By Steven H. Chaffee and Donna G. Wilson

Media Rich, Media Poor: Two Studies of Diversity in Agenda-Holding

Both Wisconsin and national data indicate entropy and diversity of agenda are higher in communities that have more newspapers.

►Studies of the effects of mass communication normally work from a model of content-specific directional attitudinal influence on individuals. That is, the typical study examines changes in the opinions of a person that correspond to the arguments made in a message to which he has been exposed. Innovative formulations in media effects analysis consist of deviations from this model. For instance, agenda-setting research involves the traditional content-specific influence of community news sources on individuals, but it does not inquire into the attitudinal direction of that influence.[1] Recent conflict and consensus studies are novel in their concern with effects on the local community as a system rather than on specific individuals, although they necessarily build upon a content-specific directional attitudinal influence model.[2] Research on the "information gap" is non-attitudinal and concerns an effect of mass communica-

tion on the structure of society as a whole rather than on individuals, but it is closely tied to specific items of media content.[3] The study of "information holding"[4] is non-attitudinal in its conception, but it too is highly content-specific and is rather traditional in focusing on effects on individuals.

This study contemplates a more complete abandonment of the traditional model. It proposes and illustrates a form of media effects research that is not concerned with directional attitudinal outcomes nor with specific media content, and which evaluates media impact at the level of the community as a system rather than in terms of individuals. While this approach is novel in empirical research, the origins of its underlying assumptions are several centuries old. The pre-empirical arguments that won adoption of the First Amendment guarantees of freedom of speech and of the press did not revolve around any presumed power of the newspaper to exercise directional persuasive influence on individuals. Instead, it was simply assumed that press freedom would guar-

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[1] See Lee B. Becker, Maxwell E. McCombs and Jack M. McLeod, "The Development of Political Cognitions," in Steven H. Chaffee, ed., *Political Communication* (Beverly Hills: Sage, 1975).

[2] See Phillip J. Tichenor and Daniel B. Wackman, "Mass Media and Community Public Opinion," *American Behavioral Scientist* 16:593-606 (March/April 1973); P.J. Tichenor, J.M. Rodenkirchen, C.N. Olien and G.A. Donohue, "Community Issues, Conflict and Public Affairs Knowledge," in Peter Clarke, ed., *New Models for Mass Communication Research* (Beverly Hills: Sage, 1973).

[3] See G.A. Donohue, P.J. Tichenor and C.N. Olien, "Mass Media and the Knowledge Gap," *Communication Research* 2: 3-23 (January 1975); John T. McNelly and Julio Molina R., "Communication, Stratification and International Affairs Information in a Developing Urban Society," JOURNALISM QUARTERLY 49:316-26, 339 (Summer 1972).

[4] Peter Clarke and F.G. Kline, "Media Effects Reconsidered," *Communication Research* 1:224-40 (October 1974).

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antee a diversity of voices and that the overall result of this would be a political system that was on the whole capable of making informed judgments on public issues.

While new modes of transmission have been added to the national media system through technological innovation in the intervening two centuries, the diversity of viewpoints expressed via those media has not necessarily expanded. Indeed, it may have shrunk appreciably in the past half-century as a consequence of the loss of newspaper competition in many communities. Even with network television and local radio news available to practically every citizen, there are considerable differences in media informational resources from one locale to another in the United States. One current study of media influence in the 1976 presidential campaigns is based on a contrast between two cities, one characterized as "media rich" and the other "media poor."[5] Outside major cities, U.S. citizens can find themselves in locations that are undeniably "media poor" in comparison with the metropolitan locales where one can still expect truly competitive newspapers. Non-network television channels add an element of media richness and they too tend to be found in the major cities.

A central question is whether the apparently greater diversity of media resources available in urban (and suburban) communities manifests itself in a corresponding diversity of perceptions about public issues among its citizenry.

This is not an individual-level matter; it is not presumed under pluralistic political theory that each citizen should hold a full range of views on an issue. What is assumed is only that the total set of opinions held in the community as a whole will be diversified—even though each individual may hold to his own narrow personal viewpoint.

The general goal of reporters and editors in the news industry is to identify issues and explain the various positions that people hold on them. The result, if the news media are "effective" in what they are trying to do, should be two-fold. First, the media audience should come to be concerned with those issues stressed in the news; agenda-setting research indicates that, under certain conditions at least, this is the case.[6] Secondly, there should be diversity of perceptions of public issues. This should manifest itself first in the number and variety of issues that people think are important, and additionally in the variety of conclusions they have reached on those issues.

Lest this conceptual approach seem obvious, it should be pointed out that it is not widely shared in mass communication research. The goal of news communication that is assumed in most writings is that of achieving community agreement or consensus on an issue; Lasswell, perhaps the most influential of the field's pre-empirical theorists, calls this the "correlation function" of communication.[7] Schramm likens the media's persuasive role to those of the tribal council of elders in traditional society and of the salesman in modern times.[8] The "limited effects" model of mass communication[9] practically dismisses mass media as ineffectual because of their apparent failure to convert large numbers of individuals to new positions, or to narrow society's definitions of problems into compact packages. Diversity of opinion, on what problems are important and on what should be done about them, not only is not prized in these conceptions; it is a positive hindrance to getting things done. The media are deemed to have

[5] T.E. Patterson and R.P. Abeles, "Mass Communications and the 1976 Presidential Election," *Items* 29:13-18 (1975).

[6] Maxwell E. McCombs and Donald L. Shaw, "The Agenda-setting Function of the Media," *Public Opinion Quarterly* 36: 176-87 (Summer 1972); Jack M. McLeod, Lee B. Becker and James E. Byrnes, "Another Look at the Agenda-Setting Function of the Press," *Communication Research* 1:131-66 (April 1974); David Weaver, Maxwell E. McCombs and Charles Spellman, "Watergate and the Media: A Case Study of Agenda-Setting," *American Politics Quarterly*, 3:458-72 (October 1975).

[7] Harold Lasswell, "The Structure and Function of Communication in Society," in Lyman Bryson, ed., *The Communication of Ideas* (New York: Harper and Row, 1948).

[8] Wilbur Schramm, "The Nature of Communication Between Humans," in Schramm and Donald F. Roberts, ed., *The Process and Effects of Mass Communication*, rev. ed. (Urbana: University of Illinois Press, 1971).

[9] Joseph T. Klapper, *The Effects of Mass Communication* (New York: Free Press, 1960).

failed when they neglect to "correlate" society into a single viewpoint.

Non-directional societal-level effects studies, then, run counter to traditional norms within the academic community regarding the appropriate test of media performance. This type of impact does, however, accord reasonably well both with Jeffersonian reasoning about press freedom, and with the goals toward which professional news personnel strive in today's comparatively free media environment. At least one recent study approaches the relationship between competitiveness of newspaper market penetration and political reasoning from this viewpoint.[10]

The Measurement of Diversity

A quarter-century ago, a measure of diversity was introduced into communication research. This was Shannon's H, the statistic indicating entropy in a system.[11] The underlying rationale for the measurement of H was Information Theory, and for a while it bade fair to unify all of the empirical sciences.[12] Schramm outlined some of its potential applications to mass communication problems,[13] but it has fallen into relative disuse in social science as in biological science, owing to operational difficulties in applying it to unbounded and living systems. It has been of some value in content analyses[14] and in the study of social mobility[15] in recent years, and a few devotees have used it in place of conventional parametric statistics in other types of data analysis.

Despite its seeming limitations, the statistic H has several properties that make it an ideal measure of diversity of perceptions in a local political system. First, it is a ratio scale with a true zero point; this means that all mathematical operations can be performed on it.[16] More importantly, it can be calculated from purely nominal scale data; directionality, as in an ordinal scale, need not be assumed insofar as the primary observations under study are concerned. One may start with a set of categories and observe the frequency with which

events occurring in the system fall into each category. Calculation of H under Shannon's formula is based on two factors, each of which is substantively important in the concept of diversity as we have been discussing it here. Entropy (H) increases with a greater number of categories, and it decreases to the extent that observations concentrate disproportionately in one or a few of these categories.

Secondary analyses of two recent large probability sample surveys, one of the state of Wisconsin in 1973 and the other a U.S. nationwide survey in 1974, are utilized in this paper. The question on which our diversity measures are based in both cases concerns the respondent's perception of the "most important problem" of the society under study. In the case of the Wisconsin survey, respondents were asked what they thought was the most important problem facing that state; responses (up to three per person) were coded into 33 categories.[17] The nationwide survey, which was

[10] Peter Clarke and Eric Fredin, "The Media and Political Reasoning," presented to Theory and Methodology Division, Association for Education in Journalism, College Park, Md., August 1976.

[11] Claude E. Shannon and Warren Weaver, *The Mathematical Theory of Communication* (Urbana: University of Illinois Press, 1949).

[12] Ludwig von Bertalanffy, *General System Theory* (New York: Geo. Braziller, 1968).

[13] Wilbur Schramm, "Information Theory and Mass Communication," JOURNALISM QUARTERLY 32:131-46 (Spring 1955).

[14] William J. Paisley, "The Effects of Authorship, Topic, Structure and Time of Composition on Letter Redundancy in English Texts," mimeo, Stanford University Institute for Communication Research; James H. Watt and Robert Krull, "An Information Theory Measure for Television Programming," *Communication Research* 1:44-68 (October 1974); Robert Krull, *Program Entropy and Structure as Factors in Television Viewership*, unpublished Ph.D. dissertation: University of Wisconsin, 1973; J.H. Watt, "Television Viewing and Aggression: An Examination of the Catharsis, Facilitation, and Arousal Models," unpublished Ph.D. dissertation: University of Wisconsin, 1973.

[15] David D. McFarland, "Measuring the Permeability of Occupational Structures: An Information-Theoretic Approach," *American Journal of Sociology*, 75:41-61 (July 1969).

[16] S.S. Stevens, "On the Theory of Scales of Measurement," *Science* 103:677-80 (June 1946).

[17] "What do you think are the most important problems facing the state of Wisconsin?" Coding categories: civil rights, cost of living, crime, DNR, drugs, economy, education, energy crisis, environment, farmers' incomes, food, fuel prices, government, highways, housing, inflation, lack of industry, land use planning, laws, mass transit, natural resources, need for toll roads, pollution, poor government officials, poor morals, recreation for young, revenue sources, specific needs of cities, state finances, taxes, unemployment, welfare and other.

conducted following the November 1974 election campaign by the Center for Political Studies of the University of Michigan, asked the most important problems facing the nation; again, up to three responses per person were recorded, and these were coded into 15 categories.[18]

We will characterize these measures as *agenda holding*. The "most important problem" questions have been designed mainly for use in studies of the power of the mass media in setting the public agenda, which has been operationalized as the problems people think are important—regardless of what, if anything, they think should be done about those problems. Since there are a number of limitations on the agenda-setting principle,[19] one should not assume that the agendas measured in the data we are analyzing have necessarily been set by the press. Instead, we can simply note that the problems people identify as important, when aggregated across the population of a community, constitute the public agenda that is held in that community. We expect this to vary from one place to another both because the actual problems of communities differ and because the problems stressed by local media will vary somewhat.

In the measurement of *H* from such data, the number of categories defined by the researchers is not so important as is the number of categories into which the responses actually fall, and the relative frequencies in each. For instance, one might define 100 different "important problem" categories, but chances are that very few responses would fall into more than a dozen or two of them with sufficient frequency to affect the value of *H* significantly. At one extreme, if all responses fell into a single category, *H* would be minimal—zero, in fact

—regardless of the number of categories that had been defined *a priori*.

The calculation of entropy is based on the formula

$$H = -\sum_{i=1}^{n} p_i \log_2 p_i$$

where *n* is the number of possible categories, and p_i is the probability of occurrence of the *i*th category. While any logarithm could theoretically be used in the formula, the base-2 log is conventionally used because of the frequent application of Information Theory to two-state systems such as electronic computers. The result is a binary digit or "bit" which is the form in which *H* is conventionally reported. Another way of expressing the implication of the formula is that the maximum value of entropy for *n* categories is $Hmax = \log_2 n$ bits. For example, if there are 16 categories into which responses can be coded, then *H* cannot exceed $\log_2 (16) = 4.00$. This maximum value would only be reached, however, if exactly 1/16 of all responses fell into each of the 16 categories; any deviation from this perfectly rectangular distribution of responses would reduce the value of *H* below 4.00 bits.

Because *Hmax* varies with the number of categories, the data sets from the two surveys we are secondarily analyzing here will not be directly comparable to one another. *Hmax* = 5.04 for the Wisconsin survey, and *Hmax* = 3.91 for the national survey. The two studies can, however, be viewed as closely complementary to one another. The measures of agenda-holding in the two surveys are similar, as are (to a lesser extent) the coding category schemes. Each study is something of a summative test of the hypothesis that media richness of a community is associated with greater diversity in the public problems agenda held by the citizens of that community. The specification of "media rich" communities is based in both studies on the number of different daily newspapers locally published and circulated; in the national sample study, communities are

[18] "What do you think are the most important problems facing this country?" Coding categories: agriculture, campaign issues, consumer protection, economic and business, foreign affairs, functioning of government, labor; union-management relations, national defense, natural resources, non-political, public order, racial, social welfare, Watergate and other.

[19] See McLeod, Becker and Byrnes, *op. cit.*; Steven H. Chaffee and Fausto Izcaray, "Mass Communication Functions in a Media-Rich Developing Society," *Communication Research* 2:367-95 (October 1975).

also divided roughly by population, a factor that correlates both with number of daily newspapers and with other elements of media-richness (e.g. number of television and radio stations).

The Wisconsin Study

In October 1973 a statewide adult probability sample was drawn by the Wisconsin Survey Research Laboratory for a study of environmental values. Among the questions asked was, "What do you think are the most important problems facing the state of Wisconsin?" Additional probes encouraged the respondent to make a second or third response. These responses were categorized by the Laboratory staff into the 33 topic areas. To measure diversity of agenda-holding we grouped the respondents by county and calculated two statistics. The first measure was simply the mean number of different problem categories mentioned by each respondent. The second was entropy, which was calculated separately for each county on the basis of the distribution of responses across the 33 categories.[20]

The Laboratory's multi-stage sampling design produced interviews in 25 of Wisconsin's 50 counties. These were divided into three groups on the basis of our best estimate of media-richness. The first group of 11 counties is identified as "media-rich"; it includes two kinds of areas: those within the immediate circulation zones of competitive metropolitan newspapers (from Milwaukee, Chicago, or Minneapolis-St. Paul), and those counties in which there is more than one local daily newspaper. Group II consists of nine counties in which there is a single daily newspaper and where metropolitan circulation is a minor factor. Finally, there is a set of six counties in which there is no locally published daily newspaper and little evidence of major dominance from a metropolitan (or even regional) daily from outside. One pragmatic test of the validity of these groupings will be whether the differences found on our dependent variables follow the patterns hypothesized.

Table 1 shows in summary form the relevant data from the Wisconsin survey. It is clear that there is a sharp drop-off in both dependent variables, on the average, between the first (media-rich) group of counties and the other two. There are slight differences between the second and third groups overall; both are in the direction of greater diversity of agenda holding in those which are served by a single daily paper, in comparison with daily-less counties.

The simple comparisons between the media-rich counties on the one hand, and the two groups with lesser media resources on the other, are statistically quite strong. Of 154 comparisons between pairs of counties from these two groups, 115 (75%) are in the direction hypothesized for each dependent variable. Because of a few ties, the significance levels based on sign tests differ slightly ($z = 7.06$, $p < .001$ for mean number of responses per person; $z = 7.39$, $p < .001$ for entropy per county). Of course, it is impossible with this type of analysis to control for other factors that probably have a bearing on both dependent variables, and we should expect such factors as education and the availability of other (non-media) cultural resources to favor the areas that are also classified here as media-rich. Further, our estimates of entropy are based on few respondents in most cases; reasonably stable estimates would require samples of perhaps 50 or more from each locale. Understanding those limitations, we can state at the least that the differences found here are sufficient to establish (a) the hypothesis as one worth pursuing in studies designed more specifically for it, and (b) the entropy measure as one that behaves stably enough to discern at least gross differences between communities represented by small samples.

Since the N for our analysis of entropy is only 25 counties, it is impractical to attempt to subdivide this sample further to control for other community cultural

[20] It should be emphasized that entropy is operationally independent of both the number of respondents and the number of responses per person in a community, since it is calculated from the percentages of all responses that fall into each category, rather than from the raw frequencies.

TABLE 1

Indicators of Diversity in Wisconsin Counties, by Newspaper Resources

County	(N)	Responses/person	Entropy/county
I. Media-rich counties:			
A	(33)	2.03	4.04
B	(118)	1.68	4.00
C	(26)	2.04	3.99
D	(16)	2.06	3.91
E	(14)	2.07	3.87
F	(14)	2.29	3.61
G	(27)	2.22	3.55
H	(19)	1.84	3.55
I	(17)	2.00	3.49
J	(18)	1.78	3.43
K	(14)	1.71	3.23
Weighted mean	(316)	*1.89 responses*	*3.82 bits*
II. One-newspaper counties:			
L	(23)	1.91	3.75
M	(22)	1.68	3.66
N	(13)	1.38	3.62
O	(16)	1.88	3.47
P	(13)	1.23	3.34
Q	(17)	1.65	3.33
R	(12)	2.33	3.22
S	(11)	1.73	3.19
Weighted mean	(127)	*1.73 responses*	*3.49 bits*
III. Counties with no daily newspaper:			
T	(13)	1.85	4.06
U	(14)	1.93	3.46
V	(25)	1.96	3.45
W	(13)	1.31	3.34
X	(18)	.89	3.26
Y	(8)	2.00	2.88
Weighted mean	(91)	*1.64 responses*	*3.44 bits*

NOTE: Data are from 1973 Wisconsin statewide survey. Within each group, counties are listed in descending order of entropy. Interviewing and coding were done by Wisconsin Survey Research Laboratory.

factors that might correlate with diversity of agenda-holding. We turn now to the second study, in which the number of sampling locales is large enough to permit partialing on at least one major correlate, population size.

The National Study

In November 1974, following the national elections, the Center for Political Studies (CPS) of the University of Michigan conducted a nationwide survey of mass communication and political behavior. Because of the current prominence of agenda-setting research, an open-ended question about "the most important problems facing this country" was included in the questionnaire. As with the Wisconsin survey, we have used the data as coded by CPS to estimate the frequency of occurrence of each category in calculating H.

Table 2 presents the results for each primary sampling unit (PSU) in the CPS data set. As in the Wisconsin study (Table 1), communities have been grouped

TABLE 2

Indicators of Diversity in U.S. Primary Sampling Units, by Newspaper Resources

Locale	(N)	Responses/person	Entropy/community
I. Media-rich communities:			
a. Self-representing SMSAs (including suburbs):			
A	(21)	2.19	2.94
B	(18)	2.56	2.84
C	(40)	2.53	2.78
D	(26)	2.27	2.63
E	(20)	2.45	2.55
F	(12)	2.33	2.50
G	(42)	2.55	2.45
H	(35)	2.23	2.45
I	(26)	2.31	2.44
J	(17)	2.52	2.38
K	(54)	2.50	2.31
L	(13)	2.15	2.31
M	(24)	2.13	1.95
Weighted mean	(348)	2.38 responses	2.50 bits
b. Other Media-rich SMSAs:			
N	(11)	2.64	2.95
O	(17)	2.35	2.86
P	(31)	2.32	2.79
Q	(29)	2.14	2.75
R	(22)	2.27	2.69
S	(15)	2.67	2.66
T	(19)	2.11	2.66
U	(13)	2.15	2.61
V	(21)	2.52	2.60
W	(16)	2.50	2.60
X	(20)	2.70	2.59
Y	(25)	2.00	2.58
Z	(13)	2.54	2.55
AA	(12)	1.83	2.52
BB	(37)	1.97	2.47
CC	(21)	2.24	2.32
DD	(18)	2.00	2.32
EE	(14)	1.93	2.31
FF	(17)	1.94	2.26
GG	(21)	1.81	2.23
Weighted mean	(392)	2.23 responses	2.57 bits
II. Single-daily communities:			
a. SMSAs:			
HH	(32)	2.28	2.95
II	(18)	2.33	2.89
JJ	(18)	1.67	2.77
KK	(19)	2.47	2.68
LL	(15)	2.33	2.64
MM	(18)	2.39	2.63
NN	(22)	2.23	2.49
OO	(21)	2.62	2.29
PP	(24)	2.08	2.25

TABLE 2, *continued*

QQ	(22)	1.91	2.07
RR	(29)	2.31	2.00
SS	(8)	1.38	1.62
Weighted mean	(246)	*2.21 responses*	*2.44 bits*

b. Non-SMSA counties:

TT	(16)	2.63	2.92
UU	(15)	2.33	2.92
VV	(12)	2.17	2.85
WW	(32)	2.00	2.76
XX	(28)	1.86	2.62
YY	(11)	2.09	2.53
ZZ	(21)	1.86	2.52
AAA	(20)	1.10	2.47
BBB	(17)	2.18	2.45
CCC	(26)	2.04	2.36
DDD	(13)	2.08	2.34
EEE	(16)	2.25	2.30
FFF	(19)	1.90	2.25
GGG	(24)	1.33	1.99
HHH	(31)	1.90	1.94
III	(10)	1.70	1.90
JJJ	(15)	1.27	1.90
KKK	(17)	1.77.	1.86
LLL	(18)	1.67	1.82
Weighted mean	(361)	*1.88 responses*	*2.35 bits*

III. Non-SMSA counties without daily newspapers:

MMM	(30)	2.00	2.82
NNN	(25)	2.08	2.74
OOO	(24)	1.92	2.63
PPP	(26)	1.92	2.61
QQQ	(17)	2.06	2.55
RRR	(30)	1.93	2.44
SSS	(15)	1.47	2.14
TTT	(20)	1.85	2.06
UUU	(20)	2.25	2.05
VVV	(7)	2.29	1.71
WWW	(14)	1.43	1.70
Weighted mean	(228)	*1.93 responses*	*2.42 bits*

NOTE: Data are from 1974 Center for Political Studies nationwide survey. Within each group Primary Sampling Units (PSUs) are listed in descending order of entropy. Interviewing and coding were done by Center for Political Studies, University of Michigan.

into the three categories of (I) Media-rich (more than one daily newspaper), (II) Single-daily communities, and (III) Communities without local daily newspapers. In addition, the media-rich single-daily groups have both been divided further on the basis of metropolitanism, using criteria developed by CPS from U.S. Census data. The most metropolitan group consists of the 13 largest urban communities in the nation, which in the CPS sampling design are assured of being sampled so that there are data to represent them; these are called "self-representing" standard metropolitan statistical areas (SMSAs). The remainder of the media-rich group, which consists of PSUs that were randomly sampled, is shown separately in Table 1. The single-newspaper communities are

TABLE 3

Summary of Weighted Means in the Two Studies

| | Wisconsin (counties) | National Sample | | |
		Self-rep. SMSAs	Other SMSAs	Non-SMSAs
Mean no. of responses per person:				
Media-rich	1.89	2.38	2.23	--
(N)	(316)	(348)	(392)	
Single dailies	1.73	—	2.21	1.88
(N)	(127)		(246)	(361)
No daily	1.64	—	—	1.93
(N)	(91)			(228)
Mean entropy of responses (in bits) per locale:				
Media-rich	3.82	2.50	2.57	·-
(N)	(11)	(13)	(20)	
Single dailies	3.49	—	2.44	2.35
(N)	(8)		(12)	(19)
No daily	3.44	—	—	2.42
(N)	(6)			(11)

NOTE: Entries are taken from Tables 1 and 2. Data from the Wisconsin counties are not comparable to those from the national sample, since different questions were asked, and different category systems were used in coding the responses in the two surveys. Cell Ns are, respectively, the number of locales represented in calculating the mean entropy per locale. Weighting of entropy scores from each locale is proportional to the number of respondents for that locale.

also divided on the basis of metropolitanism. Here, however, the division is between those that are classified as SMSAs and those that are not. (All of the self-representing SMSAs are clearly media-rich.) Finally, Group III consists of communities that have no local daily paper; none of these comprises an SMSA.

The national study data in Table 2 generally replicate the findings from the Wisconsin study (Table 1), and support the overall hypothesis. The results are somewhat more clear-cut for the measure of entropy per community than they are for the number of responses per person, when the partialing for metropolitanism is considered. The two groups of media-rich SMSAs, which do differ in total population, do not differ appreciably in average entropy—and both are rather clearly above the other three groups on this key measure. On the other hand, the number of problem cate-

gories mentioned by each respondent appears to vary more with metropolitanism than it does with media-richness (when metropolitanism is controlled). These patterns are somewhat easier to see in Table 3, which summarizes the findings from the two studies. Also consistent with the Wisconsin results is the fact that entropy varies very little among the three groups of communities that are classified here as less than media-rich.

Statistically, the simple contrasts between the media-rich communities and the other PSUs in the national study are comparable to the Wisconsin study. Of 1,386 possible comparisons between each of the 33 media-rich PSUs and each of the 42 other PSUs, 74% are in the hypothesized direction for responses per person, as are 62% for the community entropy estimates. By sign test, both findings are highly significant ($z = 25.00$,

p<.001 for responses; z = 12.30, p<.001 for entropy); a less conservative statistical procedure would probably yield higher estimates of significance but would involve more assumptions about the distributions of these variables than appear warranted here.

Discussion

This can be considered a feasibility study, one which has established a case for more penetrating research into the question of diversity of public opinion. To develop a conceptual perspective on these findings, we should first examine some of the major limitations on them. Then we can consider what types of research might be designed in the future.

One obvious problem here has been the "most important problem" question. We have used it in this study because it yields open-ended data, which are essential for measuring diversity, and because it provides comparability between our two data archives. Further, it is not an inconsequential criterion variable; the agenda held by the public in a community is a research topic of considerable interest in both media research and the field of community development. But this is not the only area in which diversity of viewpoints is important. The range of *opinion* on any agenda topic is also worth assessing; so is the degree of variation *across time* either in the problems agenda or in opinions about items on that agenda. Communities in which many different viewpoints on the same topic are aired, and in which shifts in the total public perspective occur, would seem to be functioning more in the manner of the Jeffersonian ideal than those communities where few problems are perceived as important, and where there is little diversity of opinion or change in perspective over time. The role of local media in differentiating communities in these ways is a topic worth more extensive investigation.

The use of local sites that happen to have been sampling units in the Wisconsin and CPS surveys is largely an artifact of those survey designs, but it is

justifiable. We have focused on newspapers in defining media-richness because they generally cover local circulation areas that correspond roughly to communities as we have defined them operationally here. Television has been ignored operationally here, in part because it is more difficult to define the level of TV "media-richness" of a local community where distant signals may be received, or where cable service brings in added channels. What we have not addressed at all with this method, of course, is the role of *national* media— and television pursues much more of a national news orientation than does the newspaper in this country. Cross-societal comparative research comparing different types of national media systems in terms of diversity of public perspective would be very difficult to arrange in the face of political and economic barriers; it is a conceivable long-range model worth bearing in mind, however.

The concept of "media-richness" is admittedly a glib and simplistic one. Carefully designed studies might well be able to discern subtler differences between media systems, such as the impact of various legal controls, or of chain vs. independent ownership, on the degree of diversity. One important link in the hypothesized causal chain that we have omitted in this article is that of diversity of media *content*. As noted, there is already some literature assessing media content diversity by means of entropy measures; the promising results here might well stimulate more such efforts.

Another limitation of this study is its small and variable local sample sizes. While one may assume that sampling error is taken into account in the statistical tests, it is difficult to take terribly seriously estimates for a given community that are based on only a dozen or so cases. A study designed specifically to address the diversity question should (a) sample the same number of persons in each site, (b) select certain communities purposefully to provide a clear contrast in terms of local media re-

sources and (c) draw somewhat larger samples in these sites.

Perhaps the greatest weakness in this design is the obvious fact that there are many possible correlates of diversity as we have measured it here, correlates that could account for our findings without any necessary effects being attributed to media resources. The one major factor that we were able to control in the national study—the community's degree of metropolitanism—does in fact appear to account better for the number, if not the diversity, of agenda problems held by the citizen. While media richness and metropolitanism are naturally related to one another, there is evidence here that their respective consequences are not identical; further research could specify the character of their separate and interacting relationships.

If a sample of a sufficient number of communities were available, a multiple regression design could be substituted for the group-contrasts approach we have had to use here. This would permit the simultaneous comparison of such predictors as educational level, occupational and racial-ethnic distributions, tenure of residence, and other aggregate indices, along with more detailed specification of the community's media characteristics.

An additional contribution of this study might be in stimulating consideration of entropy as a measure for other mass communication variables. For example, media entropy of a particular community could be computed from the distribution of newspaper circulations. Occupational and ethnic distributions could also be conveniently summarized via the H statistic. Voting entropy could be computed from the proportion of votes each candidate received; this method could be particularly useful in assessing elections in which more than two candidates receive significant numbers of votes.

Meanwhile, the results reported here are highly encouraging as a first step in assessing at an empirical level the early principles on which the American nation's media system has been built.

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