AN EXAMINATION OF POLICY NARRATIVES IN AGRICULTURAL BIOTECHNOLOGY POLICY IN INDIA

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The Narrative Policy Framework (NPF) focuses attention on the importance of narratives in policy debates and on their empirical analysis. While NPF has become an increasingly important and accepted approach to studying the policy process, the vast majority of research applies it to the policy contexts of the United States, which limits tests of its potential generalizability and responsiveness to cultural specificity. To broaden the contextual scope of the approach, this study applies the NPF to a non-U.S. policy context through examining the controversial issue of agricultural biotechnology policy in India. It analyzes media coverage from leading English newspapers in India to explore the strategic use of narrative variables in policy narratives. In doing so, it highlights the important role of incomplete policy narratives in policy debates and outcomes. Policy narratives do not always contain a full suite of narrative components, and yet they may be among the most common messages received by the public and political actors. Through an analysis of incomplete narratives, this study attempts to further refine the definition of policy narratives and consider which narratives are important from empirical and audience reception perspectives. Results show that incomplete narratives occur more frequently and contain relevant narrative variables.

Variables, Media Coverage, Political Communications, Genetically Modified Food Crops, GMOs, Bt Eggplant, Bt Brinjal.

Una examinación de las narrativas de política en la política de biotecnología agrícola en India

El Marco de Políticas Narrativas (NPF) enfoca su atención en la importancia de las narrativas en los debates políticos y en su análisis empírico. Este estudio aplica el NPF a un contexto político fuera de EE. UU. y examina el controvertido tema de la biotecnología agrícola en India. Analiza el cubrimiento de medios de periódicos de habla inglesa en India para explorar el uso estratégico de variables narrativas dentro de las narrativas políticas. Evalúa el papel que juegan las narrativas políticas incompletas dentro de los debates políticos y sus resultados. Las narrativas políticas no siempre contienen una gama entera de componentes narrativos y sin embargo podrían estar entre los mensajes más comunes que recibe el público y los actores políticos. A través de un análisis de narrativas incompletas, este estudio intenta refinar más la definición de las narrativas políticas y considerar qué narrativas son importantes para las perspectivas de recepción empíricas y de la audiencia. Los resultados muestran que las narrativas incompletas ocurren más frecuentemente y contienen variables narrativas relevantes.

Palabras clave: narrativas políticas, NPF, política de biotecnología agrícola, India, Asia, variables narrativas, narrativas políticas incompletas, debates políticos.

检验印度农业生物技术政策中出现的政策叙述

叙述性政策框架 (NPF) 聚焦于政策辩论中叙述的重要性以及相关的实证分析。本文将NPF应用于非美国政策的背景中，并考察了与印度农业生物技术政策相关的争议性问题。本文分析了印度主流英文报纸的媒体报道，以探索政策叙述中对叙述变量的策略性使用。本文评估了不完整政策叙述在政策辩论和政策结果中的作用。政策叙述并不总是包含一整套的叙述内容，但它们可能是公众和政治行为者接收的最常见的信息之一。通过对不完整叙述的分析，本文试图进一步完善政策叙述的定义，并从实证和观众接受的角度来考量哪些叙述具有重要性。结果表明，不完整叙述出现地更为频繁，并且包含了相关的叙述变量。

关键词：政策叙述，NPF，农业生物技术政策，印度，亚洲，叙述变量，不完整政策叙述，政策辩论

Public policy scholarship attempts to understand how knowledge and information is used in the policy process. This knowledge and information is often communicated through policy narratives that are specifically constructed about policy issues and tell stories that contain narrative elements and strategies (McBeth, Jones, and Shanahan 2014). These policy narratives are the focus of the Narrative Policy Framework (NPF), which provides theoretical and empirical tools for analyzing the role of narratives in the policy process (Jones and McBeth 2010). In particular, NPF scholarship focuses on variations in content of narratives through a systematic study of several narrative elements as well as narrative strategies and belief systems.

NPF's central questions revolve around the empirical role of policy narratives in the public policy process, and whether policy narratives influence policy outcomes (Shanahan *et al.* 2013). The present study focuses on the former question as it explores the role of narratives. It expands scholarship on the NPF by exploring connections between narrative variables and policy outcomes in a non-U.S. policy context. It examines the controversial issue of agricultural biotechnology policy in India. With a focus on how narrative variables are used in policy narratives, it analyzes media coverage from two leading English newspapers in India and provides an in-depth discussion of how narrative variables appear in policy narratives generated by the media. Furthermore, it examines the strategic use of narrative variables in the media across losing, winning, and incomplete narratives with specific attention to certain NPF variables. Policy narratives do not always contain a full suite of narrative components, and yet these incomplete narratives may be among the most common messages received by the public and political actors. Through an analysis of incomplete narratives, this study attempts to further refine the definition of policy narratives and consider which narratives are important, both from empirical and audience reception perspectives.

The study of policy narratives using NPF has expanded beyond the United States to countries such as Switzerland, the United Kingdom, India, Thailand, and Korea (Gupta, Ripberger, and Collins 2014; Lawton and Rudd 2014; Nakyam 2014; Park 2014; Schlaufer 2016; Weible *et al.* 2016). NPF studies in the Indian context have investigated strategic

use of policy narratives by coalitions surrounding the Jaitapur Nuclear Power Plant and developed a network-based approach for coding characters in the analysis of air and climate issues in Delhi, respectively (Gupta, Ripberger, and Collins 2014; Weible *et al.* 2016). This study attempts to contribute to, and expand further, this growing body of comparative NPF scholarship as an important next step in expanding our understanding of policy narratives, which intuitively are embedded with significant amounts of culturally specific content. Because of this, studies beyond U.S. policy processes are vital to conduct.

This article briefly presents literature on NPF and its contribution to public policy scholarship. It then provides a discussion on how media content has been studied under NPF and its role in the policy process. I subsequently make a case for the inclusion of incomplete policy narratives before defining winning and losing narratives. Research methods are then discussed followed by this study's findings and discussion. I conclude by extrapolating some of the key implications of the study, directions for future research, and a note on the limitations facing this and similar studies.

NPF and Public Policy Scholarship

NPF considers narratives as central to the policy process and as extremely important to shape the conduct and outcomes of all aspects of government since they may potentially provide information on dynamics, beliefs, and actor behavior within the policy process (Jones 2013; Jones and Jenkins-Smith 2009; Jones and McBeth 2010; Shanahan *et al.* 2013; Shanahan, Jones, and McBeth 2011; Shanahan, McBeth, and Hathaway 2011; Weible and Schlager 2014). Narratives are critical to the meaning-making process since they can be used to persuade actors toward a particular policy preference or to influence decision making (Jones, Shanahan, and McBeth 2014). Analysis of policy narratives enables scholars to gain insight into the dynamics of public policy issues, the opinions of stakeholders who advocate within policy subsystems, and possible directions with regard to policy decisions (Weible *et al.* 2016).

NPF focuses on three levels of analysis: micro-level studies focus on the individual as a unit of analysis, meso-level studies focus on the policy subsystem as a unit of analysis, and macro-level studies focus on the institutional or societal scale (Shanahan, Jones, and McBeth 2011). Meso-level NPF studies have often relied on public consumption documents distributed by actors from advocacy organizations. These documents are generated and disseminated with policy-relevant intent to

persuade actors to enact change. However, narratives in media may not always be disseminated with policy-relevant intent and may appear to be incomplete to the NPF researcher. However, they are an important source of information for the public and, hence, need to be studied as policy narratives in the policy process (Crow *et al.* 2016). A more detailed explanation on the role of media in the policy process and the need to consider incomplete policy narratives is provided in the following section. In addition to the narrative core elements (setting, characters, plot, and solution), this study includes two more components: use of scientific evidence and discussion of risks and benefits.

Previous NPF studies have examined the use of evidence in narratives as an indication of diverging policy beliefs among coalitions (McBeth *et al.* 2010; Shanahan *et al.* 2013; Shanahan *et al.* 2008). Use of evidence has also been studied as a narrative strategy in the context of scientific uncertainty and disagreement (Gupta, Ripberger, and Collins 2014; McBeth *et al.* 2007) while Schlaufer (2016) has linked scientific evidence to all narrative elements in an attempt to systematize how evidence is used in narratives. Thus, it is important to study the use of scientific evidence in a narrative. On the other hand, risk perceptions have not been as widely studied in the NPF. These may be essential to understanding how policy problems are defined particularly in scientific issues that are fraught with risk. In an NPF study focused on wildfires in Colorado, Crow and others (2016) studied risk perceptions in narratives of natural hazards as these may influence policy decisions that aim to reduce risk from future or current hazards. Both of these components are relevant to include in a discussion on agricultural biotechnology policy since the science behind agricultural biotechnology and its risks and benefits have been intensely debated, and these components help provide a thematic framing that connects a single incident to larger societal trends, problems, or causes (Crow *et al.* 2016; Iyengar 1990).

NPF and Policy Narratives in the Media

Actors involved in the policy process use strategically constructed stories to communicate with, persuade, or influence the public. "[These stories] come in many forms and from many stakeholder sources—elected officials give speeches, interest groups write newsletters and press releases, concerned citizens write letters to the editor, and the media writes editorials and news stories" (Shanahan, McBeth, and Hathaway 2011, 374). All of these stories contain varied narrative components that are connected to actor beliefs and policy preferences.

However, these stories become policy narratives only "when the author or group strategically constructs the story to try to win the desired policy outcome" (375). This has also been referred to as a "policy stance" present in the policy narrative. Policy narratives come in many forms and from different sources. Those that originate from interest groups or elected officials are more likely than those from media to include a policy stance as these stakeholders have vested interests in promoting their policy preference. Equating narratives constructed by stakeholders and by media can lead to a flawed analysis, particularly because media narratives may not always promote a policy preference but may still contain requisite narrative components.

Examining definitions of policy narratives as they have appeared in the NPF literature over time may help clarify this issue further. One of the earliest definitions of a policy narrative appears in Jones and McBeth (2010, 340), which outlines its minimum qualities: (1) Setting or a context, (2) Plot, (3) Characters, and (4) Moral of the story. A policy stance or preference on the issue may have been assumed but is not mentioned as a requirement. More recent NPF treatments not only state that a policy narrative must have "at least one character and some reference to a public policy preference or stance" (McBeth, Jones, and Shanahan 2014, 229) but also assert that, "a policy narrative will have a minimum of one character and a referent to the public policy of interest (e.g., problem, solution, evidence for, etc.)" (Jones, Shanahan, and McBeth 2014, 7). The examples in the parentheses do not refer to a policy stance as suggested by the first definition. It further states that, "it is possible that a communication would be considered a policy narrative without a solution" (Jones, Shanahan, and McBeth 2014, 7). A policy stance usually manifests as a solution, but that is not included in this definition. Thus, the requirement of the inclusion of a policy stance varies based on these definitions.

Recent NPF research delves into the role of media in the policy process and acknowledges that "Media, of course, are not the same, and as such they have different influences on the audiences they reach" (Crow and Lawlor 2016, 479). Arnold (1990) distinguished between two policy spheres where the work of policy making occurs: the visible and the invisible realm. Media contribute to the formation of public opinion in the visible realm, and this may indirectly put constraints on policy makers depending on public opinion and media coverage. On the other hand, in the invisible realm, the media do not pay attention and neither does the public, which remains ignorant. Policy makers are able to make choices unconstrained by public opinion or public scrutiny within the invisible realm.

In the visible realm, media's interaction with the policy process occurs in two important ways: through the selection of issues that are to be highlighted for the public and policy makers (i.e., the topical focus of narratives) and through the way meaning is attached to the issue to make it understandable (i.e., the strategic construction of narratives). Media may not always strategically construct the narratives and may simply highlight issues for the public and policy makers. Thus, it may not only provide information to the public in an unbiased manner but also play an active role in changing opinions and influencing agendas through a strategic framing and construction of policy narratives (Crow and Lawlor 2016; McLeod, Kosicki, and McLeod 2002). Media play a role in the policy process "by constructing (or co-constructing with policy advocates) the images used to communicate about and understand policy issues . . . framing issues in certain ways . . . and disseminating the narratives communities use to discuss problems, policies, and solutions . . ." (Crow *et al.* 2016, 5–6).

NPF research demonstrates that media play a role in the production of policy narratives, but it remains unclear "whether media actors are considered active, voluntary members of coalitions, or whether they are incidental members of such coalitions through their professional roles" (Crow and Lawlor 2016, 474). In case of print media in particular, "the audience is less likely to have a predetermined positive or negative stance toward reading a news article as opposed to an interest group's or political official's narrative (Entman 1995a). Whereas readers are prepared for political officials or interest groups to put forth policy outcomes, the mainstream media is presumed by general audiences to be more neutral in their reporting" (Shanahan, McBeth, and Hathaway 2011, 376). Thus, not all media narratives may constitute policy narratives given the neutrality of the narrative. Media accounts can often outline policy issues with none or only some of the narrative elements present in them. Yet "readers are most likely to be open to ingesting [policy narratives in media accounts] for information" (393). Shanahan and others (2008) tested whether the media serve as conduits or contributors. Their results demonstrate "a more complex policy landscape, perhaps necessitating a move away from a dichotomous conceptualization" about contributor or conduit to "matters of degree" wherein media can be contributors in some instances and conduits in others (Shanahan *et al.* 2008, 130).

In addition to being conduits or contributors, media accounts may contain information on policy issues from multiple perspectives. Although they may not be "policy narratives" in the sense that they do not advocate for a specific policy preference, they may yet contain the required narrative elements (policy referent and character) (Jones, Shanahan, and

McBeth 2014, 7). Policy narratives may at times try to provide holistic information on the policy issue rather than shape public opinion toward a specific policy goal. Although these narratives may contain the policy referent and character components of a narrative, these may tend to be excluded from an NPF analysis given that they do not outline a specific stance on the issue. Since media can act in multiple roles of conduits and contributors—as well as disseminators of multiple sides of the issue—this study undertakes a classification of narratives as not only losing and winning policy narratives akin to much NPF scholarship, *but also 'incomplete' policy narratives.* The 'incomplete' policy narrative is one that does not advocate for a specific policy preference and contains multiple views from both sides with regard to the policy issue. All of these narratives contain the required two narrative elements of policy referent and character.

Last, analyzing a policy stance or judgment often occurs when the study is directly examining winning or losing coalitions. For example, Weible and others (2016) conducted an NPF analysis on air and climate issues in Delhi, India but did not focus on 'losing' and 'winning' coalitions per se, thereby not needing to code for a policy stance. The suggestion here is that the presence of a policy stance—though arguably important in NPF research—may not always be central and included in a policy narrative, depending on the focus of the NPF study. Thus, not every NPF study may code for a policy stance. Following this lead, the present research, therefore, includes 'incomplete' policy narratives: that is, policy narratives that do not advocate for a particular policy preference but contain the requisite narrative elements of referent and character to qualify for a policy narrative.

NPF research has primarily analyzed winning and losing narratives in the context of narrative strategies used by winning and losing coalitions (Schattschneider 1960) and the corollary *perceptions* of those coalitions regarding their status as winners or losers. Sometimes, clear winners and losers emerge in a policy debate (Crow and Berggren 2014; Shanahan *et al.* 2013), whereas in intractable policy issues, they may not emerge (McBeth *et al.* 2007). Therefore, definitions of winning and losing narratives need to align with this aspect. For the present study, a clear winner and loser emerged, enabling the classification of narratives not in favor of the policy as winning narratives and those in favor as losing narratives.

Broadening the NPF: Applications in Non-U.S. and Other Policy Contexts

A majority of NPF studies have focused on policy contexts within the United States, but there is a dearth of NPF studies in contexts outside

that country. A significant test for the generalizability of a particular framework is its potential application to a multiplicity of policy subsystems in a variety of national contexts. This process has recently begun with some of the first attempts at systematically applying the NPF methodology outside the United States (see, for example, Gupta, Ripberger, and Collins 2014; Lawton and Rudd 2014; Nakyam 2014; Park 2014; Schlaufer 2016; Weible *et al.* 2016). Such applications might well reveal some challenges that NPF research within the United States has not yet encountered. Meso-level NPF research has relied on content analysis of public consumption documents that have been relatively accessible in the United States. However, both in Gupta and others' (2014) and in Weible and others' (2016) study (n = 55 and 75, respectively), they were able to access relatively few public consumption documents, likely because coalitions in countries like India tend to distribute fewer such documents. Also, there are discrepancies in terms of how coalitions use the Internet to distribute these documents, which complicates their accessibility. In contexts where large-n studies cannot be conducted, other approaches may need to be developed for meso-level analysis. This is one area that remains underdeveloped in narrative scholarship. Further applications of NPF in non-U.S. contexts would help deal with possible challenges that arise. Given this, the present study involving a case study of adoption of genetically modified (GM) crops in India makes a useful step in expanding the scope of NPF.

Agricultural Biotechnology Policy—The Case of Bt Eggplant in India

Agricultural biotechnology is a broad term defined by the U.S. Department of Agriculture (USDA) as "a range of tools, including traditional breeding techniques, that alter living organisms, or parts of organisms, to make or modify products; improve plants or animals; or develop microorganisms for specific agricultural uses. Modern biotechnology today includes the tools of genetic engineering" (USDA n.d.). This study focuses on the narrow aspect of genetic engineering but uses the broad terms of 'agricultural biotechnology' and 'genetically modified' crops. The term 'genetically modified' crops is more commonly used among stakeholders and in the media in India based on media searches. Agricultural biotechnology has been a matter of contention globally since it was first adopted in the United States in 1996. Two decades later, the issue continues to cause conflict among scientists, farmers, industry, consumers, and activists, not only in the United States but also globally. To date, there have been no definite

findings regarding the variation in reception of GM crops among nations and stakeholders (Herring, 2006, 2015). This study uses NPF to understand the varied narratives and examines their role in the policy process.

India is a crucial case study, given its trajectory—a long history of promoting agricultural biotechnology since the mid-1980s, the adoption of a GM crop (Bt cotton) in 2002, and a ban in 2010 on the first GM food crop (Bt eggplant or Bt brinjal, as it is commonly known in India). In February 2016, the Indian government was expected to make a decision on allowing GM mustard. However, that decision has been deferred (Damodaran and Sinha 2016; Mohan 2016). In mid-2000, Bt eggplant was potentially the first GM food crop to be considered seriously by the regulatory system (Ramaswami and Pray 2007). There was intense public debate nationwide regarding its commercialization. It is the first locally developed GM food crop in India created by Maharashtra Hybrid Seeds Company (Mahyco), a joint venture with Monsanto, the St. Louis–based seed giant (Center for Environment and Education 2010; Jayaraman 2010). After nine years of rigorous testing by a complex array of state science institutions that were coordinated by the Genetic Engineering Approval Committee (GEAC)—including seven government departments, committees, and institutes—Bt eggplant's hybrids and varieties were approved in October 2009 (Bagla and Stone 2013; Herring 2012, 2015). However, in 2010, the Minister for Environment and Forests at the time rejected GEAC's decision and placed an indefinite moratorium owing to strong public opposition (Bandopadhyay, Sinha, and Choudhary 2012; Herring 2012, 2015). He stated that the moratorium would remain until studies prove "the safety of the product from the point of view of its long-term impact on human health and environment" (Bagla 2010, 767). Using the commercialization process of Bt eggplant as the policy issue under consideration, this study examines variation in policy narrative elements across winning, losing, and incomplete narratives.

Research Method

Data for the study were collected from two of the leading English newspapers in India: *Times of India* and *Hindustan Times*.[1] Policy documents were first gathered to provide contextual policy information such as a timeline, actors involved, and policy issue information. To keep the

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[1]As per the Indian Readership Survey (2014), *Times of India* and *Hindustan Times* are the top two English daily newspapers in India.

Table 1.
**Search Terms, Newspapers, and Article Counts.**

Newspaper	Audience	Circulation	Search terms	Article counts
Times of India	National	7,590,000 daily	Bt brinjal, Bt eggplant, genetically modified, agricultural biotechnology	87
Hindustan Times	National	4,515,000 daily	Bt brinjal, Bt eggplant, genetically modified, agricultural biotechnology	140
Total		**12,105,000**		**227**

analysis more focused and to measure content of policy narratives over a significant period of time, the sampling timeframe was chosen as three years before and after the original policy decision to ban Bt eggplant in India: February 9, 2007 to February 9, 2013. Online archives of the New Delhi edition of *Times of India* and *Hindustan Times* were accessed through the *ProQuest News and Newspapers* database. The search terms, daily circulation, and article counts are included in Table 1.

In total, 1,212 articles (397 from *Times of India* and 815 from *Hindustan Times*) were downloaded using search terms: "Bt brinjal" or "Bt eggplant" or "genetically modified" or "agricultural biotechnology." Articles that were duplicates, did not focus on Bt eggplant, and those not written in narrative form (such as lists or bulletins) were removed, which led to a final count of 227 articles (87 from *Times of India* and 140 from *Hindustan Times*) coded for this study.

Because this study focuses on how the use of narrative elements varied across the three types of narratives, it is important to consider their frequency across the six-year timeframe. Figure 1 shows the coverage of losing, winning, and incomplete narratives over the six-year period. Incomplete narratives had the highest frequency (48.21 percent, *n* = 81), followed by winning narratives (38.69 percent, *n* = 65), and losing narratives were the least (13.10 percent, *n* = 22). Media provided more incomplete narratives at the time of the policy decision, and also, actors supporting a ban on Bt eggplant were more active and prevalent in the visible realm (where media contribute to formation of public opinion). The higher frequency of incomplete narratives, compared with winning and losing narratives, makes it more salient to include them in the analysis.

Figure 1.
Coverage of Types of Narratives.
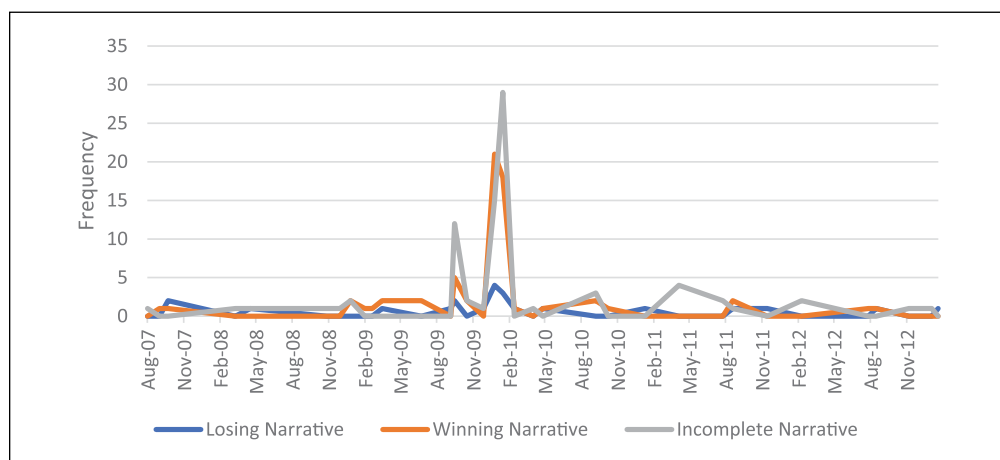
The codebook for analyzing the media articles measured the article's topical focus, presence/definition of policy problems and solutions, use of evidence, presence/type of characters, opinion on agricultural biotechnology, episodic/thematic focus, and types of risks/benefits. Two coders were trained to code the articles to attain a mutual understanding of the codebook. A standard set of instructions was established to foster intra- and intercoder reliability (Krippendorf 2004). Following the training, intercoder reliability was tested on 10 percent of data randomly chosen from the population. Intercoder reliability (Freelon 2010) was established wherein agreement ranged from 69 to 100 percent (π = .60–1.0).[2] These intercoder measures were achieved with the following process: (1) coding of a random sample of articles, (2) discussion by the coders and codebook revisions, and (3) recoding of a new set of randomly chosen 10 percent articles. The coded data were analyzed using Microsoft Excel and R Studio statistical software package as appropriate. The categories for problem definitions and types of characters were analyzed qualitatively. Adhering to the 'policy narrative' definition (McBeth, Jones, and Shanahan 2014), media articles without a policy referent (the main focus of the article was not on the Bt eggplant policy issue) and a character were removed from the final dataset leading to 171 articles (*Times of India* = 51 and *Hindustan Times* = 120).

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[2]Intercoder reliability scores are provided in Table 3. For Scott's π results for coded data, a general guideline is to use data with a value of .80 and above, whereas exploratory and tentative conclusions can be drawn from moderately reliable data with Scott's π ranging from .60 to .80 (Krippendorf 2004).

Table 2.
Categories of Problem Definitions in *Times of India* and *Hindustan Times*.

Problem definition category	Percentage (*n*)
1: Data access issues	4.32 (6)
2: **Risks/health/environmental impacts**	**28.78 (40)**
3: Socioeconomic impacts	16.55 (23)
4: Regulatory authority issues	11.51 (16)
5: Lack of adequate testing	20.14 (28)
6: Propaganda	7.91 (11)
7: Other	10.79 (15)
Total	**100 (139)**
Policy problem present	**81.29 (139)**
Policy problem absent	18.71 (32)
Total	**100 (171)**

Note. The bold faced values refer to variables that have the highest frequency.

Research Findings and Discussion

This study focused on the following narrative variables: policy problems and solutions, use of scientific evidence, discussion of risk and benefit information, and presence of characters. Each narrative variable is discussed individually in context of whether the presence of a problem definition is related to other narrative variables in the media dataset. Narrative variables are simultaneously examined across losing, winning, and incomplete narratives in the media dataset. This is followed by a broader discussion on the value of media articles as policy narratives with a focus on their narrativity score and the significance of a comparative analysis between two national level media.

Policy problems play an important role in a policy narrative because identifying a policy issue helps establish the plot. Policy solutions are also often provided in relation to a pre-defined problem enabling actors to narrow down the scope of a solution and providing agency to actors to solve the problem. Problem definitions usually include a discussion on the need for policy change or transformation (Kingdon 2003; Shanahan *et al.* 2013; Stone 2011). Based on the qualitative descriptions of problem definitions in the overall media dataset, seven categories were developed (see Table 2). Risks, health, and environmental impacts arising from the adoption of Bt eggplant were discussed most frequently (28.78 percent, *n* = 40), followed by the problem of lack of adequate

testing (20.14 percent, *n* = 28) and socioeconomic impacts (16.55 percent, *n* = 23). This finding is supported in the literature because risks from agricultural biotechnology have been a point of contention among stakeholders and have contributed to a gridlock in negotiations. The problem definition related to lack of adequate testing facilities has also been fiercely debated (see, for example, Gupta 2011).

A majority of policy narratives included a problem definition (81.29 percent, *n* = 139), and the categories of definitions support the direction in which policy change is being suggested. For example, the frequent discussion of risk, health, and environmental impacts supports the minister's proclamation that the moratorium would remain until studies prove "the safety of the product from the point of view of its long-term impact on human health and environment" (Bagla 2010, 767). This is supported through Figure 2, which shows that at the time of the policy decision, the problem definitions related to risk, health, and environmental impacts, and lack of adequate testing, were most frequently discussed in the media.

Table 3 examines the presence of problem definitions in relation to other narrative variables. The majority of the articles with a problem definition also included a solution. The presence of policy solutions and problems are statistically significant ($p < .001$). A statistically significant relationship was also found between the presence of risk and benefit information and the presence of a policy problem ($p < .001$; Cramer's $V = .29$). Therefore, narratives that define a policy problem also provide solutions and include risk and benefit information. No significant relationship was found between presence of a policy problem and the five characters.

Analyzing the use of narrative variables across losing, winning, and incomplete narratives, Table 4 shows how different problem definitions appeared across the narratives. Risk, health, and environmental impacts were discussed most frequently by winning (40.68 percent, *n* = 24) and incomplete (27.12 percent, *n* = 16) narratives. But these did not appear in losing narratives. A closer qualitative examination shows that winning narratives discussed these impacts in relation to risks to health and environment. Socioeconomic impacts were discussed more by the losing narratives (56.63 percent, *n* = 10), and this was largely in the context of how presently the yield is low and how it would benefit the economy and farmers to adopt Bt eggplant.

Table 5 shows a significant difference in the presence of policy problems across all three narratives in the media (χ squared = 8.0944, df = 2, p value < .05, Cramer's V = .22). Policy problems occurred

Figure 2.
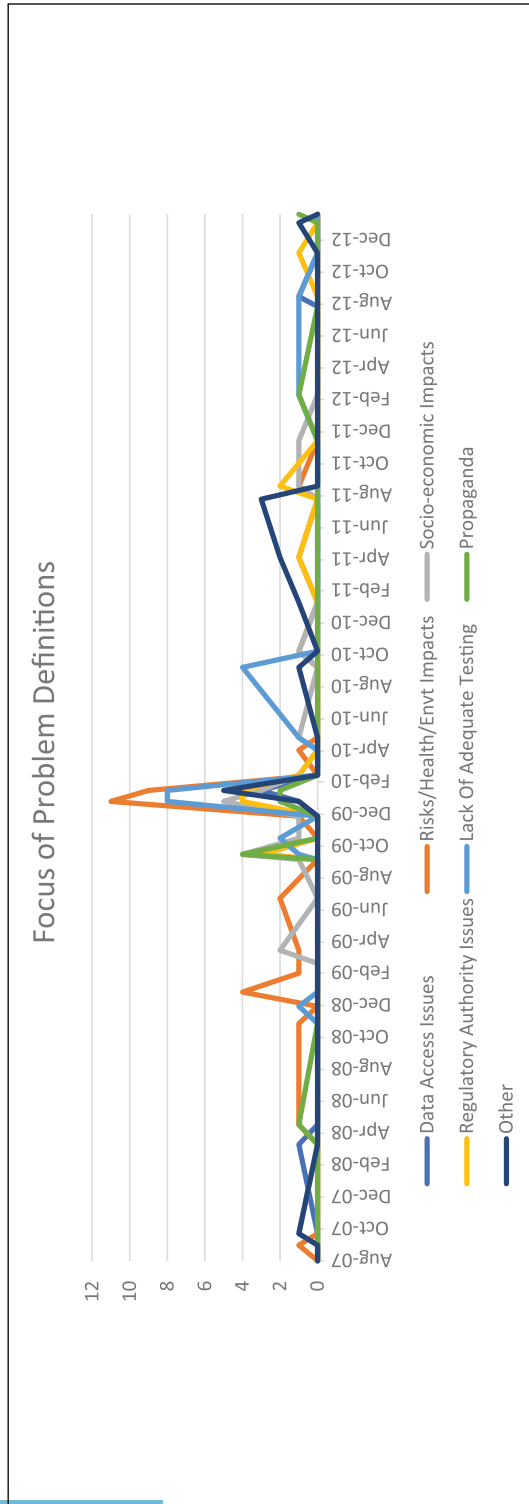**Focus of Coverage over Time in _Times of India_ and _Hindustan Times._**

Focus of Problem Definitions

www.

Table 3.
Policy Problems and Presence of Evidence, Solutions, and Risk/Benefit Information in *Times of India* and *Hindustan Times*.

Policy problem	No evidence % (*n*)	Evidence used % (*n*)	Total % (*n*)
Absence	22.92 (22)	13.33 (10)	18.71 (32)
Presence	**77.08 (74)**	86.67 (65)	81.29 (139)
Total	100.00 (96)	100.00 (75)	100.00 (171)

χ **squared**[a] **= 1.9512, *df* = 1, *ns***

Policy problem	No solution % (*n*)	Solution used % (*n*)	Total % (*n*)
Presence	11.51 (16)	**88.49 (123)**	100.00 (139)

χ **squared = 171, *df* = 2, *p* value < .001**[b]

Policy problem	Absence of risk/benefit information	Presence of risk/benefit information	Total % (*n*)
Absence	38.30 (18)	11.29 (14)	18.71 (32)
Presence	61.70 (29)	**88.71 (110)**	81.29 (139)
Total	100.00 (47)	100.00 (124)	100.00 (171)

χ **squared = 14.615, *df* = 1, *p* value < .001; Cramer's *V* = .29**

Note. Intercoder reliability scores: 69.6 percent (π = .60) for types of risks/benefits expressed in the article, 78.3 percent (π = .67) for the use of evidence to support a policy preference, 91.3 percent (π = .84) for episodic/thematic focus, 91.3 percent (π = .87) for opinion of article on agricultural biotechnology, 95.7 percent (π = .91) for presence of policy solution to 100 percent (π = 1.0) for variables measuring presence of policy problem, and inclusion of characters.
[a]Pearson's chi-squared test conducted with Yates continuity correction for all results in this article.
[b]It is not possible to provide a measure of association (Cramer's *V*) for these two elements since policy solutions were coded only for those narratives that had a policy problem. So since policy problems showed no variation, a test of association is not possible.

more frequently in the losing (86.36 percent, n = 19), winning (90.77 percent, n = 59), and incomplete (72.84 percent, n = 59) narratives. There is no significant difference in the use of evidence (χ squared = 8.0944, df = 2, ns). However, losing narratives use evidence more frequently (63.64 percent, n = 14) than winning (56.92 percent, n = 37) and incomplete (61.73 percent, n = 50) narratives. Thus, more frequent use of evidence may not be associated with narrative strategies to successfully influence policy outcomes. This supports similar work in the NPF (McBeth *et al.* 2007; Shanahan, Jones, and McBeth 2011). All three narratives have a higher presence of policy solutions: losing (89.47 percent, n = 17), winning (89.83 percent, n = 53), and incomplete (86.44 percent, n = 51); and risk and benefit information:

Table 4.
Problem Definitions Used by the Losing, Winning, and Incomplete Narratives in
Times of India and *Hindustan Times.*

Problem definition category (final)	Losing narrative % (*n*)	Winning narrative % (*n*)	Incomplete narrative % (*n*)
1: Data access issues	5.26 (1)	1.69 (1)	6.78 (4)
2: Risks/health/environmental impacts	0.00 (0)	**40.68 (24)**	**27.12 (16)**
3: Socioeconomic impacts	**52.63 (10)**	13.56 (8)	8.47 (5)
4: Regulatory authority issues	0.00 (0)	8.47 (5)	18.64 (11)
5: Lack of adequate testing	10.53 (2)	23.73 (14)	20.34 (12)
6: Propaganda	15.79 (3)	6.78 (4)	6.78 (4)
7: Other	15.79 (3)	5.08 (3)	11.86 (7)
Total	100.00 (19)	100.00 (59)	100.00 (59)

Table 5.
Narrative Variables across Losing, Winning, and Incomplete Policy Narratives in *Times of India* and *Hindustan Times.*

	Losing narrative % (*n*)	Winning narrative % (*n*)	Incomplete narrative % (*n*)	Total % (*n*)
Absence of policy problem	13.64 (3)	9.23 (6)	27.16 (22)	18.45 (31)
Presence of policy problem	**86.36 (19)**	**90.77 (59)**	**72.84 (59)**	**81.55 (137)**
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ **squared = 8.0944,** *df* = 2, *p* **value < .05; Cramer's** *V* = .22				
Absence of evidence	36.36 (8)	**56.92 (37)**	**61.73 (50)**	56.55 (95)
Presence of evidence	**63.64 (14)**	43.08 (28)	38.27 (31)	43.45 (73)
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ **squared = 4.5361,** *df* = 2, *ns*				
Absence of policy solution	10.53 (2)	10.17 (6)	13.56 (8)	11.68 (16)
Presence of policy solution	**89.47 (17)**	**89.83 (53)**	**86.44 (51)**	**88.32 (121)**
	100.00 (19)	100.00 (59)	100.00 (59)	100.00 (137)
χ **squared = 0.35704,** *df* = 2, *ns*				
Absence of risk/benefit info	27.27 (6)	16.92 (11)	34.57 (28)	26.79 (45)
Presence of risk/benefit info	**72.73 (16)**	**83.08 (54)**	**65.43 (53)**	**73.21 (123)**
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ **squared = 5.7281,** *df* = 2, *p* **value < .06,** *ns***; Cramer's** *V* = .18				

losing (72.73 percent, n = 16), winning (83.08 percent, n = 54), and incomplete (65.43 percent, n = 53); but no significant difference in their use. It should be noted that the p value < .06 (Cramer's V = .18) for risk and benefit information, so we should not completely disregard the lack of significance. The discussion of risks and benefits of agricultural biotechnology is an important aspect of the policy debate with environmental and health-related risks being frequently cited as problems.

Next, the study examined appearance of characters in the overall media dataset and across the three narratives. In addition to heroes, villains, and victims, beneficiaries are included since actors supporting Bt eggplant have often invoked a discussion of who benefits from the crop. Also, certain character types were mentioned as potential or latent resources and were proposing or taking action but could not be categorized as hero, villain, victim, or beneficiary. For example, Greenpeace sought access to data regarding testing of Bt eggplant (Raaj 2008), or Mahyco appealed to the High Court to not allow public release of data (Raaj 2008). These were categorized as 'Other.' Use of characters is often related to the persuasiveness of a narrative where characters may invoke sympathy from the audience and garner support (Jones, Shanahan, and McBeth 2014). This may be particularly prevalent in intractable policy issues where characters depict themselves as heroes to gather support for their policy preference and depict their opponents as villains.

As Table 6 shows, 80.59 percent ($n = 220$) of the total characters identified were heroes. This was surprising, given the extreme polarization in the policy debate. The expectation was to see a policy landscape with a high frequency of heroes and villains battling it out to achieve their desired policy preference. One reasoning for this highly unexpected finding is that characters were often advocating their solution to the policy problem without highlighting a villain. For these heroes, agricultural biotechnology itself was a negative entity (but agricultural biotechnology was not portrayed as a villain per se), and hence they did not feel the need to villainize others.

Previous NPF research shows that heroes are more likely to persuade an audience (Jones 2013). Among the 220 hero characters in this study, the highest concentration was with the government. This is not surprising because three government ministers were highly active in the policy issue. This was followed by nongovernmental organizations (NGOs) and the environment as heroes. Only six heroes were from the industry, and 6.23 percent of all characters were classified as 'Other.' A

Table 6.
Presence of Character Types in *Times of India* and *Hindustan Times*.

Characters	% (*n*)
Overall	
Heroes	**80.59 (220)**
Villains	6.96 (19)
Victims	3.30 (9)
Beneficiary	2.93 (8)
Other	6.23 (17)
Total	**100.00 (273)**
Hero	
Business	2.73 (6)
Government	**49.09 (108)**
NGO/environment	35.00 (77)
Other	13.18 (29)
Total	**100.00 (220)**
Villain	
Business	**52.63 (10)**
Government	10.53 (2)
NGO/environment	21.05 (4)
Other	15.79 (3)
Total	**100.00 (19)**
Victim	
Environment	11.11 (1)
Economy	11.11 (1)
Other	**77.78 (7)**
Total	**100.00 (9)**

closer qualitative analysis shows that these included actors mostly from NGOs and researchers. Of all characters, 2.93 percent were identified as beneficiaries (*n* = 8) and were largely farmers. Table 7 reflects the use of characters across the three narratives in the media dataset. Interestingly, there is a significant difference in the use of beneficiaries (Fisher's Exact Test, $p < .01$; Cramer's $V = .34$) with losing narratives having more beneficiaries (22.73 percent, $n = 5$).

Last, the study examined the differences in overall narrativity between the three types of narratives and between the two media sources: *Times*

www.

Table 7.
Use of Characters across Losing, Winning, and Incomplete Policy Narratives.

	Losing narrative % (*n*)	Winning narrative % (*n*)	Incomplete narrative % (*n*)	Total % (*n*)
Absence of hero	4.55 (1)	1.54 (1)	6.17 (5)	4.17 (7)
Presence of hero	**95.45 (21)**	**98.46 (64)**	**93.83 (76)**	**95.83 (161)**
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ squared = 1.9487, *df* = 2, *ns*				
Absence of villain	86.36 (19)	89.23 (58)	90.12 (73)	89.29 (150)
Presence of villain	13.64 (3)	10.77 (7)	9.88 (8)	10.71 (18)
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ squared = 0.25599, *df* = 2, *ns*				
Absence of victim	90.91 (20)	98.35 (61)	95.06 (77)	94.05 (158)
Presence of victim	9.09 (2)	6.15 (4)	4.94 (4)	5.95 (10)
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ squared = 0.54063, *df* = 2, *ns*				
Absence of beneficiary	77.27 (17)	100.00 (65)	96.30 (78)	95.24 (160)
Presence of beneficiary	**22.73 (5)**	**0.00 (0)**	**3.70 (3)**	4.76 (8)
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
Fisher's Exact Test, *p* < .01; Cramer's *V* = .34				
Absence of other	95.45 (21)	96.92 (63)	88.89 (72)	92.86 (156)
Presence of other	4.55 (1)	3.08 (2)	11.11 (9)	7.14 (12)
	100.00 (22)	100.00 (65)	100.00 (81)	100.00 (168)
χ squared = 3.767, *df* = 2, *ns*				

of India and *Hindustan Times.* Most of the narratives (see Table 8) only include half of the narrative components (*M* = 4.94) with 38.01 percent (*n* = 65) narratives having five and 26.32 percent (*n* = 45) having six narrative components. Therefore, it is important to consider whether policy narratives generated in the media are producing the most effective narratives since they do not always include all the important and relevant components. Losing narratives used slightly more narrative components than winning, and winning narratives used slightly more components than incomplete ones. Therefore, a higher use of narrative components may not always be connected to winning. One-way ANOVA reveals a statistically significant difference in the mean use of narrative components ($p < .01$) across the three types. There was a statistically significant

Table 8.
Narrativity[a] Index for Losing, Winning, and Incomplete Narratives, and for *Times of India* and *Hindustan Times*.

Number of narrative components	% (*n*)
0	0.00 (0)
1	0.00 (0)
2	8.19 (14)
3	9.94 (17)
4	8.19 (14)
5	**38.01 (65)**
6	**26.32 (45)**
7	8.19 (14)
8	1.17 (2)
9	0.00 (0)
10	0.00 (0)
Mean narrativity score	*M* (*n*; *SD*)
Full dataset	4.94 (171; 1.39)
Losing narratives	5.45 (22; 1.44)
Winning narratives	5.17 (65; 1.23)
Incomplete narratives	4.63 (81; 1.44)
p < .01 (one-way ANOVA)	
Times of India	5.35 (51; 0.96)
Hindustan Times	4.76 (120, 1.50)
t statistic = 3.105, *p* < .002	
Total	100.00 (171)

[a]Narrativity is a scale variable from 0 to 10, with 0 = *no narrative components* and 10 = *used all narrative components* (use of policy referent, policy problem, policy solution, hero, villain, victim, beneficiary, other, evidence, risks, and benefits).

difference in the mean use of narrative components (*t* statistic = 3.105, *p* < .002) between *Times of India* and *Hindustan Times*. Since media coverage may vary across media outlets based on ideology, ownership, and so on, it may be important to include multiple media sources to ensure that a particular ideology does not dominate the coverage.

Conclusion and Future Directions

NPF provides the theoretical and empirical tools to analyze the role of narratives in the policy process. One of the goals of this study was

to expand scholarship on the NPF by exploring connections between narrative variables and policy outcomes in a non-U.S. context to test the generalizability of this policy process framework through its application in a policy subsystem in a different national and cultural context. Prior meso-level NPF research conducted in this context has revealed challenges from lack of data or accessibility issues for public consumption documents distributed by advocacy organizations (Gupta, Ripberger, and Collins 2014; Weible *et al.* 2016). Hence, this study examined policy narratives available in the media to test the applicability of the NPF and found that narrative variables present across media provide substantial insight into the agricultural biotechnology policy issue in India. There was variation in articulation of problem definitions and characters among coalitions. Thus, in contexts where public consumption documents from advocacy organizations may not be available or easily accessible for meso-level NPF studies, media may prove to be an important and robust source of data. This study attempted to expand the scope of NPF research by using media narratives in a policy and national context not studied before.

In addition to the three traditional NPF characters (hero, villain, victim), this study included a new character type—beneficiary—previously used in Weible and others (2016). This is an important character type for certain policy issues, especially when characters are advocating for solutions benefiting a part of the population. Among the characters, a statistically significant relationship was found only in the use of beneficiaries across the three narratives. Also, potential and latent sources need to be considered in some form because they may be providing resources to advocate for a policy preference, for example, in the case of Greenpeace petitioning the legal system to release safety data. For characters, although no significant relationship was found in the use of heroes and policy problems in the media, given the large number of heroes, it may be important to consider how they appeared and if they articulated solutions.

Although risk perceptions have not been as widely studied in the NPF, risk perceptions may influence policy decisions that are aimed at risk reduction (Crow *et al.* 2016). In the present study, higher frequency of problem definitions related to risk, health, and environmental impacts support existing literature that these aspects were highly contested in the policy subsystem. The frequency of these problem definitions increased substantially at the time of the policy decision. The higher frequency of risk-related concerns closely correlates with problem

definition categories supporting the recommendation that risk information be included as a narrative component for policy issues fraught with risk. To test the generalizability of this component, NPF research may benefit from further application of this component in risk-related areas such as science and technology issues and hazards and natural disasters. In case of evidence, this study found no significant difference in use of evidence, although it was used more by losing narratives. This supports similar work in the NPF (McBeth *et al.* 2007; Shanahan, Jones, and McBeth 2011). In addition to the narrative core elements, additional components such as risk and evidence may need to be included based on the policy issue under consideration.

Another goal of this study was to assess the role of incomplete policy narratives in policy debates and outcomes in an attempt to refine the definition of policy narratives and consider which narratives are important from empirical and audience reception perspectives. This study found that policy narratives do not always contain a full suite of narrative components because most of the narratives only included half of the narrative components. Recent research shows that the current NPF structure does not take into account several differences that exist among media organizations, platforms, and actors, and it remains unclear whether media actively and voluntarily or incidentally participate in coalitions as part of their professional positions (Crow and Lawlor 2016). Media as conduits and contributor have been studied (Shanahan *et al.* 2008), but by including the category of incomplete policy narratives, one may account for an additional role of the media as disseminator of information without taking sides on a policy issue. This may also account for the differences among policy narratives distributed by advocacy organizations (which have vested interests in promoting their policy preference), on one hand, and by the media (which may not always promote a policy preference), on the other hand. Furthermore, the two media sources that were examined show a significant difference in their use of narrative components. To avoid bias that may exist across media outlets and to ensure a robust dataset with breadth and depth of coverage, it may be useful to include multiple media sources. A useful future step might be to analyze how the use of specific narrative elements varied across the two sources. This may also help examine whether media sources vary in their role as conduits, contributors, or disseminators in the policy process. Last, the study focused on the role of narratives and how narratives are communicated through language. Despite the understanding that narratives are constructions of language, cultural context

and nuances of language have yet to be explored by NPF studies. These language characteristics of narratives are important to understand to assess the stability of policy narratives when there are multiple dominant languages in a political system. This study analyzed media narratives in English language newspapers in a country with no official national language but which uses English and Hindi for official purposes (Government of India n.d.). Given this, it is justifiable to use English newspapers, but it would be valuable to analyze media coverage of Hindi newspapers to examine variation in the use of narrative components and whether narrative construction varies across languages.

Acknowledgment

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