The Issue-Attention Cycle and Public Policy in the United States

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Abstract: Four decades ago, Anthony Downs offered a compelling picture of the public policy issue-attention cycle. This paper offers a systematic test of how well 50 social issues in the United States fit the model over an extended period of time. A total of 29 issues that fit Downs's model are analyzed in order to test Downs's theory that an increase in public interest in an issue increases the government's efforts to address the issue. The results were quite mixed. For 11 issues, there was a positive relationship between the level of media attention and the number of bills passed. This provides partial support for Downs's theory. Downs postulated that state intervention occurs when there is a high level of public concern. On the other hand, the results also reveal that a large number of policies were implemented when the level of media attention was not at its peak, resulting in either no relationship between attention and legislation or a negative relationship.

Keywords: issue-attention cycle, policy issues, Anthony Downs, public policy decisions

INTRODUCTION

Public attention to many social problems waxes and wanes in modern societies. Some problems successfully attract public attention, whereas others fail. Some that receive attention also lead action, whereas others do not. Anthony Downs (1972) developed the issue-attention cycle (IAC) model to describe and account for the ebb and flow of attention to issues. Four decades later, Downs's model still possesses considerable explanatory prowess. Since its introduction, a substantial number of researchers in fields such as political science, public administration, or journalism

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have used the model. A recent Google Scholar search revealed 1,666 citations of Downs's article "Up and Down with Ecology—The Issue-Attention Cycle."

Downs's model outlined the five stages of the life cycle of ecological issues: the pre-problem stage; alarmed discovery and euphoric enthusiasm; the realization of the cost of major progress; a gradual decline in intense public interest; and the post-problem stage. The IAC model may be applied not only to ecological issues but also to other common political, economic, and social issues. The purpose of the present study is to empirically model Downs's conceptual IAC by using a spline function to examine the life cycles of ecological, political, economic, and social issues and to match those issues with similar cycles to corresponding issue-attention model. There is a good fit between ecological issues and the IAC model, and this study extends Downs's work by investigating whether the model also provides a good fit to nonecological issues.

Downs argued that several dynamics affected the level of attention and its progression through this cycle. Attention may diminish because the government may take some action to deal with a given problem, and in this case, attention is likely to wane before it is known whether the policy has actually mitigated the problem. Another possibility is that attention declines in the face of the mounting realization of the political and economic cost of addressing the problem. This realization may raise barriers to action that cause the media, citizens, politicians, and activists turn their attention to other issues.

Because attention often induces action, Downs also explored whether the public's attention to an issue results in action to address it. The IAC model suggests that the government strains to address a social issue when the level of public interest in the issue peaks. Such efforts can take many forms, but the most common response is the making of new laws or the revision of existing ones. This study investigates the relationship between the level of media attention to a social issue and the government's efforts to address that issue by analyzing fifty issues that have attracted considerable attention in the United States since the 1940s.[1]

We primarily focus on empirically testing Downs's argument that state intervention occurs when the level of public interest in an issue rises.[2] In order to assess the rela-

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1. We chose each of these 50 issues based on whether policies aimed at addressing that issue were established, on the level of the media's interest in the issue, and on its life span. We included social problems that were widely publicized across. In addition, we focused on issues with a life span of at least 20 years. We collected the data on the level of the media's interest through a keyword search of the ProQuest Historical Newspaper Database from 1940 to 2008.

2. An earlier Korean language study on this topic (Kim & Park, 2006) analyzed 50 issues in the United States and classified them according to issue types. The researchers of this study

tionship between the level of public concern and government intervention on an issue, this research collects and analyzes the data on issues from 1940 to 2008 and on legislation in the United States from 1972 to 2008.[3] We explore the relationships between level of public interest and government action only for those issues to which the IAC model provides a good fit.

Dunlap and Scarce (1991) argued that the life cycle of issues generally accords with the pattern predicted by the IAC model. However, they pointed out that environmentalism peaked in the mid-1970s, slowly faded in the 1980s, and then rapidly regained attention after the mid-1980s. They dubbed this phenomenon "the second miracle of public opinion." We also study the difference between issues that follow the IAC model and issues that regain the attention of the public in connection with government action.

LITERATURE REVIEW

This section reviews previous studies on the level of public interest in issues, the life span of issues, the measurement of media attention, and the spline function analysis method. Scholars examining the life cycle of public issues have postulated that there are several steps in the life span. These theories are typically based on and tested by the level of media attention to a given issue.

Numerous case studies have employed these models to track the development of a given issue (e.g., Dunlap & Scarce, 1991; Winter & Eyal, 1981; Peters & Hogwood, 1985; Hasan & Simmons, 1989; Mok & Park, 1993; Kim & Park, 2006). The IAC model is the most representative one and is extensively used in the agenda-setting field. According to the Social Science Citation Index, it was cited in a total of 323 papers from January 1972 to January 2012. Hasan and Simmons (1989) and Peters and Hogwood (1985) demonstrated that Downs's model can be easily to issues other than environmental ones.

A number of scholars have examined the role of television in directing the public's attention to a particular social problem (e.g., Moyer & Clignet, 1980; Gusfield, 1981;

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collected the data by manually counting the number of articles on an issue listed in the New York Times Index. Our study uses the same fifty issues but extends the data collection period and adopts new data collection methods, such as computer keyword searching. Our research is also differentiated from the previous study by its focus on the statistical analysis of the correlations between media attention to issues and legislation related to them.

3. We cannot get the data on legislation before 1972 because there is no database that contains such information.

MacKuen & Coombs, 1981). They have reported that issues come to garner widespread public interest owing to messages sent to audiences and subscribers of the mass media. In addition, various studies (e.g., Hilgartner & Bosk, 1988; MacKuen & Coombs, 1981; Erbring, Goldenberg, & Miller, 1980) have discussed methods for measuring the level of media attention. Hilgartner and Bosk (1988) have claimed that examining the relative importance of an issue in the media can reveal the level of the media's interest in that issue, and Erbring et al. (1980) have argued that the space taken up by an article on the first page of a newspaper is proportionate to the media's interest in the issue reported in that article.

Some studies have investigated how the life cycle of an issue can be modeled. Greene (1977) has provided a detailed explanation of a spline function model converting the life cycle of an issue into a mathematical model, and Suits, Mason, and Chan (1978) have developed a three-dimensional spline function method. We adopted the spline method here to determine whether or not an issue on which action has been taken by the government has gone through the life-cycle stages described by the IAC model.

A review of a series of studies that have employed or examined the IAC model follows here. Hasan and Simmons (1989) examined the applicability of the IAC model to the level of public interest in the issue of toxic waste in Bloomington, Indiana, and Winter and Eyal (1981) investigated the media's interest in civil rights. Mok and Park (1993) examined whether the issue of air pollution in the United Stated bore out the IAC model and found that there were seven phases in the life cycle of the issue. They followed the issue from 1940 to 1990 and argued that there were two additional phases between phases 1 and 3 of the IAC model. That is, the issue went through the pre-problem stage, gained some public attention, and then entered a phase in which it maintained a low level of public interest for some period of time before attracting a higher level of attention.

DOWNS'S ISSUE-ATTENTION CYCLE

Downs's IAC is a conceptual model with five stages whose lengths vary according to the nature of the issue. In the first phase, when the issue arises, other than a few warning signs from civic organizations or experts, there is little interest in the matter. In the second phase, the average citizen takes a sudden interest. Normally, by this phase, there have many dramatic incidents connected to the issue that incite the public's desire to address the problem. In the third phase, the average citizen's interest peaks. At the same time, however, the public begins to realize that the solution will be costly

and that benefits will likely accrue only to certain groups. In the fourth phase, there is a gradual decline in public interest. In the fifth and final phase, the post-problem stage, public interest in the issue all but evaporates, but this loss of interest is not like the unawareness of the issue that characterizes the first stage in that it follows on the heels of the implementation of policies that address the issue. Therefore, there is no longer any need to pay additional attention to it.

After explaining the basic five-stage IAC, Downs did suggest that certain issues regain attention, but he noted that the level of this attention is lower than that of the first time such issues capture the public's interest. He did not emphasize this resurgence, but as we have indicated, it is a fairly common phenomenon. Figure 1 illustrates the typical IAC model.

Figure 1. A Figurative Representation of the Downs Issue-Attention Cycle
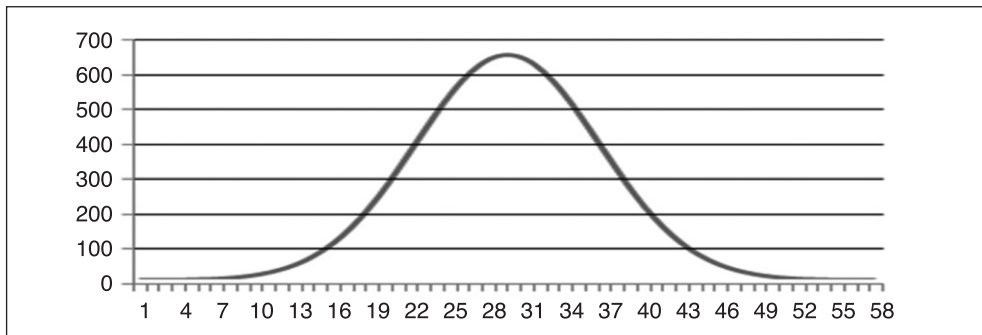
Stage1: 1-13; stage 2: 14-28; stage 3: 28-34; stage 4: 29-44; stage 5: 44-58.

SELECTING SOCIAL ISSUES AND THE SPLINE FUNCTION METHOD

We use the spline function method to determine whether the life cycles of 50 issues from 1940 to early 2008 follow the IAC model. We drew on the Facts on File Five-Year Index, which identifies issues with a high level of interest, to select these issues. In this study, 9 indices were considered, and then 10 issues were selected from each one. Among these, overlapping issues and those with a life span of less than 20 years were excluded. As suggested in Sabatier and Jenkins-Smith (1988), a time span of at least 10 years is needed to understand the development of a public policy, which means that, it takes at least 20 years to observe the waxing and waning of attention to an issue. Appendix 1 provides a list of these 50 selected issues.

The life cycle of each of the 50 issues may, like fluctuations in stock prices, be difficult to predict and may be revealed only over an extended period of time. Downs developed his ICA model based on what at the time appeared to be an issue that had reached the end of its life, but later events revealed it to have more life. Therefore, instead of focusing on changes occurring over a short period of time, this study identifies the life cycle according to the pattern that unfolds over a long period. Classifying graphs by the naked eye can be subjective and, therefore, to ensure objectivity, this study employs the spline function method to determine whether or not the life cycle of each issue follows the IAC model.

The Spline Function Method

The spline function method basically employs a regression model that can measure and show significant changes in the level of media attention (dependent variable) at a specific point in time (independent variable). This method assigns a mathematical value to the measured level of media attention and enables it to be expressed in a graph. To determine whether the spline function accurately reflects actual data on the life cycle of an issue, the regression model employs goodness of fit. The spline function method can be used to classify the life cycle by type.

Suits et al. (1978) argued that the spline function can be applied to a system of piecewise polynomial approximations, and in the case of cubic spline functions, they demonstrated that the x-axis (denoting the independent variable) can be divided into $k+1$ intervals by points X_0, X_1, …, X_{k+1}. These intervals represent points that change rapidly in a life cycle. The cubic spline function can be proposed to fit a regression in the form

$Y=a_1+b_1(X-X_0)+c_1(X-X_0)^2+d_1(X-X_0)^3+¢≤(d_{i+1}-d_i)(X-X_i)^3D_i*$, where D_i* is a dummy variable whose value is 1 for all observations such that $X≥X_i$ and 0 otherwise. If the attention cycle of an issue has six intervals, then the multiple regression model can be expressed as follows: $Y=a_1+b_1(X-X_0)+c_1(X-X_0)^2+d_1(X-X_0)^3+(d_2-d_1)(X-X_1)^3D_1*+(d_3-d_2)(X-X_2)^3D_2*+(d_4-d_3)(X-X_3)^3D_3*+(d_5-d_4)(X-X_4)^3D_4*+(d_6-d_5)(X-X_5)^3D_5*$.

In this model, $X_0=0$, and $D_1*=1$ if $X>X_1$ and $D_1*=0$ otherwise; $D_2*=1$ if $X>X_2$ and $D_2*=0$ otherwise; $D_3*=1$ if $X>X_3$ and $D_3*=0$ otherwise; $D_4*=1$ if $X>X_4$ and $D_4*=0$ otherwise; $D_5*=1$ if $X>X_5$ and $D_5*=0$ otherwise. Here interval points are X_0, X_1, X_2, X_3, X_4, and X_5. The above mathematical model can be expressed as a multiple regression model as follows: $Y= b_0+b_1Z_1+b_2Z_2+b_3Z_3+b_4Z_4+b_5Z_5+b_6Z_6+b_7Z_7+b_8Z_8$.

In the above equation, $b_0=a_1$, $b_2=c_1$, $b_3=d_1$, $b_4=(d_2-d_1)$, $b_5=(d_3-d_2)$, $b_6=(d_4-d_3)$, $b_7=(d_5-d_4)$, $b_8=(d_6-d_5)$, $Z_1=(X-X_0)$, $Z_2=(X-X_0)^2$, $Z_3=(X-X_0)^3$, $Z_4=(X-X_1)^3$, $Z_5=(X-X_2)^3$,

$Z_6=(X-X_3)^3$, $Z_7=(X-X_4)^3$, and $Z_8=(X-X_5)^3$. This multiple regression equation has eight composite variables, and the regression model can be estimated using actual data.

Measuring the Level of Media Attention to Social Issues

The level of media attention to social issues can be measured using various units according to the type of media outlet. In the case of newspapers and magazines, measures of attention have been based on publication size, the number of related articles, and the total number of words in an article. For television and radio, media attention can be measured in terms of the broadcasting time. Several studies have proposed methods for measuring the level of media attention (Erbring et al., 1980; Hilgartner & Bosk, 1988; MacKuen & Coombs, 1981). Hilgartner and Bosk (1988) estimated media attention to an issue as the extent to which the media deal with the issue based on the number of articles on that issue. Erbring et al. (1980) asserted that the level of attention the media pays to an issue in an article on the front page is likely to be higher than the attention it pays to issues mentioned on other pages.

For this study, we evaluated 50 issues on the U.S. agenda between 1940 and early 2008. These are representative issues that have confronted American society in the past seven decades. In addition, we used the total number of *New York Times* articles about each issue per year to measure the level of media attention. We did this in part because it was not possible to determine how much airtime a given issue received on television or radio or the size of an article in a newspaper over the past seven decades for every issue. Although it is theoretically possible to measure the total number of words per article devoted to a given issue, this is not practical because such data cannot be reasonably accessed. We drew on the ProQuest Historical Newspaper Database, which has articles from the *New York Times* from 1851 to 2008. Using this database, we determined the number of articles per year in the *New York Times* related to each issue through a keyword search.[4] Then we evaluated the level of media attention and used the data to gauge changes in this level over time for the 50 selected issues. We

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4. Media attention to an issue cannot be measured simply as the number of articles that contain exact keywords because many articles with those keywords may be found before the issue starts to attract the public's attention. Therefore, this study assumes that the level of attention the media pays to an issue before the public begins to pay attention to it reflects the pre-problem stage. For instance, about 50 articles with the keyword "waste disposal" were published before the issue started grabbing media attention, thus constituting the pre-problem stage. In this study, types of issues were classified on the assumption that scattered and occasional references to an issue do not represent a level of media attention that can produce an agenda.

expressed these changes through life cycle graphs and classified life cycles according to the shape of the graph. Among the 50 issues, some fit the IAC model, whereas others did not.

The Issue Life Cycle and the Spline Function

We evaluated the issue of atomic energy and weapons, one of the 50 issues, to assess whether its life-cycle pattern could be determined and whether that pattern would correspond to the IAC model. This issue became a public one in 1945 after the United States exploded an atomic bomb in Japan in an effort to end World War II. According to the *New York Times* database, there were 209 and 512 articles related to the issue in 1945 and 1958, respectively.[5] Figure 2, which is based on the data, depicts the level of media attention on the y-axis and the year on the x-axis.

Figure 2. The Life Cycle of the Atomic Energy and Weapons Issue
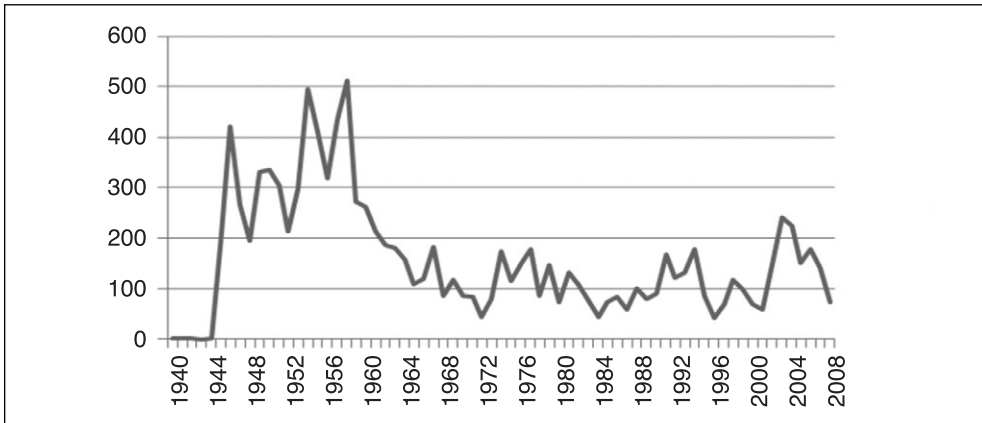
The atomic energy and weapons issue went through the pre-problem stage from 1940 to 1944, started to gain media attention in 1945, and entered a 10-year phase of increasing attention up to 1954. Beginning in 1954, the cycle entered a climax phase, and in 1959, it began an extinction phase that lasted 14 years, until 1972; it had just about completed the whole IAC cycle, but then the issue regained public interest. This second wave of interest peaked in 2003 and then declined, although more recent data are likely to show a resurgence of interest owing to the destruction of the Fukushima nuclear facility in Japan in March 2011.

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5. There were 10 articles on this issue between 1940 and 1944.

We analyzed the data on the level of media attention to this issue using the spline function method to determine its life cycle category. To apply the spline function method, we identified the years 1944, 1946, 1958, 1972, 1996, and 2003 as points of rapid change. The interval in the spline function is a point in which the life cycle flow changes rapidly. Therefore, there were six intervals in the spline function (X_1=1944, X_2=1946, X_3=1958, X_4=1972, X_5=1996, and X_6=2003). Table 1 shows the measurement results according to the spline function method.

Table 1. Estimation Results for the Spline Function for the Atomic Energy and Weapons Issue

Independent Variables	Regression Coefficients (-Value)	t-Value	Probability Level
$Z_1=(X-X_0)$	8.758***	8.482	0.000
$Z_2=(X-X_0)^2$	-19.333***	-8.740	0.000
$Z_3=(X-X_0)^3$	56.098**	2.071	0.043
$Z_4=(X-X_1)^3D_1$*	46.093**	2.115	0.039
$Z_5=(X-X_2)^3D_2$*	45.108**	2.194	0.032
$Z_6=(X-X_3)^3D_3$*	20.188***	7.231	0.000
$Z_7=(X-X_4)^3D_4$*	-10.157***	-5.628	0.001
$Z_8=(X-X_5)^3D_5$*	.549**	2.018	0.048
$Z_9=(X-X_6)^3D_6$*	.103	.887	0.887
F	18.001		0.000
R^2	0.635		

*$P<0.1$, **$P<0.05$, ***$P<0.01$.

In this spline function, the level of media attention was the dependent variable Y, and there were six intervals. Coefficients of independent variables (Z_1, Z_2, Z_3, ..., Z_9) were estimated through a multiple regression model. This spline function had a high F-value of 18.001, indicating exceptionally high statistical significance, and R^2=0.635, implying that the independent variables explained 63.5% of the variation in the dependent variable. Among the nine independent variables, eight were significant, indicating that the spline function sufficiently depicted the atomic energy and weapons issue. Figure 3 illustrates how well the spline function measurement depicted the actual life cycle of the issue.

The shape of the life cycle deduced from this spline function model was accurate enough for classification purposes. The pattern of the atomic energy and weapons

Figure 3. The Life Cycle of the Atomic Energy and Weapons Issue and Predicted Values
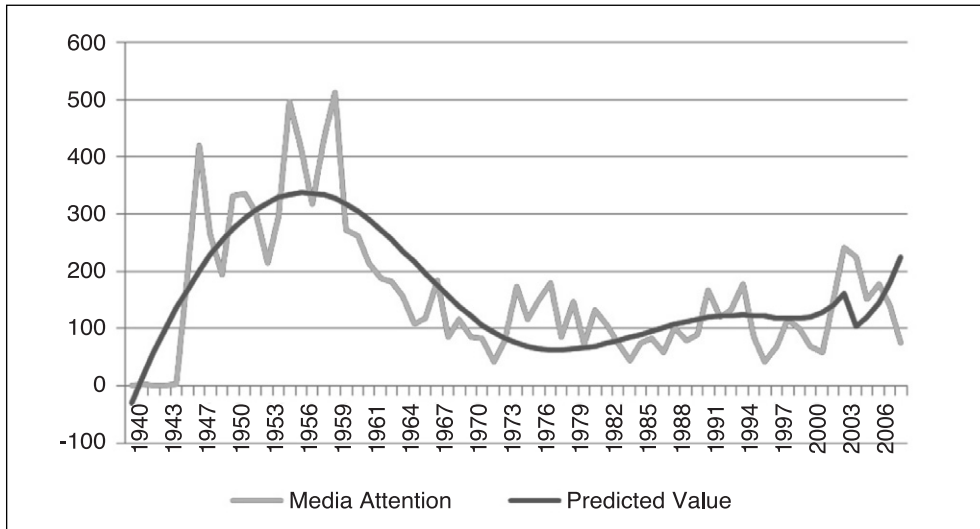
issue was not consistent with the IAC model, but it was consistent with a revised IAC model that took into account the possibility of the rebirth of an issue. Downs mentioned that an issue with a history of public attention can regain this attention later even after a decline. This issue can be classified as just such an issue in light of this second phase of renewed interest.

THE IDENTIFICATION OF THE ISSUE LIFE CYCLE

We used the same method we used to analyze the atomic energy and weapons issue to evaluate the media attention life cycle of the other 49issues and to classify each of these cycles according to whether or not it followed the IAC model. The 50 issue life cycles can be classified according to two patterns: the IAC model pattern and the non-IAC model pattern.

Issues that follow the IAC model pattern can also be further broken down into two types: general and repetitive. The general type more or less reflects the IAC model. That is, media attention increases, peaks, and eventually disappears or continues at a diminished level. Here the diminished level is far lower than the levels seen in the prior stages of the IAC life cycle. The characteristics of this type of life cycle are identical to those of the IAC model. The issue of alcohol abuse is representative of this type of life cycle. It went through a pre-problem stage between 1960 and 1967 and received

increasing attention for two decades, from 1968 to 1986. For the next six years, the level of media attention peaked, declining gradually between1991 to 2008. The phase of increasing attention to this issue lasted 18 years, longer than that for other issues. This pattern is consistent with the IAC model.

In the repetitive type, the issue already went through Downs's phase of peak attention and is in a decline when it receives some renewed interest and thus repeats Downs's stages. Among the 50 issues, the atomic energy and weapons and air pollution issues were representative examples of this type of life cycle. These issues had two life cycles, but the second one received a lower level of media attention. The atomic energy and weapons issue went through a pre-problem stage from 1940 to 1944, started to gain public interest in 1945, and entered a phase of increasing attention that lasted 11 years to 1955. The air pollution issue also had two life cycles that stretched from 1940 to 2008. The issue began gaining attention in 1947 and maintained a steady level of interest starting in 1951. Beginning in1965, media attention increased sharply, peaking in 1970. This level of interest was sustained for approximately four years and then tapered off between 1974 and 1986. Beginning in 1986, the issue regained public interest, which peaked in 1999 and declined thereafter. Air pollution became an issue in the United States as a result of the serious smog problem in the late 1940s in Los Angeles, California, and Donora, Pennsylvania, which brought it to the public's attention and made it necessary for the government to take action at the national level. As a result, the Air Pollution Control Act of 1955 was enacted, followed by many more laws designed to manage air pollution.

Issues that do not follow the IAC model may demonstrate several patterns on a graph, such as an increasing, skyrocket, and unidentifiable shape. The increasing shape can be seen as indicating the continuation of the third phase in the IAC model. The skyrocket shape may suggest an unexpected burst of public interest that is followed by a loss of interest or a second abrupt increase in the level of interest. The unidentifiable shape indicates the lack of any discernible pattern.

Employing the spline function method to eliminate the subjective element in identifying the shape of issue life cycle, we classified the 50 issues into the two types of life cycle patterns. Table 2 shows the results of the classification of the 50 issues.[6]

Appendix 2 applies the spline function method to representative issues to demonstrate each type of pattern. Multiple issues fell into each category, reflecting different patterns of media attention. Model shapes deduced from the spline function method

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6. These results show that there are no big differences between this study and that of Kim and Park (2006) when it comes to issue types. This means that using keyword searching as a method of collecting date is reliable.

Table 2. The Classification of 50 Issues in the United States by Type

Issue Type		Name of Issue	Total
IAC Model Pattern	general type (16)	agriculture, arms control, courts, computers and the Internet, crime and criminals, currency rates (foreign-exchange rates), education and schools, insurance, homelessness, labor, alcohol abuse, railroads, minorities and the oppressed, taxation, telephone and telecommunication, waste disposal	29
	repetitive type (13)	atomic energy and weapons, aeronautics (or space), economic conditions, housing, immigration, medicine and health, air pollution, science and technology, pornography and obscenity, water pollution, AIDS (HIV), gun control, welfare	
Non-IAC Model Pattern		abortion, cancer, drugs and drug trade, government (politics and government), homosexuality, prisons and prisoners, diet (obesity), defense, food, drug, and cosmetics regulation, marriage, smoking and tobacco, terrorism, North Korea, bank and banking, freedom and human rights, commerce (international trade and the world market), populations, World War II, police, social security, unemployment insurance	21

were used to better clarify differences across several patterns. Appendix 3 shows fitted spline function curves for representative issues from both the class that followed the IAC model and the class that did not.

Those issues with general and repetitive patterns showed distinct shapes, whereas those with an unidentifiable pattern had no distinct shapes sufficient for their classification or received unwavering attention over time. For example, the issue of unemployment insurance showed consistent variability in terms of the level of media attention, which suggests that the accumulation of data over an extended period of time may be necessary for classifying issues like it.

According to the classification of life cycles of the 50 issues, 16 issues exhibited the general pattern, in which media attention increased and then declined. In addition, 13 issues demonstrated a repetitive pattern. Among the 50 issues, some garnered public interest for a second time after having faded from the public eye. From a broader perspective, the repetitive pattern can be seen as following the IAC model, and so we conclude that 29 of the 50 issues (58%) were consistent with the IAC model.

Among the remaining issues, 21 were classified as NIMP, among which 8 exhibited an unidentifiable pattern. The remaining 13 issues exemplify the increasing or skyrocket patterns, which are inconsistent with the IAC model. In the case of the skyrocket pattern, the issue appeared abruptly on the agenda as a result of an unexpected incident

such as a war or terrorist attack. In the case of the unidentifiable pattern, the level of media attention fluctuated yearly and over the long term.

THE RELATIONSHIP BETWEEN THE LEVEL
OF INTEREST AND PUBLIC POLICY

The main objective of this study is to investigate the relationship between the level of interest in an issue and the government's efforts to address the issue. Downs asserted that a rise in the level of interest in an issue to a certain point will result in efforts on the part of the government to address that issue if some consensus can be built that the issue is in need of state intervention. In any modern society, the government's efforts to solve a problem take the form of legislation.

The issue of homelessness exhibited the general pattern. We examined the relationship between the level of media attention to the issue and policies enacted to address the problem, following the premise that the level of media attention to an issue reflects that of public attention to it (MacKuen & Coombs, 1981; Mok & Park, 1993; Park, 1912). In the United States, homelessness started to attract public interest in 1981. The level of interest increased sharply starting in 1983 and peaked in 1987.

With an increase in the level of media attention, the government set out to solve the problem. The result was the enactment of the Homeless Assistance Act of 1983 and the Emergency Shelter for the Homeless Act of 1983 as well as 23 related bills to establish new policies or amend existing ones. The high level of public interest in the issue of homelessness clearly induced the government's policy initiatives.

We investigated the relationship between the level of media attention to a problem and efforts undertaken to address it for all 29 issues classified as having general or repetitive pattern. We measured these efforts by the number of bills enacted or amended by the U.S. Congress designed to solve the issue.

The Library of Congress database identifies bills enacted or amended from 1973 (the first year of the 93rd Congress) to the present (the 112th Congress). We determined the number of bills related to 29 issues for each session of Congress by using keywords in the search window for the period of that session.[7] The session of Congress was used instead of the year as the unit of analysis because of a significant difference in the number of bills passed between the first and second years of a session. For example, 56.7% of bills passed between the 93rd Congress to the 108th Congress passed in the second the session.

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7. See http://thomas.loc.gov/home/LegislativeData.php?&n=BSS&c=112.

We relied on a simple bivariate relationship between the level of media attention and the government's policy activity to examine the relationship between media attention and policy initiatives. Table 3 reports the correlation coefficient between the level of media attention to issues and the number of related bills enacted or amended from the 93rd (1973-1974) session of Congress to the 108th (2003-2004) session. However, we were not able to analyze the correlation coefficient between issues and bills introduced before the 93rd Congress because no suitable database was available. The table shows contemporaneous coefficients in which there is no lag between attention and

Table 3. Correlations between Media Attention to an Issue and Congressional Action

N	Issue	Correlation Coefficient		N	Issue	Correlation Coefficient	
		no lag	time lag			no lag	time lag
1	agriculture	.426*	.434*	16	medicine and health	-.170	.088
2	arms control	.256	.137	17	air pollution	-.365	-.173
3	atomic energy and weapons	.113	-.247	18	alcohol abuse	.753***	.526**
4	aeronautics (or space)	-.103	.046	19	railroads	.668***	.692***
5	courts	.831***	.782***	20	minorities and the oppressed	-.498**	-.526**
6	computers and the Internet	.054	.089	21	science and technology	-.081	-.121
7	crimes and criminals	.443*	.717***	22	taxation	-.025	-.139
8	currency rates (foreign-exchange rates)	.441*	.392*	23	pornography and obscenity	-.176	-.585***
9	economic conditions	.847***	.497**	24	telephone and telecommunication	.079	.317
10	education and schools	-.309	-.446*	25	water pollution	-.291	-.177
11	housing	-.401*	-.301	26	AIDS (or HIV)	.323	.379*
12	homelessness	.840***	.781***	27	gun control	-.404*	-.215
13	immigration	.126	.029	28	welfare	.390*	.489**
14	insurance	.248	.137	29	waste disposal	-.107	.460*
15	labor	-.498**	-.176				

*p<.10, **p<.05, ***p<.01.

action and coefficients with a one-session lag between media attention and the passage of a bill.

The results provide only weak support for Downs's theory that the government strives to solve a problem when the level of interest in the problem is at its peak. In fact, the results for a substantial majority of coefficients provide no support this idea. Among a total of 58 possible relationships, only 19 demonstrated a significant positive relationship between attention and action. These 18 relationships covered 11 of the 29 issues. Contrary to expectations, seven coefficients for six issues showed a negative relationship between attention and action. That is, the lower the level of attention to an issue, the more likely congressional action was. This result is, of course, contrary to expectations. In 32 cases, coefficients showed no relationship between attention and action. We also conducted a t-test to determine whether relationships would vary according to the level of peak attention to an issue. According to the results, there were no significant mean differences.

The results reported in table 3 suggest that Downs's model captures only some part of the agenda-setting story and is consistent with the findings of Jones and Baumgartner (2005), who suggested that public concern over issues and the passage of statutes have either a strong or no relationship.

The fact that there was a fairly direct positive relationship between the level of media attention and the establishment or revision of related policies for only 11 issues, no such relationship for 18 other issues, and a negative relationship between 6 issues that received little attention and action highlights several important insights. As shown in table 4, for example, those issues for which there was a positive relationship between attention and action tended to exhibit a general pattern (8), not a repetitive one (3). Those for which no relationship was evident were slightly more likely to demonstrate a repetitive pattern (7) than a general pattern (5). Those for which a negative relationship was apparent were split evenly between general (3) and repetitive (3) patterns. In addition, those issues for which no relationship between attention and action was evident often involve technological factors (atomic energy; aeronautics and space; computers and the Internet; science and technology; and telephone and telecommunications) or fairly technical factors (insurance and taxation). The two environmental issues, water and air pollution, also tend to involve technological factors. This is a very interesting finding that suggests that technological issues tend to lead to public policies related to them regardless of the amount of attention paid to them. Technological issues may be directly related to public life before it attracts public attention. Those issues showing no relationship between attention and legislation tended to be more narrowly defined and specific and often involved economic interests, a pattern potentially reflecting the mobilization of interests in the policy process.

Table 4. Issue Areas Grouped Based on Correlations with Legislation

	General Type		Repetitive Type	
Positive Relationship	agriculture courts crime currency rates homelessness alcohol abuse railroads waste disposal	8	economic conditions AIDS/HIV welfare	3
Negative Relationship	education labor minorities	3	housing pornography gun control	3
No Relationship	arms control computers/Internet insurance taxation telephone/telecommunications	5	atomic energy aeronautics/Space immigration medicine/health air pollution science and technology water pollution	7

It is reasonable to ask whether broader policy typologies offer some insights in how to classify issues. For example, it is valuable to consider whether Wilson's (1973) classification of policies based on whether they have concentrated or disbursed costs and benefits (Kellow, 1988) is helpful in categorizing issues. Many policies can be approached in this way, and their differing political patterns can be examined, but the policies that are developed to address the kinds of issues we discuss here vary in the extent to which they concentrate benefits and costs. In global warming, for example, solutions are likely to involve widely distributed benefits (although they may be concentrated in future, not current, voters), but costs can be imposed in a concentrated or distributed manner. Costs may be concentrated in particular industries (e.g., coal and oil industries) or distributed widely (an energy tax). Indeed, costs may be distributed widely as the result of the use of general tax revenues to subsidize clean energy (which provides a concentrated benefit to businesses, , such as wind turbine manufactures, that generate clean energy).

Another classificatory approach to policies is Lowi's (1972), which breaks them down into four groups: regulatory, constituent, distributive, and redistributive. This approach likewise has limitations with respect to classifying issues. Many issues are addressed via a mix of policies that can be characterized as regulatory, distributive, or redistributive. Clearly, economic conditions fall into this category. Alcohol abuse can be addressed by regulating liquor sales or jailing offenders (regulation), and it can also

be addressed by offering substance abuse treatment programs (distribution). Water pollution has been addressed through regulatory standards and by offering grants to local communities to improve wastewater treatment. The list goes on.

CONCLUSION

We considered a total of 50 issues that garnered attention in the United States from 1940 and 2008 and classified the level of media attention to these issues according to the type of life-cycle pattern. We then examined the relationships between the level of media attention and policies developed to address the issue. In addition, we investigated whether the life cycle of issues were consistent with the IAC model. We broke the 50 issues down into two categories, those that followed the IAC model, which include a general and repetitive form, and those that did not. We ultimately determined that 29 of the 50 issues were consistent with the IAC model, while 21 were not. Among the 29 issues, 16 exhibited a general pattern, while 13 demonstrated a repetitive pattern. The increasing pattern seen in issues whose life cycles were not consistent with the IAC model could perhaps be regarded as corresponding to stage 2 of the IAC model, but because issues demonstrating type of pattern continue to receive increasing attention over a longer period of time than expected, a more accurate judgment will only be possible in the future.

In addition, we identified laws related to an issue in order to determine whether they were enacted when the level of media attention to the issue was high. Here the results were quite mixed. Of the 29 issues examined, there was a positive relationship between the level of media attention and the number of bills passed for only 11. This provides partial support for Downs's theory state intervention occurs when there is a high level of public concern. On the other hand, the results also reveal that a large number of policies were implemented when the level of media attention was not at its peak, resulting in either no relationship between attention and legislation or a negative relationship.

The implementation of a policy even after the waning of public interest can still be interpreted as a response to the earlier level of interest, but it is difficult to see how a negative relationship can be. Indeed, the existence of such negative relationships suggests that some issues are easier to address when they are out of the public's eye, something that may be compatible with either the inside initiative or mobilization models of Cobb, Ross, and Ross (1976). The only pattern we identified was that issues showing positive relationships with legislative action were more likely to exhibit a general pattern (as opposed to a repetitive pattern) than those issues showing no or

negative relationships with legislative action. Future research should consider a wider range of issues for more robust results.

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Appendix 1: 50 Issues

1. abortion	26. marriage
2. agriculture	27. medicine and health
3. arms control	28. air pollution
4. atomic energy and weapons	29. alcohol abuse
5. aeronautics (or space)	30. population
6. banks and banking	31. railroads
7. cancer	32. World War II
8. freedom and human rights	33. smoking and tobacco
9. commerce (international trade and the world market)	34. minorities and the oppressed
10. courts	35. police
11. computers and the Internet	36. prisons and prisoners
12. crimes and criminals	37. science and technology
13. currency rates (foreign exchange rates)	38. social security
14. defense	39. taxation
15. drugs and drug trade	40. terrorism
16. economic conditions	41. pornography and obscenity
17. education and schools	42. telephone and telecommunication
18. food, drug, and cosmetic regulation	43. water pollution
19. government (politics and government)	44. AIDS
20. housing	45. gun control
21. homelessness	46. welfare
22. homosexuality	47. diet (obesity)
23. immigration	48. waste disposal
24. insurance	49. unemployment insurance
25. labor	50. North Korea

Appendix 2: Estimation Results for Representative Cases for IAC-Model-Pattern Issues and Non-IAC-Model-Pattern Issues

Independent Variables	Dependent Variables (Representative Issue in Each Type)		
	IMP		NIMP
	alcohol abuse (general)	air pollution (repetitive)	unemployment insurance (unidentified type)
$Z_1=(X-X_0)$	.188 (.492)	-0.821* (-1.613)	-.476 (-.535)
$Z_2=(X-X_0)^2$	7.057 (1.098)	-14.508 (-1.209)	17.393 (.704)
$Z_3=(X-X_0)^3$	1.690 (0.699)	14.103*** (6.260)	2.782 (.619)
$Z_4=(X-X_1)^3 D_1{}^*$	5.762** (2.359)	37.679 (1.244)	-19.480 (-.388)
$Z_5=(X-X_2)^3 D_2{}^*$	-9.505*** (-5.836)	-36.179*** (-8.439)	-5.169 (-.836)
$Z_6=(X-X_3)^3 D_3{}^*$	1.419 (.928)	85.055** (2.527)	-21.913 (-.941)
$Z_7=(X-X_4)^3 D_4{}^*$	1.299* (1.782)	30.089*** (8.780)	3.444 (0.798)
$Z_8=(X-X_5)^3 D_5{}^*$	-.439* (-1.859)	-7.420*** (-7.300)	-3.487 (-.431)
$Z_9=(X-X_6)^3 D_6{}^*$		0.316** (2.273)	2.173 (.334)
$Z_{10}=(X-X_7)^3 D_7{}^*$			.164 (.708)
R^2	.909	0.754	0.382
F Value	58.576***	31.632***	5.385***

1. Numbers in parentheses indicate t-values.
2. *p<.10, **p<.05, ***p<.01.
3. X_0, X_1, X_2, X_3, … X_8 are interval points.

Appendix 3: Fitted Spline Function Curves for Five Representative Cases