

THE FORM OF ONLINE NEWS IN THE MAINSTREAM U.S. PRESS, 2001–2010

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Extending a long-term study of three print newspapers from 1894 to 1994, the third in a series of studies shows electronic editions adapting to the online environment. The newspapers did not reinvent themselves online in 2001, instead reproducing the forms of print as a way to continue established relationships with readers. But readers were changing, and by 2005 the web editions had shifted the form from mapping content to managing the reading experience. Users encountered stories with more jumps that could display advertisements and found links that kept traffic inside the site. By 2010 the sites were less meager compared to the design of print editions. The form had moved toward the index as a metaphor for public life, in the style of web portals. The sites preferred content interactivity to interpersonal interactivity, continuing a long history of resisting innovation and new techniques for public engagement.

KEYWORDS form; internet; newspaper; United States; visual; website

Introduction

In one response to rapid news diffusion online, the U.S. newspaper industry is refocusing on differentiating print from online editions. Industry observers saw papers adjusting the “stories that readers” see online (*Editor & Publisher*, August 1, 2009, editorandpublisher.com). Publisher Arianna Huffington said encouraging personal interactivity would bring on a “golden age of engagement” (*Mediaweek*, March 1, 2010, mediaweek.com). But paid access to news contradicts open sharing in the continuing crisis at U.S. newspapers.

The emerging news form influences content quality and public learning (Stark Adam, Quinn, and Edmonds, 2007), but effective design eludes newspapers that are “failing to make a meaningful business from their websites” (*Mediaweek*, September 27, 2010). The *New York Times* R&D operation is looking for tablets and e-readers that “look more . . . like print” to redefine newspapers “as content providers” (*Editor & Publisher*, October 1, 2009) and return to journalists’ first passion.

By 2010 the main questions were what forms to use for presenting news online and what interactive aspects to include. How the industry answers will matter because of the relationship between news form and public life.

Researching Online News

News forms are not products of technology but physical accretions from political culture (Barnhurst and Nerone, 2001). Journalists, politicians, and the public leave behind traces that reveal a collective metaphor for relationships within the polity. News forms also express shifts in power relations among the three groups (Barnhurst and Mutz, 1997). The long news hypothesis suggests that journalism has redefined news in ways that the public expects but that enhance journalists' voice in politics, and audiences responded by rejecting mainstream news as a cultural form.

When moving online, journalists predicted the internet would change news form and content (Barnhurst, 2002). Researchers found that newspapers failed to exploit online capacities, missing opportunities to advance participation. The sites first reproduced their print form, resisting technical change out of fears about online accuracy, credibility, and image vs. substance. Web editions followed custom for ranking news and positioning readers by placing content and arranging pages to require print-like reader navigation. But the sites were less rich visually than print.

By 2005 the sites reflected some online qualities: more home-page capacity, interactivity, and page-view requirements (Barnhurst, 2010). The sites mapped content less; homepages became potpourris of accidents and crime (Barnhurst, 2009). The result was sensational content emphasizing danger. The sites buried jobs stories and played down political life. Links increased but not to external sites or journalists' email, preferring feedback pages or discussion boards instead. Besides keeping traffic internal, the sites' forms made readers load more pages to read stories, generating the hits advertisers required. Fewer stories were follow-ups and more were electronic-only, but staff-written stories online still resembled print versions.

Research has continued examining press and website design. A study of five print and online front pages found three design phases from 1990 to 2002 (Cooke, 2005). First, *three-panel layout* showed a newspaper-nameplate-like banner, a left column of briefs like a newspaper "chimney," and a wide right column for most content. Next, *vertical scrolling layout* lengthened the page with more stories. Finally, *portal-style layout* shifted to rectangles containing information to other websites in appearance. Another study of 83 U.S. newspaper sites from 1997 to 2003 traced online news page position, interactive feedback, and other traits (Greer and Mensing, 2006). In 1997 most story links included a headline and lead, the standard form by 2003, when sites loaded more news on the first screen. Email links were widespread, but interactivity changed little. The sites of medium to large newspapers "became more similar" by 2003, but "small newspapers still lagged" (Greer and Mensing, 2006, p. 26). The study called for research to examine presentation closely, especially website standardization.

Interactivity research examines news organization economy, user efficiency, and public benefits. Its main dimensions include *content interactivity*—more choices for free navigation—and *interpersonal interactivity*, contact such as email and forums. Sites of large-circulation papers provide the user with

better interactivity (Zeng and Li, 2006). Their greater resources afford content interactivity, but interpersonal interactivity depends on the size of technical staff, not of circulation. Adjusting online, newspaper organizations made information retrieval more or less efficient. Interactivity can benefit users by emphasizing "immediate access" (Li, 2006, p. 68), like the *Chicago Tribune* site that required few screens to reach stories in 1999. Front-loading stories made reading more efficient. Early functionalists argued efficiency to make news organizations modern (Barnhurst, 1993), but current research shows how efficiency enhances online news-user power.

Content and interpersonal interactivity may make websites popular, but interactive news encourages users' political activity. A 2005 web survey, for instance, took measures of political engagement among site users of a cooperating (Chung, 2008). Audiences of a mid-sized Midwest newspaper site tended not to be interactive unless they were internet savvy, male, and considered the site credible. They also engaged in more political activity. The form of news online may influence political knowledge among users. Displaying text, photos, and captions can affect the recall of news (Pipps et al., 2009). Journalism practice uses news form to map social worlds (Barnhurst and Nerone, 2001). Authoritative outlets rigorously highlight important stories, a practice that aligns the online press with print traditions (Lim, 2010).

This study replicates its 2001 and 2005 counterparts to describe online form from three U.S. newspapers, extending data going back a century. As the only continuous examination of newspapers moving online, it clarifies phases of online news design and patterns of interactivity, which have mixed evidence from other studies.

Measuring News Form Online

Descriptive methods can track how visual journalism evolved, including images, interactive links, and other details (Palomo and Angeles, 2008). In visual content analysis, no random sample of news sites can represent the American press. The three sites selected span the North American continent and reflect a range of mainstream news markets. The *New York Times* can afford to innovate and operates a national site among the most visited (in Nielsen ratings). The *Chicago Tribune* has an online edition that dominates the Midwest. The *Oregonian* serves mid-sized Portland and its surrounding state on the Pacific coast. NYTimes.com is among the most-studied websites, but ChicagoTribune.com and OregonLive.com are more typical.

The three extend the data on newspaper websites after the 2000s, when online news had become common. By 2010 online readership outstripped newspaper circulation and attracted more ads (<http://stateofthemediamedia.org>). This study follows the outlets measured for a century (Barnhurst and Mutz, 1997) and online from 2001 and 2005 (Barnhurst, 2002; Barnhurst, 2010).

An assistant drew a purposive sample for three consecutive weeks in mid June 2010, a period with no holidays or major expected news. He found stories on the pages listed in navigation menus, then used site search engines to find related stories. His census reached 40 total stories per topic per site.

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After calibrating on the 2005 sample, he coded the 2010 stories for site, date, topic, authorship, and timing. For form he coded each story's position on the site, number and types of links, and length in screens and continuation pages. He also noted the display and text typography and counted and sized images.

A second coder with the same training completed 10% of stories, with good reliability for the categories (Krippendorff's Alpha averaging 0.97) that ranged (from 1.0 to 0.93), according to complexity, from simple page counts to classifying links. The second coder also identified online stories identical and similar to or dissimilar or absent from print editions.

The results reported align with general knowledge of the news outlets and content categories, and comply with tests for sampling error (chi square or analysis of variance, *F*, with post hoc Sheffe tests).

Balancing Form with Journalism

The sites in 2001 ran few stories (one-eighth) on the main page, like selective front pages in print, and placed a majority (two-thirds) on topical pages (Barnhurst, 2002). By 2005 the web editions went to the opposite extreme, loading almost half their stories on home and a third on topical pages (Barnhurst, 2010), the second phase of online news design (Cooke, 2005). In 2010 the (third phase) sites split the difference, placing less on the home page without mapping content more (Table 1).

[Table 1 about here]

From 2005, story placement on home pages dropped by half and topical pages remained the same, but stories with no links on pages grew to a quarter overall. The sites ran a quarter of stories on home and a third on topical pages. NYTimes.com had the fewest unlinked stories, and the other sites left a third of stories without links, requiring a site search. The large changes in tertiary pages suggest less ranking of newsworthiness on the latter sites (Barnhurst, 2010).

The average pages a reader had to traverse to reach a story dropped between 2001 and 2005 (to 1.7) but jumped by 40% as of 2010 (to 2.4). NYTimes.com continued requiring more digging, but the other sites expected readers to go beyond tertiary pages or use searches to find their stories.

Crime continued to lead on home pages, but accident stories now spread evenly across all sections. Half of political stories appeared on topical pages, but even fewer employment stories lined from the top three levels. Fore-grounding crime and accidents emerged by 2005 and continued in 2010, when politics stories became less, and jobs stories much less, prominent.

The sites did become more alike in presenting news on main and topical pages (Greer and Mensing, 2006), although design phases occurred later (Cooke, 2005). The *Times* used the main sections to map content (Lim, 2010), but other sites shifted content beyond tertiary pages.

Moving Through the Site

Readers move through each page to find a story and then navigate to read the pages containing content. The sites reduced the screens required overall and to read a story but increased screens to reach a story (Table 2).

[Table 2 about here]

The typical story link grew closer to the home page by 2005 but by 2010 grew even farther than in 2001. The average link for an *Oregonian* story was down the page (measured in browser window lengths of about six inches), a reversal that continued the big changes on the site. The other sites moved down and up more moderately.

Reaching the story, readers had to jump to fewer screens for the average story, another reversal. Story jumps had grown in 2005 but by 2010 reached the lowest measure yet. The numbers did not reflect story length. By 2005 jumps were doing the opposite, increasing as stories grew shorter (Barnhurst, 2010).

Even with fewer jumps within stories, readers in 2010 went through almost five screens from home to the end of the average story. OregonLive.com and ChicagoTribune.com traded places for the shortest total screens in 2001 and 2005. NYTimes.com always ran the longest, markedly unlike the other two sites, but the differences among them were smaller in 2010.

Links to politics returned to their 2001 position closest to the top of pages, and crime stories returned to their 2001 position farther down, the most pronounced difference among links. Accident and job stories played in the middle but closest to crime, making politics stand out in 2010. Although jumps decreased for all topics, strong differences remained between spot news and the other two, politics and employment. The differences among the topics shrank by 2005 but increased by 2010 to split the difference.

In 2010 the sites became more alike (Li, 2006), spreading story links farther and requiring less scrolling to read stories, washing out differences that had emerged by 2005. But NYTimes.com again differed from others in its interactions with readers. News of politics also stood out with link positions closer to the home page and a high number of page jumps. The most authoritative site and important topic again bucked trends for other categories.

Design & Interaction

The sites in 2010 had not added variety in their visual design. ChicagoTribune.com redesigned in the following year, switching to serif typography for most story elements, but in 2010 remained sans serif. OregonLive.com used sans serif for everything. And NYTimes.com continued the most complex typography: serif headlines and text but sans serif for captions, bylines, and datelines. The share of stories with images again increased, but a majority still had no images (Table 3).

[Table 3 about here]

All three sites added images. OregonLive.com had almost none in previous years but ran a majority of stories with images by 2010. ChicagoTribune.com again nearly doubled its images, and NYTimes.com ran slightly more images. Although only three-fifths of stories included images, two images ran for every three illustrated stories. Variation declined overall (stories ranged up to seven images in 2005), and was narrowest at NYTimes.com. All topics included more images, with crime adding the most (by a factor of five since 2005) followed by jobs (three times as many). Images doubled for politics and accidents. By 2010 images had reached similar levels for all topics (differences were within sampling error). As in 2005, images were small, reaching to about two-thirds the browser window width.

The sites expanded some interactive options, contrary to earlier criticisms. Interactivity and links ran in less than a quarter of stories in 2001 and grew to accompany more than half in 2005. Almost all stories by 2010 allowed for interactivity of some sort (Table 4).

[Table 4 about here]

The three sites were distinct in user interactivity. NYTimes.com had the most links to related content, mainly leading to a current story immediately accessible within site. Free direct access (before paid content kicked in the following year) replaced its links to paid archives, which had predominated as of 2005. The *Tribune* and *Oregonian* sites routinely pushed interaction by allowing for readers to comment or join discussion forums within the site (although the *Oregonian* site declined from its high of 86.9 in 2005). ChicagoTribune.com had few other links in any of the studies. Staff email addresses, a staple at the *Oregonian* in 2001, had disappeared by 2005 but reappeared as an occasional element by 2010. The other sites had almost none. The *Tribune* site linked slightly more often to external URLs or email addresses, an element the other two sites mostly avoided.

Two key interactive options are absent from the table. Links disappeared to the paid archive, so that primarily readers using the site search engine to find older stories would reach it. The studies focused on story content and so did not code for the links standard to every page on the sites, such as section links and navigation elements. By 2010 links to print, email, or sharing content over social media became another fixture on news web pages.

As in 2005 the topics did not differ dramatically. About a third of stories within each topic by 2010 had links to internal pages, and more than half had options to comment. External links were a minor element, and email options were almost nonexistent except on the *Oregonian* site.

The sites had also expanded their typographic palette and used more images, a practice tied to increased recall of political knowledge (Pipps et al., 2009), but they displayed images in less varied ways, and in smaller sizes than in print. Interaction serves and may encourage politically active users (Chung, 2008), but shifted to on-site feedback at the *Tribune* and *Oregonian* sites. NYTimes.com went its own way, using content interactivity to nudge readers toward its own stories, and, unlike other large news outlets (Zeng and Li, 2006), did not support as much interpersonal interactivity.

Content Production

The online stories were products of staff or wire services and ran as either first-day or follow-up reports. The web editions had focused on current events by 2005, providing fewer follow-ups but without changing the share of staff reports. By 2010 staff-written stories declined overall and for every site and topic, replaced by wire stories (Table 5).

[Table 5 about here]

Staff-written follow-ups rebounded to more than a quarter of all reports. Wire-service follow-ups returned in a similar way. Wire content accounted for half of all stories in 2001, dipped to about a third in 2005, and came about halfway back in 2010.

The three sites lined up with NYTimes.com using wires the most, followed by ChicagoTribune.com and then the *Oregonian* site, which always used the fewest wire stories online. All the sites decreased staff production, which had gone up in 2005.

For topics staff members generated the most crime stories, supplanting political reports that led in previous years. Staff produced about the same share of accident stories as political stories but the lowest share of jobs stories. The increased follow-ups affected all topics but especially crime, always a fount for ongoing stories. Accident stories were most likely to be one-offs.

Post-hoc comparisons of sample stories have shown the online diverging from the print editions in each study year (Table 6). In 2001 most online articles matched the print version, and in 2005 two-thirds were mostly or entirely alike. In 2010 only one-third were similar in both editions, a tenth of stories had greater changes, and more than half appeared online only.

[Table 6 about here]

As in 2005, most differing or no-print-version stories were from other news outlets (not staff produced). Seven out of eight staff articles were the same or similar in both editions. The *Oregonian* site and jobs stories had the largest share of identical or similar content across platforms, and ChicagoTribune.com and accident stories had the smallest share. Accidents were the most likely and crime the least likely to be from outside news producers.

In 2010 staff-written stories declined and wire stories and follow-ups rebounded. The online editions continued to diverge from print, with the exception of staff-written articles.

Staying the Course

The organization of news proposes metaphors for political life as well as expectations news producers have for themselves and their medium

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(Barnhurst and Nerone, 2001). Their move online seems to have reinforced the *index* as a metaphor, providing reports, images, and links to related content more than interpersonal interactivity as the means for journalism to inform the public. The newspapers online—documented in this and two prior studies of their form—followed patterns of experimentation, moderation, and standardization.

In the process of adapting, the study news sites experimented, reproducing print forms online in 2001, exploiting the web in 2005, and becoming more native as online portals by 2010, in a timeline moving more slowly than expected (Cooke, 2005). The number of jumps within a story went up and down, for instance, forcing users mid decade to click more (and see more ads) when reading the text. Jumps were one element of the form that commercial motives seem to have influenced. Story link positions went down and up, overloading the home and topical pages of mid decade and perhaps disempowering users (Li, 2006), who had more to sort through when finding a story. Story linking appears to have been an element of the form that web capacities have influenced.

By 2010 the sites seemed to be finding a middle ground. They split the difference on content structure—the choices for where to place a story, how many jumps to impose on readers of stories, and what range of jumps to use for different topics. The middle road may have made them more like other web portals (Cooke, 2005). In their content the sites returned to more of a balance in doing follow-up reports and in the use of wire stories. The result was moderation, moving away from the extremes of commercial and technical experimentation but also moving to reassert journalists' expectations to map content (Lim, 2010).

Standard forms emerged in the process, so that in other aspects the sites became more alike (Greer and Mensing, 2006). They structured content similarly, used images similarly for all topics, relied similarly on staff-produced stories, and returned similarly to follow-up reports. The new norms incorporated some of the changes that the course of adaptation introduced. Online news form had foregrounded danger and fear at mid decade (Barnhurst, 2009; Barnhurst, 2010), a change that was continuing in 2010. The sites positioned stories of crime and accidents higher and included somewhat more images of crime. Crime stories also had the largest share of staff production and of follow-up stories.

On the question of interactivity, the sites and the industry seem to have taken the side of content instead of interpersonal linking. Key aspects of the new form continued along older lines that led toward the new long journalism. What appeared online diverged from print *except* for production that matters most, such as staff writing. Placing stories on the sites became more standard *except* for the news that mattered most, such as politics. And the most authoritative site was distinct. The *Times* could afford to incorporate more typographic variety and more images into its site (Zeng and Li, 2006), as well as many more links to its own content, while giving the public fewer options to comment or give feedback. The *Times* was also unlike the other sites in the number of jumps within the average story. Where the others did less NYTimes.com did more mapping of content, another marker of authority (Lim, 2010). Along with story content (Barnhurst, 2012), the news forms emerging

online continue to express the shifting power relations among journalists, politicians, and the public (Barnhurst and Mutz, 1997).

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Table 1

Content Structure

Percentage of stories placed in sections of three newspaper sites by topic, June 2010

	<i>Times</i>	<i>Tribune</i>	<i>Oregonian</i>	Politics	Jobs	Crime	Accidents	Total
Section								
Home	27.5	28.1	25.0	27.5	18.3	35.0	26.7	26.9
Topical	27.5	33.1	33.1	48.3	18.3	36.7	21.7	31.3
Tertiary	28.1	7.5	13.1	8.3	7.5	24.2	25.0	16.3
Other	16.9	31.3	28.8	15.8	55.8	4.2	26.7	25.6
N*	160	160	160	120	120	120	120	480

For site, Chi-square = 31.156, df = 6, $p < .000$. For topics, Chi-square = 117.893, df = 9, $p < .000$.

* Number of cases for sites and topics is the same for all other tables.

Table 2

Position and Jumps

Mean screens to reach a story link and jumps through story text by site and topic

	Link Position	Story Jumps	Total Screens
Overall	2.99	2.30	4.62
Site	**	***	***
A. <i>New York Times</i>	2.82 ^C	2.81 ^{B, C}	5.18 ^B
B. <i>Chicago Tribune</i>	2.65 ^C	2.04 ^A	3.95 ^{A, C}
C. <i>Portland Oregonian</i>	3.51 ^{A, B}	2.05 ^A	4.73 ^B
Topic	*	***	*
A. Politics	2.50 ^C	2.80 ^{C, D}	4.97
B. Employment	3.11	2.81 ^{C, D}	4.18
C. Crime	3.30 ^A	1.78 ^{A, B}	4.99
D. Accidents	3.09	1.83 ^{A, B}	4.62

One way analysis of variance, *p < .05, **p < .01, ***p < .001. Position: (df 2, 370) F = 6.532 (Site); (df 3, 370) F = 3.29 (Topic). Jumps: (df 2, 479) F = 12.118 (Site); (df 3, 479) F = 16.402 (Topic). Total: (df 2, 479) F = 10.152 (Site); (df 3, 479) F = 3.465 (Topic)

^{A, B, C, D}

post hoc Sheffe tests with significance level of at least .05.

Table 3

Images with Stories

Percentage of stories illustrated with images, mean images per story overall and for illustrated stories, and range in images per story by site and topics

	<i>Times</i>	<i>Tribune</i>	<i>Oregonian</i>	Politics	Jobs	Crime	Accidents	Total
Images %	30.6	26.3	63.1	36.7	42.5	41.7	39.2	40.0
Mean								
For all [†]	0.39 ^C	0.31 ^C	1.07 ^{A,B}	0.51	0.65	0.58	0.62	0.59
For with	1.29	1.17	1.69	1.39	1.53	1.40	1.57	1.47
Range	0–2	0–4	0–5	0–4	0–5	0–4	0–4	0–5

Within Images: for site, Chi-square = 9.755, df = 15, n.s.; for topics, Chi-square = 86.873, df = 10, p < .000.

[†]One way analysis of variance (df 2, 479), p < .001, $F = 44.231$ (site); (df 2, 479), n.s., $F = .592$ (topic).

Table 4

Interactive Options

Percentage of stories with internal and external links to content, with links inviting comments and emails, and the total, average, and range by sites and topic

	<i>Times</i>	<i>Tribune</i>	<i>Oregonian</i>	Poli- tics	Jobs	Crime	Acci- dents	Total
Content								
Site URL	89.4	0.0	17.5	38.3	39.2	35.0	30.0	35.6
Ext. URL	2.5	7.5	1.9	4.2	5.8	1.7	4.2	4.0
Interaction								
Comment	7.5	91.9	68.1	52.5	53.3	60.0	57.5	55.8
Email	0.6	0.6	3.8	1.7	0.0	0.8	4.2	1.7
Total	100.0	100.0	91.3	96.7	98.3	97.5	95.8	97.1
Mean [†]	2.26 ^B	2.51 ^{A, C}	2.11 ^B	2.18	2.33	2.31	2.35	2.29
Range	1–6	1–4	0–4	0–4	0–6	0–4	0–4	0–6

Chi-square = 351.943, df = 8, $p < .000$ (site). Chi-square = 13.667, df = 12, n.s. (topic).

[†]One way analysis of variance (df 2, 479), $p < .001$, $F = 9.538$ (site); (df 2, 479), n.s., $F = .901$ (topic).

Table 5

Content Production

Percentage of stories drawn from staff reports and from wire reports on three newspaper internet sites for four topics, June 2010

	<i>Times</i>	<i>Tribune</i>	<i>Oregonian</i>	Politics	Jobs	Crime	Accidents	Total
Staff								
1st report	23.8	29.4	38.8	29.2	22.5	28.3	42.5	30.6
Follow-up	28.7	26.3	30.0	31.7	25.0	40.0	16.7	28.3
Wire								
1st report	28.7	30.6	13.8	14.2	44.2	15.0	24.2	24.4
Follow-up	18.8	13.8	17.5	25.0	8.3	16.7	16.7	16.7

Chi-square = 18.943, df = 6, p < .01 (site); Chi-square = 59.616, df = 9, p < .000 (topic).

Table 6

On-line vs. Print Editions

Percentages of online sample* stories compared to corresponding print stories, by site and topic

	<i>Times</i>	<i>Tribune</i>	<i>Oregonian</i>	Politics	Jobs	Crime	Accidents	Total
Identical	18.75	0.00	31.25	16.67	41.67	0.00	8.33	16.67
Similar	25.00	12.50	12.50	8.33	8.33	41.67	8.33	16.67
Different	6.25	18.75	6.25	25.00	0.00	8.33	8.33	10.42
No print	50.00	68.75	50.00	50.00	50.00	50.00	75.00	56.25

*Representing a 10% sub-sample, drawn at random and stratified by site and topic

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