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Issue Diversity in the Internetage
Changes in Nominal Issue Diversity in Germany between 1994 and 2005

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Abstract: Does the diffusion of the internet lead to a fragmentation of modern societies? The fragmentation hypothesis suggests that the internet offers an enormous amount of different information, eventually considering fragmentation to be growing. In consequence, there will be a smaller amount of common issues people are concerned about. Takeshita (2005) proposes to use issue diversity to study such effects. The paper reviews studies of issue diversity and discusses different effects on fragmentation. Additionally, survey data collected in Germany between 1994 and 2005 was analysed. During this time the major diffusion of the internet took place. The results show different effects for different diversity indicators, but no general growth in issue diversity during the time of internet diffusion.[1]

Keywords: Diversity, Fragmentation, Issues, Internet

Zusammenfassung: Führt die Verbreitung des Internets zur Fragmentierung moderner Gesellschaften? Die Fragmentierungshypothese geht von einer Ausweitung und Differenzierung von Informationen durch das Internet aus sowie einer zunehmenden Fragmentierung. In Konsequenz nimmt die Anzahl von Themen ab, die große Teile der Bevölkerung gleichermaßen für wichtig erachten. Takeshita (2005) schlägt vor, Maße der Themenvielfalt zu verwenden, um Fragmentierungseffekte zu untersuchen. Der vorliegende Beitrag diskutiert unterschiedliche Ansätze und Studien zu Vielfalts- und Fragmentierungseffekten. Zusätzlich werden Umfragedaten aus der BRD zwischen 1994 und 2005 analysiert, also dem Zeitraum, in dem sich das Internet verbreitet hat. Die Ergebnisse zeigen zwar unterschiedliche Effekte je nach Vielfaltsindikator, aber keine generelle Zunahme in der nominalen Themenvielfalt.

Schlüsselwörter: Vielfalt, Fragmentierung, Issues, Internet

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1. Issue Diversity and Fragmentation

Diversity in political positions and societal perspectives is an important characteristic of democratic societies. A system of free media and diversity in media offers is regarded as precedent condition for this. Knowing about many issues and finding information about these issues in the mass media helps individuals to develop opinions and act reasonably. From this point of view, mass media shall inspire the individual by providing information about different issues. From another point of view, mass media should reduce diversity and instead enhance social integration and conformity. Mass media should help to find a consensus in society about the most important problems and ensure that individuals find like-minded others who are concerned about the same problems.

Takeshita (2005) proposed studying fragmentation by looking at people's issue diversity, thereby suspecting a decrease in issue diversity – and, consequently, increasing fragmentation – because of the diffusion of the Internet into modern societies.

1.1 Issue Diversity

The empirical examination of issue diversity in the agenda-setting tradition started in the Seventies' with a study by Chaffee and Wilson (1977). Surveys were conducted that included a question about the most important problems facing the country. Nominal diversity indicated the number of issues named in an interview and entropy was based on the number of thematically different issue categories into which responses fall and the relative frequencies in each. Analogue to the postulated media impact hypothesis, both diversity indicators were higher in media-rich environments compared to media-poor environments. Allen and Izcaray (1988) accomplished a similar study in a media-rich, but less developed environment in Venezuela. They only looked at the number of issues the interviewees named. Their structural equation model indicated an impact of the socio economic status (SES) on nominal diversity as well as a strong positive impact of newspaper use. Lasorsa (1991) found a positive effect of the SES on entropy and a smaller but significant positive impact of newspaper competition. A study by Wanta, King, and McCombs (1995) in the early 1990's compared the USA and Taiwan. An older age, agreement to a duty of being well informed, and the number of the newspapers read have a positive impact on nominal diversity in the USA. In Taiwan, nominal diversity decreases with age but grows with the level of education. A panel study by Culbertson and colleagues (1994) indicated a stronger contribution of newspaper to agenda richness than television. McCombs and Zhu (1995) enlarged the perspective by looking at changes over time. They analyzed survey data in the USA from 1954 up to 1994. They found no linear trend in nominal diversity but a small increase from 1954 to 1974 and a small decrease between 1974 and 1994. In contrast, a systematic increase in entropy was found, especially from 1974 to 1994, accompanied by an increase in issue volatility.

A European tradition of diversity research started in the early 1990's. Reinemann and Brosius (1998) did a diversity study comparing East and West Germany. They focused on per-

sonally important problems (sorrows) and noticed a greater diversity in East Germany. Peter and de Vreese (2003) drew a cross-national comparison between European countries. Nominal diversity and entropy were greatest in Germany and the lowest in the UK. Only the number of TV news-outlets used by the individual had a positive impact on nominal diversity and entropy in each country except for France. In Germany, positive impact is derived from political interest, use of TV news, and education. Schönbach, de Waal and Lauf (2005) analyzed the impact of newspaper use on diversity in the Netherlands. They found positive effects for education and for the frequency of newspaper use. In addition, de Waal and Schönbach (2008) showed that newspapers expand the individual issue diversity more than online news do.

1.2 Fragmentation

Takeshita (2005) outlined the link between diversity, new media, and fragmentation. The development of new media – especially the Internet – caused a growth in number and diversity of media offers. This diversity in media offers and a growth in public availability lead to an increase of issue diversity in the public sphere as well. Growing issue diversity reduces the likelihood of big issues, which dominate the public agenda, and of finding persons with the same set of issues. In consequence, this enhances the fragmentation of the public. So the Internet might weaken the societal commonness and consensus (DiMaggio, Hargittai, Neumann, & Robinson, 2001; Neuman, 1991). Chaffee and Metzger (2001, p. 375) summarize: "The problem is that the public will not be able to come together over common issues because there will not be any issue that they share in common." Takeshita (2005, p. 285) characterizes this phenomenon as a "decline in the centripetal power of the media" and outlines issue diversity as indicator to study fragmentation (Takeshita, 2005, p. 289). Although, the majority of the studies on fragmentation focus fragmentation of publics (e.g. Tewksbury, 2005; Webster, 2009; Webster & Ksiazek, 2012) some studies take fragmentation of issue agendas into account.

In most of these studies an increase of issue diversity or a decrease of media effects on issues were taken as indicators for fragmentation. Schönbach *et al.* (2005) compared the effects of reading print newspapers versus online newspapers on issue diversity in the Netherlands. Due to online news media use, they only found a very moderate growth in diversity for highly educated people, but no general tendency of fragmentation. Coleman and McCombs (2007) took age as an indicator for affinity to the Internet and compared the agenda-setting effects between generations. If the Internet leads to fragmentation, the agenda-setting effect should be smallest for the Internet generation who uses more diverse information sources and is exposed to more issues. However, the results did not differ much between the generations. Coleman and McCombs (2007, p. 505) summarize: "(…) there is a high degree of redundancy in the media agendas even on diverse media. Furthermore, most people do not have time or desire to explore the multitude of diverse issues on numerous channels and Web sites (…)". Gehrau and Go-

ertz (2010) compared the entropy of media issues people were talking about in Germany in the years 1997 and in 2007. Their results confirmed a substantial growth of diversity in conversation issues from the mass media and a notable amount of conversation issues deriving from the Internet in 2007.

2. Method

2.1 Hypothesis

According to Takeshita (2005), the diffusion of the Internet in modern societies leads to a growing accessibility and diversity of information offered by the mass media. This tendency might affect issue diversity and fragmentation of the public.

For understanding the relation between diversity and fragmentation it is necessary to differentiate changes in nominal diversity from changes in issue entropy. In this paper fragmentation is defined as the probability of finding like-minded others, who are interested in the same issues. High fragmentation goes along with low probability of finding like-minded others and low fragmentation is characterized by a high probability of finding like-minded others. With this definition in mind, changes in both diversity indicators might be linked to fragmentation in such way: The fragmentation of the society is growing if the nominal issue diversity is decreasing and the issue entropy is growing at the same time. If the number of issues, the individual is concerned about, is going down while the number of different issues the society is concerned about is growing, the probability for everyone to find others who care about the same issue decreases. In consequence the fragmentation concerning societal and political issues is growing. In contrast, fragmentation is decreasing when nominal issue diversity is growing while issue entropy is decreasing. In this case, people are concerned about more issues than before while the number of different issues society is concerned about goes down. In this case it is more probable than some years before to find people who are at least concerned about one of your issues. Growing nominal issue diversity works against fragmentation which might be adjusted by a growth of issue entropy. On the other side, a decrease in nominal issue diversity might be compensated by a decline in issue entropy. In consequence, in both cases fragmentation will remain stable.

The paper focuses changes in nominal issue diversity. Consequently, final conclusions on fragmentation will not be possible until the results are completed by results for issue entropy. Additionally, Takeshita (2005) points out a new perspective on changes in nominal issue diversity: The diffusion of the Internet might enhance the number of people who are concerned about one problem only. It might have been hard for them to find sufficient information in the old mass media, but it is easy for them to find such information on the Internet. A similar phenomenon was outlined by Althaus and Tewksbury (2002, p. 198): "Online news outlets might therefore promote the development of 'issue publics': small groups in a population that acquire expertise in particular subjects (…)".

The developments characterized by Takeshita (2005) might be analyzed on the individual as well as on an aggregate level. On the individual level, di-

Table 1: Impact of changes in diversity on fragmentation

changes in issue entropy	changes in nominal issue diversity	
	decrease	increase
decrease	stable fragmentation	declining fragmentation
Increase	growing fragmentation	stable fragmentation

versity might be growing for those people using diverse information offers on the Internet; on the societal level, fragmentation could be growing parallel to the number of people who are only concerned about one issue. The following hypotheses concern nominal diversity on the aggregated level. On this level, a growing number of people who are only concerned about one special issue reduces diversity. Hence, we find two contradictory tendencies: Internet diffusion leads to growing issue diversity and concurrently to a decreasing issue diversity. To distinguish both tendencies, the study takes an additional look at the number of people who are concerned about several issues which is clear above the mean set of issues. A growth in diversity might be caused by this growing number of many-issue people. In addition, young people are compared to older people as proxy for fast versus slow diffusion of the Internet. Accordingly, the study focuses three hypotheses:

H_1 There will be a growth of nominal issue diversity during the diffusion of the Internet between 1994 and 2005.

H_2 Alternatively, there will be an increase of people who are concerned about one issue only and people who are concerned about more than three issues at the same time.

H_3 As young people adopted the Internet faster, the effects on diversity are bigger for young than for old people.

2.2 Survey

Telephone surveys were conducted every working day by the German public opinion and market research institute FORSA. Since the beginning of 1994, these interviews included questions about issues in Germany. The issue questions were asked until the end of 2005 and the data was recently reprocessed and made available for scientific use. The number of interviews was approximately 500 per working day. The survey is based on a probability sample, organized as independent random digital dialing procedure. This leads to a dataset on the basis of working day for twelve years, which was aggregated for years.

2.3 Dependent Variables

The issues of the public were measured as most important problems (MIP). The MIP question regarded three problems: 'Which are the three most important problems in Germany at the moment?' As some people named more than three problems in the interview, up to ten different problems were coded by the interviewer. The present study analyzes nominal issue diversity by looking at the number of problems mentioned. Although, the wording in the question is focused on three problems the number of problems named varies individually and therefore seems to be a suitable indicator for nominal issue diversity. According to Takeshita

(2005), the idea of one-issue people was picked up and complemented by an indicator for multiple-issues people. Based on the MIP question, three individual criterion variables have been computed: Nominal issue diversity counts the number of problems named by the interviewee. One-issue people is a dummy variable for those who named one problem only. Multiple-issues people is another dummy variable for those who named four problems or more. For the analysis on the aggregate level for years, nominal diversity was characterized by the mean of the number of mentioned problems whereas one-issue people as well as multiple-issues people were operationalized by the percentage of the interviewees in this category.

2.4 Independent Variables

The main hypotheses concern the impact of the Internet, but the data does not include media use questions. Therefore, the hypothesis cannot be tested by comparing the diversity of Internet-users and Non-users. However, the survey year was used as proxy for the Internet effect. In consequence, each variable correlating with the year is confounded with the effect of the diffusion of the Internet. To substantiate the results, age was taken as additional proxy for Internet use as done by Coleman and McCombs (2007). The Internet diffused much faster in the group of young Germans than in the group of older people. Therefore, processes related to the diffusion of the Internet should develop faster in the group of young people in comparison to older people.

3. Results

The nominal issue diversity in Germany was approximately 2.5 problems per person with about one problem standard deviation. Four percent of the interviewees named no problem, thirteen percent named one problem, twenty-seven percent named two problems, forty-seven percent named three problems, and nine percent named four or more problems.

The applied data for Internet use derives from the 'German online study' (van Eimeren & Frees, 2010, p. 336), which has been conducted every year since 1997. Until 1997, only 6.5 percent of the Germans (older than thirteen years) used the Internet at least sometimes. The number of users grew continuously up to fifty-eight percent in 2005. In 2003, the fifty percent mark was passed and after that the growth started to decelerate considerably (see Table 1). Nominal issue diversity remained quite unvaried during the same period: The mean nominal diversity in 1994 was 2.5 and in 2005 2.6. From 1994 to 2000 there is a slow decline from 2.5 down to 2.3 and later on a slow augmentation up to 2.6 in 2005. On the level of aggregates for years, there are no obvious changes in nominal issue diversity during the years of the main diffusion of the Internet into German society (see Table 1 and Figure 1 & 2). H_1 was not supported.

According to H_2, the steadiness in nominal diversity might be due to two parallel and competing effects: a growing number of one-issue people and of multiple-issues people at the same time caused by the Internet. In fact, the percentages of one-issue people and multiple-issues people change more during

Table 2: *Nominal diversity (percent and mean) by year*

	1994	1995	1996	1997	1998	1999
N	*127405*	*123441*	*51197*	*24105*	*20534*	*92078*
Mean Percent:	2,5	2,4	2,4	2,4	2,3	2,3
No issue	2,9	4,9	2,8	4,0	4,4	6,7
One issue	11,3	12,6	15,3	15,2	17,1	16,8
Two issues	27,3	27,5	31,2	28,9	30,3	28,5
Three issues	51,7	48,4	45,5	46,2	43,1	41,8
Multiple issues	6,7	6,6	5,3	5,7	5,1	6,3

	2000	2001	2002	2003	2004	2005
N	*95202*	*123833*	*123966*	*125097*	*127196*	*126925*
Mean Percent:	2,3	2,4	2,7	2,6	2,6	2,6
No issue	6,5	6,1	3,9	2,6	2,3	2,1
One issue	15,9	14,1	12,2	11,6	10,9	12,4
Two issues	29,6	27,1	23,9	26,4	24,8	25,8
Three issues	42,2	41,6	43,2	49,1	50,0	49,2
Multiple issues	5,8	11,2	16,8	10,3	12,0	10,5

Table 3: Internet use (percent) by year

	1994	**1995**	**1996**	**1997**	**1998**	**1999**
Percent Internet use				*6,5*	*10,4*	*17,7*
14-19 years				6,3	15,6	30,0
20-29 years				13,0	20,7	33,0
30-39 years				12,4	18,9	24,5
40-49 years				7,7	11,1	19,6
50-59 years				3,0	4,4	15,1
60-100 years				0,2	0,8	1,9

	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Percent Internet use	*28,6*	*38,8*	*44,1*	*53,5*	*55,3*	*57,9*
14-19 years	48,5	67,4	76,9	92,1	94,7	95,7
20-29 years	54,6	65,5	80,3	81,9	82,8	85,3
30-39 years	41,1	50,3	65,6	73,1	75,9	79,9
40-49 years	32,2	49,3	47,8	67,4	69,9	71,0
50-59 years	22,1	32,2	35,4	48,8	52,7	56,5
60-100 years	4,4	8,1	7,8	13,3	14,5	18,4

Basis: van Eimeren & Frees, 2010, p. 336.

the time span than nominal diversity does. The number of one-issue people is slightly growing from eleven percent in 1994 up to seventeen percent in 1998. However, this growth cannot be attributed to the diffusion of the Internet which predominantly took place in the following years. Furthermore, the years between 1999 and 2005 show a continuous decline of one-issue people on twelve percent. The function is curvilinear and independent from the diffusion of the Internet. The constellation is different for the multiple-issues people. We find a slow decrease between 1994 and 2000 from seven percent to five percent, a strong boost for about eleven percent points on seventeen percent between 2000 and 2002, a strong decline between 2002 and 2003, and finally stability about eleven percent between 2003 and 2005. Only the changes between 2000 and 2003 might have been due to the Internet use because these changes correspond with the major diffusion of the Internet (see Table 1 & 2 and Figure 1 & 2). Therefore, H_2 was rather contradicted than supported.

One problem of the argumentation is the lack of data for Internet use, which we face by using year as a proxy. The diffusion of the Internet into German society differed much between age groups. Among the young people aged from fourteen to nineteen, the diffusion was mostly completed in 2003 with more than ninety-five percent using the Internet at least sometimes. In contrast, for the sixty years or older people the diffusion of the Internet started in 2000 and did not reach twenty percent in 2005 (see Table 1 & 2 and Figure 2). If the diffusion of the Internet caused diversity and fragmentation, there should be considerably greater effects for the young people than for the old ones. Meanwhile, this had not proved to be true. Among the young people the share of one-issue people is about twenty percent from 1996 to 2005 and the percentage of multiple-issue people is under five percent from 1994 to 2000, eventually peaking at nine percent in 2002 and remaining above five percent later. In contrast, the old people show a curvilinear augmentation of one-issue people: from fifteen percent in 1994 up to nineteen percent in 1998, followed by a decline to thirteen percent in 2005. The share of multiple-issue people remains around six percent from 1994 up to 2000, then moves up to eighteen

Figure 1: Nominal diversity (percent and mean) by years.

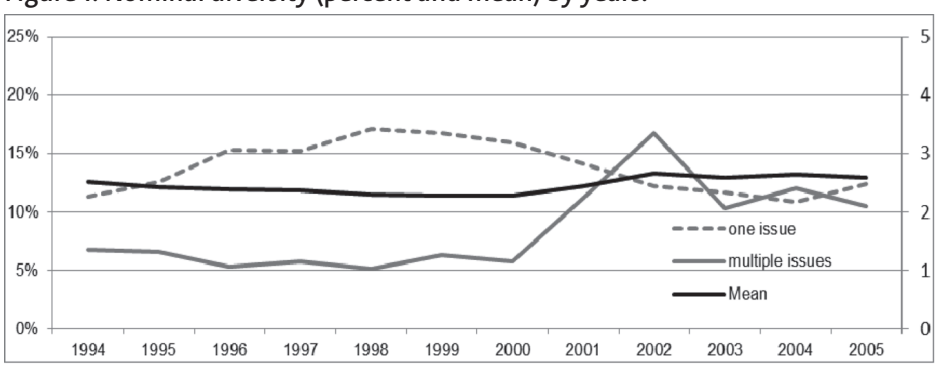
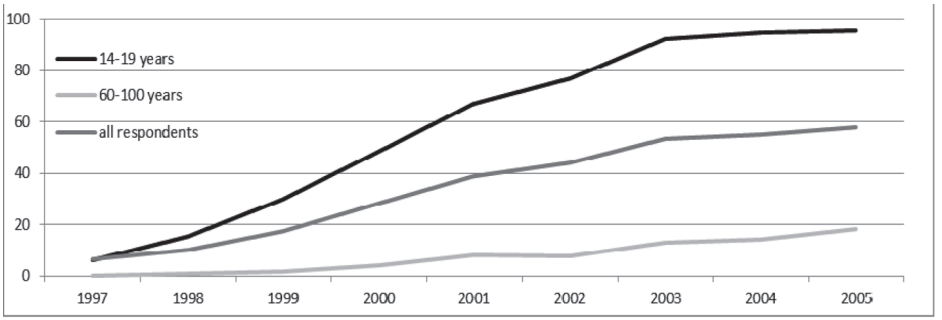


Figure 2: Internet use (percent use as least sometimes) by year and age



percent in 2002, and subsequently remains around fourteen percent from 2003 to 2005. This indicates changes between 2000 and 2003, which may, however not be attributed to the Internet as the group who often used the Internet was less affected by these changes than the group who only rarely used the Internet (see Table 2 and Figure 3). H_3 was contradicted.

4. Discussion

In conclusion, none of the hypotheses was supported by the data. On the long run, the diffusion of the Internet did not lead to changes in nominal issue diversity in German society. Solely the number of people interested in multiple issues is growing after the diffusion of the Internet has passed a critical mass of adoption (Rogers, 2003) in 2000. However, this growth stops after two years and turns into a decline again. In addition, the older people – who rarely use the Internet – are more affected than young people – who are intensive users of the Internet – by these changes. In consequence, it is more likely that these changes are caused by other reasons and the Internet use rather suppresses than supports these effects. The amount of one-issue people does not change much during the time of diffusion of the Internet and thus contradicts the assumption of Takeshita (2005) or Althaus and Tewksbury (2002). In fact, in the years with the most dynamic diffusion of the Internet the amount of one-issue people even declines. Both effects combined lead to a small tendency of growing nominal issue diversity in the years of the Internet-diffusion in Germany. Still this is no prove for Internet effects because it does not systematically follow the diffusion curve of the Internet and is confounded with other effects linked to the year. Another problem are conditional antagonistic effects, e.g. between different socio-demographic groups or different Internet-users. Such effects cannot be analyzed with the setting especially because of the lack of information about the individual Internet-use.

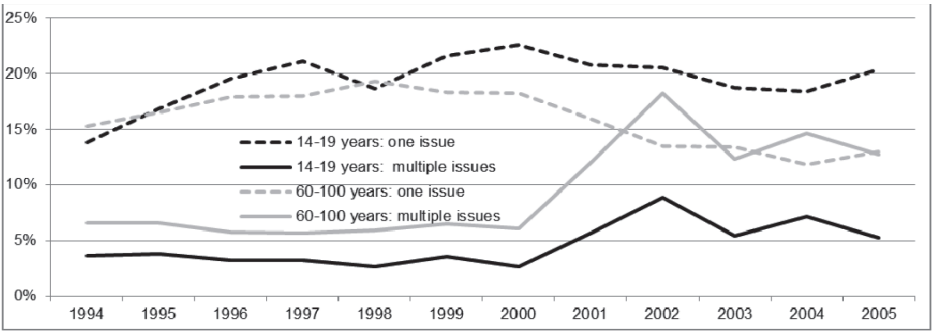
Nevertheless, the results at hand are a first substantial step towards an understanding of the consequences of the diffusion of the Internet on the fragmentation of the public referring to issues. The results prove no general change in nominal issue diversity during the diffusion of the Internet. Hence, if the diffusion of the Internet had a common and substantial effect

Table 4: Nominal diversity (percent) by year for old and young respondents

	1994	1995	1996	1997	1998	1999
(19-20 years) n	*6155*	*6407*	*2802*	*1333*	*1192*	*6578*
no issue	4,9	9,9	7,3	7,7	9,0	14,1
one issue	13,8	16,9	19,5	21,1	18,6	21,6
two issues	30,2	28,7	32,8	28,0	30,5	27,0
three issues	47,4	40,8	37,2	40,0	39,3	33,8
multiple issues	3,6	3,7	3,2	3,2	2,6	3,5
(60-100 years) n	*28859*	*27989*	*11597*	*5657*	*5315*	*23909*
no issue	4,5	6,0	3,4	4,9	5,5	7,9
one issue	15,3	16,5	17,9	18,0	19,3	18,3
two issues	30,5	30,5	32,8	30,5	32,6	30,7
three issues	43,2	40,4	40,1	41,0	36,8	36,7
multiple issues	6,6	6,6	5,7	5,7	5,9	6,5

	2000	2001	2002	2003	2004	2005
(19-20 years) n	*6697*	*9241*	*9902*	*10545*	*10838*	*10458*
no issue	14,1	14,9	12,0	9,7	8,5	7,1
one issue	22,5	20,8	20,5	18,7	18,4	20,3
two issues	29,6	27,9	26,7	29,2	29,0	30,1
three issues	31,1	30,7	32,0	37,0	37,0	37,3
multiple issues	2,6	5,7	8,9	5,4	7,1	5,3
(60-100 years) n	*24917*	*35249*	*29146*	*24773*	*24581*	*24262*
no issue	6,9	5,9	3,6	2,3	1,9	1,8
one issue	18,3	16,0	13,4	13,4	11,8	13,0
two issues	31,7	28,5	25,1	27,8	26,1	26,7
three issues	37,1	37,6	39,6	44,2	45,6	45,6
multiple issues	6,0	12,0	18,2	12,3	14,7	12,8

Figure 3: Nominal diversity (percent) by years and age groups



on fragmentation in the field of public issues, this effect must be caused by issue entropy. And as nominal issue diversity must be considered as stable, this effect would be simple: a growth of issue entropy would indicate a growth of issue fragmentation, as a growth of issue entropy cannot be compensated by a growth in nominal issue diversity or – as McCombs and Zhu (1995) put it – by a growth of cognitive carrying capacity.

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