

Storytelling with Interactive Graphics:  
An Analysis of Editors' Attitudes and Practices

Mary Spillman & Jennifer George-Palilonis  
Ball State University

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## Introduction

A common dilemma faces today's news editors who must decide whether to devote time and resources to the production of interactive graphics for their websites. Are interactive graphics too time consuming relative to the number of unique page views they generate? Or, do they not generate enough website traffic because they haven't been displayed prominently or published with enough frequency to attract readers' attention?

It is generally known that newspapers such as *The New York Times*, the *Boston Globe* and the South Florida *Sun-Sentinel* regularly produce robust graphics. Trade and general interest publications have contained anecdotal reports on editors' approaches to and concerns about interactive graphics. For example, Andrew DeVigal, multimedia editor at *The New York Times*, noted in a Q & A with *Times'* readers that there is considerable risk in taking on multimedia projects for the sake of multimedia alone and that he must seriously consider whether the work put into one project can potentially apply to future projects before his team begins working on it (Talk to the Newsroom, 2009).

Although there is considerable scholarship defining digital storytelling in terms of its unique features (Paul & Fiebich, 2005), on the interactive features of online newspapers (Chung, 2008; Greer & Mensing, 2006; Rosenberry, 2005; Schultz, 1999), on principles of interactivity and usability (Flavian, Guinaliu & Gurrea, 2006; Vaughan, 2002) and on the effectiveness of visual learning and information retention (David, 2006), there currently is little formal scholarship that probes editors' attitudes toward the

production of these new storytelling forms and measures the depth of their use. Thus, it is difficult to assess whether interactive information graphics truly don't yield enough page views to warrant their development, or whether there simply are not enough news organizations devoting resources and prime website real estate to these types of features to effectively assess their worth.

In order to delve deeper into this "chicken or egg" circular cause and consequence argument and to assist editors as they make tough staffing and editorial decisions in this time of economic downturn and circulation decline, it is necessary to more thoroughly explore how newspaper websites use interactive graphics, as well as how they are presented online.

### **Study rationale**

In recent years, newspapers have faced a series of economic problems tied to changes in technology (e.g. the Web emerging as a primary delivery system) and the general economic downturn that many fear is threatening the future of news. In response to these structural challenges, news editors and journalism researchers have sought new models for news distribution and content strategies that appeal to younger audiences, online audiences and general audiences whose news consumption habits have changed in the wake of the digital revolution. However, changing the culture and workflow for news organizations can be costly, risky and daunting. It is not surprising that many news organizations avoid devoting time and resources to the development of interactive content that appears time-consuming, specialized and is unproven in terms of generating web traffic.

This study, however, seeks to determine whether the true value of this type of story form has yet to be realized. Are interactive graphics getting fewer page views because users can't readily find them? Are text-based stories still the bread and butter of Web content because there are so many more text-based stories than any other form of content? Is the jury still out on interactive graphics because there aren't many news organizations that have given them a fair shot? In light of these questions, this study creates a more well-rounded view of the media landscape when it comes to the use of interactive graphics as a primary storytelling tool. The following research questions will inform this pursuit:

RQ1: How frequently do mid- to large-circulation newspapers publish interactive graphics on their websites?

RQ2: To what degree do mid- to large-circulation newspapers value interactive graphics as a primary story form?

RQ3: What are the barriers to producing interactive graphics?

## **Literature review**

As previously mentioned, little formal research exists that explores to what extent interactive information graphics are used among news websites. However, during the past 20 years, information graphics have been given considerable attention by scholars who have set out to determine their general value as news story forms. The literature review that follows provides a brief overview of how interactive graphics are generally defined and examines the ways in which previous graphics research has laid a foundation for this paper.

Information graphics in their most basic forms are maps, charts and diagrams that have become increasingly critical in the information age because “at their best, graphics are instruments for reasoning about quantitative information” (Tufte, 2001). Add the potential for interactivity and non-linear navigation, and a whole new taxonomy for interactive information graphics has emerged that includes instructives (how-to graphics), simulations and games, narrative animations, and data visualizations (George-Palilonis & Spillman, 2011). The use and classification of information graphics in news and other storytelling genres has rapidly evolved, providing editors with myriad possibilities when it comes to telling visual stories online (Nichani & Rajamanickam, 2003).

Some scholars have studied how specific types of computer graphics (e.g. data visualizations) are produced and integrated into online news by identifying narrative design differences and by making recommendations on best practices (Segel & Heer, 2010). Others have studied how users react and relate to interactive graphics. Some have suggested that story-based approaches to online information graphics seem to motivate users but might lead to less intensive reception of information, and interactive graphics may overwhelm users with too much information and disregard basic design principles (Burmester, et al., 2010). Yet others assert that a well-developed interactive graphic has the potential for rich storytelling unrivaled by other story forms (Cairo, 2005).

Regarding news editors' attitudes toward different story forms, Wojdyski (2010) found that text stories are still the most widely used story form online, with video coming in second. Perhaps most telling is that editors reported that interactive story forms such

as slideshows, interactive graphics and multimedia packages, are mainly used only for special reports. Yet, interactivity in mediated messages has been linked to positive attitudes, satisfaction and perceived involvement with the message content (Rafaeli & Ariel, 2007). Likewise, users have responded favorably to visual representations of data that they are able to manipulate (Ancker, Chan, & Kukafka, 2009).

Sundar (2004) has theorized that interactivity plays an important role in information consumption. And Wojdyski (2010) found that although there is no evidence of a relationship between interactivity and recall of numerical information, “there is evidence that interactivity in information presentation leads to more positive attitudes toward the content for users who were not highly involved with the content” (p. 19). Ariely (2000) showed that when users are able to control the sequence and pacing of information consumption, they are more accurate in evaluating that information than those given no control, or control over sequence but not pacing.

There also has been some exploration into the intersection of journalism and video games. Bogost, et al., (2010) note that while news organizations finally have embraced Web delivery, they remain wedded to traditional approaches despite evidence that games effectively prompt users to synthesize information and explore systems, and can be good journalism. Bogost (2011) also asserts that, “instead, newsgames make the news *harder* and *more complex*. We shouldn't embrace games because they seem fun or trendy, nor because they dumb down the news, but because they can communicate complex ideas differently and better than writing and pictures and film. Games are raising the bar on news, not lowering it.”

One international study identified five factors that impeded the use of “news graphics”: high cost of production, media managers who lacked knowledge, designers who did not have sufficient skills, technical and communication limitations (e.g. bandwidth) and lack of appropriate software (Salimi, Masoud & Mazaheri, 2011).

## **Methodology**

This study employs a mixed method research approach that is designed to collect both qualitative and quantitative data. The three-part approach includes:

- a content analysis of 100 U.S. news websites to determine how interactive graphics are presented and accessed (e.g. how often interactive graphics are featured on the home page, whether a news website regularly compiles a collection of multimedia content that includes interactive graphics, and the relative ease with which users are able to find this interactive material);
- a national survey of multimedia editors to gauge the collective mindset on the value of interactive graphics as storytelling tools, as well as the extent to which news organizations currently devote time, manpower and space to these types of multimedia features;
- interviews with four editors at news organizations that regularly display interactive graphics on their sites to provide deeper insight into why they choose to produce this content and what, if any, benefits are realized.

Specifically, the content analysis was conducted to address RQ1: How frequently do mid- to large-circulation newspapers publish interactive graphics on their websites? Each site was visited four times, once each week during a 30-day period between the

hours of 10 a.m. and 6 p.m. Homepage navigation was reviewed to determine whether interactive graphics or multimedia were referred to in top-level links. Home pages also were examined for evidence of secondary links (hyperlinks) to graphics. Likewise, researchers looked for prominently featured graphics on the homepage and collections of graphics elsewhere on the site. Two researchers conducted the content analysis for inter-coder reliability of 97 percent accuracy.

A survey of design, multimedia, graphics or Web editors/producers was developed to address the remaining research questions: RQ2: To what degree do mid-to large-circulation newspapers value interactive graphics as a primary story form? RQ3: What are the barriers to producing interactive graphics? The survey was sent via U.S. mail to 216 editors of English language general circulation newspapers. The newspapers selected were those with the top five highest circulations in each U.S. state and the District of Columbia, as reported by the Audit Bureau of Circulations. (If the state had fewer than five newspapers in the data set, the highest number was selected.) The names of editors, producers, etc., were identified from the 2010 *Editor and Publisher* member database and through the websites of the publications. The 30-question survey included items on which respondents were asked to rate their responses using a five-point Likert-scale, as well as open-ended questions designed to gather an in-depth response.

Respondents could elect to complete the paper survey and return it in a pre-addressed, postage paid envelope or to access the questionnaire via a hyperlink to a Web-based survey. Each editor was assigned a random personal access code that was kept separate from responses to maintain anonymity and security. Identifying

information on the paper surveys also was separated from responses. Editors received three e-mail reminders to take the survey. Fifty-three editors completed the survey, resulting in a 25 percent response rate. The responses came from a well-distributed cross-section of circulation sizes (see Table 1). It should be noted that in an era of economic downsizing in the news industry, it is increasingly difficult to achieve high response rates. Editors are being asked to produce more content with fewer resources and have little time to devote to surveys, despite their potential value to the industry.

Finally, in order to delve more deeply into research questions 2 and 3, follow-up interviews were conducted via phone and email with four editors at news organizations that regularly display interactive graphics on their sites. The results of these interviews provide insight into how much and why interactive graphics are valued at those organizations, as well as what, if any, benefits they get from frequently developing them.

**Table 1: Daily circulation of papers responding**

Fewer than 10,000	1
10,001 - 25,000	7
25,001 - 50,000	7
50,001 - 100,000	14
100,001 - 250,000	19
250,001 - 500,000	4
More than 500,000	1

## Results

Several key themes emerged from the content analysis, survey and interviews. The section that follows provides an overview of the most significant findings in all three areas.

### *Content Analysis*

Of the 100 news websites surveyed, only 28 sites included a link to “multimedia,” “interactives,” or a related label or gallery of multimedia content on the homepage. In most cases (n=19), the link label was “multimedia.” But of the 19 sites that used the “multimedia” label, only four featured information graphics prominently on the corresponding landing page. Those four were: [nytimes.com](http://nytimes.com) (*The New York Times*), [sun-sentinel.com](http://sun-sentinel.com) (*Sun-Sentinel*), [stltoday.com](http://stltoday.com) (*St. Louis Post-Dispatch*) and [miamiherald.com](http://miamiherald.com) (*The Miami Herald*). The remaining 15 “multimedia” landing pages included only photo and/or video galleries.

Information graphics are a common story form on the four sites mentioned above. The multimedia landing page of [nytimes.com](http://nytimes.com) features links to more than 100 multimedia stories, most of which are photo slideshows. However, during the period of this study, there were no less than 15 interactive graphics featured there as well. Likewise, data visualizations, interactive maps, narrative animations, and instructive graphics accompanied numerous written stories on the site. Although [sun-sentinel.com](http://sun-sentinel.com) did not feature any information graphics on the homepage during the weeks of the content analysis, the *Sun-Sentinel* has been known to frequently do so. For more than 10 years, the *Sun-Sentinel* site has contained a large multimedia gallery called “the edge,” which regularly features more than 25 interactive games, graphic simulations,

narrative animations, interactive information graphics, data visualizations, and links to full-page static graphics that originally appeared in the printed newspaper under a feature titled, "News Illustrated."

The multimedia landing page for the *St. Louis Post-Dispatch* (<http://www.stltoday.com/news/multimedia/>) includes a "graphics" menu that lists as many as 12 links to interactive graphics that range from data visualizations to instructive animations. Finally, [miamiherald.com](http://miamiherald.com) features a "graphics" link below the fold on the homepage, with sub-navigation to an "all graphics" landing page. The landing page features as many as 20 interactive graphics each day, with buttons that allow the user to browse as many as 60 additional interactive graphics that have been posted in recent months.

Only two of the 100 sites examined prominently featured an information graphic on the homepage and/or linked to an information graphic from the homepage. Of course, this doesn't mean the other sites never do so. However, during the period of this content analysis, finding information graphics in this form of presentation was a rare occurrence. During the first week of the content analysis, [usatoday.com](http://usatoday.com) (*USA Today*) featured a link to an interactive data visualization above the fold in the "Top Picks" menu. In week three, [pressherald.com](http://pressherald.com) (*The Portland Press Herald*) included a link to an interactive data visualization toward the bottom of the homepage in the "Special Features" menu.

Two sites featured a link to "media" that included only photo and/or video galleries; an additional 22 featured links to "photos," "photo gallery," "video" and/or

“video gallery.” Six sites featured an “interact” link that directs visitors to a page of user-generated content.

### *Survey*

Interactive graphics, in general, received an enthusiastic response from editors. Eighty-seven percent (46 of 53) agreed or strongly agreed that interactive graphics are valuable story forms and 96 percent (51 of 53) said they add value to the news product. The support, however, was not without some reservations, as one editor noted in his response:

“I think our constant internal debate is not whether these graphics have value, but whether their value justifies the amount of time needed to do them right. They don't significantly increase traffic and rarely end up with more than a few hundred views.”

Still another wrote:

“A typical graphic tied to a news topic might generate 10,000 page views over its life for us. At typical CPMs, that won't cover the labor involved in producing the graphic. We like to do the right thing by readers, but we have to carefully choose the topics we lose money on.”

Additionally, while about 47 percent (25 of 53) of respondents agreed or strongly agreed their management saw value in interactive graphics, approximately one third were neutral and about 21 percent (11 of 53) said managers did not see value in this story form.

Despite the worry that interactive graphics are not cost-effective, a few editors reported that their news organizations are running the graphics as often as 10 or more times a month. Most of those responding, however, produced only 1-3 per month, which

averages less than once per week. Nineteen percent of editors said they produced no interactive graphics (see Table 2).

**Table 2**

<b>How many interactive graphics does your publication run on its website each month?</b>	<b>%</b>	<b>No.</b>
0	19.2	10
1-3	61.5	32
4-6	11.5	6
7-9	1.9	1
10 or more	5.8	3
<b>Total</b>	100	52 (1 missing)

Nearly 70 percent (37 of 53) agreed or strongly agreed that “the production of interactive graphics is too time consuming,” but the jury may still be out on whether interactive graphics are important to overall website traffic. Nearly one-third of the respondents (32 percent, 17 of 53) agreed or strongly agreed that interactive graphics do not generate enough page clicks, but about 40 percent indicated interactive graphics do generate enough page clicks (21 of 53), the same number who said that graphics increase website traffic (21 of 53). A possible explanation for the balanced responses could be that recently produced projects – good or bad – influenced the editors’ current opinion.

While the bottom line was an obvious area of concern, 62 percent (33 of 53) of editors disagreed, strongly disagreed or were neutral that cost kept them from hiring staffers capable of producing interactive graphics. The cost of software also wasn’t an

impediment to production. Nearly 53 percent (28 of 53) said they could afford the software and about 21 percent were neutral (11 of 53); 26 percent (14 of 53) said the cost was too much.

The expertise of staff members may hinder production at some news outlets. While 55 percent (29 of 53) of respondents agreed or strongly agreed their staffers have the necessary conceptual skills, approximately 19 percent (10 of 53) were neutral and about 26 percent (14 of 53) said the staffers did not possess the skills needed. Slightly more than 47 percent (25 of 53) of editors agreed or strongly agreed that their staffers did not have the necessary technical skills (programming, Flash, etc.); about 13 percent (7 of 53) were neutral. Slightly less than 40 percent (21 of 53) said their staffs did have the requisite abilities.

“Downsizing of overall newspaper staff means we are not able to hire people who already have skills to produce interactive graphics,” one editor wrote. “Training print artists to do this is a slow process and only works if they are really interested in learning it.”

### **Personal interviews**

Personal interviews with editors at four newspapers (*Sun-Sentinel*, *Boston Globe*, *The New York Times*, *St. Louis Post-Dispatch*) known for their high-quality work in interactive storytelling and graphics provided additional insight on the research questions.

All agreed that newspapers, in general, and interactive storytelling, in particular, are in transition. Many papers have drastically cut staff during the past few years as

publishers struggled to monetize Web delivery and retain profits during a recession. These cuts put additional strain on graphics producers who were often tasked with creating static art for the print product, as well as interactive graphics for the Web.

As noted in the survey results section, managers generally appreciate interactive graphics as a story form and value the staff members who produce them, but managers don't always understand the amount of time, technical skills and effort it takes to produce a high-quality product. Some of the confusion may stem from the lack of universal definitions for interactive graphic content. While some editors have embraced high-level interactivity such as animation, data visualizations and games, others might define an interactive as a slideshow with simple text and photos or even a video. News managers who are inexperienced in planning for interactive elements and inserting them into the editorial process may also contribute to the confusion. This deficiency is not intentional; it's connected to the lightning speed in which story forms and software are changing.

David Schutz, deputy design director/news & graphics of *The Boston Globe*, says his thinking about interactive graphics has been a moving target and he has adjusted his outlook over time. He now better understands technology, what a graphic artist can execute and how readers take in the pieces of a story. He says it's not important to do an interactive graphic for every story. "Interactivity is a tool and does not define the work," he said (Personal communication, Feb. 9, 2012). Steve Duenes, graphics director, *The New York Times*, sees interactive graphics as storytelling devices that can be vehicles for serious journalism and should be treated as such (Personal communication, March 12, 2012). Duenes also cautioned that page views should not be

used to determine a graphic's value. "Traffic isn't necessarily the best indication that a piece of content is good," he said. "But graphics do as well as all other forms of content; often they do better." Will Sullivan, director of mobile news, Lee Enterprises, and former interactive director with the *St. Louis Post-Dispatch*, agrees: "We need to shift from the notion of getting page views and clicks and more on what makes for good content" (Personal communication, Feb. 10, 2012).

There is no one-size-fits-all approach to how interactive graphics are created. The process differs from paper to paper, depending on the size of the staff, how the graphics department fits into the overall newsroom structure and whether the staff produces content for the Web as well as the print product. The process also varies depending on the actual task. Sometimes staff might be asked to restyle a static print graphic to match Web styling, while other times data visualizations, animations or motion graphics might be required. In general, graphics work is divided into what must be produced quickly (as in breaking news) and what is needed for long-term projects. However, interactive elements that don't change, are evergreen and have a long shelf life often are valued.

Sullivan says the planning process usually begins with collaborative meetings among reporters and editors in order to establish the need for graphics and/or graphics potential. Once the project is under way, the interactive staff starts to build relationships with others in the newsroom, which he says is important to the storytelling process. At *The New York Times*, Duenes says, ideas for interactives also come directly from the graphics department. No matter the source, once assignments are made, small groups have an initial discussion before beginning the reporting process. Once the data

collection is complete, it's a matter of execution, with editing along the way, Duenes says.

Staff time and technical skills still remain a challenge for some newsrooms. Cindy Hulfachor, senior graphics reporter at the *Sun-Sentinel*, said she has access to an enormous amount of art created previously by staffers and that the newspaper sometimes uses stock art and templates to increase efficiency (Personal communication, Nov. 28, 2011). Sullivan notes that tools are getting cheaper and some software is open source, presenting less of a problem than in the past. Schutz agrees that technical skills are important. "Software and training should be an investment in the future," Schutz said. "You're either willing to make it or not." He understands, however, that smaller papers may not have the resources. Schutz also values quality over quantity and sets high standards.

Graphics editors say that interactives have to compete with traditional stories for space on the website. The graphics staffs often have to pitch their projects to Web editors and producers in order to get prime placement on the websites in a process akin to a section editor who pushes to get a story on Page One of the newspaper. Despite the challenges and the ever-changing landscape, editors are hoping the business model will rebound. "Newspapers are in an awkward stage of change," Hulfachor said. "I'm hoping we'll see an upswing."

## **Discussion**

An interesting paradox emerges if the results of the survey of editors are compared to the content analysis of 100 news websites. While most editors (87 percent)

assert that interactive graphics are valuable story forms and that they add value to the news product (96 percent), only a few news organizations regularly and prominently feature information graphics on their websites (four were identified in the content analysis). Additionally, despite a clear concern that the production of interactive information graphics is not cost-effective and that the graphics don't generate enough page views (or "clicks"), the content analysis showed that even on sites that do produce them, information graphics are often difficult to find or not prominently featured on homepages or easy-to-find multimedia landing pages. This paradox begs two relatively simple questions: Have interactive information graphics been given a fair shot as a story form capable of increasing site traffic and/or attracting and keeping users' attention? How can website traffic for interactive graphics be evaluated effectively if the graphics are hidden deep in a site or displayed in a manner that defies logic, making it nearly impossible for users to find them?

Additionally, it appears that enthusiasm for producing interactive graphics may have waned in some newsrooms, based on the responses to the open-ended survey questions and the frequency with which the graphics are produced. Just fewer than 62 percent of editors responding said they produced 1-3 interactive graphics per month.

Interactive graphics, once "the next hot thing" in multimedia content, now compete for time and attention with social media, news curation and apps development projects. One might argue that before news organizations move away from one storytelling tool and dive into a new content or distribution strategy, they should do so with confidence that research supports the move. In the case of interactive graphics, evaluation must go beyond simply monitoring page views to include further studies on

usability, user satisfaction and user engagement. Ultimately, a complete analysis requires news organizations to first commit to regularly developing interactive graphics and prominently displaying them so that users come to expect this storytelling form as a regular fixture in the news landscape. Of course, with recent cuts in staffing at most American newspapers – especially in the graphics and multimedia staffs – this may be a tricky proposition.

Based on the findings of this study, additional research and tools are needed to assess the value and effectiveness of interactive graphics as primary story forms. Page views may not be the only useful metric in this pursuit. Journalists have an obligation to provide not only what the public wants to know, but also what they need to know using the best combination of storytelling forms. Schutz measures his *Boston Globe* product in terms of the “whole” menu. Sometimes, he says, the readers need to eat green beans.

News organizations should be committed to telling stories in the most innovative, engaging, appropriate ways possible. Not every story needs interactive content, but it is counter-intuitive to expect users to be satisfied with less interactive content as news delivery moves to the iPad and other tablet devices where interactivity and visual quality are key.

Specifically, future research should address several key research questions:

- 1) Do interactive graphics prominently displayed on a news organization's home page or clearly marked landing page attract readers and keep them longer on a news site?
- 2) Do interactive graphics improve readers' understanding of news stories?

3) Are younger audiences more interested in engaging with interactive graphics than other, more traditional story forms?

The answers are essential to resolve the age-old question of which came first, the chicken or the egg? They also may prevent editors from prematurely undervaluing an important storytelling form that has not yet had the chance to realize its full potential.

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