

The Impact of New Media on Policy Affecting Agriculture

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Keywords

Agricultural policy, agenda-setting, new media, blogosphere

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The Impact of New Media on Policy Affecting Agriculture

Lauri M. Baker and Tracy Irani

Abstract

New media have changed the way people communicate and transfer information, but their effects on agenda-setting and the transfer of salience of objects and attributes have not been explored empirically. This study utilized a quantitative content analysis to determine how the blogosphere affects the agricultural policy agenda by analyzing a specific piece of policy that has the potential to effect agriculture. Results indicate a significant predictive relationship of the blogosphere agenda, media agenda, interest group agenda, and public agenda to the policy agenda. This adds new information on agenda-setting in an online environment by concluding agenda-setting occurs in new media environments similarly to traditional media environments. Future studies should consider the influence of the blogosphere on the political agenda.

Key Words

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Introduction

In recent years, the general public has developed an increased concern for where their food comes from, how animals were treated prior to processing, and how agriculture is affecting the environment. As a result, public concern over policy that affects agriculture has increased (Blandford & Fulponi, 1999; Adams & Salois, 2010). During this same time, public understanding of the scientific complexities of agriculture has decreased (Vandermoere, Blanchemanche, Bieberstein, Marette, & Roosen, 2011), and the average American has moved farther away, literally and figuratively, from production agriculture (Kellogg Commission, 1999). Less than 1% of the American population claims production agriculture as its primary occupation, and only 2% are directly involved in it full time (U.S. Environmental Protection Agency, Ag 101, 2013). A population of people exists in the United States without a first-hand knowledge about food production who are voting and making policy decisions that affect all agricultural producers and, by extension, American consumers.

Agricultural policy is complex. Decisions made in United States' agricultural policies encompass multiple levels, from production agriculture to marketing and sales, which in turn affect markets in countries around the world. For example, when a change is made to the Farm Bill price set for a commodity like corn, this change will affect how much income is made on the farm, the cattle producers who purchase corn for feed, the food companies that use corn in their products, the consumers who purchase products made with corn, and the countries outside the United States that purchase corn on the world market. These economic effects are exacerbated when combined with the effects of agricultural policies on society, and "governments are being pressured to ensure that public concerns are addressed" (Blandford & Fulponi, 1999, p. 1). All of these difficulties come together to make agricultural issues arguably the most contentious of policy issues (Blandford & Fulponi, 1999). Consequently, it is no surprise why a concern over the lack of understanding of an industry that feeds and clothes so many is growing. These intensifying concerns make research related to agricultural policy both pertinent and imperative.

As the fastest diffusing technology in recent history, the Internet has significantly changed how people communicate and transfer information (Goodman et. al, 1998; Perkins & Neumayer, 2011). Its use continues to grow, in part because of the speed at which information can be transferred (Garrison, 2000). During a time when public understanding of agriculture has diminished, the American public's access to information has increased. Access to the Internet in the United States was reported at 5 million users in 1995, and 50 million Americans had access by 1999 (Stempel, Hargrove, & Bernt, 2000). The United States has 231 million Internet users (CIA World Factbook, 2013). This growth has resulted in increased use of online newspapers and blogs. The Newspaper Association of America reports that monthly traffic to online newspapers was 73.3 million unique visitors in 2009 (Langeveld, 2009), which results in 43.6% of Internet users visiting online newspapers at least monthly, a 10.5% increase from the same month in 2008 (Langeveld, 2009). In 2009, only 25% of Americans reported reading a print-only version of a newspaper, 5% reported reading print and online, and 39% said they read only an online newspaper (Pew Research Center, *Newspapers Face a Challenging Calculus*, 2009). Seventy-two percent of adults who are online use social networking sites (Pew, 2013). The blogosphere also is continuing to grow, with 42% of Internet users (representing 32% of all adults) reporting having read an online journal or blog and 33% reporting reading a blog on a regular basis (Smith, 2008).

In addition to access rates, the habits of those using the Internet have changed. Users are specifically seeking scientific- and policy-related information online (Schroeder, Caldas, Mesch, & Dutton, n.d.) and have formed an active policy network on the Web (McNutt, 2008). Political discourse plays an important role in the blogosphere, with bloggers and blog readers engaging in the exchange of ideas and actively seeking to shape the political agenda, encourage unified action, and initiate mobilization (Pole, 2010). Wallsten (2007a) determined the blogosphere is affected by the mass media and vice versa, thus implying an indirect connection between policy development and the Internet, but more research needs to be conducted to determine the exact relationship.

Studies have been conducted about the relationship among the mass media, public opinion, and political elections (McCombs, 2004). Although clear evidence shows information about policy and an active exchange of ideas about policies occurs through the Internet, how directly influential these information sources are on final policy development is unclear. This study seeks to fill these gaps in our knowledge of policy development and the online environment.

Political Agenda Setting Online

At the core of agenda-setting is the public's awareness of issues and the salience of these issues, which collectively represent the public agenda. The more often people hear about an issue, the more likely it is to be salient to them (McCombs, 2004). The measurement of salience can be divided into two levels: object salience and attribute salience. Object salience is simply a connection between a specific issue or object in the media agenda and in the public agenda. This is called the first level of agenda-setting (McCombs, 2004).

Attribute salience is the second level of agenda-setting in which "specific aspects of media content about public affairs are explicitly linked to the shape of public opinion" (p. 85); thus, these attributes are salient in the public agenda. This concept can be measured through comparing the themes and language appearing in media content, sometimes called a frame, and determining how often and for how long they appear in the mass media agenda. Often, the timeframe of the increases and decreases of public concern, or the public agenda, on a specific issue mirrors that of the mass media agenda (McCombs, 2004).

Agenda-setting research has emerged to answer questions associated with how the Internet affects agenda-setting. The Internet combines mass communication and interpersonal communication in a single channel; Internet users can obtain information and send feedback without having to leave the same communication context. Interactivity, assumed as an inherent attribute of the Internet from its beginning, contributes tremendously to the promotion of audience activity to a higher level (Morris, & Ogan, 1996); moreover, new media transforms the way audiences use information from selecting among available resources to intentionally and actively searching for information useful to them. Audiences do not have to change their schedule to follow the agenda set by the media; instead, they have access to the information they need whenever and wherever Internet access is present.

Brubaker (2008) found that because of the Internet and people's ability to choose their own personal agenda, the Internet's effects on agenda-setting were minimized; however, other studies have determined that an agenda-setting effect exists online. A study by Lee (2009) concluded that online newspapers have agenda-setting effects, whereas Roberts, Wanta, and Dawo (2002) found an agenda-setting effect in electronic bulletin boards by analyzing five issues in 1996 fall political campaigns. Wallsten (2007b) found a bidirectional relationship in the political blogosphere, which was contrary to the previously accepted view that the relationship was unidirectional, as in traditional agenda-setting relationships (2007).

The actual political power of social media has been difficult to establish in an empirical way (Shirky, 2011), which indicates a need for more research in this area. However, Americans are participating in politics online, as 39% of all Americans took part in some sort of political activity on a social networking site during the 2012 campaign (Pew, 2013).

The Influence of the Blogosphere on Policy and Politics

The blogosphere has been credited as having major political influence, with numerous bodies of literature citing the blogosphere with the now-infamous political ousting of Senate Majority Leader Trent Lott in 2002 (Drezner & Farrell, 2004; Pole, 2010; Rigby, 2008). Some scholars in this field have gone so far as to say the blogosphere is responsible for fundamentally changing the entire political landscape in the United States (Pole, 2010). Bloggers primarily influence political discourse, which in some cases has initiated political action (Drezner & Farrell, 2004; Pole, 2010; Wallsten, 2007a). The majority of the research in this area credits the blogosphere's political influence to its ability to influence traditional media.

As the blogosphere continues to grow, an emergent hierarchical structure has developed in the political blogosphere, with a few political bloggers being well known and sought after by the public and the mainstream media. If a lesser-known blogger has a potentially big story, that blogger often contacts an elite political blogger. This mechanism allows the mainstream media to visit the few elite blogs easily and gain a sense of what is being discussed in the blogosphere (Drezner & Farrell, 2004) and has been the process for many breaking political stories that have had an impact on the U.S. political landscape. A study on the influence of blogs determined that 83% of journalists used blogs in story development, with 43% using blogs at least once a week (Farrell & Drezner, 2007). As such, the blogosphere has the potential to influence the content in mainstream media.

The blogosphere has had a significant impact through feeding important stories to the mass media, but this is not the only way the blogosphere has influenced U.S. politics. The blogosphere also has assumed the role of keeping the mainstream media in check (Drezner & Farrell, 2004; Pole, 2010). Political bloggers have become known for fact-checking the mainstream media and, if they deem the story worth telling, working to make sure the entire story is told (Drezner & Farrell, 2004;

Pole, 2010). Bloggers were famously responsible for forcing CBS News to admit that it could not substantiate documents about George W. Bush's National Guard service when bloggers were able to identify these documents were forgeries (Drezner & Farrell, 2004). In this same vein, the blogosphere often sheds light on issues that may have been passed over by the mainstream media, often pushing these stories through to the elite bloggers and eventually to the mainstream media (Drezner & Farrell, 2004; Pole, 2010). Because bloggers do not have an editorial board to answer to, they are often able to break stories or illuminate issues the mainstream media shies away from (Gill, 2004).

The blogosphere's influence is limited by the fact that the majority of bloggers are individuals without staff, support, or fact-checkers of their own. Bloggers must rely on the mainstream media's resources to find information about what is happening in the world, which restricts their ability to have mass reach on their own accord (Drezner & Farrell, 2004; Kerbel, 2009); however, even with its limitations, the mainstream media and policymakers may find the blogosphere difficult to ignore as an indicator of what Americans think about politics and policy (Drezner & Farrell, 2004).

Although some disagreements persist about how directly influential the blogosphere is on politics and the policy development process, there is no doubt that it has changed the face of American political discourse. Blogging has redefined access to the media, allowing for more people to be heard on political issues (Pole, 2010). Research indicates the mainstream media affects the blogosphere agenda and vice versa (Delwiche, 2005; Wallsten, 2007a), and in some situations these agendas overlap (Delwiche, 2005); however, no clear pattern has been determined for why or when this occurs. These circumstances may represent a decentralization of communication and a change in the flow of information (Delwiche, 2005), but how the blogosphere contributes to setting the political agenda remains unknown.

Policy that Affects Agriculture

Some policies can be explicitly defined as agricultural policies at the federal level, like the Farm Bill and Crop Insurance Legislation. However, a myriad of other policies affect agriculture, but they are not specifically developed and defined as agricultural policy. These policies include items such as animal welfare, which may affect groups like the Organization of People for the Ethical Treatment of Animals (PETA) and the Humane Society of the United States (HSUS), but also has implications for how production agriculture handles livestock. Another example of this type of policy is climate-change policy. On the surface, it may seem to only affect those with a passion for environmental issues; however, the implications for these policies affect the daily operations and long-term success of production agriculture.

Purpose and Hypotheses

The purpose of this study was to gain a greater understanding of the influences on development of public policy, particularly new media influences. Specifically, this study seeks to better understand the agenda-setting effects of new media. Based on what is known about the online political landscape related to agenda setting, we developed the following hypotheses:

- H1: The blogosphere, elite media, specialized public, and interest group agenda will have a statistically significant predictive relationship on the policy agenda.
- H2: A statistically significant two-way relationship will exist between all predictive agendas.
 - a. blogosphere and elite media
 - b. blogosphere and specialized public
 - c. blogosphere and interest group

- d. elite media and interest group
- e. elite media and specialized public
- f. specialized public and interest group

Variables are operationalized based on their role in the political process. The outcome variable was House Bill 2454, also called Cap and Trade legislation, which was a policy related to capping CO₂ emissions including those produced by agriculture. The blogosphere was represented by the top political blogs, and the elite media was represented by the top online newspapers. The specialized public opinion was represented by the comments on the elite media and blogosphere. The interest group agenda was based on hearing testimony related to the outcome variable.

Methodology

The researchers conducted a quantitative content analysis to assess the hypotheses and determine the influence of multiple factors on the outcome of a piece of policy. For the purpose of this study, the influencing factors of analysis were the elite media agenda, the blogosphere agenda, interest group agenda, and a specialized public agenda. Literature indicated a conceptual model with a two-way relationship between the blogosphere and the elite media, the blogosphere and specialized public agenda, the blogosphere and the interest group agenda, the elite media and specialized public agenda, elite media and the interest group agenda, and the specialized public agenda and the interest group agenda. H1 and H2 were tested using a confirmatory structural equation model (SEM).

Underlying assumptions for SEM (normality, sampling adequacy, and no extreme multicollinearity) (Byrne, 2009) were tested and confirmed to be acceptable before main hypothesis testing; however, the measured variable “time” for the interest group agenda had to be dropped from the model due to sampling inadequacies. To test the hypotheses in this study, structural equation modeling analysis was used with the method of maximum likelihood, AMOS 17 was used to perform the data analyses. The exogenous latent variable was the policy agenda, and the four endogenous latent variables were the blogosphere agenda, elite media agenda, specialized public agenda, and the interest group agenda. A breakdown of the latent and measured variables is in Table 1.

Table 1.
Latent and measured variables in structural equation model

Latent	Measured
Blogosphere Agenda	Custom dictionary attributes, tone master variables, comments, number of words, time
Elite Media Agenda	Custom dictionary attributes, tone master variables, comments, number of words, time
Specialized Public Agenda	Custom dictionary attributes, tone master variables, comments, number of words, time
Interest Group Agenda	Custom dictionary attributes, tone master variables, number of words, time*
Policy Agenda	Custom dictionary attributes, tone master variables

Note: * indicates variable removed due to sampling inadequacies

Sampling

The purposive samples selected for this study consisted of content derived from political blogs, elite media, the text of the H.R. 2454 as passed in the U.S. House of Representatives (1,400 pages of bill text), and the transcripts from the four days of committee hearings on H.R. 2454 (approximately 400 pages of text). The political blogs and elite media were chosen according to the top-ranked political blogs and online newspapers in 2009. The top five political blogs selected for this study were based on Wikio ranking in the political blog category for 2009. Determining the exact number of political blogs is difficult because many directories have different listings. Technorati, one of the largest blog directories, lists 11,638 political blogs; however, a study by the Pew Internet and American Life Project reported 1.4 million blogs that contain purely political information (Lenhart & Fox, 2006). Due to the hierarchical structure of blogs, the top bloggers often have the same or similar stories as other political bloggers. A blog's position in the Wikio ranking is determined by an algorithm that uses the number and weight of the incoming links from other blogs (Klein, 2009). Next, the top five online newspapers for 2009 were chosen to represent elite media; these were chosen from an estimated 1,500 online newspapers (World Association of Newspapers, 2012). Then, the blogs and newspapers for content related to H.R. 2454 were searched. Search terms included "H.R. 2454," "climate change," "climate change policy," "energy policy," "Cap and Trade," "Waxman-Markey," "global warming," and "The American Clean Energy and Security Act of 2009." Human judgment was then used to determine if the content related to H.R. 2454 and fell in the specified time frame. The total amount of content derived from the blogs and newspapers was approximately 200 stories and/or posts from 400 words to 1,200 words with an average of five comments per post ranging in length from three words to 400 words, resulting in approximately 201,000 words total.

The specific time frame for the content analyzed from political blogs and elite media was 60 days prior to the passage of H.R. 2454 (March 16, 2009, through May 14, 2009). This time frame is well over the four weeks or more that previous empirical research (Winter & Eyal, 1981) established as the optimum time span for examining agenda-setting effects. The content generated during the first 30 days of this time frame was labeled Time 1 (March 16, 2009, through April 15, 2009), and the content generated during the last 30 days was labeled Time 2 (April 16, 2009, through May 14, 2009).

Content Analysis

This study was designed to follow Kaid and Wadsworth's (1989) suggested seven steps for implementing a content analysis: formulate the hypotheses or research question to be answered, select the sample to be analyzed, define the categories to be applied, outline the coding process and train the coders, implement the coding process, determine reliability and validity, and analyze the results from the coding process.

As previously discussed, the objectives and sampling have been established. The applied categories were established according to categories from agenda-setting, the theoretical basis for this study; as such, each variable in the study was coded for attributes, time-frame, and tone in an effort to determine what recurs in the output variable. Due to the large volume of text in this study and to aid in objectivity, a quantitative content analysis software was used, Diction, for analysis. Diction is a computer-assisted textual analysis (CATA) program that measures five standardized variables related to tone that have been proven to be independent of each other. These are certainty, activity, optimism, realism, and commonality. Diction uses 10,000 search words in 33 lists, called dictionaries, to determine the levels of each of these standardized variables (Hart, 2000). Additionally, Dic-

tion allows for the creation of custom dictionaries for the ability to analyze more than tone. Custom dictionaries were developed based on the attributes of a random sample of content within the study. A panel of experts reviewed the sample content to determine attributes and to develop dictionaries from this sample. CATA has been used in agenda-setting and agenda-building studies that require sorting and coding of large bodies of text with detailed coding protocols (Kioussis, 2005; Ragas, Kim, & Kioussis, 2010).

As suggested by Kaid and Wadsworth's (1989) sixth step for implementing a content analysis, validity concerns in a content analysis were addressed in this study. First, face and content validity was measured by using good sampling techniques and determining that results were plausible (Kaid & Wadsworth, 1989). Additionally, in studies that use inferential statistics, other data-related, construct, and predictive validity should be considered (Kaid & Wadsworth, 1989). These threats were addressed in this study in the following ways. Data-related validity was addressed through ensuring enough data in each cell and through a large sample. Within data-related validity, another concern is for violation assumptions; thus, tests were conducted during the data analysis process to ensure that there were no violations. Construct validity is threatened by inadequate explanation of constructs (Kaid & Wadsworth, 1989), which was checked by the panel of experts' review of the custom dictionaries and the standardization of tone through the use of Diction. Predictive validity requires a correlation between measures and criterion construct of interest (Kaid & Wadsworth, 1989) and is threatened by untheoretically linked measures to criterion; thus, that this study uses a theoretical basis related to the measures and used successfully in the past is imperative. This study is an extension of research within the theoretical base of agenda-setting.

Data Analysis

All data were standardized using PASW Statistics 18. After standardization, structural equation modeling (SEM) tested the relationship between the multiple variables and tested hypotheses. AMOS, a plug-in for PASW Statistics 18, was used to build the SEM.

The latent variables or factors in this study are the policy agenda, media agenda, blogosphere agenda, interest group agenda, and a specialized public agenda. The measured variables within this study are the number of attributes within each agenda; the time frame in which the attributes or objects appear; the length of articles, blog posts, or comments; and tone (certainty, activity, optimism, realism, and commonality). In an effort to assess the agenda of each latent variable, a set of attributes were used that communicate the importance at a point in time (Dearing & Rogers, 1996). The hierarchy of the attributes of the agenda were determined by the salience of each. Salience was measured, as with previous agenda-setting research, by the frequency of attribute mentions in the analyzed content (Kioussis, 2005).

The coding scheme for this study was based on frequency counts of each attribute and attributes mentioned within the unit of analysis rather than a simple binary (present/absent) coding scheme, which allowed for more advanced data analysis. Some variables, however, had a limited number of options and a minimal number of choices within each category. Fortunately, SEM is designed to work with variables of multiple types within the same model, so data can be continuous, censored, binary, ordered categorical (ordinal), counts, or combinations of these variable types.

Results

The first step in the model testing was to estimate the goodness-of-fit for the hypothesized model. The X^2 test was significant, which suggested the estimated model did not fit well with the observed

data; however, the X^2 test is sensitive to sample size and often leads to model rejection. Therefore, researchers have suggested that if an X^2 /degree of freedom ratio does not exceed five, the model fit is acceptable (Bollen & Long, 1993). Because the X^2 /degree of freedom ratio of the current hypothesized model was estimated at 1.96 ($X^2 = 1178.13$, $df = 550$), CFI was .90, NFI was .82, and RMSEA was .68, it was concluded that the hypothesized model was acceptable despite the significant X^2 statistic. CFI, or Comparative Fit Index, depends extensively on the average size of the correlations in the data. If the average correlation between variables is not high, then the CFI will not be very high (Byrne, 2009). The CFI for the hypothesized model was near 1, at .90, which is considered high. RMSEA, or Root Mean Square Error of Approximation, is another test of model fit; good models are considered to have an RMSEA of .05 or less. Models with an RMSEA of .1 or more have a poor fit (Byrne, 2009). The RMSEA in the hypothesized model in this study was .68, which indicates this model may not be a good fit. NFI stands for Normed Fit Index and is another measure of goodness of fit. A value between .90 and .95 is considered acceptable, and above .95 is considered good. The NFI in the hypothesized model in this study is .82, which is not high enough to be considered a good fit. The goodness of fit statistics for the hypotheses were not consistent in determining the goodness of fit for this model.

Additionally, after examining the significance of the regression weights, eight of ten relationships in the model showed significant direct effects as expected ($p < .01$). The only two exceptions were the two-way relationship between the elite media and interest group agendas (H2d: $\beta = .16$, $p > .05$) and the relationship between specialized public opinion and interest group agendas (H2f: $\beta = .14$, $p > .05$). These relationships were not significant (Table 2 and Figure 1).

Table 2.

Slopes and p values for hypothesized structural equation model

Hypothesis	β	p
H2e: elite media and specialized public (two-way)	.82	.003*
H1: elite media (one-way)	.79	.005*
H2a: blogosphere and elite media (two-way)	.77	.003*
H2b: blogosphere and specialized public (two-way)	.72	.002*
H1: blogosphere (one-way)	.68	.004*
H1: interest group (one-way)	.67	.002*
H1: specialized public (one-way)	.43	.007*
H2c: blogosphere and interest group (two-way)	.41	.008*
H2d: elite media and interest group (two-way)	.16	.192
H2f: specialized public and interest group (two-way)	.14	.112

Note: * indicates a significant value at $p < .001$

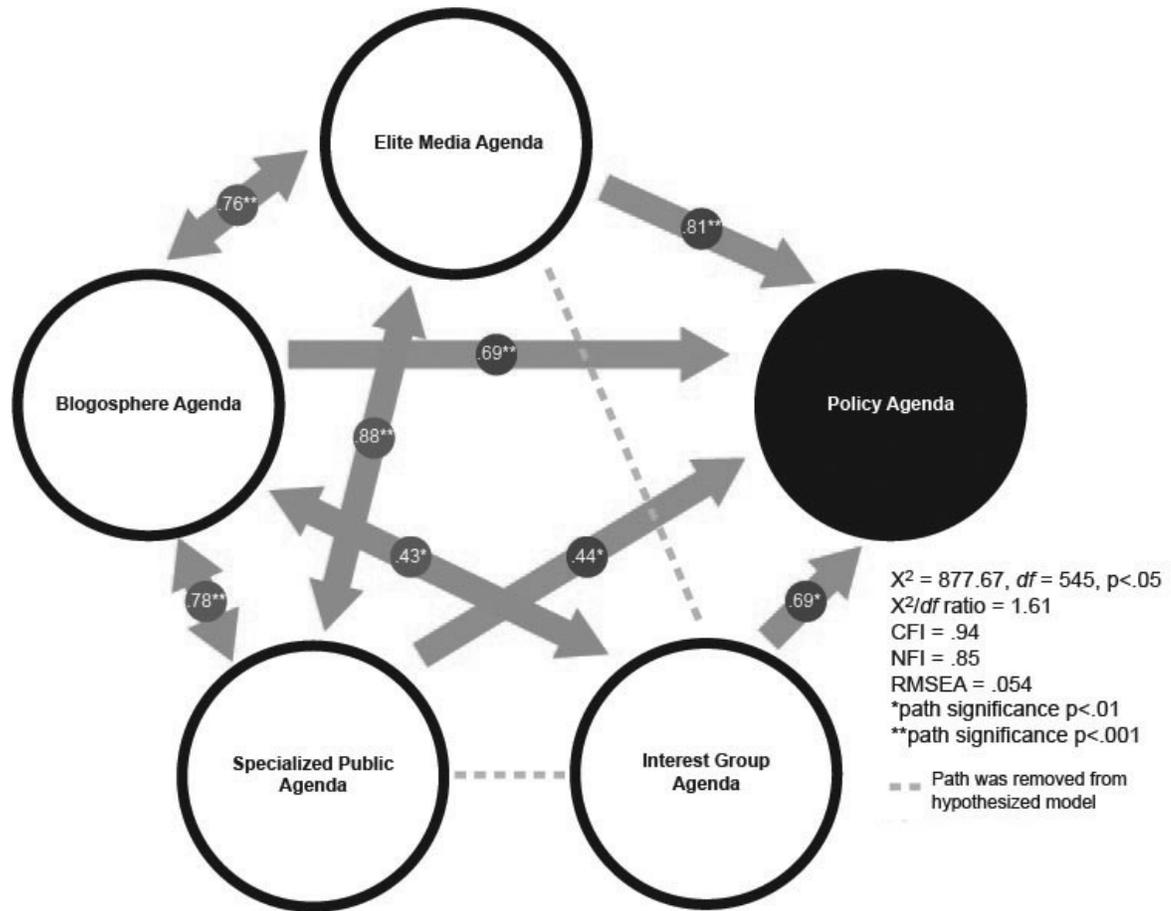


Figure 1. The hypothesized predictive relationship on the policy agenda

In an effort to improve the model and better explain the relationship between the agendas, the literature was again examined to determine if there was an indication of a different relationship between the agendas compared in H2d and H2f, none was found. Thus, the two non-significant relationships were removed from the model and it was tested again for goodness of fit. The standardized β coefficients were examined to evaluate the estimated causal relations. Six of eight relationships were significant at $p < .001$, and the other two were significant at the $p < .01$ level. As shown in Table 3 and Figure 2, the new model fit the observed data better than the previous hypothesized model, with statistical significance of the regression weights for all constructs ($X^2 = 877.67$, $df = 545$, X^2/df ratio = 1.61, CFI = .94, NFI = .85, RMSEA = .054). All of these goodness of fit statistics except NFI indicate this model is a good fit.

Table 3.
Slopes and p values for final revised structural equation model

Hypothesis	β	p
H2e: elite media and specialized public (two-way)	.88	.000**
H1: elite media (one-way)	.81	.000**
H2b: blogosphere and specialized public (two-way)	.78	.000**
H2b: blogosphere and specialized public (two-way)	.76	.000**
H1: blogosphere (one-way)	.69	.000**
H1: interest group (one-way)	.68	.002*
H1: specialized public (one-way)	.44	.005*
H2c: blogosphere and interest group (two-way)	.43	.001*

Note: * indicates a significant value at $p < .01$, ** indicates a significant value at $p < .001$

The final model strongly supports eight out of ten relationships in the hypothesized model in this study. As Figure 2 illustrates, the blogosphere agenda ($\beta = .68$, $p < .001$), elite media agenda ($\beta = .81$, $p < .001$), interest group agenda ($\beta = .69$, $p < .01$), and specialized public agenda ($\beta = .44$, $p < .01$) all have a significant influence on the policy agenda, which confirms H1. Additionally, a two-way relationship is supported by this data for the blogosphere and elite media agenda (H2a: $\beta = .76$, $p < .001$), blogosphere and the specialized public agenda (H2b: $\beta = .78$, $p < .001$), blogosphere and interest group agenda (H2c: $\beta = .43$, $p < .001$), and between the elite media agenda and the specialized public agenda (H2e: $\beta = .88$, $p < .001$); however, this final model does not support a two-way relationship between the elite media agenda and interest group agenda (H2d: $\beta = .16$, $p > .05$) and the relationship between specialized public opinion and interest group agendas. (H2f: $\beta = .14$, $p > .05$).

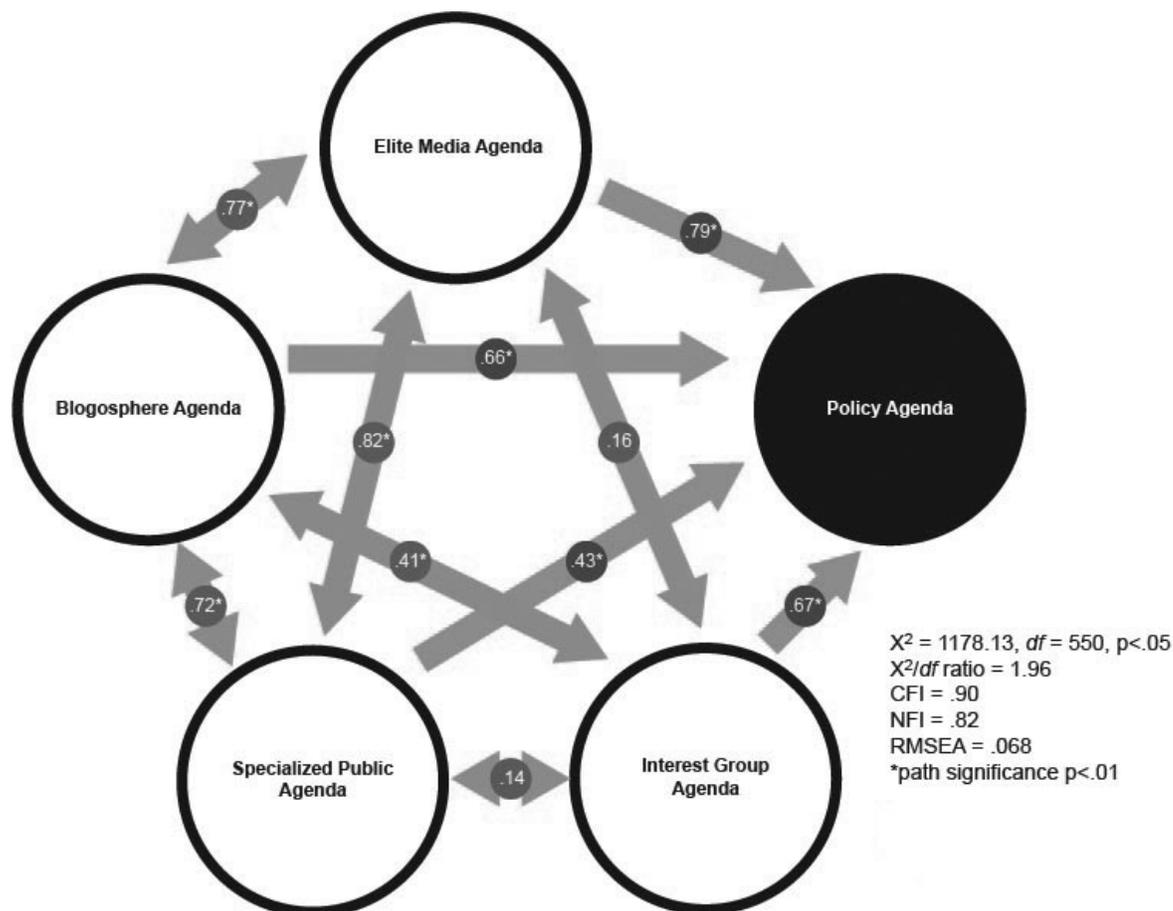


Figure 2. Final revised predictive relationship on the policy agenda

Conclusions and Discussion

The results of this study indicated a predictive relationship of the blogosphere agenda, media agenda, interest group agenda, and public agenda on the policy agenda. This conclusion adds new information on agenda-setting in an online environment by concluding that new media in fact shapes the policy agenda; specifically, this study determined that the blogosphere, online newspapers, and online public opinion shape the policy agenda. Our study also furthered research on the connection between the blogosphere and political agenda, which Wallsten (2007a) made, and offers empirical evidence that the blogosphere agenda has a predictive relationship on the policy agenda particularly when agricultural and environmental policy are concerned.

Our study confirmed a two-way relationship between the elite media and public opinion as determined in previous agenda-setting research (McCombs & Shaw, 1972; McCombs, 2004) and confirmed the two-way relationship of online media and the general public (Lee, 2009). This study also confirmed the conclusions of Wallsten (2007b) and other case studies (Drezner & Ferrell, 2004; Kerbel, 2009), that the blogosphere influences the elite media agenda, and offered additional empirical information indicating that the elite media has an influence on the blogosphere agenda, which has been assumed in case studies (Drezner & Ferrell, 2004; Gill, 2004). Additionally, this study offers evidence that the interest group agenda and the blogosphere agenda are related in a two-way relationship. This study failed to show there was a two-way relationship between the elite media agenda and the interest group agenda and the public agenda and the interest group agenda, which implies the media and the public may not be as closely aligned as the public and the blogosphere.

This study offered new empirical knowledge related to the predictive nature of new media agen-

das on the policy agenda, particularly related to policies affecting agriculture. The blogosphere, elite media, specialized public, and interest group agenda will have a statistically significant predictive relationship on the policy agenda. Through the testing of H1, it was determined that the blogosphere, elite media, specialized public, and interest group agendas have a statistically significant predictive relationship on the policy agenda. Although literature in these areas implied a predictive relationship, this study adds the first empirical knowledge that new media versions of the elite media and public agendas have a strong predictive relationship with the policy agenda. Prior to this study, multiple case studies indicated a possible predictive relationship of the blogosphere agenda on the policy agenda, but this study verifies a strong predictive relationship between these agendas.

Through the testing of H2 in this study, it was determined that a statistically significant two-way relationship exists between the blogosphere agenda and the elite media, public, and interest group agendas. These results confirm prior case studies that implied this relationship. Additionally, it was also determined that a significant two-way relationship exists between the elite media agenda and public opinion, which has been confirmed in previous studies; however, this test of H2 indicated no two-way relationship of statistical significance between the interest group agenda and the public agenda and the interest group agenda and the elite media agenda. This result diverges from the relationship indicated in previous studies, but multiple reasons explain why these relationships were not significant in this study. Absence of a strong connection between the interest group agenda and the elite media and public agenda in this study may be due to the new media format of the elite media and public agenda in this study, but this is because of the two-way relationship between the interest group agenda and the blogosphere agenda. The public agenda and interest group agenda do not always coincide in the literature, so perhaps it is less surprising that this relationship was not significant. That the interest group agenda and the elite media agendas relationship was not significant is surprising, because these agendas have been linked in previous research; however, the sampling inadequacies related to the interest group agenda possibly affected the significance of this relationship and the relationship between the interest group and public agendas.

Recommendations

These results indicate that agenda-setting occurs in new media environments in a way similar to traditional media environments. Specifically, the agenda-setting effects of the blogosphere are strong and should be considered in future agenda-setting research, especially in instances where agricultural and environmental policy is a factor. Due to the strong relationship of the blogosphere agenda and all other agendas in this study (elite media, public, interest group, and policy), future agenda-setting studies would be remiss not to at least consider the agenda-setting effect of the blogosphere on other agendas under investigation. Moreover, individuals or groups seeking to influence policy that affects agriculture should utilize new media channels like the political blogosphere.

Future research is recommended into the potential two-way relationship between the interest group agenda and the public and elite media agendas. This study did not show a significant two-way relationship between these agendas, but this is not conclusive evidence that a two-way relationship does not exist. Future research also should continue to look at the blogosphere agenda and other new media agendas, because this type of communication continues to increase. The measure of these agendas over time will offer stronger empirical evidence of the strength of the predictive relationship of these agendas on the policy agenda. Considering the influence of the lower-ranked blogs and online newspapers would be valuable to determine if these relationships hold true.

Limitations

This type of study is limited to the nature of the texts themselves. One text may focus solely on a single issue and ignore another, which has a strong influence on the discussion of attributes and tone. This was addressed in this study by sampling multiple texts to get a large number of texts and overcome the issue. This study was limited in time frame due to the time constraints of the researchers and the available resources for analyzing such large amounts of text. Unfortunately, this limitation could not be overcome, but the large sample size helps limit its effects. This study also had a limitation in the sampling frame for the interest group agenda in that it included only four texts for analysis, which limited the use of advance statistics for comparison between attributes and tone. In hindsight, this approach may have been prevented by separating texts into each person's testimony instead of each day serving as a text (unit of analysis); moreover, there was a purposive sampling frame, which indicates a sampling limitation. This limitation was mitigated by the hierarchical nature of the blogosphere.

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