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Place, Distance, and Environmental News: Geographic Variation in Newspaper Coverage of the Spotted Owl Conflict

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This paper examines the geographic variation of newspaper coverage of the conflict over northern spotted owls and old-growth forest protection in the Pacific Northwest. We address four issues: the extent to which newspaper "framing" of the conflict favored one side or the other, the way in which coverage varied among newspapers publishing in different cities around the country, the extent to which that variation was related to the newspapers' physical distance from the Pacific Northwest, and the extent to which variation was related to other characteristics of the newspapers' locations. We content-analyzed the news coverage in ten major daily newspapers for the period 1990–1994. Dependent variables were number of stories, story length, number of sources, and the number of "pro-cut" or "pro-save" news sources and story themes appearing in each article. Independent variables were physical distance, economic ties, political dominance, lumber-industry employment, environmentalism, and political and environmental pluralism. In the 408 stories we analyzed, there was a significant tendency to present story themes that parallel the pro-cut side of the conflict. Regression results showed physical distance and economic connections both to be significant predictors of the number and length of stories and number of sources, with explained variance ranging from 38 to 78 percent. Variation in the framing of the story was more difficult to predict, although there does appear to be some relationship to voter registration and environmental membership patterns. *Key Words:* news media, environmental reporting, northern spotted owl, old-growth forests.

At first glance, the influence of distance in the reporting of news seems straightforward. In a given news market, nearby events are most relevant, and therefore receive the most coverage. Accordingly, most introductory journalism textbooks discuss the importance of proximity in the selection of news. Occasional studies have been done that seem to confirm that events "close to home" will receive more news-media attention, and that coverage decreases with distance (Molotch and Lester 1975; Adams 1986).

In many other instances, however, this distance-decay concept proves inoperative. A variety of studies have suggested that the likelihood of an event in a given place being reported depends more on the perceived newsworthiness of either the event or the place than on how far away the place is (Walmsley 1980; Brooker-

Gross 1983; Gaddy and Tanjong 1986). Furthermore, studies of the amount of coverage only scratch the surface of potential distance effects, as variation in the content of coverage is arguably at least as important (Shoemaker and Mayfield 1987). Various aspects of that content may in turn affect the news frame, which may limit possible audience interpretations and perceptions (Entman 1993; Pan and Kosicki 1993; Liebler and Bendix 1996).

In this paper, we explore the impacts of distance on newspaper coverage of the controversy over northern spotted owls and old-growth forest protection in the Pacific Northwest. This topic affords an opportunity to examine spatial variation in news-media treatment of one of the most visible environmental controversies of the past decade, and thereby to address several questions of interest to researchers in geography,

environmental policy, and mass communications: Overall, how was the issue framed in newspaper coverage? How much did the amount and type of content of coverage vary in different parts of the country? Was such variation due to the varying distance between the geographic site of the controversy and the communities in which the newspapers were published? Or to other determinants of the degree of connection between those locales, which we conceptualize as "social distance"? Or was it due to other characteristics of the communities in which each newspaper published?

A significant portion of the somewhat limited geographic literature on mass communication is devoted to broadcasting and other electronic media (see, for example, several of the essays in Brunn and Leinbach 1991). With these media, many of the interesting geographic questions relate to the reduction of spatial variability—through compression of the effective space across which communications occur (Gould 1991) or the creation of new, shared "places" (Adams 1992). By attending here to newspaper coverage, we examine a mass medium that retains spatial variation, while acknowledging that the space involved may be defined by connectivity as well as physical distance (Gould 1991). Burgess (1990) argued persuasively for expanded attention to the mass media within geography, with particular attention to portrayals of the environment. While differing from her cultural-studies approach, we heed that call with an explicitly geographic investigation of environmental reporting. In the section that follows, we preface our analysis with brief reviews of environmental reporting, geographic influences on news content, and the old-growth forest conflict itself.

Environmental Issues in the News

A variety of authors with different perspectives have attested to the importance of news-media coverage in influencing knowledge levels, opinion, and policy on environmental issues (Atwater et al. 1985; Mazur and Lee 1993; Ader 1995; Davis 1995; Hester and Gonzenbach 1995). Both newspapers and television news play a demonstrable role in setting the agenda for environmental debate (Trumbo 1995). While acknowledging the significance of envi-

ronmental reporting, however, scholars (and indeed some journalists) have been critical of its quality. Among the problems identified in analyses of environmental reporting are a simple lack of coverage (Askari 1995; Graham and Dziuban 1996); the tendency to concentrate coverage on discrete, dramatic crises rather than ongoing phenomena (Schoenfeld et al. 1979; Bendix and Liebler 1991; Bowman 1996); and misstatement or oversimplification (Sleeper 1979; Carmody 1995). Some, particularly critics sympathetic to one side or the other of environmental disputes, go further to allege that coverage ends up being biased as well (Lee and Solomon 1990; Hatfield 1991; Ray and Guzzo 1993).

It is difficult to objectively measure bias in news stories because any report must reflect decisions regarding what facts to include in the story; these decisions in turn establish the story's frame. There have been many efforts to explicate the concept of framing (Entman 1993). Gitlin, for example, described media frames as the "persistent patterns of cognition, interpretation, and presentation, of selection, emphasis and exclusion, by which symbol-handlers routinely organize discourse" (1980: 7). A news report's frame, then, will be determined not just by the facts that are included, but by the choices (attribution, phraseology, source selection, etc.) that present some facts as particularly salient (Entman 1993; Pan and Kosicki 1993; Liebler and Bendix 1996).

Of course, advocates on any issue will have their own frames, that is, their own sense of which facts are most salient. Thus, a story in which all of the facts are correct might still be deemed biased if the dominant facts presented are in accord with one side's frame but not the other. Alternatively, however, attempts to balance coverage by drawing equally from each side's frame in establishing that of the news story may be misleading if one side's view actually has more merit (i.e., demonstrable fact) than the other (Bowman 1996).

Research on media framing of environmental issues has shown that sources do have a significant impact on news frames (e.g., Molotch and Lester 1974; Liebler and Bendix 1996). Moreover, mass-communications research has generally found that reporters rely disproportionately on government officials as sources, resulting in a dominance of official perspectives (Sigal 1986; Brown et al. 1987; but see Liebler and Bendix

1996 for an exception to the latter point). In environmental reporting, this source influence may be amplified by a tendency of reporters to rely on a small set of sources (Friedman 1986, 1991) and to accept source statements uncritically (Dunwoody and Griffin 1993).

In sum, the literature on environmental reporting emphasizes its importance while questioning its adequacy. Critiques have focused on the quantity, timing, and content of coverage, with studies of the last suggesting that news-story frames (which may or may not be imbalanced) are determined by the selection and arrangement of story elements, including source usage.

Geographic Influences on News Content

Distance

As noted at the outset, the importance of proximity as a "news value" has long been considered axiomatic. In the simplest sense, this is because events tend to be more important to those who are near them. To cite a prominent environmental example, Molotch and Lester (1975) found that both the quantity and longevity of newspaper reporting about the 1969 Santa Barbara oil spill decreased with distance from California. Proximity also increases the coverage of routine (as opposed to exceptional) news events (Martin 1988). But the linkage between distance and coverage is far from absolute. Lutbeg tracked a set of news events and, finding minimal difference in the event-paper distance between papers that chose to cover or not to cover the events, concluded "clearly no bias for stories closer to home is evident" (1983:732).

If these contrasting results suggest that distance is an unreliable predictor of news coverage, does that diminish the role of geography in determining newsworthiness? On the contrary, it suggests that a more sophisticated understanding of the relationships among places is required. As a starting point, it may be necessary to recognize: (a) that the relevant distance may derive from social proximity or separation, rather than a simple physical metric of miles, (b) that place characteristics unrelated to either physical or social distance may affect coverage,

and (c) that there should be more subtle measures of the dependent variable (coverage) than simply whether or not an event has been the topic of a news story.

It must be noted that the impacts of distance may be expressed in ways that are not captured by simple measures of whether an event is covered, or the number and length of stories published about it. Berkowitz and Beach (1993) found that journalists used a greater variety of news sources for local stories than for those outside their metro areas. They noted that journalists develop a diverse pool of sources in their home communities, and that when they go outside those communities, they are more dependent on obvious, high-visibility sources. Martin (1988) reported that the distance between reporters' residences and the communities in which events occurred directly affected both the variety and types of sources used; because of the importance of sources on framing, she suggested that distance could therefore become a source of bias.

Rothbart's "liberal distance function" further suggests that framing may vary with distance. According to this view, the further removed one is from a controversy, the easier it is to be liberal regarding it—essentially an early formulation of NIMBY, but applied to social phenomena rather than risk scenarios: "the group closest to the locus of reform perceives the desirability of the reform differently than those who are distant" (1973:300). Applying this to an environmental reporting situation, it may be "easier" for a newspaper distant from the locus of a controversy to adopt an environmentalist frame, because the community in which it publishes is unlikely to experience any related economic hardship.

Place Characteristics and Social Distance

Distance is not, of course, the only geographic variable that may influence the coverage a paper gives to a news event. Geographers and mass communication scholars have both examined the question of whether the characteristics of a place make events there more likely to be covered by media elsewhere (Brooker-Gross 1983; Singer et al. 1991). But if the concern is to determine why particular events receive different coverage in different communities (as in the current study), then event location is held constant.

Instead, the question becomes whether characteristics of the communities in which different papers are publishing affect the type of coverage they give to the events.

In some cases, similarity of characteristics between places may establish a degree of connection between them, or dissimilarities may make them seem more remote. Thus place characteristics may contribute to social distance (or its inverse, social proximity), which may be quite distinct from the physical distance between the same locales. Carter and Mitofsky (1961) noted the importance of psychological proximity, or the degree to which news consumers identify with a place. Adams (1986) tested this idea in a study of U.S. news coverage of foreign disasters by including social distance (as measured by flow of tourists) as a variable predicting the amount of coverage, and found that it was indeed significant. Again, however, there are contradictory findings: In the case of the Santa Barbara oil spill, there was surprisingly little coverage in the Gulf Coast oil-producing region, despite what would seem to be an obvious linkage (Molotch and Lester 1975).

The importance of place characteristics to coverage is not limited to social distance. Tichenor, Donohue, and Olien have argued that newspapers are highly responsive to the structural characteristics of the communities in which they publish. In particular, they distinguish between homogeneous communities, in which, they argue, consensus is common and media avoid criticism (explicit or implicit) of existing power bases, and more pluralistic communities, in which power is less centralized, conflict is more routine, and the media can actively report on it without challenging community norms (Tichenor et al. 1980; Donohue et al. 1985).

Studies by mass-communication scholars Dunwoody and Griffin have explored the ways in which such structural variables within a community may affect both the amount of coverage local newspapers give to environmental issues and the ways in which they frame them. In assessing coverage of three Superfund sites in Wisconsin, they found that newspapers in relatively homogeneous communities were more hesitant to assign "blame" to corporate polluters than papers in more diverse communities (Dunwoody and Griffin 1993). In a subsequent study of several hundred Midwestern newspapers,

however, they found that coverage of nearby toxic-waste issues was not consistently affected by community pluralism (as measured by racial diversity). Similarly, when they tested for impacts of community reliance on manufacturing (reflective of a unified power base with a possible stake in the issue), the statistical results were equivocal (Griffin and Dunwoody 1995).

Of note, these studies have focused on community homogeneity/pluralism as influencing coverage of local issues, whereas our concern is with coverage by papers of varying distances from the news events. But their thrust has been directed at the possibility that, in homogeneous communities, newspapers may avoid themes challenging established business interests. It seems logical that this avoidance might extend to events farther away. The general theme of environmental concerns taking precedence over business interests may be unpalatable in such a case, even if the actual debate is occurring outside the community. By this logic, newspapers in pluralistic communities would be more likely to cover even distant environmental issues in a manner unsympathetic to business interests than would those in homogeneous settings.

The widespread use of wire-service copy in newspapers might be thought to reduce the importance of place characteristics and social distance, because many papers draw on essentially the same source of text. But the decision making about story content still takes place at the local, editorial level. Typically wire stories are edited for length and content, and they are frequently revised to highlight local angles. Those wire stories that do run without revision reflect the editorial decision by a paper's staff to leave them "as is."

The Controversy: Old-growth Forests and Owl Protection

Our study examines many of these issues in the context of the struggle over protection of the northern spotted owl and the old-growth forests where it lives in the Pacific Northwest. The details of this struggle have been explored at great length in both popular and scholarly books (Dietrich 1992; Wilson 1994; Yaffee 1994); accordingly, we review the owl story only briefly here.

The northern spotted owl (*Strix occidentalis caurina*; all subsequent "owl" references refer to this species unless otherwise noted) is a medium-sized owl that makes (or made) its home in conifer forests throughout much of western Oregon and Washington, and northwestern California (Figure 1). It is a nocturnal species, hunting small mammals by night and roosting in trees by day. These activities are hardly unusual; the attention garnered by the spotted owl has been due not to what it does, but where it does it—old-growth forests. Throughout most of the owl's range, its habitat requirements for nesting and foraging limit it to forests with structural characteristics that take 150 years or more to develop (Forsman et al. 1984; Thomas et al. 1990; Carey et al. 1992; Ripple et al. 1997). To a large extent, that habitat type is found on land administered by the federal government—the Bureau of Land Management and the U.S. Forest Service (USFS).

Range of the Northern Spotted Owl



Figure 1. The range of the northern spotted owl (after Thomas et al. 1990).

This reliance on old-growth conifer stands has put the spotted owl at risk. Because they contain many large, old trees, these are exactly the stands that are most profitable to log. By 1989, owl habitat had been reduced an estimated sixty percent from 1800 levels (Thomas et al. 1990), mostly due to logging, and mainly in the twentieth century. A further threat to the owl is the fact that much of the remaining old-growth is highly fragmented (i.e., interspersed with logged stands), and such fragmentation may disrupt both the owl's social structure and the occurrence of its prey (Carey et al. 1992; Lamberson et al. 1992; Miller et al. 1997; but see Rosenberg et al. 1994 and Carey 1995 for dispute regarding the reasons for the owl's old-growth requirement).

The implication of the linkage between the spotted owl and old-growth forest is that for the owl to survive, logging—especially clearcutting—of old-growth forests must be curtailed. Nor is the highly publicized owl the only species at stake, as there are some forty threatened or endangered species thought to have ranges overlapping that of the northern spotted owl (FEIS 1994). The dilemma is that in this region, logging is important both economically and culturally (Dietrich 1992). And in the postwar era, clearcutting occurred at unsustainable rates, rates that arguably threatened not only the survival of an owl species, but of the old-growth forest-type itself (Hirt 1994). There have been protests over Northwest clearcuts since the 1960s, by individuals and environmental groups. These protests began before the spotted owl was identified as a key species, and in the controversy over the owl's fate, the motivation of many of its advocates has undoubtedly been to use the owl's status to save the forest, not just to save the forest for the owl's sake.

Extensive research on the spotted owl began in the early 1970s, coinciding with the 1973 passage of the Endangered Species Act, which requires the identification and listing of threatened and endangered species, and the development and implementation of plans by federal land-management agencies to protect such species. In the years that followed, biologists' knowledge about the spotted owl expanded greatly, as did discussion and debate over the degree to which it might be threatened and the policies needed to protect it (Yaffee 1995). In 1986, the environmental group GreenWorld petitioned the U.S. Fish and Wildlife Service

(FWS) to list the spotted owl as a threatened species. This was a critical step, as such a listing would make preservation of owl habitat mandatory under the Endangered Species Act. When the FWS declined to do so in late 1987, several environmental organizations joined Green-World in a lawsuit challenging the decision. The following year, the U.S. District Court in Seattle ruled that the FWS decision had been based on political and economic grounds rather than on the available biological data, and ordered a new review of the owl's status (*Northern Spotted Owl et al. v. Hodel et al.* 1988). On the basis of that review, the FWS formally proposed the listing of the owl as threatened in June 1989.

This decision elevated the entire issue from a subject of regional debate to a nationally visible story. The provisions of the Endangered Species Act, triggered by the FWS action, required that large areas (the exact sizes were fiercely disputed) be set aside and protected from logging. The issue was no longer an ecological debate whose implications were apparent only to those immediately affected; now there were the threats of job losses, failing businesses, declining tax bases, and the overall specter of social and cultural disruption of the region's traditional communities. These elements probably would have sufficed to draw some media attention, but other issues piggy-backed onto the owl dispute once it became visible. Chief among these were the use of the issue as a debating point in the 1992 presidential election and renewed debate over the merits of the Endangered Species Act. Table 1 lists some of the more visible events in the five years that followed the listing proposal.

In the years since the FWS proposal to list the spotted owl, raucous debate has ensued on several related topics: What is the actual status of the northern spotted owl? Is it sufficiently distinct from the neighboring California spotted owl (*Strix occidentalis occidentalis*) and Mexican spotted owl (*Strix occidentalis lucida*) to merit protection under the Endangered Species Act? What actions were necessary to protect the species? What would the social and economic costs of those actions be? Was the protection of the owl worth these costs? As the debate continued, the questions broadened: Was the spotted owl simply an example of extreme environmental protection, heedless of human costs? Or was the spotted owl representative of

myriad species threatened by economic development, heedless of environmental costs?

The Frames: "Pro-cut" versus "Pro-save"

Integral to this debate was the effort of the opposing sides to cause media accounts to reflect, or at least incorporate, their frames of the issues. The information campaigns of the timber industry and environmental organizations produced competing social realities of the old-growth controversy for presentation to the media (Lange 1993; Yaffee 1994). For the pro-cut side, this meant emphasis on scientific uncertainty (perhaps the owls do not require so much intact forest, perhaps they can survive in second-growth forest, perhaps they are not genetically a species at all), and the negative social and economic repercussions of reduced logging (loss of jobs, tax revenues, and a traditional way of life). The keystone of this frame was "jobs vs. owls," a message that owl protection would directly result in throwing working people out of their jobs. For the pro-save side, the frame involved making the science seem certain by emphasizing the near unanimity of research linking the owl to old-growth, but went beyond that to emphasize greater complexity (whole-log exports and structural changes in the industry as the "real" causes of timber job losses) and higher ecological stakes (the loss of irreplaceable "ancient forests," erosion and fishery damages due to clearcutting, and destruction of an ecosystem rather than a single species).

We have demonstrated elsewhere that the relatively simple frame of the pro-cut side translated more readily to network television news (Liebler and Bendix 1996), but the quite different constraints of print and broadcast news mean that those findings are not automatically transferable to newspaper reports of the debate.

Research Objectives

In our exploration of newspaper coverage of the debate, we addressed four specific questions:

Q1. Nationwide, did newspaper coverage reflect the frame favored by one side over the other?

Q2. How did the amount and content of coverage vary spatially?

Table 1. Key Events in the Spotted Owl Controversy, 1990–1995

1990	
April	Report of the Interagency Scientific Committee to Address the Conservation of the Spotted Owl (Thomas Committee) is released; its evaluation of the owl's habitat protection needs is considered exorbitant by logging interests, and inadequate by some environmentalists.
June	FWS officially lists northern spotted owl as a threatened species; Bush Administration announces "Five-Point Plan to Preserve Owl and Protect Jobs."
September	USFS announces it will adopt a policy "not inconsistent with" Thomas Committee plan, while also proposing timber sales in areas previously set aside for owl protection. It does not issue an Environmental Impact Statement (EIS) for the decision.
1991	
February	Federal District Judge Zilly orders FWS to identify critical owl habitat for protection.
May	Federal District Judge Dwyer rules that USFS failure to publish an EIS for its owl-management strategy violates the National Environmental Policy Act, and bans timber sales in potential owl habitat on the national forests until one is prepared.
September	"Gang of Four" scientists (Jack Ward Thomas, John Gordon, Jerry F. Franklin, and K. Norman Johnson) report to Congress that there is no management option by which extensive timber harvests can be made compatible with habitat protection.
October	Interior Secretary Lujan convenes cabinet-level "God Squad" with authority under the Endangered Species Act to decide whether economic impacts justify setting aside species protections.
1992	
July	Judge Dwyer rules that revised EIS developed by USFS is still insufficient, in part because it ignores threats to other species (thus widening the issue, legally at least, beyond spotted owls). He continues ban on timber sales.
September	President Bush and Governor Clinton campaign in Northwest; the former promises to "make people more important than owls" while the latter expresses sympathy for both sides.
1993	
April	President Clinton holds Timber Summit in Portland, OR; at conclusion, he promises development of a plan within sixty days (a deadline later extended) to reconcile environmental protection with social and economic well-being of the local populace.
June	Outline of the favored "Option 9" plan from the Federal Ecosystem Management Assessment Team (FEMAT) is leaked to the press; the plan would allow logging at a rate less than a third of pre-1989 levels, but substantially more than has been allowed under Judge Dwyer's injunctions. All sides object.
July	President Clinton announces his choice of Option 9. The administration presents a draft of the EIS which they hope will persuade Judge Dwyer to lift his injunction.
November	President Clinton selects Jack Ward Thomas (now famous for the 1990 report by the committee he chaired) to be new head of the USFS.
1994	
February	Administration announces details of Final EIS for the Option 9 plan; timber-sale levels have been further reduced in hopes (only partially borne out) that environmentalists will endorse the plan to Judge Dwyer.
December	Judge Dwyer approves the Clinton Forest Plan. Each side still objects that the plan represents abdication to the other.

Q3. Could spatial variation, as discovered in answering Q2, be related to the physical distance between the communities in which newspapers were published and the north-western locus of the controversy?

Q4. Could spatial variation be related to place characteristics of the communities in which the papers were published?

Methodology

Newspaper Selection and Content Analysis

We content-analyzed all of the news coverage appearing in ten newspapers over the five-year period (1990–1994) following the proposal of the FWS to list the spotted owl as endangered.

This time period allowed us to study coverage after the story had become nationally visible, and while new developments continued to arise (see Table 1). These changing developments meant, of course, that the nuances of the debate shifted over time. But although details may have varied, the basic underpinnings of each side's views were largely consistent.

We chose the newspapers to ensure some geographic variability (Figure 2), but included only papers with circulations between 300,000 and 600,000 in order to control for organizational resources that might affect reporting practices (this accounts for the apparent underrepresentation of the Intermountain West, as well as the absence of familiar but larger papers such as *The New York Times* or *Washington Post*). Two of the papers (the *Oregonian* and *Seattle Times*) circulate within the actual center of controversy (i.e., within the owl's range), a third (the *San Francisco Chronicle*) is virtually on its border, and the remainder are at substantial but varying distances. All of the newspapers are situated in large urban centers and are major media voices for their respective regions.

All of the newspapers in the sample were available in digital form, either on CD-ROM or the Lexis-Nexis and Dialog online databases.

This allowed the efficient use of keyword searches, in place of reliance on printed indices. We examined all stories including either of the phrases, "old-growth forest" or "spotted owl." All news stories reporting on the controversy in the Pacific Northwest were retained in the sample; editorials, opinion columns, and letters were excluded.

Variables coded for each story included the length (number of words, readily counted with the stories in digital form), the number of sources appearing in the story (broken down into "pro-cut," "pro-save" or "neutral"), and the number of themes discussed in the story that were identifiable as fitting either the pro-save or pro-cut frame.

Sources were classified according to the statements attributed to them. Such classification was usually straightforward, as in the identification of a pro-cut¹ source in a story about President Clinton's 1993 "Timber Summit":

But, Dan Tomascheski, vice president of Sierra Pacific Industries of Redding, Calif., told the president that setting aside old-growth preserves "would be a disaster for the timber industry . . . in the Pacific Northwest" (Yozwiak 1993: A1).

Pro-save themes included inherent limits to how long logging could continue even without



Figure 2. Distribution of newspapers analyzed for this study.

owl protections, the role of owls as "indicator species" reflecting the overall health of the ecosystem, problems other than owl loss resulting from old-growth logging (erosion, fisheries deterioration, etc.), overseas exports of logs from the Pacific Northwest, research indicating that spotted owls are limited to old-growth forests, and the irreplaceability of "ancient forests." Pro-cut themes included job losses due to owl protection, loss of tax revenues due to owl protection, lumber price increases due to owl protection, impacts of owl protection on traditional ways of life in logging communities, research indicating that spotted owls are not limited to old-growth forests, and suggestions that the northern spotted owl might not actually be a distinct species.

The themes were readily identified in the news stories, and we recorded the presence of each theme that appeared in a story. The following excerpt contains elements of the frames from both sides, with one pro-cut theme (jobs versus owls) and one pro-save (exports):

At the center of the controversy has been the northern spotted owl. Judges, responding to environmentalists' lawsuits against the Reagan and Bush administrations, banned logging of old-growth trees in large areas of public forest lands in the Northwest to protect the owl under the Endangered Species Act.

As a result, timber workers have blamed the owl for their industry's economic woes, while environmentalists have pointed to other factors, such as exports that cost wood-processing jobs in the United States (Dawson 1993:A7).

Physical Distance and Place Characteristics

For our purposes, physical distance was a straightforward measure of the distance in kilometers between the city in which a newspaper is published and the nearest city to it within the owl's range. For place characteristics, we used variables reflecting economic connection with the Pacific Northwest, as well as political patterns, employment in timber-related industry, patterns of environmentalism, and pluralism. All of these except pluralism can be considered components of social distance, since their potential impact on coverage would be based on their role in establishing the degree of connection between the place of publication and the events being reported.

For a measure of economic connection, we used the volume of Federal Express traffic between the cities in which the newspapers published and the two large cities within the spotted owl range (Seattle and Portland).² The data we used are from the 1990 portion of those that were analyzed in Mitchelson and Wheeler's (1994) study of interurban information flows.

For the political variable, we used 1992 county-level voter registration figures from the 1992 general election, dividing the percent Republican registration by the percentage Democratic registration. The resulting variable reflected a Republican majority if greater than 1, and a Democratic majority if less than 1.

For timber employment, we used two measures calculated from the U.S. Census Bureau's 1993 County Business Patterns Economic Profiles: the percentage of employed persons working in the lumber and wood products industries (logging, sawmills, etc.) and the percentage of annual payroll derived from those industries.

For environmentalism, we used Wikle's (1995) data for membership in environmental organizations. These are location quotients calculated at the county level for total 1993 membership in ten U.S. environmental organizations. They thus represent concentration of membership in each county relative to the overall rate of memberships in the U.S., and are a reasonable measure of the level of environmental "sympathy" in those counties.

We used two variables to measure the homogeneity/pluralism of the communities in which the newspapers publish. The first was political: we took the absolute value of the difference in Republican and Democratic voter-registration percentages. A high value would thus reflect political homogeneity, with one party dominant, while a low value would reflect pluralism, with neither dominant.³ The second was more directly environmental. We assumed that environmental organizations do not draw substantial membership from persons working in the timber industry, and that environmental group members and timber workers tend to have opposing views on issues like endangered-species protection. We standardized the values (described above) for environmental membership and percentage of lumber- and wood-products-industry employment, and then used the absolute value of the difference between the z-scores of those two variables. For the resulting variable, high values again represent homogeneity (either

environmental membership or lumber-industry employment high relative to the other), whereas low values are suggestive of pluralism.

All of the place characteristic measures except for the Federal Express data were at the county level. To determine which counties to include in our analyses, we obtained breakdowns of circulation by county from published sources and newspaper business offices. For each paper, we included data from any county that accounted for 20 percent or more of the paper's circulation. In many cases, only one county met that criterion. Where there was more than one county, we weighted each county according to its relative contribution to circulation, then summed the figures to arrive at a single value of each variable for the paper.

Data Analysis

Our first question asked whether the overall coverage, across all papers, favored either frame in the debate. Our content analysis measured two news-story components that could potentially be reflective of one or the other: the inclusion of sources favoring one or the other side, and the inclusion of themes that were congruent with one frame or the other. For each news story, we subtracted the number of pro-save sources from the number of pro-cut sources, and the number of pro-save themes from the number of pro-cut themes. The resulting variables (dubbed "sourcebalance" and "themebalance") were positive if they favored the pro-cut frame, and negative if they favored the pro-save theme.⁴ We used t-tests to determine whether either sourcebalance or themebalance differed significantly from zero (i.e., whether either side was significantly favored).

We addressed the open-ended, descriptive Question 2 (how did coverage vary spatially) visually, plotting graphs of the number of stories, the average length of stories, the average number of sources used in stories, and the means for sourcebalance and themebalance by newspaper.

For the remaining two questions, we regressed the number of stories and the means for length, total sources, sourcebalance and themebalance on distance in km (Question 3) and on the place-characteristic variables (Question 4). For these questions, the unit of analysis was properly the newspaper, rather than the individual news story. As a result, our analyses included only 10

observations. This small number of observations is not ideal for regression, and suggests that the results should be interpreted with caution. The limited sample size imposes particular concern that the regression assumption of normally distributed variables might be violated. We used the Shapiro-Wilk test to check the normality of each of the variables included in the regressions. Variables that were found not to be normally distributed (i.e., $p > .05$) were log-transformed to normalize the distribution.

With so few observations, multiple regression was not practical. Consequently, the relative contribution of the different independent variables can only be assessed by comparison of the variance explained in each of the simple regression equations.

Results

The Data

A total of 408 news stories met the criteria for inclusion in our sample. Coverage over the five years varied from just 10 articles averaging 270 words each in the *Atlanta Constitution* to 148 stories averaging 1036 in the *Seattle Times* (Table 2). The number of sources referred to in the stories ranged from zero (quite common in brief reports of court rulings and the like) to as many as 21 in lengthy analytical pieces. The number of themes (from among those coded) appearing in the stories ranged from zero to eight, with an overall average of 1.4.

The newspapers' distance from the owl's range averaged 1948 km, and ranged from 0 km (Seattle and Portland) to 3862 km (Boston). The average figure for Federal Express traffic to/from the region was 1444. The cities actually within the region, unsurprisingly, had the largest number of shipments to and from it. But this variable was not strongly correlated with physical distance, as Eastern cities like Boston and Atlanta had substantially more Federal Express traffic than closer communities like Phoenix and St. Louis.

The Houston and Phoenix papers were the only ones circulating in communities with Republican majorities, with the Rep/Dem registration ratios for the others ranging from .34 for the San Francisco area (Alameda, San Francisco, and San Mateo counties) to a near-even .99 for St. Petersburg. Lumber employment was

Table 2. Coverage Characteristics, by Newspaper

Newspaper	Number of Stories	Average Story Length (words)	Average No. of Sources Per Story	Sourcebalance ^a	Themebalance ^b
<i>Arizona Republic</i>	25	472	2.6	0.52	0.28
<i>Atlanta Constitution</i>	10	270	0.7	0.00	0.30
<i>Boston Globe</i>	10	600	3.1	-0.30	0.10
<i>Houston Chronicle</i>	13	666	3.1	0.00	0.85
<i>Minneapolis Star-Tribune</i>	26	562	2.3	-0.15	0.42
<i>(Portland) Oregonian</i>	124	887	4.0	-0.44	0.08
<i>San Francisco Chronicle</i>	30	1029	4.2	-0.40	0.37
<i>Seattle Times</i>	148	1036	4.4	0.11	0.22
<i>St. Louis Post-Dispatch</i>	12	751	4.2	-0.25	0.00
<i>St. Petersburg Times</i>	10	390	1.3	-0.40	0.10

^aSourcebalance = pro-cut sources – pro-save sources

^bThemebalance = pro-cut themes – pro-save themes

of limited importance (< 1 percent of either persons employed or annual payroll) in all of the communities, including those in the Pacific Northwest. Although there was variance, with percentages for both variables ranging from thousandths to tenths of a percent, these numbers suggest that the industry no longer represents a dominant economic interest in any of the urban areas in which these papers are located.

These same areas are, however, centers of enthusiasm for environmental groups. The environmental membership variable was a location quotient, the ratio of the counties' membership rate to national rates, so any values greater than one reflect membership rates above the national average. Only Houston had an environmental location quotient below 1.0; the rest varied from 1 (Phoenix) to 2.34 (San Francisco).

The communities with minimal voter registration majorities for either party, were, by definition, those with strong political pluralism. St. Petersburg was by far the most pluralistic by this definition, with a Democratic majority of less than 0.5 percent. San Francisco, Atlanta and Seattle, with overwhelming Democratic majorities (> 20 percent) had the least political pluralism. Because environmental pluralism was considered high if the difference between standardized values of lumber employment and environmental membership was low, environmental pluralism could be found either in cities having both above-average lumber employment and environmental membership (e.g., Seattle) or those below average for both (e.g., St. Peters-

burg). Conversely, those with high environmentalism relative to lumber employment (San Francisco) or high lumber employment relative to environmentalism (Phoenix) were less pluralistic. The use of standardized scores to calculate environmental pluralism should not mislead: In the Phoenix (Maricopa County) example, the high lumber employment was only relative to the other counties in the sample, not relative to other fields of employment.

Framing in the Overall Coverage

The two measures we developed to quantify the agreement of coverage with the pro-cut and pro-save frames were sourcebalance and themebalance. For the former, the average across the 408 news stories was -0.13, reflecting a slight tendency to use pro-save more than pro-cut sources. The difference was not statistically significant, however ($t = -1.51$, $p > .1$). The themebalance average was 0.22, reflecting a significant ($t = 4.49$, $p > .001$) tendency to include pro-cut themes more often than pro-save. Interestingly, none of the newspapers in the study had a negative average (Table 2); all except the *St. Louis Post-Dispatch* averaged more pro-cut than pro-save themes.

Spatial Variation

Reference to Table 2 and Figure 3 demonstrates that there was indeed substantial

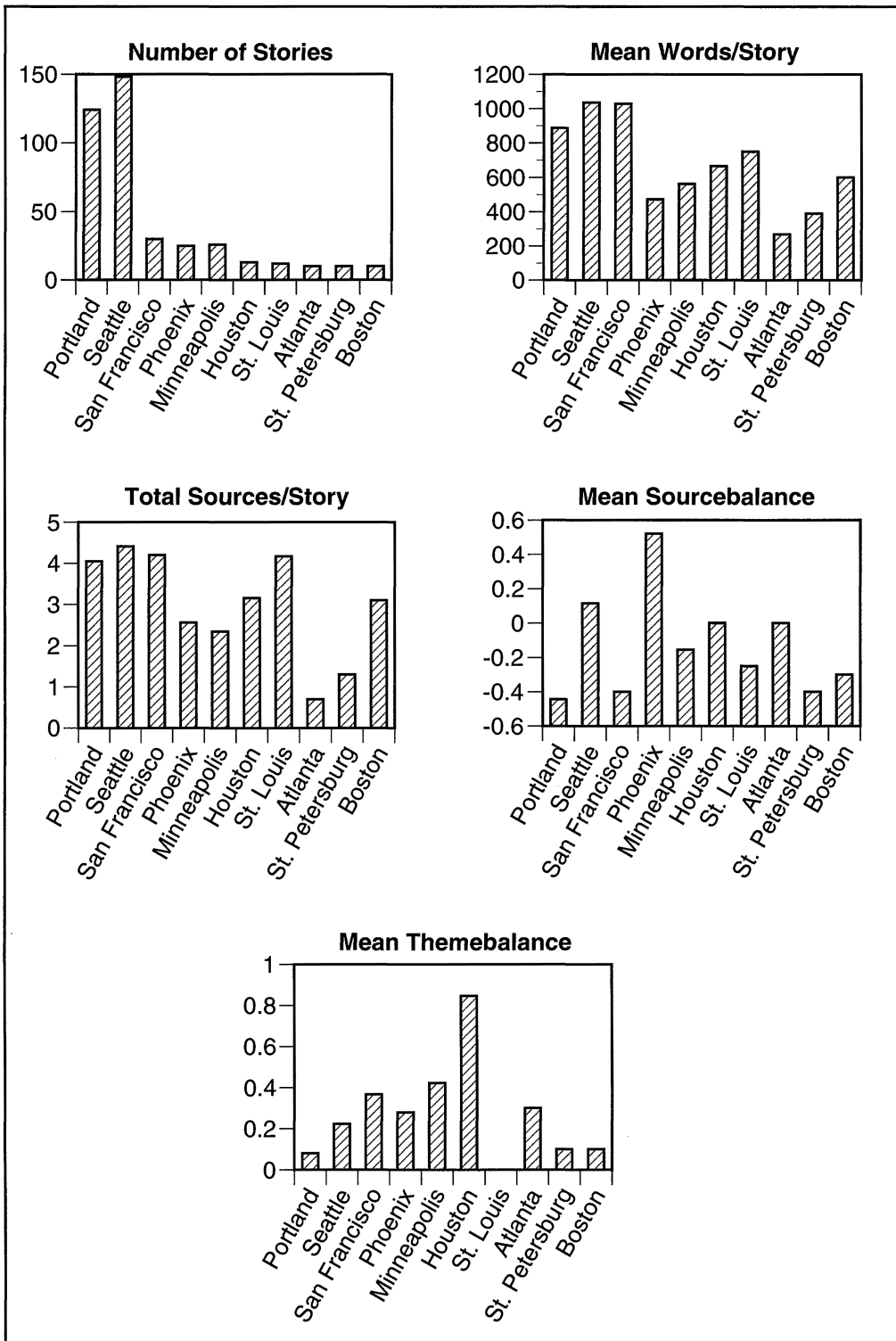


Figure 3. Variation in coverage among newspapers.

variation in the coverage provided by the different papers. The Portland and Seattle papers each published well over a hundred stories, while none of the others had more than 30. The difference in story length was less profound, but the two southeastern papers, the *Atlanta Constitution* and the *St. Petersburg Times*, are notable for the brevity of their stories, with both averaging under 400 words. To a large extent, the stories in these papers, especially the *Times*, were single paragraphs about agency pronouncements or court rulings set within "Nation in Brief" or "National Digest" columns, as with the following from the *St. Petersburg Times*:

Judge rules against loggers: A federal judge in Portland, Ore., issued a preliminary injunction Wednesday, blocking all logging in old-growth forests on U.S. Bureau of Land Management property because of danger to the northern spotted owl's habitat ("National Digest . . ." 1992:12A).

The higher averages for the other newspapers reflected the inclusion of more analytical pieces, with descriptions of the setting, explanation of the arguments, and interviews with the players in (and observers of) the debate. Because longer stories allow room for inclusion of more sources, it is unsurprising that the distribution of total sources per story (Figure 3) essentially parallels the graph for story length.

The two variables reflective of framing, sourcebalance and themebalance, also show considerable variation among newspapers. Given the low averages for total source use, the differences between the *Arizona Republic* (most pro-cut) and the *Oregonian* (most pro-save) are substantial. And similarly, with the overall average of themes mentioned less than 1.5, the differences between the *St. Louis Post-Dispatch* (balanced themes) and the *Houston Chronicle* (averaging .85 more pro-cut than pro-save) are noteworthy.

Assessing the Impacts of Physical Distance and Place Characteristics

Were one to examine only the relationships between coverage and physical distance (Table 3, and Figure 4), one could well conclude that spatial variation in the amount of coverage is indeed a function of the traditional relationship between distance and newsworthiness. Both the number ($R^2 = .70$) and length ($R^2 = .60$) of stories declined with distance, a relation-

ship that is intuitively logical and (despite the limited degrees of freedom) statistically significant. There is also a significant decrease ($R^2 = .46$) in the number of sources used.

But physical distance, interestingly, does not show the strongest relationship to the quantity of coverage. Quantity also increases with Federal Express traffic, and the relationship for number of stories is actually stronger ($R^2 = .78$) than was the case with physical distance. Lumber employment, too, shows a strong relationship with the number of stories ($R^2 = .66$), although none whatsoever with story length.

Unlike the quantity variables and total sources, the framing variables are not strongly related to any of the predictors, but they were more responsive to place characteristics than to physical distance. In communities with high Republican registration, a higher proportion of pro-cut sources appears in the news stories ($R^2 = .30$), and in communities with high environmental membership, the proportion of both pro-save sources ($R^2 = .21$) and pro-save ($R^2 = .17$) themes increases, although it should be noted that the small number of observations drops these relationships below the .05 significance level.

Discussion

Our initial finding, of a significant imbalance favoring the pro-cut frame, may be at odds with a common perception of liberal, environment-friendly media. The consistent appearance of pro-cut themes was largely due to the idea of jobs lost due to owl protection. This was by far the most common theme in every one of the ten newspapers. Some might suggest that this simply represents the bald fact that owl protection did cause major job losses, with significant social implications. Such a conclusion presupposes, however, that the frequency with which this theme appears demonstrates its unambiguous truth. In a detailed analysis of a time series of northwestern logging employment, Freudenburg et al. concluded otherwise:

this common belief is remarkably devoid of empirical support. There is simply no quantitative evidence of any statistically credible increase in job losses associated with the federal listing of the northern spotted owl as a "threatened" species (1998:22).

Table 3. Explained Variance and Significance (P) for Regressions of Story Characteristics on Distance and Place Characteristics

Independent Variable	Number of Stories (log-transformed)	Average Story Length (words)	Average No. of Sources per Story	Sourcebalance ^a	Themebalance ^b
Physical distance (km)	.70 (.003)	.60 (.008)	.46 (.032)	.02 (.721)	.00 (.926)
FedEx traffic	.78 (.001)	.60 (.008)	.38 (.056)	.01 (.786)	.02 (.694)
Political registration	.13 (.316)	.23 (.164)	.09 (.400)	.30 (.099)	.08 (.433)
% Lumber employment (log-transformed)	.66 (.004)	.06 (.485)	.04 (.562)	.11 (.351)	.03 (.642)
% Lumber payroll (log-transformed)	.26 (.134)	.01 (.788)	.00 (.958)	.13 (.335)	.05 (.533)
Environmental membership	.17 (.237)	.38 (.059)	.26 (.136)	.21 (.177)	.17 (.240)
Political pluralism	.14 (.295)	.27 (.122)	.12 (.325)	.07 (.466)	.00 (.899)
Environmental pluralism	.04 (.587)	.11 (.343)	.18 (.225)	.01 (.832)	.00 (.951)

^aSourcebalance = pro-cut sources – pro-save sources

^bThemebalance = pro-cut themes – pro-save themes

This conclusion is controversial, and certainly some would choose to argue the point. But it is, at the very least, an indication that “jobs versus owls” does not represent a known verity, intrinsically worthy of preference. And the object of the present analysis is not to argue “bias,” in the sense of media favoring one side or the other over the “truth,” but rather to determine whether the themes presented align more with one side’s preferred frame than the other’s. In this instance, such is clearly the case.

Our data confirm that there was indeed spatial variation in the coverage of this environmental issue. Concerned citizens, relying on their local daily papers, must have had very different impressions of the importance of the issue (based on the amount of coverage) or of the merits of the two sides (based on the frames presented) depending on the city in which they lived. This might be true because they varied in how far they lived from the actual old-growth forests. But the data suggest that the amount of coverage was at least as closely related to the degree of actual interaction between cities, reflected in the flow of Federal Express packages. This finding is logical enough—one might expect newspapers to pay more attention to news of communities with strong ties to their own. These findings simply remind us that this social proximity is at least as important as phys-

ical proximity, and the two may not be well correlated.

Although the decrease in the number of sources with distance is congruent with the findings of Martin (1988) and Berkowitz and Beach (1993), the reasons are probably dissimilar. Their reasons related to source choices made in reporting by newspapers’ staff. In the spotted owl dispute, most of the newspapers outside of the west coast (exceptions were the *Houston Chronicle* and the *Boston Globe*) relied on wire-service reports more than staff-generated copy to cover the story. Since their staff were not doing the reporting, the fact that they were likely to know few sources in the Pacific Northwest had little impact. Instead, the tendency to run shorter stories in the more distant papers is probably responsible for this trend.

The findings relating the framing variables to political and environmental membership patterns suggest an unsurprising tendency for newspaper coverage to reflect the likely predilections of the local readership. In the western U.S., supporters of development tend to assert that environmental issues are pressed by “outsiders,” often specifically identified with the media, who do not understand or sympathize with local conditions. This assumption would suggest that the framing variables should have been more responsive to distance—either physical or

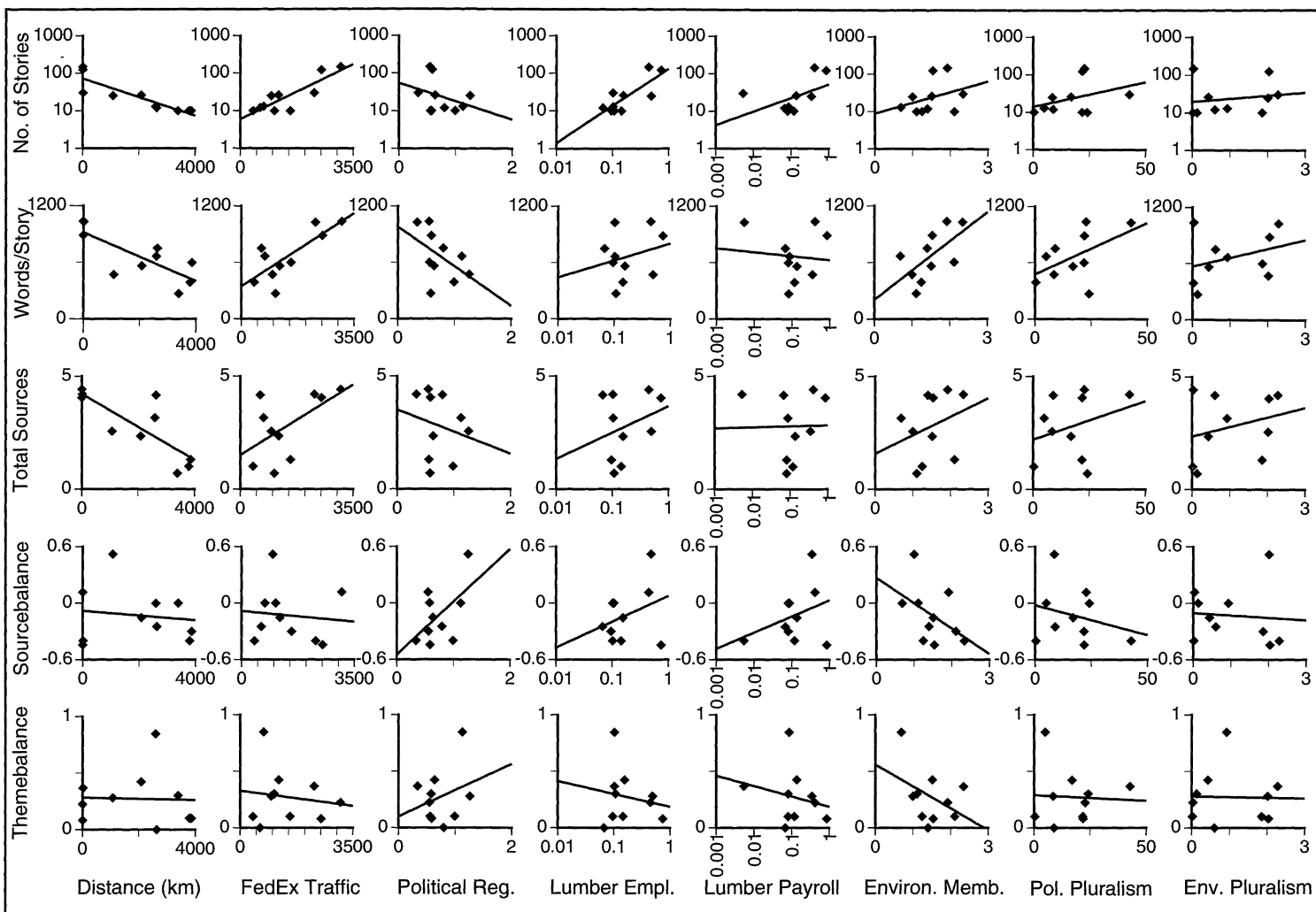


Figure 4. Bivariate plots of coverage by distance and place characteristics.

social. But most of these variables were striking in their failure to correlate with any of the predictor variables we measured. We suspect that this reflects a form of social distance for which we had little variance in our sample: the distinction between urban and rural. The use of major metropolitan dailies in our study ensured that all of the newspapers were located in large urban areas. Had we examined papers published in small rural communities of the Pacific Northwest, we might well have found proximity yielding coverage even more sympathetic to the pro-cut frame. Such a comparison might well prove of interest, although it would pose formidable methodological challenges.

That comparison might also reveal a role for pluralism, which proved largely irrelevant to the coverage we analyzed. Again, this probably reflects the size of the cities in which our newspapers publish. As with most large American cities, they are all fairly pluralistic, and none of them is directly dependent on the lumber industry for their economic well-being. Apparently that combination meant that there was neither the homogeneity nor the economic stake present that would have been needed to affect the framing of this conflict.

Figure 3 reminds us, though, that there *was* geographic variation in the framing of this debate, even if our measures do not explain it. Given the lack of explanation provided by the community-level social variables that we used, it is likely that much of the variance is related to individual and organizational-level variables. Newspapers are not simply a reflection of their communities; they are put together by individual reporters and editors, working within the constraints of organizational resources and policies. The search for explanation could profitably incorporate such variables as ownership and the characteristics of the newsroom employees, variables that did not fit into our search for specifically geographic causes.

Conclusion

Virtually all commentators on current affairs, regardless of their political persuasion, emphasize the importance of news media in shaping our attitudes and debates. There seems to be little doubt that an understanding of the role of media is therefore central to understanding how

these attitudes and debates evolve. To the extent that media coverage varies spatially, this understanding must have a geographic component. Although some research can be found regarding spatial variation in news coverage, much of it is in the mass-communication literature, with little contribution from geographers. This study reflects our belief that the understanding of media coverage has much to gain from a geographic perspective. Because both the environment and attitudes and perceptions regarding the environment have a long history of study in geography, we have chosen in this paper to specifically address environmental news.

Hence our purpose here was to examine the geographic variation in newspaper coverage of a major environmental story, and determine the extent to which it is explained by accessible geographic variables. The findings demonstrate that measures of physical and social distance can be used to successfully predict variables related to the amount of coverage. We had less success in explaining variation in the framing of the issue, but believe that the question is of sufficient importance to merit further attention.

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Notes

1. In a literal sense, this is actually "anti-save" rather than "pro-cut," but we considered the net rhetorical impact to be favorable toward continued logging, and coded all sources making such statements as "pro-cut."
2. The Federal Express data are actually organized by airport rather than by city. In two instances, we used the data for airports located in neighboring cities (Tampa and Oakland) because

they handled the Federal Express shipments for the cities of interest (St. Petersburg and San Francisco).

3. We are aware that pluralism in general, and political pluralism in particular, are far too complex to be fully encapsulated by the measures described here. These measures do, however, capture significant components of pluralism that are likely to be relevant in this study.
4. Although there were many sources who had been coded as neutral, these had a null impact mathematically because they pushed the summary number toward neither positive nor negative.

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