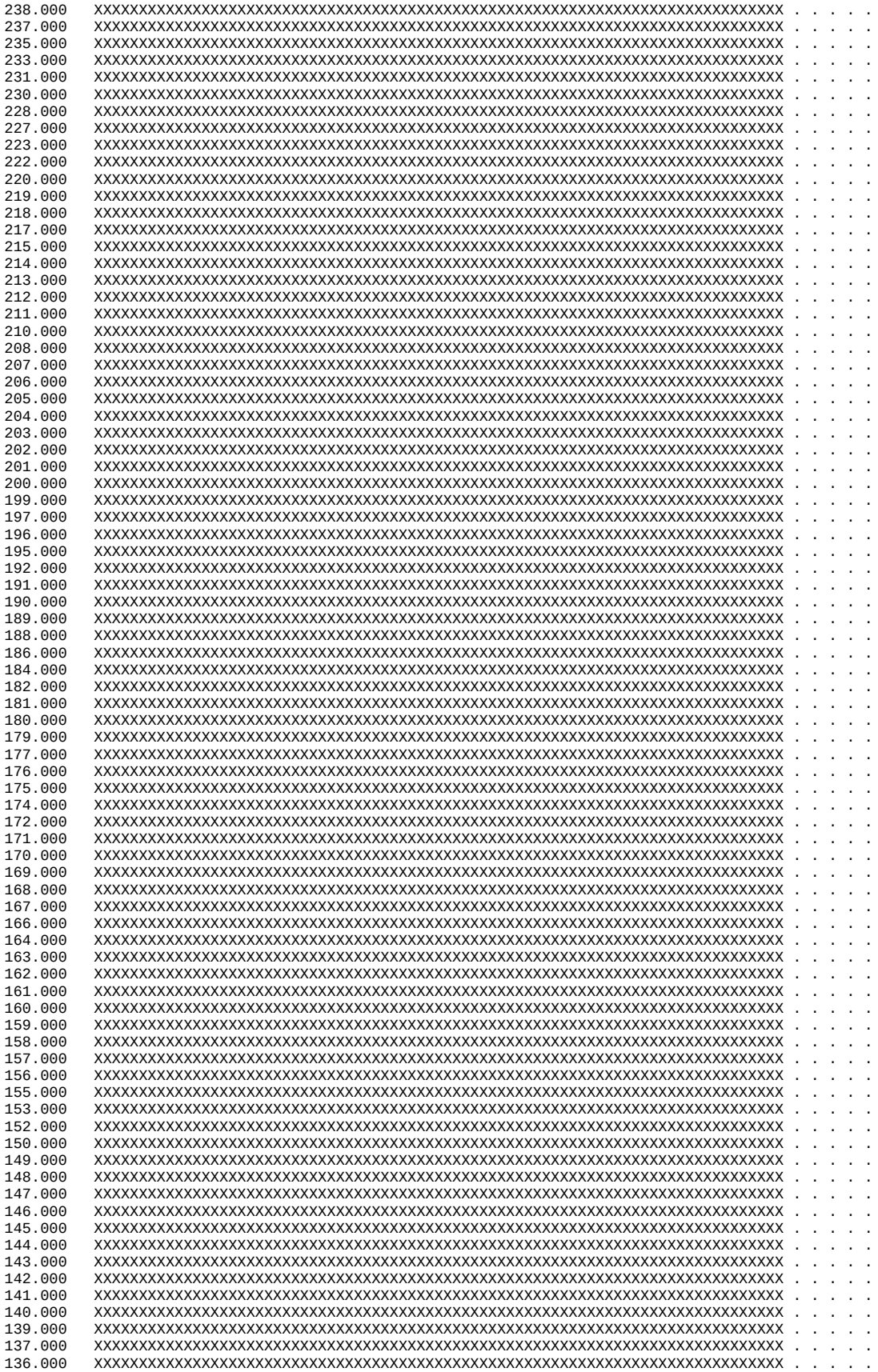
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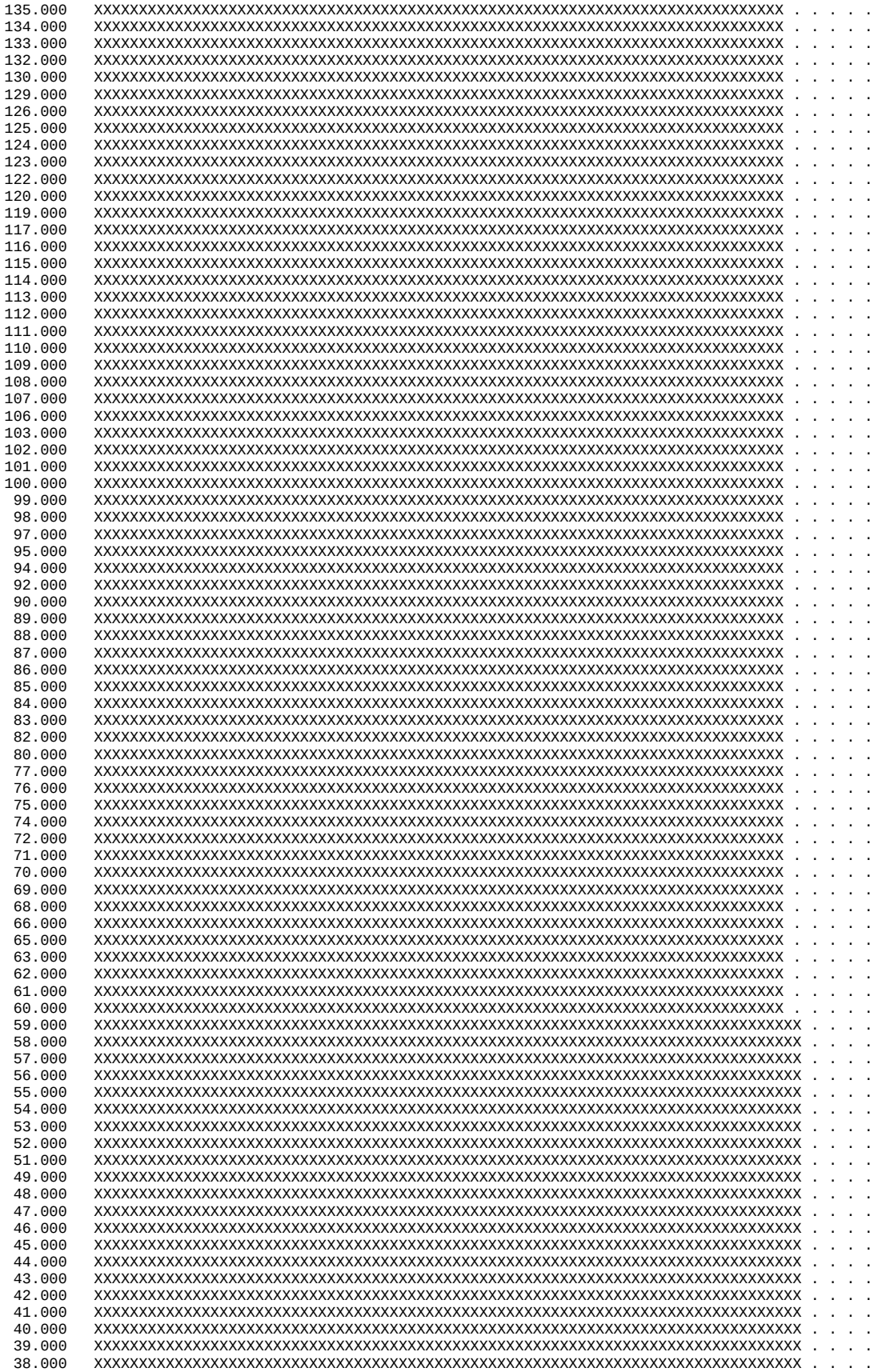
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These graphs are extremely large. This is consistent with this highly dense graph.

Bi-Components:
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win7
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win10
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Lambda Sets and Bridges:

HIERARCHICAL LAMBDA SET PARTITIONS (win4)

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a g i   i   i     c d     s b   a       a           e   o o   o     t   a   l a
l a o   o   c     o c     s l   s       s     c     r   l a   n     e   l p o l m
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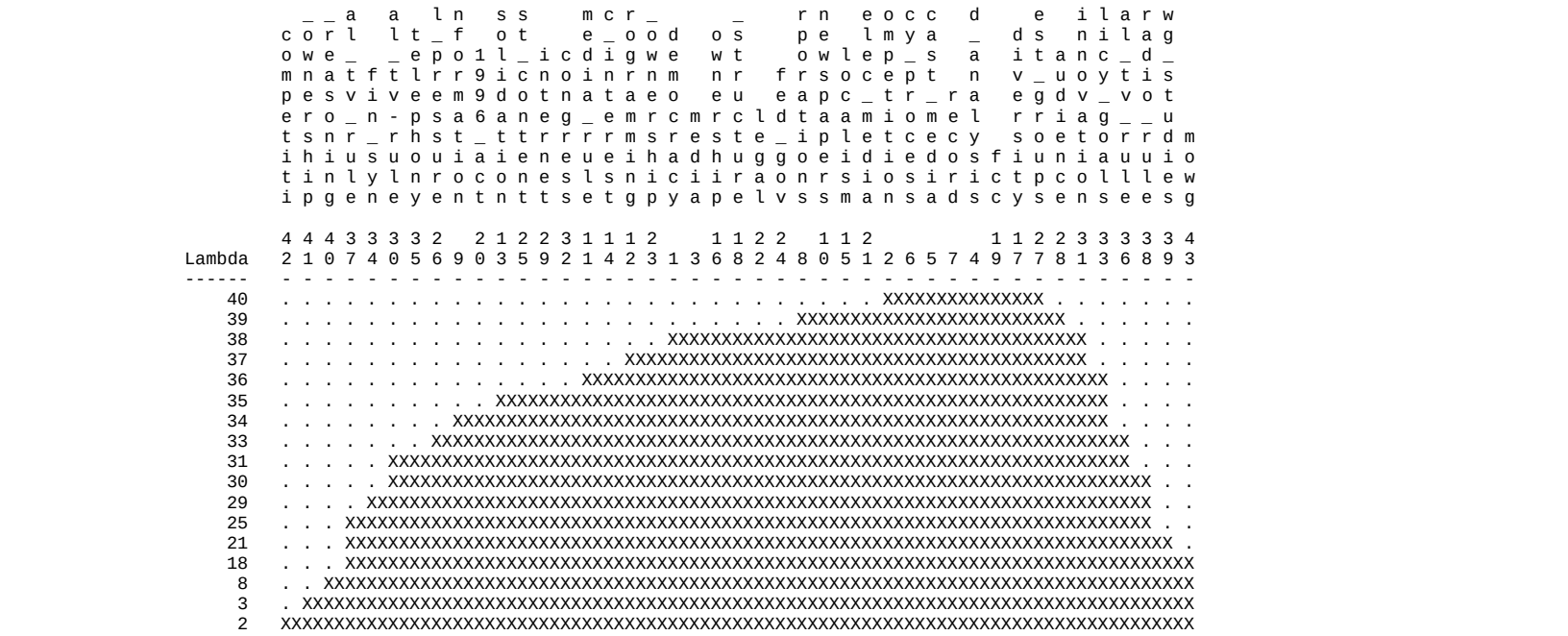
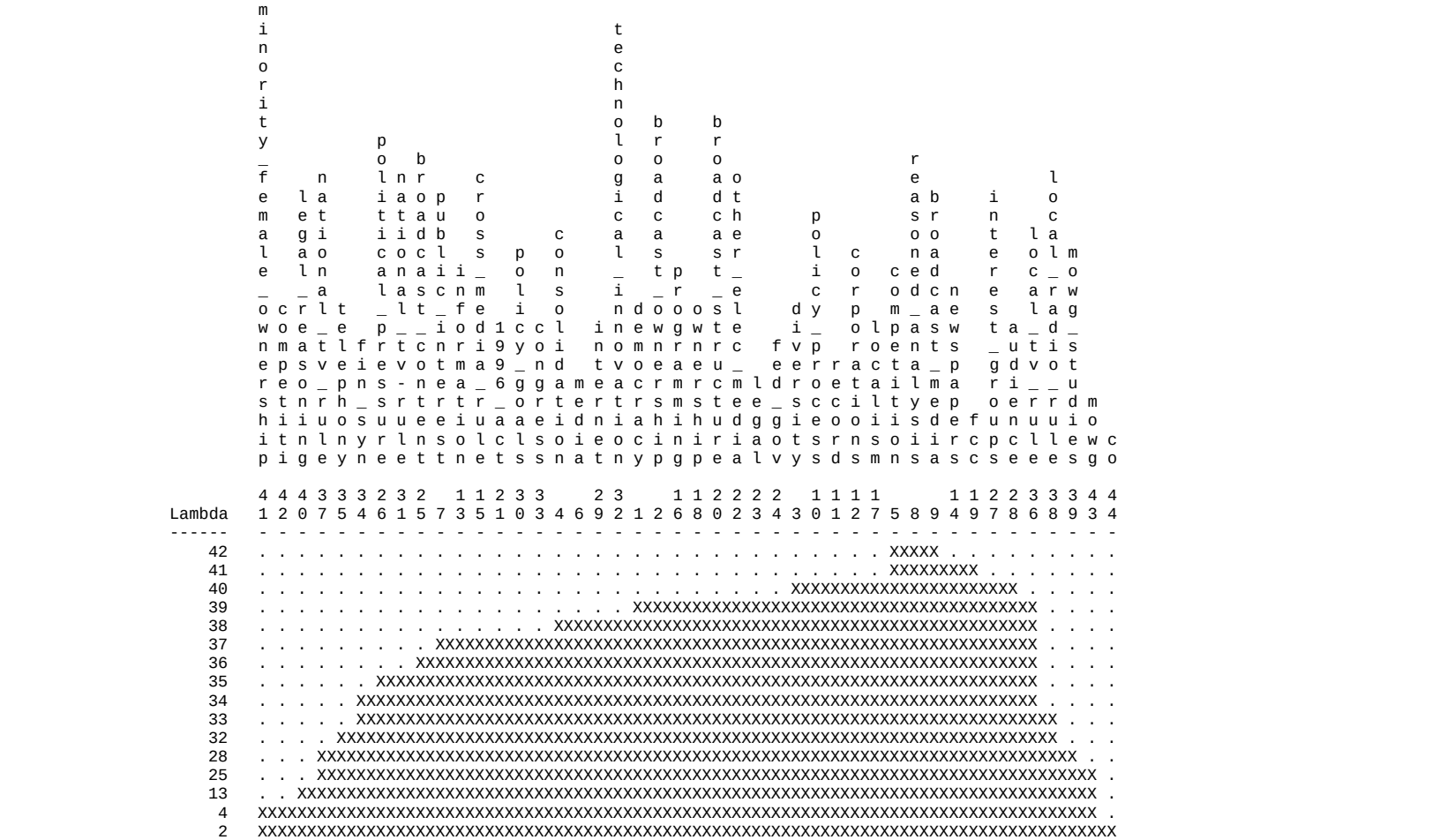
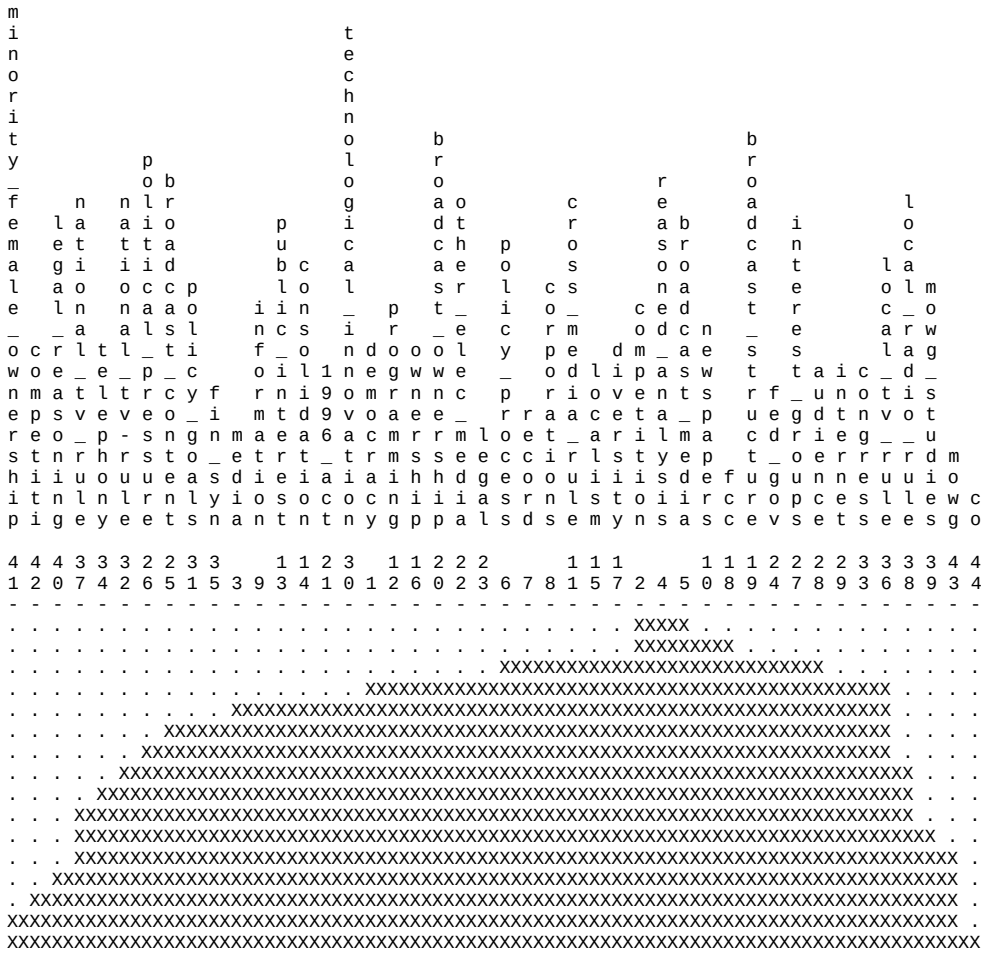


HIERARCHICAL LAMBDA SET PARTITIONS (win7)



HIERARCHICAL LAMBDA SET PARTITIONS (win10)



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