Constructing Visual News
Technological Changes in Photo Editors’ Newswork
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Abstract: This study has three goals: to assess what technologies are used by photo editors to construct visual news; to determine changes in photo editors’ work routines; and to assess essential technological and professional skills of photo editors. A national mail survey of photo editors at the top 100 U.S. daily newspapers was conducted. The study employed a four-page self-administered questionnaire containing both closed-ended and open-ended questions about usage types, work routines, technology and visual literacy skills, attitudes toward technology, along with concerns about certain problems identified in the literature. The results of this survey suggest that with the latest implementation of technology in newspapers, a change in photo editors’ work routines has started to emerge. These subtle changes include the use of technology to manage time, help with photo gathering and production, easier access to wire images, makes work easier, and expands the amounts of news and images available. Yet, also brings to light a new set of issues as to photo editing, and continues concerns regarding the ethics of photo imaging. This study also suggests that perceptions measuring visual literacy, visual storytelling, professional skills, and attitudes toward technology were shown to measure their constructs. The items used to measure these attitudes concerning the effectiveness of visual literacy and professional skills in news production along with perceptions regarding technology provides a promising measure of news professionals’ attitudes regarding the work they do and the knowledge they possess to do it.

Keywords: Digital Photography, Photo Editors News Routines, New Technology, Newspapers, Visual Construction of News

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Introduction
The death of newspapers has been predicted for over fifty years. First the conquering medium supposedly was radio, then television, more recently there has been audiotext, videotext, and now the web. Yet, newspapers have survived in more or less the same form. Despite this, a downward trend continues for newspaper economics. In the last two decades, there has been an extreme decline in advertising; a loss of profits; and a continued decline in circulation figures. Apart from these dramatic declines, it is evident that newspaper organizations undergo basic structural changes, as well as invested tremendous amounts of money to acquire the necessary resources for news professionals to gather and report the news. Even with major improvements in the technology of newsgathering, printing, and distribution, it is highly likely that the technology will change again in the foreseeable future (Maynard 2000).

According to Seelig (2003), traditional newspapers have looked to the implementation of new technology in an effort to work through economic hardships in an effort to reduce overhead, while at the same time increase productivity and the ease of production. As such, news professionals have had to adapt to changes in work routines and acquire the necessary skills to get the job done. Thus, the purpose of this research is to examine changes in photo editors’ work routines specifically as it applies to constructing visual news. This study has three goals: to assess what technologies are used by photo editors to gather and produce visual news; to determine changes in photo editors’ work routines; and to assess essential visual literacy, visual storytelling skills, and professional skills, in addition to photo editors’ technological skills.

Background and Literature Review
The most recent technological change in the newsmaking process is the digitization of the newsroom (Garrison 2003, Seelig 2002, 2003). This includes computer databases that stores news budgets, access to wire photos and wire stories, staff photos, staff news copy, graphics, stories, web and e-mail access, and much much more; along with the latest in pagination and photo production software. News professionals also have access to compact digital devices such as laptops and digital cameras, wireless phones, and PDAs that provide instant access to information so that photographers and reporters on location have...
the capability to transmit stories and pictures instantly to meet deadlines (Regan 2000, Seelig 2003).


Newton (1998) explored the changes in newspaper photojournalism as a result of digital imaging. Overall, Newton found editors to have positive attitudes toward digital imaging, such as higher ethical standards, increased speed and efficiency, along with better internal communication. Newton said it was also common for resourceful and adaptable photo editors to advance more quickly. These photo editors have significant visual reporting skills, professional journalism skills, as well as strong technological skills, and were willing to work in teams.

Russial & Wanta (1998) call attention to how most of the literature regarding digital imaging has focused more on ethical issues, and has remained silent with respect to journalists' technical skills and use of this new technology. Accordingly, they surveyed photo editors’ at daily newspapers concerning issues about new technology in five areas: digital imaging use, what skills are important today, what skills are important in five years, changes in workload due to media convergence, and hiring criteria. Traditional photography skills such as shooting and providing accurate caption information, as well as picture editing were ranked the most important today; along with digital imaging skills such as scanning and using Photoshop. Of the skills deemed important in five years, photo editors still ranked traditional photography skills such as shooting and providing accurate caption information, as well as picture editing as the most important. But in the years to come more emphasis will be placed on digital imaging skills including using Photoshop, scanning, digital cameras, and digital archives.

Zibluk (2004) surveyed professional photographers and photo editors in Arkansas regarding trends and changes in technology. His research focused on skills valued as important now, and in five years. Currently, the top five skills important right now are the digital camera, basic camera, law/ethics, Photoshop, and people skills. Although the order changed somewhat, the skills listed as important now and in five years were still the same. According to Zibluk (2004), a majority of Arkansas photojournalists indicated using the digital camera, and the "black and white darkroom is all but dead and buried, though some open-ended comments considered it a useful tool.” The switch to a digital darkroom is near completion. Photographers indicated a heavy reliance on Photoshop, along with Quark and/or InDesign. Zibluk also found that the while technology skills are important, professional journalism skills of writing and reporting are still important.

In recent years, Russial (2000), Seelig (2003), and Dunleavy (2004), investigated how digital imaging is changing the roles and responsibilities of photojournalists and photo editors. Russial surveyed photo editors at daily newspapers in the U.S., whereas, Seelig concentrated on photo editors’ at one major metropolitan newspaper, The Philadelphia Inquirer—just after successful adoption and implementation of a completely digital newsroom. Dunleavy (2004) specifically explored how the digital camera has changed photographers work routines. Russial (2000) addressed changes in an average workday, changes in workload and staffing, as well as impact on quality of work. Seelig (2003) focused more on the subtle nuances that occur in everyday life; everyday routines and informal social interactions, and the role technology plays in the social construction of news photos.

Both Russial (2000) and Seelig (2003) found that the average day still demands traditional tasks such as attending meetings, editing, planning, and developing images, and the majority of the day for photographers is spent shooting photos. Photo editors did report that technology has lead to changes in work and work life improved content and provided greater flexibility, as well as more interpersonal communication with others, and more autonomy. Yet, while going “digital” has lead to greater routinization of work, it has also lead to more production demands and an increase in time spent producing content and journalistic tasks.

Not surprisingly, both Russial (2000) and Seelig (2003) found some uncertainty and apprehension toward the new technology. According to Seelig (2003), photo editors also reported concerns of job security, high costs, and the potential for misuse. Some photo editors at The Inquirer reported that they felt the process at times was isolating, “like they were working in boxes,” and very little autonomy. Some photo editors even commented that they felt like they were often second-guessed in their offerings to news editors because now, everyone has access to photos. Still other photo editors expressed concern that as a result of the digital camera, they will be left out of the initial edit, and that at some point, the entire editing process. Similarly, Russial (2000) found photographers felt a loss of control over their images, lower reproduction quality, and greater control by desk editors to make decisions.
Despite changes to photo editors’ work, and feelings of apprehension and uneasiness in early adoption studies (Russial 2000, Seelig 2003), Seelig (2004) found photo editors to have a positive attitude toward new technology. Seelig surveyed newspaper photo editors at U.S. daily newspapers. Overall, the results of this study found that for the most part, photo editors appear to be responding well to the changes technology has brought to the newsmaking process. Photo editors at these newspapers have a sense of what it takes to get the job done as well as the skills required to execute these takes. Thus, it is possible that technological change could be viewed as another way of making photo editor’s work routine efficient and systematic.

Fahmy & Smith (2003) conducted a qualitative study to assess the advantages and disadvantages of going digital. Participants were recruited from the 2001 Picture of the Year International (POYi) roster. Fahmy and Smith found that all respondents welcomed the use of digital cameras, although it takes some getting used to. Other comments included using a digital camera allows one to stay longer on assignment, but others said that because they were able to see images right away so they often left their assignment early.

Fahmy & Smith also explored changes in the production process. Most respondents reported that no matter what the delivery method, images should be treated the same. Although some photographers reported resistance to using a computer screen instead of prints. Still, Photoshop has been used in production for many years, so most photographers were not apprehensive to work with it. The bottom line is the attitude of the photographer, “what kind of care you take and what kind of pride you have in your work” (2003, 87). Mostly, concerns were more focused on the issue of control. Photographers have gained a lot of power in that they have the flexibility to edit their images on location. Similarly, Seelig (2003) found that photo editors were worried that digital imaging eliminated the need for photo editors, or at least might lead to reductions in the staff needed for editing in the newsroom. Overall, the results suggest that just as Seelig found both good and bad aspects to adopting technology, so did Fahmy & Smith.

More recently, Dunleavy (2004) explored how photographers’ use of the digital camera creates an interpersonal relationship between subject and photographer. Because the digital camera affords the photographer instant access to the image captured, a new dimension in the photojournalism routine develops—picture editing and selection at the moment of capture. This new dimension in the photographers’ routine has many photo editors concerned that they will be left out of the initial editing process, or that fewer images will make it back to the newsroom.

Some research (Fahmy & Smith 2003, Garrison 1997, 2001, 2003, 2004, Maier 2000, Niebauer et al. 2000, Russial & Wanta 1998, Russial 2000, and Seelig 2004) has examined the adoption of technology in the newsroom guided by the diffusion of innovation (Rogers, 1995). Although, the majority of the newsmaking studies that do exist are mostly guided by the social construction of news or news routines (Berkowitz 1992, 1993, 1997, 2000, Fishman 1980, 1982/1997, Gans 1979, Lowrey 2002, Molotch & Lester 1974/1997, Seelig 2001, Shoemaker, Eicholz, Kim, & Wrigley 2001, Snow 1983, Sumpter 2000, and Tuchman 1973/1997, 1978). However, Boczkowski (2004) asserts that very few studies explore the more recent implementation of newer information technologies and the changes they have brought to the production and dissemination of news. While this research adopts no specific theoretical framework, it does take into account similar concepts from both these areas of literature, its implications on technological change, and how it applies to the construction of visual news. And, while past research (Russial & Wanta 1998, Russial 2000, and Zibluk 2004) has examined on skills necessary for photo editors to acquire with the adoption of new technology; most of this research has focused more on technical competencies and technology skills on less on the traditional visual communication skills such as visual literacy, visual storytelling, and professional skills. Granted technical skills are important, but this research seeks to uncover that traditional skills are still important in the changing media environment.

In this context, then, the focus of the research is on how the innovation is put to use after adoption, and what advantages or disadvantages, and changes photo editors’ have encountered in everyday activities within the newspaper organization. For these reasons, the diffusion approach to understanding how a technological innovation is put to use is a worthy starting point for this study. Understanding perceptions and attitudes toward existing technology will help news professionals understand and adopt future technologies that will be used to gather and produce the news; as well as the necessary skills befitting of news professionals as they grow with these technological changes. Accordingly, the literature leads to the following research questions:

1. What are the current digital technologies used in newspapers?
2. What are photo editors’ perceptions and understanding of the construction of visual news?
3. What are photo editors’ attitudes regarding the use of technology in the construction of visual news.
4. How has the implementation of digital technology lead to changes in photo editors’ work routines?
5. Overall, what do photo editors’ regard as the main advantages and disadvantages of the new technology?

Method
A national mail survey of photo editors at the top 100 U.S. daily newspapers was conducted. Photo editors were selected from the edition of Editor and Publisher International Yearbook 2002. Cover letters, questionnaires, and stamped, self-addressed return envelopes were sent directly to respondents in early Fall 2002. A second mailing, including a follow-up letter and another copy of the survey, was sent in early Spring 2003. Both mailings were addressed to the photo editors’ listed in the E&P Yearbook. If a newspaper’s listing in the E&P Yearbook did not list specific photo editors, then the mailing was addressed to “photo editor.” A total of 212 questionnaires were mailed to photo editors in the Fall 2002. The two mailings elicited responses from 99 photo editors for a total response rate of 47%.

The study employed a four-page self-administered questionnaire containing both closed-ended and open-ended questions about usage types, work routines, technology and visual literacy skills, attitudes toward technology, along with concerns about certain problems identified in the literature. In addition, educational backgrounds of photo editors were collected. The measures employed were self-report surveys. All information remained anonymous and participation in the study was strictly voluntarily.

Findings
The respondents represented a broad spectrum of daily newspapers. Comparison of the demographic variables indicated that photo editors share similar characteristics. Among the survey respondents, approximately half (49%) indicated 40 - 49 years of age, half (50%) responded that they have worked in the news industry between 21 to 30 years, and over half (58%) responded that journalism, photography, or photojournalism as their undergraduate major or field of study in college.

**RQ1:** What are the current digital technologies used in newspapers?  Table 1 shows the extent to which production software and use of computers have been implemented at the top 100 daily newspapers. The most widely implemented technology used is e-mail (99%), Intranet (95%), photo-imaging software (97%), pagination software (96%), the World Wide Web (98%) and online searches (98%).

### Table 1: Technology Used in Newspapers

<table>
<thead>
<tr>
<th>Technology</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo imaging software</td>
<td>97%</td>
</tr>
<tr>
<td>Pagination software</td>
<td>95%</td>
</tr>
<tr>
<td>E-mail</td>
<td>98%</td>
</tr>
<tr>
<td>Intranet</td>
<td>94%</td>
</tr>
<tr>
<td>Online Information Searches</td>
<td>97%</td>
</tr>
<tr>
<td>Traditional darkroom techniques</td>
<td>28%</td>
</tr>
<tr>
<td>Word processing software</td>
<td>94%</td>
</tr>
<tr>
<td>Instant Messaging</td>
<td>62%</td>
</tr>
<tr>
<td>World Wide Web</td>
<td>97%</td>
</tr>
<tr>
<td>Other</td>
<td>16%</td>
</tr>
</tbody>
</table>

Of the technologies listed, photo editors reported using the traditional darkroom (28%) and instant messaging (62%) the least. The low use of the traditional darkroom is to be expected considering the switch by almost all photo editors (97%) to photo imaging software. Another possibility is that in the process of adopting new technologies, these newsrooms have held on to older technologies until photo editors think they can be completely self-reliant with the new technologies. Although instant messaging did not reach complete adoption, more than half (62%) of photo editors indicated that they use instant messaging. While a nice feature, most photo editors agreed (41.4%) and strongly agreed (46.5%) that given the option, [they] would prefer to communicate with colleagues face-to-face; whereas, only a few photo editors agreed (9.1%) and strongly agreed (2%) with, given the option [they] would prefer to communicate with colleagues using e-mail.

**RQ2:** What are photo editors’ perceptions and/or understanding of the construction of visual news? 13 statements measuring photo editor’s perceptions and understanding of construction visual news were measured using a five-point likert type scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). An exploratory factor analysis of
the 13 statements was conducted to choose appropriate items for each dimension. Using principle component analysis to estimate the factor model, results were obtained for a series of three models assuming three, four, and five factors. While there were five eigenvalues larger than one in a principle component analysis, the factor solution, which identified three factors was chosen because the assumed model accounted for 61% of the variance explained; the individual variables were explained fairly well (with communalities ranging from .46 to .98); and the solution exhibits a simple structure with each variable dependent on only one factor. Varimax rotation did not provide a more reasonably meaningful interpretation of the factors, and thus, it was concluded that the unrotated three-factor model is a reasonable compromise between model parsimony and adequacy of fit.

Table 2: Photo Editors’ Perceptions/Understanding of the Construction of Visual News

<table>
<thead>
<tr>
<th>Items</th>
<th>Visual Literacy</th>
<th>Visual Storytelling</th>
<th>Professional Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have an understanding of how professionals working in the newspaper industry use news photos.</td>
<td>.803</td>
<td>.089</td>
<td>-.145</td>
</tr>
<tr>
<td>I have an understanding of how news photos are produced, organized, and disseminated.</td>
<td>.797</td>
<td>.102</td>
<td>-.171</td>
</tr>
<tr>
<td>I know how to find photos and information in electronic databases and on the World Wide Web.</td>
<td>.737</td>
<td>.115</td>
<td>-.096</td>
</tr>
<tr>
<td>I confer with other photo editors regarding how to use news photos.</td>
<td>.696</td>
<td>.014</td>
<td>.048</td>
</tr>
<tr>
<td>I confer with news editors regarding how to use news photos.</td>
<td>.691</td>
<td>-.105</td>
<td>.064</td>
</tr>
<tr>
<td>I apply evaluative criteria to select quality news photos.</td>
<td>.679</td>
<td>-.129</td>
<td>-.053</td>
</tr>
<tr>
<td>I am comfortable using computers for photo gathering and production.</td>
<td>.658</td>
<td>.134</td>
<td>-.128</td>
</tr>
<tr>
<td>I confer with my boss regarding how to use news photos.</td>
<td>.615</td>
<td>-.255</td>
<td>.072</td>
</tr>
<tr>
<td>I am able to communicate visually: interpret visual media and create meaningful visuals.</td>
<td>.015</td>
<td>.974</td>
<td>.159</td>
</tr>
<tr>
<td>I am able to conceptualize and formulate good picture stories.</td>
<td>.015</td>
<td>.974</td>
<td>.159</td>
</tr>
<tr>
<td>I understand that news production is a strategic process and approach it as such.*</td>
<td>-.035</td>
<td>-.045</td>
<td>.020</td>
</tr>
<tr>
<td>Technology helps me manage my time by readily meeting deadlines.</td>
<td>.162</td>
<td>-.127</td>
<td>.880</td>
</tr>
<tr>
<td>I apply analysis and original thought to existing information to create new picture-story ideas.</td>
<td>.201</td>
<td>-.138</td>
<td>.876</td>
</tr>
</tbody>
</table>

*Item eliminated from factor model. **Factor loadings larger than 0.6 are shown in bold face.

Table 2 shows factor loadings for the three-factor model. The first factor had high loadings on statements that reflect photo editors’ perceptions on visual literacy (31.74% variance explained). Factor 2 reflected statements about visual storytelling (15.98 % variance explained); and the third factor corresponded with statements on professional skills (12.95% variance explained). Only one item failed to load highly on any of the three factors, and was eliminated. Internal scale reliability was checked for each dimension. The visual literacy, visual storytelling, and professional skills dimensions achieved acceptable levels of Cronbach’s alpha, .84, 1.00, and .80, respectively.

RQ3: What are photo editors’ attitudes regarding the use of technology in the construction of visual news? 18 statements measuring photo editor’s attitudes toward technology were measured on a five-point likert type scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). Using principle component analysis and varimax rotation, only three factors with eigenvalues larger than one were identified; and these three factors accounted for 91% of the variance explained. The individual variables were explained fairly well (with communalities ranging from .54 to .99); and the solution exhibits a simple structure with each variable dependent on only one factor. Thus, it was concluded that a three-factor model was thought to be a reasonable
Table 3 summarizes factor loadings and dimensions. The first factor had high loadings on statements that reflect expectations about photo editor’s use of technology in news production (53.24% variance explained). The second factor had high loadings on statements about photo editors’ expectations of the functionality of technology in news production (30% variance explained). The third factor had high loadings on statements reflecting photo editors’ preference for communication (7.6% variance explained).

Table 3: Photo Editors’ Attitudes Regarding Technology

<table>
<thead>
<tr>
<th>Items</th>
<th>Use of Technology</th>
<th>Functionality of Technology</th>
<th>Preference for Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>I received ample training regarding how to use computers.</td>
<td>.921</td>
<td>.372</td>
<td>.076</td>
</tr>
<tr>
<td>Computers expand the news images available.</td>
<td>.921</td>
<td>.373</td>
<td>.074</td>
</tr>
<tr>
<td>Increased use of computers makes a more effective photo-gathering process.</td>
<td>.921</td>
<td>.373</td>
<td>.074</td>
</tr>
<tr>
<td>Increased use of computers makes news production easier.</td>
<td>.921</td>
<td>.373</td>
<td>.074</td>
</tr>
<tr>
<td>Computers are effective for communicating with colleagues for work-related work.</td>
<td>.921</td>
<td>.375</td>
<td>.072</td>
</tr>
<tr>
<td>I am confident that I will be able to keep up with the important technological advances of computers.</td>
<td>.921</td>
<td>.375</td>
<td>.071</td>
</tr>
<tr>
<td>Given a little time and training, anybody could learn to use computers.</td>
<td>.920</td>
<td>.375</td>
<td>.072</td>
</tr>
<tr>
<td>Computers isolate people by inhibiting normal social interactions among users.</td>
<td>.920</td>
<td>.375</td>
<td>.075</td>
</tr>
<tr>
<td>Computers enable me to interact more with my boss.</td>
<td>.920</td>
<td>.375</td>
<td>.075</td>
</tr>
<tr>
<td>Today’s news professionals in my field must be computer literate.</td>
<td>.706</td>
<td>.227</td>
<td>.020</td>
</tr>
<tr>
<td>Computers saves time and work.</td>
<td>.701</td>
<td>.218</td>
<td>.014</td>
</tr>
<tr>
<td>The use of computers has increased my effectiveness to perform my duties.</td>
<td>.392</td>
<td>.911</td>
<td>.044</td>
</tr>
<tr>
<td>Computers put too many people out of work.</td>
<td>.392</td>
<td>.911</td>
<td>.044</td>
</tr>
<tr>
<td>Computers control too much of our world today.</td>
<td>.392</td>
<td>.911</td>
<td>.044</td>
</tr>
<tr>
<td>The use of computers enhances the final news product at my news organization.</td>
<td>.392</td>
<td>.911</td>
<td>.044</td>
</tr>
<tr>
<td>Computers will create more jobs than they will eliminate.</td>
<td>.281</td>
<td>.829</td>
<td>.023</td>
</tr>
<tr>
<td>Given the option, I would prefer to communicate with colleagues using e-mail.</td>
<td>-.087</td>
<td>-.028</td>
<td>.933</td>
</tr>
<tr>
<td>Given the option, I would prefer to communicate with colleagues face-to-face.</td>
<td>.511</td>
<td>.178</td>
<td>.665</td>
</tr>
</tbody>
</table>

*Factor loadings larger than 0.6 are shown in bold face.

The 18 items measuring attitudes toward technology were also summed to produce the technology literacy scale (techlit scale) and reliability was checked, Cronbach’s alpha for the 18 items measuring attitudes toward technology was .96. Internal scale reliability was checked for each dimension identified in the factor analysis. The Cronbach’s alphas for the three dimensions, i.e., expectations about use of technology, functionality of technology, preference for communication, were .98, .98, and .56, respectively.

RQ4: How has the implementation of digital technology lead to changes in photo editors’ work routines? The findings presented here show—that
compared to a very small survey of managing photo editors (N=12) conducted by The Philadelphia Inquirer (1999)—changes in work routines are slowly emerging. First, who edits the film (or digital images) when the photographer returns from assignment is changing. Respondents indicated that while most photo editors (88%) are still heavily involved in the initial editing process, photographers (70%) are taking a more prominent role. Whereas, in 1999, The Inquirer reported that mostly photo editors edit film (or digital images) when the photographer returns from assignment, and only two newspapers reported that photographers are involved in the editing process.

When it comes to putting images in the computer system, very little change has occurred. In 1999, mostly photographers input photos into the system, and lab techs did the pre-press work, while three newspapers reported that photographers do it all—make the scans, provide the caption information, and do pre-press work. Not much has changed in 2002, photo editors reported that most photographers (77%) make the scans and provide caption information, and lab technicians do pre-press work, only a few (7%) said that lab technicians makes scans and do pre-press work, some (16%) indicated that photographers do it all. The findings were also consistent when it comes to cropping. In 1999, mostly all respondents said that when they do cropping, both photographers and photo editors will crop images. Likewise in 2002, both photographers (71%) and photo editors (92%) crop photos, and less than a handful (2%) indicated that lab technicians crop photos.

Once photos are viewable in the database, the person responsible for the initial selection of images has started to change. In 1999, all managing photo editors reported that initial selection occurred with the photo editor. However, in 2002, initial selection mostly occurred with photo editors (69%), while some reported that photographers (25%) make initial selection. Given the adoption of digital cameras in recent years, this change in routine is expected and consistent with Dunleavy (2004) and Seelig (2003). Yet, the final selection of images had not changed much from 1999 to 2002. Most of the final selection of images still takes place with photo editors (80%); and some indicated the director of photography (34%), news editor (21%), assistant managing editor (16%), and others (22%) make the final selection. Because some respondents indicated more than one person, it can also be assumed that some still view final image selection as a collaborative process. Although the majority of opinion here, in 2000, Seelig (2001) found that at times, photo editors would collaborate with others to make final image selection particularly when working on a breaking news story.

On the surface, it appears that there has been little change in news routines; however, open-ended questions revealed some nuances that have changed with the implementation of technology. Overall, photo editors did not perceive that technology in and of itself has changed their responsibilities as photo editor, rather the process has changed. One respondent said, “Everything – cameras, no film, computers to edit and manage images. Nothing is the same as when I started, except the need to tell stories.” “It’s all in the computer now.” “… Also can visualize design mistakes before printing.” “Gather images longer/faster with higher quality reproduction. No real change in responsibility – we’re still the arbiter of quality and story telling. Images – technology just makes it faster and easier.”

One significant change has been the amount of photos and content available almost immediately, both locally and internationally. “Compared to viewing and selecting wire pictures on the old AP silver prints, we can select from 100’s and 1000’s more images today through computers.” Also, “… The need for web content demands much faster turn around and greater numbers of images.” “… Opportunity to enhance quality of reproduction (we have had an imaging department as part of photo for three years). All newsroom employees can see photos through CCI.” “… Email has expanded our ability to get photos from a wider variety of sources in a much more timely fashion.”

Technology has also created a more quick and efficient process, yet as a result, this has affected deadlines. For instance, “Technology has increased the speed with which we can provide images to the newspaper by 200%. In the past we would need 2 hours after a shoot to get a print to the desk or a negative to be scanned. Today we can shoot an assignment and plug in and send them right away to the photo editor.” “Better ability to do research, photo assignment origination. We can push deadlines because digital photography and cell phone transmission has allowed it. Need to check more sources for pictures when dealing with wire events.” And, “… It also allows me to have later events covered and still make the daily paper.”

The most significant and noted change in the physical aspects of conducting work is editing; and most photo editors did not respond in kind. “I’m glad we’re able to get news images later, but some photographers transmit back to the office as a way to avoid editors and some photographers have no business editing their own work.” “I like applications such as Photo Mechanic which makes editing much easier, but I don’t like that some photographers choose not to come into the office and will edit themselves and
send from their homes instead. I liked sitting with
the photographer, looking, and picking images
together. “The editing process is much different now. The
ability to view all photographers take is minimized.
Many times I have to call a photographer to send
more images to make a more informed edit.”
“Technology has made it more difficult to maintain
the editing process. Photographers have more control
and other news and design editors can more easily
circumvent the photo editing process.”

RQ5: Overall, what do photo editors’ regard as
the main advantages and disadvantages of the new
technology? Most photo editors were positive in
their comments as to the main advantages of the new
technology. “The speed of getting images into the
newspaper benefits the reader the most.” “Ultimately
leaves more time for content creation.” Some photo
editors feel that technology increases the quality of
reporting. “There are increased demands, but the
excitement of being able to deliver the report faster
and in greater depth is worth it.” “… I must add that
because of the technological changes, we are able to
get more meaningful, end-of-game photos into the
paper in the time for deadline, because of the speed
and efficiency of the digital process. Also, because
of my ability to search a wide variety of photo data-
bases on the Internet, I can offer a better selec-
tion of photos for the decision making process.”

Another advantage noted by most photo editors
has been the ability to push limits of deadlines, and
get content into the newspaper faster. “… We can get
images faster and earlier to make better decisions on
daily content. We can also push deadline at night
and still get images in late.” “… We can push news
and sports deadlines to limits undreamed of 10 years
ago. We can take and immediately upload digital
images, using satellite phones, from anywhere in the
world – e.g. Afghanistan.”

Technology has also lead to an increase in effi-
ciency and makes the job easier. “Yes, it allows news
organization to cover a wider, more diverse selection
of stories in an efficient and cost effective way.” “…
The new technology has give photo a much stronger
presence in the newsroom. We are just as mobile as
reporters, enabling us to broaden our coverage. The
time savings allow our photojournalists to work much
later into the night and still make deadline.” “Tech-
nology has shortened the steps involved time wise,
allowing us to shoot longer and still make deadlines.
There are dozens of ways it’s made my job easier to
do and made our department more efficient.”

But not all photo editors think positively toward
technology. Some have commented that technology
has increased demands on them and added more respon-
sibilities to their workload. Still, with more im-
ages available, some photo editors feel this has added
more to their workload. “One of the main changes
is having to constantly check the news wires because
so many images are now available.” “We make more
fixes “on the fly” and demand less of photographers.
Photographers get lazy about captions and make
more work for editors who have to fill in the blanks.”
“More caution/skepticism when selecting wire im-
ages. …” “Increased my workload. What before was
handled by lab techs has now shifted to photo editors.
At the same time, it does give me more control over
final image tone, crop, and quality.” “Because of the
wide range of databases available to view photos, I
have more work to do to find the best images.”
“…Downside is 24/7 cable TV that makes everything
a crisis and/or constant over-saturation. It numbs
the readers/viewers and increases stress in print news-
room where we can’t publish but once a day.” “It’s
put a premium on being able to make good decisions.
Years ago there weren’t many choices to be made,
you had to decide between a handful of photos.
Today the photo editor is asked to winnow out the
best and more informative photos from hundreds, if
not thousands, that are available.”

Technology is also a new burden and costly, “As
director of photography, it’s a big part of my job to
make sure that photographers have the tools they
need to do their job. That’s very challenging consid-
ering the cost and rapid change in technology. From
an editing standpoint, the bottom line is still content.”
“I have to spend more time from different resources
finding images and sharing our stuff images with
other papers in our chain.” “I have had to learn more
about hardware and the relationships of various
cameras to color space. Photo editing is still very
much about working with people and telling stories.
The tools have changed and will continue to change.”
“…Downside is 24/7 cable TV that makes everything
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Others expressed that they had no choice, they
must adapt to the technology or else. “Have to know
every aspect of computers – from the digital cameras
to computer input devices to archives – and you have
to keep up with every technological upgrade/change.
…” “Forced me to be a techno geek, which takes time
away from journalism.” “No longer editing film –
digital editing slower and more time consuming.
Photographers shoot more, but use less critical
thinking.” “Life goes on. It’s not what I thought it
would be, it’s just different.” “Yes, we must be ad-
aptive in the uses. We must change our ways and
keep thinking of new ways to be organized and make
sure that we remember that it’s content that matters,
not technology.”

Not all comments were good or bad, some were
mixed, and photo editors feel there are trade offs –
some things easier, others more complicated. “Technology is wonderful, but it doesn’t make work easier necessarily. For example, yes we have many new picture sources available, but it takes time to research those sources. Technology does not impact my foremost responsibilities: to get the best possible pictures into the paper, and to motivate photographers.” “Requires an understanding of broad range of technological hardware and software, but allows me to no longer be concerned about wet darkrooms and their issues. Requires vigilance to safeguard non-photo editors from usurping photo editor’s responsibilities.” “In some ways it is easier, but in others it is not effective. The best process in communicating story ideas is face to face. Computers help on the technological side, but not too much on the creative side of things, for a photojournalist.” “Technology has helped provide more content and options. Downside – has also enabled everyone to view unedited photos which are equivalent to reporters’ notes.”

And, still others are on the fence and feel that what is missing is better quality, and for news professionals to have a better understanding of technology such as how to use it and ethical implications. “It is my hope that digital journalism will come close to the quality of film, thus making this new, expedient technology well worth the wait. We’re not there yet.” “Yes, very happy. Once we learned how to use the technology to its fullest extent to achieve peak efficiency.” “Yes! However, it could be much better if senior editors completely understood the investment (money and training) needed to make it work correctly.” “Given me more choices; created better archives; communicate/file assignments better, but also is a Pandora’s box with some wanting to manipulate images.”

Overall, photo editors appeared concerned with the lack of quality in journalism as a direct result of technology. “Technology has made routine, mechanical tasks easier, but we have to develop work habits that allow creative people time to think rather than simply do more work.” “The instant nature of technology has decreased the amount of planning and discussion of the merits of stories. Discussion seems to come following publication and not before.” “We expect more from photographers, more work, less quality. Deadlines have moved up, less time to shoot, less quality.” “Yes, we need to remind ourselves content comes first.” “... I am very concerned about ethics because the computer software is so powerful. Even cropping can change a photo in a big way.”

Discussion and Conclusions
This study explored how technology has impacted the construction of visual news. The results of this survey suggest that with the latest implementation of technology in newspapers, a change in photo editors’ work routines has started to emerge. Similar to previous research (Fahmy & Smith 2003, Russial 2000, and Seelig 2003), these subtle changes include the use of technology to manage time, help with photo gathering and production, easier access to wire images, makes work easier, and expands the amounts of news and images available. Yet, also brings to light a new set of concerns as to photo editing, and a continues concerns regarding the ethics of photo imaging. Still, it is apparent that the “new” digital technologies of late have been implemented and are a part of everyday routines. Given the percentages of technology use indicated by photo editors surveyed in this study, and as outlined by Rogers (1995), if an innovation is reported to be adopted/implemented by over fifty percent, then that innovation is considered used; and therefore, it is no longer necessary to consider these technologies a new technological innovation.

This study also suggests that perceptions measuring visual literacy, visual storytelling, professional skills, and attitudes toward technology were shown to measure their constructs. The items used to measure these attitudes concerning the effectiveness of visual literacy and professional skills in news production along with perceptions regarding technology provides a promising measure of news professionals’ attitudes regarding the work they do and the knowledge they possess to do it. Because the scales in this study have only just been developed and tested, additional studies are needed to further test scale validity and reliability. Until such studies are completed, it is suggested that this instrument be used in conjunction with other methods of perception and attitude measurement. Preliminary evidence would recommend against treating professionals’ skills as a separate construct from technology skills. Nowadays, it is fair to say that technology skills are part of the professional package of skills necessary to be a good photo editor as if they were interchangeable constructs. Future investigations however, ought to continue to examine these constructs for their predictive validity.

Similar to Maier’s (2000) assessment of why CAR was adopted in these newsroom, these photo editors appear to be willing to use new digital photography and information technologies because they too have a strong professional drive, strong computer skills, and they understand the power of photographic storytelling to convey information. Likewise, Newton (1998) said it was also common for resourceful and adaptable photo editors to advance more quickly. These photo editors have significant visual reporting skills, were willing to work in teams, professional journalism skills, as well as strong technological skills. Hence, it is possible that the photo editors
surveyed here, have a positive attitude toward technology because these photo editors have a sense of what it takes to get the job done as well as the technological skills required to execute their roles and responsibilities; and given time and proper training, people adopt well to change. Although, both Russial & Wanta (1998) and Zibluk (2004) investigated the importance of technical skills of photo editors and photojournalists, this research goes further in its’ assessment of the necessary skills befitting a photo editor in today’s precarious media climate. There is no question that technology skills are important, but [we] must not forget that professional journalism skills of visual literacy and visual storytelling are just as important.

Still, the gradual shift in picture editing is attributed to the increased use of digital cameras by photographers. As Dunleavy (2004) and Seelig’s (2003) research has shown, the more that photographers use digital cameras, the more photographers edit their own work particularly on location, and thus, at times, reducing the number of images photo editors edit when photographers return from assignment, or possibly, leaving the photo editor out of the initial editing process all together. According to Rogers (1995), feelings of uncertainty is not surprising given that often people resist change when confronted with something new or unfamiliar. After all, familiar routines and processes are comforting and give people a sense of security, particularly in that they know what to do and how to do it. Hence, photo editors’ uncertainty is not surprising given that in the past, news organizations have experienced a redistribution of roles and responsibilities in the photo department, and in other parts of the newsroom with the adoption of newer technologies.

Despite these concerns, new digital photography allows photographers more flexibility both on location and in production, transmission of image from location is easier, and photographers are more aware of their images now that they are taking part in the editing process. Future research might investigate more fully the extent over time in which the diffusion of digital technology affects photo editors’ role in the picture editing process. What remains to be seen is the possible consolidation of photographers and photo editors along with the downsizing and/or redefinition of photographers and photo editors’ roles and responsibilities in the newsroom. This research would further benefit from a stronger theoretical base that offers insight into how new technology ties into the larger context of the social construction of the news, in addition to the perceived economic benefits of news gathering.

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