Erosion Narratives:

Applying the Narrative Policy Framework to Louisiana's Coastal Erosion Narrative

Andrew Lade

MPP Essay

Submitted to

Oregon State University

In partial fulfillment of

the requirements for the

degree of

Master of Public Policy

Presented May 31st, 2019

Commencement June 15, 2019

Master of Public Policy essay of Andrew Lade presented on May 31st, 2019

APPROVED:

_____

Michael D. Jones, Committee Chair

_____

Lori Cramer, Committee Member

_____

Brett Burkhardt, Committee Member

_____

Andrew Lade, Author

Abstract

South Louisiana has a major coastal erosion problem, exposing coastal communities to storm surge. The state is spending billions of dollars on projects that are not expected to last beyond 20 years. Research indicates that predominate stories influence problem definitions and solutions. Colten (2017) identified a shift in Louisiana's coastal erosion story between congressional meetings in 1990 and 1999. According to the author, the story shifted from coastal erosion being caused by sediment starvation and canal excavation to predominately sediment starvation. He argues such a narrative shift has occurred for the coastal master plan to gain broader acceptance from the petroleum industry. Defining the problem as a problem of canal excavation characterizes canal excavators as a villain, but defining the problem as a problem of sediment starvation shifts blame elsewhere. The Narrative Policy Framework (NPF) provides a systematic approach to measuring changes in policy narratives. This research utilizes the NPF to answer if there was a shift in the coastal erosion narrative in Louisiana and considers the implications. Content analyses of the congressional meetings mentioned above was performed. No significant change in villainization or victimization of the petroleum industry is found, and there is no significant change in the stated cause of erosion. In terms of theory, this study adds to the NPF literature by inductively identifying concepts that I argue will help generally calibrate the framework to complex policy environments.

Introduction

Coastal erosion is a problem in south Louisiana (CPRA 2017). Research shows that dominant narratives influence how problems and solutions are defined (Hajer 1993, McBeth and Shanahan 2005, Schon & Rein 1994). Colten (2017) argues there was a shift in Louisiana's coastal erosion narrative between congressional meetings occurring in 1990 and 1999. The 1990 meeting authorized the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) and the second meeting reauthorized it. The author took a historical approach to this argument. Through the assessment of transcripts of congressional meetings, Colten (2017) observes that the narrative shifted from coastal erosion being caused by sediment starvation and canal excavation to predominately sediment starvation. He further argues that this shift portrays major economic enterprises, such as the petroleum industry, as threatened, rather than causers of damage. While his findings are plausible, they have not been subjected to hypothesis testing.

This research is situated within the Louisiana coastal management subsystem. A subsystem is a set of actors involved in a policy problem and produce policy surrounding that problem (Sabatier and Jenkins-Smith 1993, 24). Subsystems are defined by a policy topic, influential actors, and physical geography. Subsystems can be comprised of individuals and entities. They not only include government agencies, legislative committees, and interest groups but also include individuals, nonprofit organizations, scientists, courts, and the media (Weible and Sabatier 2017).

To test Colten's (2017) observations, I apply content analyses to the congressional transcripts he identified. The methods for this research are based on the methods of Smith-Walter et al. (2016). Transcripts of the congressional hearings identified by Colten (2017) were located and content analyses were performed. The Narrative Policy Framework (NPF) provides a means for the operationalization of data. Content analyses of these data show that there was no shift in the coastal erosion narrative. This research intends to have impact beyond Louisiana's coastal management subsystem. In terms of theory, findings derivative of said analyses adds to the NPF literature by inductively identifying concepts that I argue will help generally calibrate the framework to complex policy environments (Shanahan et al. 2014).

In the next section, I describe the coastal erosion problem in Louisiana. The subsequent sections describe the NPF; the research design, data, and methods; findings; and discussion and conclusions.

Louisiana's Coastal Erosion Problem

The coastal erosion problem is tangible and has been well documented. Louisiana has lost approximately 2,000 square miles of wetlands since the mid 1930's. Presently, Louisiana loses 16 square miles of wetlands per year (Wernick 2014). Furthermore, global sea level has risen by 19 centimeters over the past 100 years, and relative sea level in Louisiana is predicted to rise 1-2 meters by the end of this century (IPCC 2013, Day and Erdman 2017). Coastal erosion increases south Louisianans' vulnerability to storm surge. Considering storm surge and its accompanying devastation, coastal erosion moves beyond an environmental problem and becomes a public safety problem. Mitigation of the environmental deterioration is necessary in order to reduce vulnerability to sea level rise and storm surge (Arkema et al. 2008, Barbier et al. 2013).

Causal Narrative Heuristics: Sediment Starvation and Canal Excavation

Two frequently cited causes of the coastal erosion problem are sediment starvation and canal excavation (e.g., Reed 1989, Scaife 1983, Turner et al. 1984, USGS *no date*, Walker et al. 1987). Coastal erosion is the loss of land into a body of water due to natural processes, such as waves, or human activity. Sediment starvation is the diminishment of sediments introduced into an aquatic system. Canal excavation is the construction of canals. The policy process is not directed by scientific information alone; policy deliberations also matter. Deliberations determine the severity and cause of the policy problem (Sabatier 2007). The stated impact of sediment starvation and canal excavation on Louisiana's coastal erosion problem has fluctuated within coastal management plans over time. Louisiana's first coastal management plan, *Here Today and Gone Tomorrow* (1987) , was created by the environmental group The Coalition to Restore Coastal Louisiana, and their plan led to the passage of CWPPRA. In the "Causes of Accelerating Coastal Land Loss" section of that plan, two paragraphs cite canal excavation as a cause of the problem, and three paragraphs cite sediment starvation as the cause. The plan directly blames "oil and

gas access canal[s]" for canal excavation and the "United States Army Corps of Engineers" for sediment starvation (CRCL 1987, 8-10). In "The Problem" section of the 1998 plan, *Coast 2050: Toward a Sustainable Coastal Louisiana*, neither sediment starvation or canal excavation are explicitly cited as causes of the problem, rather it points to a combination of "natural processes like subsidence and storms" and "human actions at large and small scales" (1). Later in the plan, canal excavation is cited as a cause of erosion: "Navigation channels and canals dredged for oil and gas extraction have dramatically altered the hydrology of the coastal area" (Louisiana Coastal Wetlands 1998, 40). The current master plan, *Louisiana's Comprehensive Master Plan for a Sustainable Coast* (2017), focuses resources on the sediment starvation problem. The Coastal Protection and Restoration Authority (CPRA) was formed in 2005 and is the state agency charged with creating and implementing the master plan (CPRA 2017). The CPRA's plan is expected to cost $50 billion over 50 years. The plans' projects include structural and nonstructural risk reduction projects and restoration projects, which include sediment diversions, barrier island restoration, ridge restoration, and marsh creation. Marsh creation projects involve dredging and depositing sediments; these projects are not expected to last beyond 20 years. The marsh creation projects in this plan are allotted $17.8 billion and is "the nation's largest investment in marsh creation using dredged material" (CPRA 2017, 96). The plan does not propose spending any resources to address the canal excavation component of the problem; however, it cites canal excavation as a cause of the problem on three occasions. Here is one of those instances:

> *Dredging canals for energy exploration and pipelines provided our nation with critical energy supplies, but these activities also took a toll on the landscape, altering wetland hydrology and leading to land loss. Navigation canals provided our nation with critical infrastructure but also allowed salt water to invade deeper into coastal basins (CPRA 2017, ES-6).*

The CPRA acknowledges canals cause erosion but does not propose to fill them. While canal excavation was removed from "The Problem" section of the 1998 plan, it remains in the same plan as a cause of erosion. Sediment starvation, however, persisted as a primary cause of the problem throughout the plans. This assessment demonstrates that Louisiana's coastal management subsystem has a more complex relationship with canal excavation than sediment starvation. Narrative has been found to matter in public policy (Crow and Jones 2018). Narrative could be influencing canal excavation's stated impact within formal public discussion (Colten 2017).

Research Questions

The research questions of the present study are based on Colten (2017). The author examined a series of state and federal environmental coastal management policies implemented in Louisiana over the last several centuries. The author argues policies shifted attention away from flood protection, to wetlands reclamation, to wildlife conservation, and to wetlands restoration. Of paramount interest to this research, he

observes a narrative shift from a House Committee meeting in 1990 to a Senate Committee meeting in 1999, the first authorizing the CWPPRA and the latter re-authorizing it. Between the two meetings, he observes that the coastal erosion narrative shifted from being caused by "levee building for flood protection and navigation and the extensive canal networks excavated for mineral extraction," sediment starvation and canal excavation, to "sediment starvation and flood and storm protection," sediment starvation alone (705). He argues that the narrative shift has enabled the coastal master plan to gain broader support from the public and corporations, including the petroleum and transportation industries. Colten argues that portraying the petroleum industry as a victim, a "threatened enterprise," was a "pivot in the land loss narrative" (706). Prior to approximately 1990, Colten argues the petroleum industry was characterized as "cause[r]s of the damage," or what might be understood more colloquially as a villain. He describes a pivot towards characterizing the petroleum industry as a victim, i.e. a "threatened enterprises" (705). The author produced his observations from historical research. Empirical analyses, however, were not performed. This research measures the narratives and tests Colten's (2017) observations. The narrative shifts identified by Colten (2017) are the foundation of the research questions:

1. *Was there a shift in the treatment of the petroleum industry from villain to victim?*
2. *Was there a shift in the coastal erosion narrative in Louisiana from a problem of canal excavation and sediment starvation in 1990 to a problem of sediment starvation in 1999?*

Broader Context: Narrative and Policy

Thought on narrative's influence on policy can be linked back to the fourth century BC. In his work *Poetics*, Aristotle refers to "narrative" as "plot." He writes: "Plot is the imitation of the action: for by plot I here mean the arrangement of the incidents… most important of all is the structure of the incidents… the incidents and the plot are the end of a tragedy; and the end is the chief thing of all" (Butcher 2008). Aristotle says narrative is an "imitation" of the action, what actually happened. Incidents can be arranged differently and tell different stories based on their arrangements. Twentieth century philosopher Paul Ricoeur expanded upon this notion contained within Aristotle's *Poetics*. Ricoeur created a body of work exploring the connection between life and narrative. Hamilton (2006) connects Ricoeur's work to policy by exploring the power of narrative in management research. Hamilton reiterates the importance of the structure of narrative and adds that ideas are remembered as heuristics, which are information shortcuts used to develop quick and easy interpretations of the world (Crow and Jones 2018). The rearrangement of heuristics can dramatically alter perceptions of a problem. Political strength or power influences narrative, and narrative influences problem definition (Crow and Berggren 2014). Research has shown that dominant political actors influence narrative more than inferior actors, and when an actor is blamed or not blamed the narrative shifts responsibility for the policy problem (Crow and Berggren 2014). Political actors have the

power to arrange the heuristics of a story as seen fit. Bardach (2000) provides an eight-step policy analysis road map with narrative as the final product. For Bardach, Narrative is essential for the success of a policy solution. The rearrangement of heuristic, such as canal excavation or sediment starvation, redefines a policy problem, and political power may determine capacity to influence narrative.

Narrative Policy Framework

Scientific findings alone do not define the coastal erosion problem in Louisiana. The scientific findings about the impact of sediment starvation and canal excavation on coastal erosion (See Causal Narrative Heuristics section.) tell only part of the story. Descriptions of problem causes and where blame resides during policy debates should also be considered (Smith-Walter et al. 2016). Descriptions of problems within a narrative carry values and may be influenced by powerful actors (Wilson 2007, Stone 1989). The NPF is utilized in this study to explore the role of narrative within the policy process.

The NPF allows for the operationalization of the narrative-focused research questions through its ability to empirically and scientifically assess policy narratives in the policy process (McBeth 2014, Smith-Walter et al. 2016). The NPF is appropriate to address the research questions. The NPF assumes that there are generalizable structural elements of narrative. Extant NPF research has regularly been able to identify said elements (e.g., Shanahan et al. 2013, Smith-Walter et al. 2016). Such methods are applicable here as well and are leveraged to code transcripts of a House Committee meeting from 1990 and a Senate Committee meeting from 1999. The narrative elements can be compared between the committee meetings. Variation in the narrative structural elements over time (i.e., between the two transcripts) would show changes in the narrative (Shanahan et al. 2018). Colten (2017) argues canal excavation was removed from the causal narrative and the petroleum industry shifted from villain to victim. In what follows, I broadly summarize the assumptions of the NPF and identify structural elements of narrative within Louisiana's coastal management subsystem.

According to Shanahan et al. (2018), the NPF makes five assumptions that are generally not tested when the framework is applied. The first assumption holds that "meaningful parts of the policy reality are socially constructed" (333). The second assumption holds that the meanings of social constructions vary "to create different policy realities, but this variation is bounded and thus is not random but, rather, has some stability over time" (333). This variation is bounded by ideologies and belief systems. The third assumption holds that "narratives have specific and identified structures" (333). The fourth assumption of the NPF holds that narratives operate at three levels micro, meso, and macro. The microlevel utilizes the individual as the unit of analysis, the meso-level utilizes policy actors or coalitions in a subsystem, and the macrolevel utilizes institutions and culture. This is a meso-level study. The fifth assumption holds that "narrative is understood

to play a central role in human cognition and communication;" People think in terms of stories (Shanahan et al. 2018, 333).

The structural elements of narratives are setting, plot, moral, and characters. These structures exist within Louisiana's coastal management subsystem. The setting is the physical setting where a narrative occurs. It can also refer to the societal sentiments. The setting in this research is the United States Capitol in 1990 and 1999 and all accompanying legal parameters, evidence, economic conditions, and norms. Plot ties the narrative components together. The plot is what happened in the hearings, what was said among committee members and guest speakers, linking characters to each other and the various facets of the setting. Moral is the policy solution (Shanahan et al. 2017). The moral of particular interest here is CWPPRA, which was formed and reauthorized by the identified committees. Characters include heroes, villains, and victims. In this research, the primary real-world characters of interest are the petroleum industry, the United States Army Corps of Engineers (USACE), the state legislature, and federal legislature. These actors appear frequently in the transcripts. Characterization of actors shifts responsibility (Crow and Berggren 2014). For instance, a victim is innocent and is not guilty of causing damage; therefore, they have caused no damage to be rectified, and non-existent damage cannot be part of a problem's solution. Only the damage caused by a villain is acknowledged and can be part of a solution.

Hypotheses

The first research question seeks to identify if there was a shift in the characterization of the petroleum industry. Colten (2017) argues that the villain associated with canal excavation is the petroleum industry, which is responsible for "the extensive canal networks excavated for mineral extraction" (705). The author argues that the public narrative shifted its characterization of the petroleum industry to victim, a "threatened enterprise," between 1990 and 1999 (706).

Hypothesis 1: There was no shift in the treatment of the petroleum industry from villain to victim.

The second research question seeks to identify if there was a shift in the problem definition of the coastal erosion problem in Louisiana from a problem caused by canal excavation and sediment starvation in 1990 to a problem of sediment starvation in 1999. This hypothesis directly tests Colten's (2017) argument that there was a shift in the causal narrative between 1990 and 1999.

Hypothesis 2: There was no shift in the coastal erosion narrative in Louisiana from a problem of canal excavation and sediment starvation in 1990 to a problem of sediment starvation in 1999.

This hypothesis poses that canal excavation was not removed from the causal narrative.

Research Design, Data, and Methods

To investigate the narratives of the congressional hearings identified by Colten (2017), content analyses of the hearings' transcripts were conducted to identify narratives and to explore possible narrative variation. The two transcripts were located on the online database ProQuest Congressional. The first is from the U.S. House of Representatives' Committee on Merchant Marine and Fisheries' meeting on September 12, 1990. This meeting discussed bill 1731, which established CWPPRA. The second transcript is from the U.S. Senate's Committee on Environment and Public Works' meeting on July 22, 1999. This meeting discussed bill 1119, which reauthorized CWPPRA.

Preparing the Documents of Interest

The two congressional transcripts required preparation before the content analyses could begin. Unread remarks submitted for the record were removed from analysis; only words that were spoken were included. During the 1999 meeting, six bills were discussed, so there was much extraneous text. All testimonies/statements not referencing bill 1119 were removed. Testimonies were not divided, meaning if only a small portion of an actor's testimony referenced the bill, the entire testimony was included. Ellipses were added where content was removed. The two transcripts were divided into segments for analysis. This allowed for coding to be conducted in manageable segments and for randomization of the coding process. The 1990 transcript contains nine segments of paragraphs: 1-64 (1A), 65 -116 (1B), 117-202 (1C), 203-272 (1D), 273-329 (1E), 330-388 (1F), 389-450 (1G), 451-529 (1H), and 530-574 (1I). The 1999 transcript contains two segments of paragraphs: 1-72 (2A) and 73-136 (2B). The 1990 transcript contains 570 paragraphs, and the 1999 transcript contains 136 paragraphs.[1]

Content Analyses

The subsequent research methods and code book follow the methods of Smith-Walter et al. (2016). This work was chosen because the authors performed an NPF study and utilized content analyses; furthermore, they describe their methods in a manner that is clear and replicable. They identified magazines and newsletters of interest and disaggregated them into paragraphs for analysis. Breaking the documents into smaller parts generates more reliable results than coding at the document level (White and Marsh 2006). Smith-Walter et al.'s (2016) code book contained the four traditional NPF policy structural narrative elements: hero, villain, victim, and moral of the story. They conducted two coding phases. During the first phase, paragraphs were coded for the presence or absence of the aforementioned narrative elements. During the second phase, the names of heroes, villains, victims, and morals were extracted, and the frequency of their use in each paragraph was recorded.

---

[1] Four paragraphs were removed from the count for the 1990 transcript, due to formatting errors.

In contrast to Smith-Walter et al. (2016), this present study relies on congressional records, rather than documents created for public consumption. I disaggregated two congressional transcripts into paragraphs for analysis. A code book was created and refined through several rounds of revision. Like Smith-Walter (2016), this code book includes the four traditional NPF structural narrative elements. It also contains two additional structural narrative elements of interest: problem definition and cause of erosion (*Appendix 1*). Like Smith-Walter et al. (2016), two coding phases were conducted. A data table layout document helped organize the coding process (*Appendix 2*). Coding was performed by section. In attempt to eliminate bias, the order of the segments was randomized. The segments were coded in the following order: 1A, 2A, 1B, 1C, 2B, 1I, 1F, 1G, 1E, 1H, 1D.

The inclusion of the problem definition and cause of erosion codes is allowed within the NPF. The framework holds that narrative structural elements, such as specific plots, can be included if deemed to be important (Shanahan et al. 2014). Also, codes should be relevant, meaning "they allow for testing the hypotheses" (White and Marsh 2006, 31). The cause of erosion code is important and relevant in this study because it allows for operationalization of data in a manner that directly answers the research questions.

Coding Operationalizations

I coded for three structural elements: villain, victim, and cause of erosion. Focusing on these structural elements is theoretically sound because defining problems defines "assignment[s] of responsibility" (Stone 1989, 283).

A villain is the antagonist and causer of the policy problem (Shanahan et al. 2018). Villain is defined in the code book as "an entity or person that causes the policy problem," coastal erosion in Louisiana. A victim is a harmed character (Shanahan et al. 2018). It is defined in the code book as "an entity or person that is harmed by the coastal erosion problem in Louisiana." Cause of erosion is a sub-code of the problem definition code. Problem definition is defined in the code book as "any statement that describes the coastal erosion problem in Louisiana and factors that exacerbate the coastal erosion problem in Louisiana." Any paragraph that was defined as problem definition and met the definition of cause of erosion was placed exclusively in the cause of erosion code. The cause of erosion code is defined as "any reference to the cause of the coastal erosion problem in Louisiana."

Intercoder Reliability Process

The intercoder reliability process and revision of the code book occurred between February and April 2019. A professional coder at Oregon State University coded paragraphs 65 to 165 of the 1990 transcript. We performed a reconciliation session for these 100 paragraphs. During reconciliation, coders compare how each paragraph was coded, and if differences are found, they attempt to determine the appropriate placement

of paragraphs. [2] After, we discussed revisions to the code book. The revisions are intended to produce "clear definitions" and "easy to-follow instructions" (White and Marsh 2006, 32). After revising the code book, a PhD student at Louisiana State University (LSU) volunteered to code. I sent her the revised code book (*Appendix 1*), example codes, the data layout sheet (*Appendix 2*), and the two transcripts. She coded paragraphs 36-50 of the 1990 transcript as training. Then we had a reconciliation session over the phone. We were able to reconcile all the codes. I then asked her to code section 2A. Upon completion of coding that section, we had another reconciliation session over the phone and again were able to reconcile the codes.

While I calibrated the code book and conducted an intercoder reliability (ICR) process, reliability concerns remain. The most common error for the LSU student was coding paragraphs that did not refer to the problem of interest, coastal erosion in Louisiana. During the reconciliation session, I indicated paragraphs did not refer to the problem of interest, and we rapidly agreed they were placed erroneously; however, The ease of the reconciling the codes is not considered when calculating percent agreement. Intercoder percent agreement was low. To calculate percent agreement, the number of paragraphs coded in the same way was divided by the number of paragraphs coded. Reproducibility, like the ICR described above, is arguably the most important interpretation of reliability (Krippendorff, 2004b).

Processing Data

Upon completion of the content analyses, further processing of the data was conducted. I prepared the data in a manner capable of testing the hypotheses. The first hypothesis states there was no shift in the treatment of the petroleum industry from villain to victim. To reject the first hypothesis, there would need to be an increase in the victimization and a decrease in the villainization of the industry. The second hypothesis states that canal excavation was not removed from the coastal erosion narrative. To reject the second hypothesis there would need to be a significant decrease in canal excavation as a cause of erosion between the time frames.

After paragraphs were placed in each code, they were combined into categories. Data within the villain code were aggregated into five categories: petroleum industry, USACE, federal legislature, state legislature, and other. Victim codes were aggregated into almost identical categories as the villain code, except "state legislature" was shifted to "Louisiana" because actors referred to the state, rather than its legislature, on many occasions. Data within the cause of erosion code were aggregated into three categories: canal excavation, sediment starvation, and other (*Appendices 3.1 and 3.2*). In a few

---

[2] Reconciliation sessions are atypical in some research methods literature (e.g., Krippendorff 2004a, White and Marsh 2006). The sessions have been applied in prior NPF studies and allow for every coding discrepancy to be identified and possibly resolved (Shanahan et al. 2013, Smith-Walter et al. 2016).

instances, paragraphs were placed in two categories. For example, paragraph 83 from the 1999 transcript cites "leveeing" and "dredging" as causes of erosion, so it was placed in the sediment starvation and canal excavation categories. *Table 1* provides examples from the 1990 transcript demonstrating how paragraphs within each code were aggregated into categories.

Each code contains several categories, designed to address the hypotheses. I calculated the proportion of the code occupied by individual categories. Changes in the proportions of these categories would be indicative of changes in the narrative. To calculate the proportions, the number of paragraphs for each category was divided by the total number of paragraphs within each code. To gain a sense of each code's presence throughout the narrative, I also calculated the percentages of each code within the entire transcript by dividing the number of paragraphs within each code by the total number of paragraphs. The proportion test in Stata 14.2 was used to check for the equality of proportions. P-values were calculated for the change in proportions of categories over time. This test was performed to examine if proportions changed significantly between the time frames.

Code	Categories of the Code	Paragraph # (1990)	Evidence from Transcript	Selected Category
Hero	Petroleum Industry, USACE, Federal Legislature, State Legislature, and other	71	"The Corps"	USACE
		132	"Mr. Breaux's bill [1731]"	Federal Legislature
		205	"State agencies"	State Legislature
Villain	Petroleum Industry, USACE, Federal Legislature, State Legislature, and other	169	"Ocean is rising"	Other
		398	"Federal policy"	Federal Legislature
		420	"Industry… enormous damage"	Petroleum Industry
Victim	Petroleum Industry, USACE, Federal Legislature, Louisiana, and other	67	"We are losing so many acres of wetlands in Louisiana"	Louisiana
		173	"Louisiana has taken a risk for the nation"	Louisiana
		333	"They [wetlands] need to be saved"	Other
Moral	Positive and Negative	16	"Give this bill favorable consideration"	Positive
		209	"We must oppose the bill"	Negative
		327	"We believe that the intent of S. 1731 is very positive"	Positive
Cause of Erosion	Canal Excavation, Sediment Starvation, and Other	30	"levee off the Mississippi River"	Sediment Starvation
		172	"Canals dug"	Canal Excavation
		351	"salt water intrusion"	Other

Table 1: This table provides examples demonstrating how paragraphs from the 1990 transcript were sorted into more general categories.

Comparing Pairs of Similar Actors and Interview Process

Further addressing the second research question, I compared the categories of the cause of erosion code for similar actors in each time frame, checking if citations of canal excavation or sediment starvation increased or decreased. Similar actors were people holding comparable positions at the time of each of the hearings. Two actors stated causes of the coastal erosion problem in 1999, Len Bahr and Senator John H. Chafee. Bahr was the Coastal Advisor to the Governor of Louisiana, and his counterpart in 1990 was David Chambers who was the Executive Assistant for Coastal Activities within the governor's

office. Senator Chafee was a U.S. Senator from the State of Rhode Island, and the only U.S. senator involved in the hearing in 1990 was U.S. Senator John Breaux from Louisiana.

To elaborate upon findings of the second research question, I conducted an interview with an actor who participated in the 1990 hearing and remains a member of Louisiana's coastal management subsystem today. The criteria to be included in the interview were participating in one of the hearings, stating a cause of erosion during the hearing, and being a member of the subsystem. Three interviewees were identified: Senator John Breaux, Representative Billy Tauzin, and James Tripp. Mr. Tripp participated in an interview. He has served as counsel for the Environmental Defense Fund since 1973 and general counsel since 1983. He has been involved with Louisiana's coastal erosion problem for many decades. He was a co-founder of the CRCL, the environmental group mentioned in the Causal Narrative Heuristics section. He was a coastal advisor to the governor of Louisiana and has served on the Coastal Master Plan Framework Development Team (Restore *no year*). Senator Breaux and Mr. Tauzin did not respond to requests for interviews.

Findings

First Research Question: Was there a shift in the treatment of the petroleum industry from villain to victim?

Victim Code

Colten (2017) argues that the petroleum industry shifted towards victimization in order for the coastal master plan to gain broader acceptance. The first hypothesis states that there was no shift in the treatment of the petroleum industry from villain to victim. The findings show that the state of Louisiana itself was the most common victim. There was no significant difference in the proportions over time, p = 0.4611. Victimization throughout the whole transcripts is present in similar proportions. The proportions are not significantly different, p = 0.9259. Directly addressing this research question, the petroleum industry is characterized as a victim in 1990 but not in 1999. This shift, 0.1111, in the proportion of petroleum industry category is non-significant, p = 0.6210 (*Table 2*).

Category	1990	1999
Petroleum Industry	11.11% (1 paragraph)	0
USACE	0	0
Federal Legislature	0	0

Louisiana[3]	77.78% (7 paragraphs)	100% (2 paragraphs)
Other	11.11% (1 paragraph (wetlands))	0
% of Total Narrative	1.58%	1.47%

Table 2: **Categories of Victim Code Compared Over Time.** Categories' proportion of the victim code and the code's proportion of the entire transcript

Villain Code

A decrease in the villainization of the petroleum industry would be consistent with Colten's (2017) observation that the industry shifted towards victimization rather than villainization. The decrease in villainization for the whole transcript was non-significant, p = 0.1364. Of particular interest for this research question, a significant decrease in the petroleum industry category did not occur, p = 0.7161 (*Table 3*).

Category	**1990**	**1999**
Petroleum Industry	11.76% (2 paragraphs)	0
USACE	35.29% (6 paragraphs)	0
Federal Legislature	41.18% (7 paragraphs)	0
State Legislature	0	0
Other	11.77% (2 paragraphs)	100% (1 paragraph)
% of Total Transcript	2.98%	0.74%

Table 3: **Categories of Villain Code Compared Over Time.** Categories' proportion of the villain code and the code's proportion of the entire transcript

Second Research Question: Was there a shift in the causal narrative?

Colten (2017) argues that canal excavation disappeared from the coastal erosion causal narrative by 1999. The second hypothesis states that canal excavation was not removed from the causal narrative. The overall proportion of the narrative occupied by the cause of erosion code does not change significantly over time, p = 0.6087. The difference in proportions between time frames for canal excavation and sediment starvation are 0.1136 and 0.2045, respectively. Of particular interest to this research question, these changes in proportions are not significantly different for canal excavation, p = 0.7502, or sediment

---

[3] Note that this is a different code than *Table 3* . "Louisiana" refers to the state government and the state itself.

starvation, p = 0.2769. Canal excavation is not removed from the narrative as Colten (2017) observes (*Table 4*).

Category	1990	1999
Canal Excavation	18.18% (4 paragraphs)	25% (1 paragraph)
Sediment Starvation	45.45% (10 paragraphs)	75% (3 paragraphs)
Other	36.36% (8 paragraphs)	0
% of Total Transcript	3.86%	2.94%

Table 4: **Categories of Cause of Erosion Code Compared Over Time.** Categories' proportion of the cause of erosion code and the code's proportion of the entire transcript

Further Evidence

In addition to the content analyses, a comparison of similar actors in each time frame and an interview were conducted. Findings from these methods bolster the findings for the second research question.

Comparing Pairs of Similar Actors

I compared the categories of the cause of erosion code for similar actors in each time frame. Two pairs of actors were identified. David Chambers and Len Bahr were coastal advisors to the governor of Louisiana and participated in the authorization and reauthorization of CWPPRA in 1990 and 1999, respectively. U.S. Senators John B. Breaux and John H. Chafee were senators and participated in the hearings of interest in 1990 and 1999, respectively. Senator Breaux was the sole senator involved in 1990. There were shifts among actors' characterizations of the cause of the problem. The Chambers-Bahr pair added two occurrences of sediment starvation and maintained one occurrence of canal excavation within the cause of erosion code from 1990 to 1999. This is contrary to what would be expected from Colten's (2017) argument that canal excavation was removed from the narrative. Canal excavation remains a part of the narrative and sediment starvation is added. The Breaux-Chafee pair lost one occurrence of sediment starvation (*Table 5*). The assessment presented here counters Colten's (2017) argument that canal excavation was removed from the narrative, adding further evidence against a causal narrative shift.

Similar Actor Pair	1990: Cause of Erosion	1999: Cause of Erosion
Chambers-Bahr	Canal Excavation	Canal Excavation, Sediment Starvation (2)
Breaux-Chafee	Sediment Starvation (2), Other	Sediment Starvation

Table 5: The number of references to each category for the cause of erosion code for pairs of similar actors from each time frame.

Interview

   In addition to comparison of similar actors, I also conducted an interview. I interviewed Mr. James Tripp on April 30, 2019. I asked Mr. Tripp if he was aware of a shift in Louisiana's coastal erosion narrative during the 1990's, from the time CWPPRA was authorized in 1990 to the time it was reauthorized in 1999. Mr. Tripp was not aware of a shift in the causal narrative.

   I asked Mr. Tripp about the solutions to the coastal erosion problem that he listed in his 1990 testimony:

1. *Stopping or slowing down... the digging of canals*
2. *Plugging canals that no longer are needed (we are talking about 10,000 miles of canals)*
3. *Making beneficial use of all dredge materials, and*
4. *Diverting the sediments of the Mississippi River into the coastal system.*

He said if he were to give this testimony today, sediment starvation would overwhelmingly be first on the list.

   I asked why addressing canal excavation has not been part of the solution of the coastal master plans over the years (See the Causal Narrative Heuristics section). He said there was no serious discussion of filling canals. The focus was introducing sediment into the system. He said there was general skepticism about the efficacy of filling canals. He added that plugging canals might be useful in some instances but may have little impact overall. He said he has tried to be open to the ideas of Dr. Eugene Turner, who has estimated the costs and studied the feasibility of filling canals. Turner has estimated filling all canals would cost $335 million, 0.67% of the master plan's cost, at a rate of $1,200 to $3,400/ha (CPRA 2017, Turner et al. 1994, Turner and McClenachan 2018). Mr. Tripp says he is skeptical of Dr. Turner's numbers and thinks they may be over-optimistic.

   Bolstering my findings for the second research question, Mr. Tripp, who has been deeply involved in Louisiana's coastal management subsystem and was involved in the 1990 hearing, is unaware of a shift in the causal narrative. He does not believe canal excavation was ever seriously considered a cause of the problem.

Discussion and Conclusions

Conclusions

   This research utilizes the NPF to analyze if a narrative shift occurred in Louisiana's coastal management subsystem from a problem of canal excavation and sediment starvation in 1990 to predominately a problem of sediment starvation in 1999. Colten (2017) observes that this shift would be accompanied by an increase in the victimization

and a decrease in the villainization of the petroleum industry, which is the foundation of the first research question. There was no significant change in the proportions of victimization or villainization for the petroleum industry category, $p = 0.6210$ and $p = 0.7161$, respectively. I fail to reject the first hypothesis. Addressing the second research question, the proportions of the cause of erosion code for the canal excavation and sediment starvation categories did not change significantly, $p = 0.7502$ and $p = 0.2769$, respectively. Additionally, a comparison of similar actors in each time frame and an interview with James Tripp fail to demonstrate canal excavation was removed from the narrative. I fail to reject the second hypothesis. These data indicate that the petroleum industry did not shift from villain to victim and canal excavation was not removed from the causal narrative.

Concerning theory, inclusion of the cause of erosion code enabled me to test if specific heuristics, canal excavation and sediment starvation, fluctuated over time. If a plot detail, such as cause of erosion, is of interest, including it as a code allows for the testing of affiliated hypotheses. I argue that similar adjustments to the NPF can be beneficial when dealing with complex policy environments. Concerning Louisiana's coastal management subsystem, Colten (2017) attempted to demonstrate that canal excavation was removed from the narrative in order for the coastal master plan to gain broader support from industry. He argued industry shifted from villain to victim. Empirical analyses have demonstrated such shifts did not occur, and, at least in these two documents, industry has not been victimized over time.

Future Work

There are two identified areas to be explored in this data set that are beyond the scope of this project. First, the problem definition code was included as a code designed to capture all descriptions of the problem of interest, coastal erosion in Louisiana. The cause of erosion code is more accurately described as a sub-code of problem definition; all paragraphs that described the problem and stated a cause of the problem were exclusively placed in the cause of erosion code (*Appendix 1*). The problem definition code could be operationalized, and categories could be produced. Second, hero and moral were coded and described in this work but also were not analyzed. Further analyses of these codes may also prove fruitful.

Final Thoughts

The impetus for this research project was my curiosity about Colten's (2017) argument that canal excavation was removed from the causal narrative. I wanted to know why such a transition occurred. I considered the power of certain political actors; I considered changes that may have occurred between the time frames: campaign contributions, learning, and altered alliances. But before I could grapple with that question, I needed to test Colten's argument. The data show a causal narrative shift did not occur; therefore, the third research question, arguably the most interesting question, was

dismissed. The third research question read: If there was a shift in the coastal erosion causal narrative in Louisiana, why did it occur? Colten (2017) provides explanations for the narrative shifts. First, he describes the petroleum industry's pivot towards victimization as "delicate political maneuvering required to build support" for the coastal master plan (705). Here he is arguing that the state has accommodated the petroleum industry. Second, he argues powerful actors dominate the narrative and observes a "diminishment of the voice of the citizen activists" (706). Dominant political actors have been shown to influence narrative more than inferior actors (Crow and Berggren 2014). The third hypothesis proposed that political power influenced the narrative. It read: A narrative shift occurred because powerful political actors influence Louisiana's coastal management subsystem.

The dismissal of the third research question raises other questions. Such as, do individuals within Louisiana's coastal management subsystem perceive the petroleum industry is villainous, and, if so, what motivations direct such reasoning?

Acknowledgements

References

Arkema, Katie K.; Greg Guannel; Gregory Verutes; Spencer A. Wood; Anne Guerry; Mary Ruckelshaus; Peter Kareiva; Martin Lacayo; Jessica M. Silver (2008). Coastal habitats shield people and property from sea-level rise and storms. Nature Climate Change http://dx.doi.org/10.1038/nclimate1944

Barbier EB, Georgiou IY, Enchelmeyer B, Reed DJ. (2013). The Value of Wetlands in Protecting Southeast Louisiana from Hurricane Storm Surges. PLOS ONE 8(3): e58715. https://doi.org/10.1371/journal.pone.0058715

Bardach, Eugene. (2000). A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving. Chatham House Publishers.

Butcher, S. H. (Translator). (2008). Aristotle. *Poetics*. Project Gutenberg. November 3, 2008. http://www.gutenberg.org/files/1974/1974-h/1974-h.htm (CRCL) Coalition to Restore

(CRCL) Coalition to Restore Coastal Louisiana. (1987). Coastal Louisiana: here today and gone tomorrow?: a citizens' program for saving the Mississippi River Delta region to protect its heritage, economy and environment; draft for public review. https://repository.library.noaa.gov/view/noaa/9219

Colten, Craig E. (2017). Environmental Management in Coastal Louisiana: A Historical Review. Journal of Coastal Research. 33(3). Pp. 699–711.

(CPRA) Coastal Protection and Restoration Authority. (2017). Louisiana's Comprehensive Master Plan for A Sustainable Coast. http://coastal.la.gov/our-plan/2017-coastal-master-plan/

Crow D.A., Berggren J. (2014). Using the Narrative Policy Framework to Understand Stakeholder

Strategy and Effectiveness: A Multi-Case Analysis. In: Jones M.D., Shanahan E.A., McBeth M.K. (eds) *The Science of Stories*. Palgrave Macmillan, New York

Crow, D.A., Jones M. (2018). Narratives as tools for influencing policy change. *Policy & Politics, 46*(2), 217-234.

Day, John W., Erdman, Jori A. (Eds.). (2018). Mississippi Delta Restoration: Pathways to a sustainable future. Springer. https://ebookcentral.proquest.com/lib/osu/reader.action?docID=5161600&query=

Hajer, Maarten A. (1993). Discourse Coalitions and the Institutionalization of Practice: The Case of Acid Rain in Britain. The Argumentative Turn in Policy Analysis and Planning, ed. Frank R. Fischer, and John Forester. Durham, NC: Duke University Press, 43–75.

Hamilton, Eleanor. (2006). Narratives of enterprise as epic tragedy. *Management Decision*. Vol.44(4), pp.536-550.

IPCC. (2013). Summary for Policymakers. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA.

Krippendorff, K. (2004a). Content analysis: An introduction to its methodology (2nd ed.). Thousand Oaks, CA: Sage

Krippendorff, K. (2004b). Reliability in Content Analysis.: Some Common Misconceptions and Recommendations. *Human Communication Research, 30*(3), 411-433.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. Coast 2050: Toward a Sustainable Coastal Louisiana. Louisiana Department of Natural Resources. Baton Rouge, La. 161.

McBeth, Mark K., and Elizabeth A. Shanahan. (2005). The Science of Storytelling: Measuring Policy Beliefs in Greater Yellowstone. Society and Natural Resources. 18: 413–29.

McBeth, Mark K. (2014). "The Portneuf School of Narrative." In The Science of Stories: Applications of the Narrative Policy Framework in Public Policy Analysis, edited by Michael D. Jones, Mark K. McBeth, and Elizabeth A. Shanahan. New York, NY: Palgrave Macmillan. xiii-xix

Reed, D. J., 1989, Patterns of sediment deposition in subsiding coastal salt marshes: The role of winter storms. *Estuaries*, v. 12, p. 222-227.

Restore the Mississippi River Delta. RESTORE The Mississippi River Delta. James T.B. Tripp. http://mississippiriverdelta.org/staff/james-t-b-tripp/

Sabatier, Paul A.; Hank C. Jenkins-Smith. (1993). Policy change and learning: an advocacy coalition approach. Boulder, Colorado: Westview Press.

Sabatier, P. (2007). *Theories of the policy process.* (2nd ed.). Boulder, Colo. Westview Press.

Scaife, W. W., Turner, R. E., and Costanza, R., 1983, Coastal Louisiana recent land loss and canal impacts. *Environmental Management*, v. 7, p. 433-442

Schon, Donald A., and Martin Rein. (1994). Frame Reflection: Toward the Resolution of Intractable Policy Controversies. New York: BasicBooks.

Shanahan, E., Jones, M., McBeth, M., & Lane, R. (2013). An Angel on the Wind: How Heroic Policy Narratives Shape Policy Realities. *Policy Studies Journal, 41*(3), 453-483.

Shanahan, Elizabeth A.; McBeth, Mark K.; Jones, M. (2014). Denouement? *The science of stories : Applications of the narrative policy framework in public policy analysis.* New York, NY: Palgrave Macmillan.

Shanahan, Jones, McBeth, and Radaelli. (2017). The Narrative Policy Framework. *Theories of the Policy Process.* Eds. Weible and Sabatier. Chapter 5. pp. 173-214.

Shanahan, Elizabeth A.; Jones, Michael D.; Mcbeth, Mark K. (2018). How to conduct a Narrative Policy Framework study. The Social Science Journal. Vol.55(3). pp.332-345.

Smith, C., & Voth, B. (2002). The Role of Humor in Political Argument: How "Strategery" and

"Lockboxes" Changed a Political Campaign. *Argumentation and Advocacy, 39*(2), 110-129.

Smith-Walter, Aaron; Peterson, Holly L.; Jones, Michael D.; Marshall, Ashley Nicole Reynolds. (2016). Gun Stories: How Evidence Shapes Firearm Policy in the United States. Politics & Policy. Volume 44, No. 6 (2016): 1053-1088.

Stone, D. (1989). Causal Stories and the Formation of Policy Agendas. *Political Science Quarterly, 104*(2), 281.

Turner, R. E., McKee, K. L., Sikora, W. B., Sikora, J. P., Mendelssohn, I. A., Swenson, E., Neill, C., Leibowitz, S. G. and Pedrazini, F., (1984). The impact and mitigation of man-made canals in coastal Louisiana. *Water Science & Technology, 16*(3/4), 497-504.

Turner RE, Lee JM, Neill C. (1994). Backfilling canals to restore wetlands: empirical results in coastal Louisiana. *Wetlands Ecological Management*. 3:63–78.

Turner RE, McClenachan G. (2018). Reversing wetland death from 35,000 cuts: Opportunities to restore Louisiana's dredged canals. PLoS ONE. 13(12): e0207717.

(USGS) United States Geologic Survey. Louisiana Coastal Wetlands: A Resource At Risk. *USGS Fact Sheet*. https://pubs.usgs.gov/fs/la-wetlands/

U.S. House of Representatives. (1990). Coastal Wetlands Management and Restoration. Sep. 12, 1990. Subcommittee on Oceanography and the Great Lakes, Committee on Merchant Marine and Fisheries. Serial No. 101-117.

U.S. Senate. (1999). Estuary and Coastal Habitat Conservation. Jul. 22, 1999. Committee on Environment and Public Works. S. Hrg. 106-284.

Walker, H. J., Coleman, J. M., Roberts, H. H., and Tye,, R. S., (1987). Wetland loss in Louisiana. *Physical Geography*. 69A (1): 189-200

Weible and Sabatier. (2017). *Theories of the Policy Process*. Chapter 5. pp. 173-214. Shanahan, Jones, McBeth, and Radaelli. The Narrative Policy Framework.

Wernick, Adam. (2014). Louisiana's coastline is disappearing at the rate of a football field an hour. Living on Earth. Public Radio International. https://www.pri.org/stories/2014-09-23/louisianas-coastline-disappearing-rate-football-field-hour

White, Marilyn D. and Marsh, Emily E. (2006). Content Analysis: A Flexible Methodology. Library Trends. 55 (1): 22-45. https://www.researchgate.net/publication/32957977_Content_Analysis_A_Flexible_Methodology

Wilson, H. (2007). *Guns, gun control, and elections: The politics and policy of firearms*. Lanham, Md. Rowman & Littlefield.

Appendices

Appendix 1: Code Book

General Guidelines

i.   Coding has been done in two phases

   a.   First, one reads the document and places paragraphs in the appropriate code (This phase fills out the "paragraph number" column of the "data table layout" document.) A paragraph can be placed in multiple codes. If a paragraph does not match any code, place it in the "no code" category.

   b.   During the second phase, one inserts data in the remaining columns of the "data table layout" document.

ii. The paragraph is the unit that is coded. It stands alone. Information from surrounding text does not influence coding of the individual paragraph.

    a. Pronouns, however, may infer actor. Place the name of the inferred actor in parentheses. (Ex: a paragraph may refer to levees as "they." Place "they" in the data table and put "levees" in parentheses.)

iii. If one cannot point to the text, it does not exist. Implications are not data.

Content Codes (Note: definitions for "villain" and "victim" are from Shanahan et al. 2018.)

1. A "**villain**" is an entity or person that causes the policy problem, *coastal erosion in Louisiana*; the "villain" carries the blame. Only code the sub-codes for "villain" (This is indicated by the "X's" on the "data table layout" document.) "Villain" has two sub-codes: "intentional" and "unintentional." "Intentional" villains knowingly cause the policy problem. "Unintentional" villains unknowingly cause the policy problem.

2. A "**victim**" is an entity or person that is harmed by the *coastal erosion problem in Louisiana*. The paragraph should contain harm words, such as "loss," "harm," "disaster." Pleading words such as "help" may also be an indicator.

3. "**Problem definition**" is any statement that describes the *coastal erosion problem in Louisiana* and factors that exacerbate the coastal erosion problem in Louisiana. These are descriptors of the coastal erosion problem in Louisiana.

- "**Cause of erosion**" is a sub-code of "problem definition" and is any reference to the *cause* of the coastal erosion problem in Louisiana. The key word here is "cause." These are causes of the coastal erosion problem in Louisiana. Do not place paragraphs in both this code and "problem definition."

Appendix 2: Data Table Layout Document

Code: Categories of Evidence	Paragraph Number	Speaker	Note		Emerging T
Humor					
Ipso Dictum					
Legal					
Public Opinion					
Science					
Statistics					

Code: Content Codes	Paragraph Number	Speaker	Evidence	Note	
			Fixer (Or Ally)		
Hero/Ally					
			Normative Statement		
Moral/Policy Solution					
			Details		
Problem Definition					
			Stated Cause		
Sub-Code: Cause of Erosion					
			Harmed Entity		
Victim					
			Problem Causer		
Villain	X	X	X		
Sub-Code: Intentional					
Sub-Code: Unintentional					

No Code	Paragraph Number	Speaker	Note		

Appendix 3.1: Categories for 1990

Name	Villain Categories	Paragraph #	Victim Categories	Paragraph #	Cause Categories	Paragraph #
Boggs, Hon. Lindy	C	69	LA	67	SS	69
Breaux, Hon. John	C	30	LA (2)	23, 41	SS(2), Oth	29, 30, 37
Chambers, David	C (2)	346, 351	Wetlands	333	CE	351
Goss, Porter J.	C, FL(2)	119, 519, 520	0		0	
Hertel, Hon. Dennis M.	0		0		0	
Kemp, Dr. G. Paul	0		0		0	
Knudson, Knute	0		0		CE, SS(2)	261, 262, 263
Rees, Morgan R.	0		0		0	
Shumway, Norman D.	0		0		0	
Tauzin, Hon. Billy	C, FL (3), Oth	135, 136, 139, 155, 169	LA (4), PI	138, 160, 172, 173, 175	CE, Oth(5), SS(4)	135, 153, 154, 155, 157, 158, 169,170, 172
Taylor, Gene	0		0		0	
Tippie, Virginia	0		0		0	
Tripp, James T.B.	FL(2), PI (2), Oth	396, 398, 418, 420	0		CE, SS, Oth(2)	396, 418, 421
TOTALS	C(6), FL(7), PI(2), Oth(2)		LA(7), PI, Wetlands		CE(4), SS(10), Oth(8)	

KEY: C- USACE, CE- canal excavation, FL- federal legislature, LA- Louisiana, N-negative, Oth- other, P-Positive, PI- petroleum industry, SL- state legislature, SS- sediment starvation

Appendix 3.2: Categories for 1999

Name	Villain Categories	Paragraph #	Victim Categories	Paragraph #	Cause Categories	Paragraph #
Bahr, Len	Oth	112	LA, Oth	115, 125	CE, SS(2)	83, 112
Bilbray, Hon. Brian	0		0		0	
Breaux, Hon, John B.	0		0		0	
Chafee, Hon. John H.	0		0		SS	109
Davis, Hon. Michael Davis	0		0		0	
Fox, Hon, J. Charles	0		0		0	
Voinovich, Hon. George V.	0		0		0	
TOTALS	Oth		LA, LAgov		CE, SS(3)	

KEY: C- USACE, CE- canal excavation, FL- federal legislature, LA- Louisiana, Oth- other, P- Positive, SL- state legislature, SS- sediment starvation