PICTURES AND PIXELS:
DIGITAL PHOTOGRAPHIC ARCHIVES AT NEWSPAPERS,
PHOTOGRAPHIC AGENCIES AND LIBRARIES

A Dissertation
Presented to
the Faculty of the Graduate School
University of Missouri - Columbia

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Philosophy

by
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December 2006
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PICTURES AND PIXELS:
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PHOTOGRAPHIC AGENCIES AND LIBRARIES

presented by Keith Greenwood

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ACKNOWLEDGEMENTS

There are too many people who have contributed to getting me to this stage to possibly acknowledge all their contributions, but I will try.

I could not possibly have gotten to this point without the guidance of Dr. C. Zoe Smith. Zoe’s work influenced me before I came to Missouri, and I am fortunate to have had her as my adviser and mentor. She has guided me not only through this dissertation but also through all the aspects of evolution that come with doctoral work. She has always had my interests at heart, and I know she will continue to influence me. In addition to Dr. Smith I must thank all my committee members. Drs. Charles Davis, Earnest L. Perry and Wayne Wanta have all given me guidance and encouragement. More importantly, they have given me questions to think about. I am a more thoughtful person because of them. And my gratitude to Dr. Antonie Stam, who opened up areas of thinking about technology and its impact that I would not have considered without meeting him. I owe this committee my gratitude.

There are others in the School of Journalism who have helped me along the way. Ginny Cowell and Martha Pickens almost always had the answers, and when they did not have them they knew where to find them. No graduate student gets through without the guidance of Amy Lenk. From forms to deadlines to just keeping up with life in general, for us graduate students Amy is indispensable. And when it comes to finding answers, I cannot overstate how much the staff of the School of Journalism library have helped me over the years. Sue Schuermann and Cindy Dudenhoffer showed me where to find resources, helped me to get resources and were always helpful.
There are others who have influenced or helped me along the way. Dr. Stan Soffin provided me with a great example of scholarship and collegiality when I was at Michigan State University. I was fortunate to study and work with many faculty there who have had an impact on me. And there are my colleagues in the doctoral class. We were all in the same boat, and we all helped row. Specifically I have to thank Scott Reinardy for his friendship and encouragement. I must acknowledge the assistance of Dr. Peter Gade at the University of Oklahoma. Listening to Peter is one of the things that helped me realize why a doctoral degree was important to me, and without his help completing this dissertation would have been a lot harder. I also have to thank Jeff Panhorst, for without his assistance the postcards that started the survey would never have been produced.

I saved my family for last. My parents, sister and extended family always have been supportive, even if they did not always quite understand what I was doing. But the real support has come from within my own home. My daughter, Kayleigh, has been most patient with all the times I couldn’t play or do something else she wanted, but she also gave me reasons to get away from the desk for a while to play catch or shoot some baskets. Thank you, Kayleigh, for giving me a reminder every once in a while of what is really important.

And finally, I have to thank my wife, Cindy. She knew I was destined to walk this road long before I did, telling me it was never a matter of if I would get this degree but only of when. Cindy has helped with the work, reading papers or transcribing tapes, but she has helped with life even more. She took care of all the things I could not and endured all my bouts of stress and doubt. She is the picture of love and support and truly deserves my undying love and gratitude.
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ABSTRACT

A survey (N = 167) and in-depth interviews were conducted to examine organizational influences on the diffusion of an innovation. Daily newspapers, historical libraries and museums and photographic agencies that handle editorial content were identified for exploration of how they have created and implemented digital photographic archives. The results indicate that characteristics of the organization such as size and organization type influence the decisions that are made with respect to creating the archive and its ongoing operation. The results also indicate innovations that fit well within the established routines of the organization and within the existing knowledge and skills of the organization members are likely to be successfully adopted. The study also addressed implications of the methods of saving photographs in a digital archive have on the future of historical research.
A dirigible crashing to the ground in flames. A mother with her children in a migrant camp. An execution in a Saigon street. The collapse of a skyscraper on September 11. These images persist in the mind because they have been preserved and repeatedly seen since they were originally created.

Men repairing fishing nets. Cattle drives. School board elections. Bread-making in a local bakery. Many photographs like these have been preserved but rarely seen since they were created. Catalogued in archives, these photographs wait to be retrieved and analyzed by researchers seeking to know more about everyday life, special events, local heroes or regional culture in a specific area or at a certain time. In fact, historical visual images have been called one of the “most important and straightforward ways in which people understand the past.”¹ The photographs can be an object of study or used to illustrate the results of research. A characteristic of these archives has been that, to use them, a researcher must physically go to where the photographs are, search the catalog at that location and then sit and view the prints or request copies to be made of them to be analyzed later.

Digital technology has changed how visual materials are created, presented and stored. Digital cameras have allowed photographs to be created as files that can be saved and then viewed on computers. Scanners and digital cameras have allowed photographic
prints and negatives, maps, motion pictures and other documents to be converted and presented in digital formats. Digital catalogs can be created that not only contain data about the images but also contain a version of the digital image, allowing the viewer to immediately determine whether the search has resulted in finding the desired image. The catalogs and the digital files also can be distributed through computer networks, allowing an interested researcher to search for and view images in collections thousands of miles away without leaving his or her own desk. In addition to broadening the range of images available to an interested viewer, the digital format and distribution allows images to be viewed repeatedly by a wider range of people than would be possible with physical objects. School children or amateur historians who would not have the means to visit an archive to search for and view images can now have access to them. As an added benefit, digitizing images for viewing also protects the original from the potential for damage that could come with careless or repeated handling. By applying digital technology, rare items that would rarely see the light of day can be made available as easily as the current items created daily.

Digital technology allows greater access to the images in photographic archives, but it is important to note that digitization does not equal preservation. Digitization can be a tool to provide greater access to fragile photographs, thus aiding in their preservation, but digital images do not last forever either. The media on which photographs are stored, often CDs, DVDs or hard drives, are subject to failures and loss of data, and advances in technology already have made some storage media obsolete. Likewise, images may become unreadable as updates to the software used to read them render their file formats obsolete. Technology for creating digital photographic archives has not been in use long
enough to know whether it can be effective for preservation,² but organizations that create digital photographic archives must balance these concerns of access and image preservation.

Digital archives of visual items are created by different types of organizations and made available to the public for use. The entities range from the news organizations that archive the materials created in the course of their work to private organizations that collect and sell photographs to organizations that create archives related to their specific purpose, such as presidential libraries or historical societies. The balance between access and preservation is different for these different types of organizations. Despite the differences in their missions, the entities share a common aim to create and maintain digital visual archives, but do their differing characteristics impact the manner in which they implement the technology to create and present digital archives? The question is worthy of consideration as the choices made when creating the digital archive determine the contents of the digital archive. The digital archives will represent the historic record future generations will study. Understanding how the archives were created and the decisions that determined their content will provide the context that guides their interpretation in future years.

The process of introducing and adopting new ideas, products or practices has been termed the diffusion of innovations. Everett Rogers’ diffusion of innovations theory suggests the adoption and implementation of technological innovations is based partially on the characteristics of the innovation such as its complexity and how well it fits with the experiences and needs of the users.³ Users already experienced at building photographic archives have background and knowledge to apply when determining
whether adopting technology will allow creation of a digital archive that meets or exceeds the functions of the existing physical collection. Those characteristics are considered during the decision making process, which Rogers separated into stages of knowledge, persuasion, decision, implementation and confirmation.4

Much of the diffusion research has focused on adoption of innovations by individuals.5 The same theoretical model of diffusion is applicable to the study of how organizations determine whether and how to adopt innovations, but organizational characteristics influence the adoption process. Like individuals, organizations evaluate and implement changes. Individuals are likely to hold onto comfortable patterns instead of adopting change. Organizations, being comprised of individuals, often mirror that characteristic.6 Scholars have determined organizations that can create an environment in which its members feel safe contemplating and exploring change are more likely to successfully implement beneficial changes.7 With regard to the diffusion of innovations, characteristics such as the degree of centralization in organizational structure and the level of management support for change have been linked to the likelihood of individuals in an organization adopting or rejecting a technology innovation.8 More relevant to the topic at hand, Smith suggested strategies for digitizing information should be determined, at least in part, by the institutional mission of the agency.9 These organizational influences add another layer of considerations to the analysis of how organizations adopt new technologies or processes, but they do not replace the characteristics of the innovation itself in the decision-making process outlined by Rogers.10

One method for studying the impact of organizational characteristics on the diffusion of an innovation is to compare the different structures, goals and purposes of different
types of organizations that might implement a similar innovation. The adoption of digital
technology to create and present photographic archives provides one such opportunity for
study. Three different types of organizations that create digital visual archives for
different purposes are news organizations, commercial photographic agencies and
libraries that focus on preservation of historic documents. Daily newspapers are
concerned with acquiring photographs of current events for presentation in a product that
will be out-of-date the next day. They store photographs to maintain a record of events
and their coverage of them. The archives also provide a means for staff to retrieve images
of past events if they become part of a new story or to produce a new product, such as a
book of photographs depicting a major event or recapping a sports season. News
organizations are profit-making businesses, but their focus is more likely to be on
providing archive access to people within the organization than to sell access to a general
audience. Newspapers do make money from selling photographic prints to the public, and
some make quite a bit of money. But the sales are of published photographs that a viewer
has requested or of images that are collected and offered for sale. The public generally
does not have the opportunity to peruse the newspaper’s archives looking for historic or
unpublished images.

Profit is also the goal of commercial photographic agencies. Black Star, Magnum,
Sipa and their competitors are in the business of selling photographs to clients. They have
created archives for the purpose of retrieving images for resale. The adoption of digital
technology may have allowed archivists at these agencies to locate and retrieve images
more quickly than could be done with index cards and file cabinets, but creating digital
archives also has offered opportunities to change how the agencies sell and distribute
photographs. By connecting the digital catalog and images to the agency’s site on the World Wide Web, potential clients may be able to conduct their own searches for relevant images instead of relying on agency staff. When a desired image is located, the digital technology also may allow the client to purchase a copy of the image and download it immediately, rather than waiting for a new print to be made and shipped. Unlike daily newspapers, providing the public with access to a digital archive is part of the business for a photographic agency.

Providing public access to an archive of photographs is also the mission of certain types of libraries. The staff at presidential or historical libraries are concerned with preserving photographs and making them available for research. Like photographic agencies and daily newspapers, these libraries may have had physical catalogs of photographs, but creating digital catalogs may allow searching for and retrieving an image to be done more quickly. And like photographic agency staff, librarians may have an interest in allowing members of the public to search for and view digital versions of the images on their own. Providing access to the catalog and images via the World Wide Web makes them accessible to more people who otherwise would have to travel to view photographs or put their trust in a researcher at the archive to find and copy the proper ones. Unlike photographic agencies, however, photographs are not the product through which these libraries stay in business. The archives of presidential and historical libraries often contain images that are in the public domain or are made freely available to interested viewers. In these cases, the interest of the librarians in protecting photographs from unauthorized access and publication is very different from that of the operators of
photographic agencies, who must implement safeguards to protect the images and guard against loss of sales.

Here, then, are three different types of organizations that create digital photographic archives. The basic technology of computers, digital cameras or scanners, software and storage media is comparable for each type of organization, but due to their differing characteristics, these organizations should have different practices and policies that determine how their archives are created, how they are presented to an audience and how legal concerns such as copyright are addressed.

The question of how these different types of organizations develop their photographic archives is not limited to the study of influences on Rogers’ diffusion process. The photographs preserved in these archives eventually become objects of historical study, providing a record of the routine of daily life as well as milestone events such as the September 11 terrorist attacks, the fall of the Berlin Wall or man’s first landing on the moon. Many organizations have amassed thousands of photographs in their archives over the years but have only converted a fraction of the images or the accompanying catalog information into digital form. Sole reliance on the digital archive would give an incomplete picture compared to that which might be constructed from looking at all images in the archive. Some photographic agencies have even sold or donated portions of their archives to other organizations. The Black Star agency sold its Black and White Historical Collection to an anonymous buyer who then donated it to Ryerson University in 2005, along with $7 million to preserve, study and display the images.11 But Ryerson’s mission is different from that of Black Star’s, raising the question of whether the decisions that organization makes will cause the images to be interpreted differently than
if they had remained at Black Star. Understanding the processes that determine how a photographic archive is created is important to understanding what types of photographs are preserved in an archive, recognizing the types of photographs that might be missing and using the images to draw reasonable, accurate conclusions about society.

This study seeks to explore how these differing organizational characteristics affect the diffusion of a similar innovation, the development and operation of digital photographic archives. This analytic study utilizes comparative analysis to merge diffusion of innovations and organizational change theories with the goal of extending knowledge of how organizational characteristics mediate the diffusion process, addressing Lundblad’s call for more research into the adoption of innovations in and across organizations. The study specifically focuses on the adoption process outlined by Rogers rather than on an assessment of the characteristics of the innovation itself or of principal figures in the adoption. The study also seeks to have practical significance by outlining how a specific type of innovation is adopted by different types of organizations, providing a model for similar organizations to consider with respect to their own innovation decisions.

This study will utilize a survey of representatives of photographic agencies, presidential and state historical libraries and daily newspapers to provide an overall assessment regarding how these different types of organizations adopted this innovation. Following the survey analysis, representatives of each type of organization will be interviewed in an attempt to provide greater context to the survey results.

The following chapter will explore the literature relevant to this study. Prior research that has focused on the diffusion of innovations and organizational change management
will be outlined and merged to provide a theoretical basis for the study. Literature from the library science field will be examined to provide further guidelines for exploration. The combination of these areas will inform the hypotheses and research questions presented at the end of the chapter.

The third chapter will outline the methodology of the study. The chapter will outline the implementation of each of the methods used in the study and the appropriateness of each to the aim of this study. Following the explanation of methodology, attention will turn to reporting the results of the study, with one chapter for the results of each method.

Chapter four will be devoted to the analysis and interpretation of the survey results, including the determinations of support for hypotheses and the answers to research questions. The interview data will be used to present “case studies” of each organization, focusing on the adoption process and the way the innovation has been incorporated into the operations of the organizations. Chapter five will report these cases. The chapter will also include a summary of the similarities and differences between the organizations, giving depth to the results of the survey analysis.

The final chapter will outline the conclusions drawn from the study, including the theoretical and practical implications apparent from the analysis of the data. Limitations of the study will be acknowledged and directions for future research will be suggested.
Advancements in technology, including the shift to digital cameras, have altered how newspapers archive photographs. Most newspaper photographs are made with digital cameras, and photographers tend to make more images when using digital equipment than they did when using film cameras. However, a smaller percentage of the total digital images created are saved and archived than was achieved with film. While Bossen, Davenport and Randle found many digital images simply disappear, leaving potential holes in the historical record, they did not find relationships between the percentage of photographs saved and any archiving policy that might be in place at the newspaper. However, they limited their studies to the practices of newspaper photographers with regard to archiving images. Missing is a theoretical exploration of how a digital archive was created at the publication or the organizational influences that affected it, and how newspapers compare to other organizations.

Individuals and organizations are constantly involved in adopting new innovations. Adopters, whether individual or organizational, make decisions regarding whether and when to adopt new technology for work and for leisure, such as cellular telephones, computer hardware and software or digital televisions and recorders. They also make decisions regarding whether and how to adopt new processes for completing tasks, whether as simple as adopting a new workout routine as part of an effort to get better
results or as complicated as adopting a new process for manufacturing a product or reorganizing a company.

The common tie between individuals and organizations and the adoption of various innovations is that they go through a similar process to evaluate an innovation and its ability to fulfill a perceived need. Rogers developed a theory to explain the process, how it works and the influences that act upon the process, referring to it as the diffusion of innovations.15

Diffusion of innovations provides the main theoretical structure for this study. The theory has been applied to the study of adoption of different types of innovations in a number of disciplines, including the field of organizational change management.16 Some organizational change research specifically applies to news organizations, one of the organizational types included in this study. Literature from the field of library science also addresses the adoption of innovations and offers an outline of best practices for the development of digital photographic archives.

Diffusion Literature

Rogers first presented the theory of diffusion of innovations in 1962.17 The theory has been referred to in popular communication to categorize individuals into groups according to whether they adopt innovations very soon after their introduction, wait a little longer before adopting or finally adopt one innovation about the time a new one arrives to take its place. Regardless of how quickly an individual or organization adopts an innovation, Rogers suggests the decision of whether or not to adopt it follows the same pattern. This study does not try to categorize organizations by how quickly they adopt
innovation to create digital archives of photographs but instead focuses on the way in which the process is carried out by different organizations.

Rogers defined diffusion “as the process by which an innovation is communicated through certain channels over time among members of a social system.” He defined communication as a “process in which participants create and share information with one another in order to reach a mutual understanding.” \(^{18}\) A social system is “a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal.” \(^{19}\) A social system could be as few as two people, with one persuading the other to adopt an innovation, or it could be a formal organization with a legitimate, official path of communication and a shadow system in which information is conveyed through social and political interactions in the organization. Both paths of communication are important to an organization’s ability to adopt an innovation. \(^{20}\) Regardless of the size of the social system, Rogers considered diffusion to be “a kind of social change, defined as the process by which alteration occurs in the structure and function of a social system.” (emphasis in original). \(^{21}\)

An innovation is a new idea, practice or object. An innovation can be evaluated by its relative advantage over another idea; its compatibility with existing values and needs; its level of complexity; the degree to which it can be experimented with on a trial basis and the degree to which results of the innovation are observable to others. \(^{22}\) For this study, digital photographic archives represent the innovation, and the characteristics outlined by Rogers provide a means of analysis for the members of an organization to determine whether to adopt and how to implement the innovation.
Rogers outlined five-steps in the diffusion process that is the focus of this study: knowledge, persuasion, decision, implementation and confirmation. Knowledge occurs when an individual or organization is exposed to the innovation and gains some understanding of how it functions. Innovation has been defined in business terms as “the use of new knowledge to offer a new product or service that customers want,” but Rogers questioned whether a need precedes or follows knowledge of an innovation. Applying this question to the creation of digital photographic archives, one must ask whether organizations identified a need for archiving and presenting photographs and then sought knowledge of how to meet the need, or whether they became aware of the possibilities offered by digital technology for creating and presenting an archive and assessed the possibilities for its implementation?

The second step of the process, persuasion, occurs when the individual or organization forms some favorable or unfavorable attitude about the innovation and its applicability to fulfilling the perceived need. The emphasis shifts from knowledge of the innovation to forming a perception about its complexity, compatibility and relative advantage. Organizational characteristics may influence the persuasion stage of the innovation-decision process. As noted earlier, organizations in which members feel safe exploring change are more likely to successfully adopt innovations. Persuading other members to consider adopting an innovation would be easier in these types of organizations than in highly centralized organizations that adhere to formal structures and communication channels. With respect to digital photographic archives, one must ask how the various organizations were persuaded to pursue adopting the innovation.
Decision is the third step of the innovation-decision process and occurs when an individual or organization engages in some activity leading to a choice to adopt or reject the innovation. Once the appropriate members of the organization have been persuaded to consider adopting an innovation, what activities do they engage in to evaluate the efficacy of the innovation and its relative advantage compared to the technology already in use? In the decision stage, vendors may present different solutions for creating a digital archive to organization members. The organizations also may implement trial versions of a digital archive, evaluating them based on compatibility with the existing system and ease of implementation. Organization members also may look at peer organizations during the decision phase, making the decision to adopt or reject the innovation based on the experiences of those at a similar organization. While these three steps have been presented in a linear fashion, it is important to note that the innovation-decision process may not always involve the same order. In some cases, individuals within an organization may make the decision to adopt an innovation and then persuade others within the group also to adopt the innovation. That subgroup may then work to persuade the organization as a whole to support adoption of the innovation, especially if funds must be committed by a central authority figure in order to adopt the new process or technology.

Implementation occurs when the innovation is put to use and constitutes the fourth step of the innovation-decision process. The implementation phase represents the shift from mental evaluation of an innovation to the behavior change involved with actually using the new technology or process. This phase also is more complicated for an organization adopting an innovation than it is for an individual due to the greater number of people involved. In organizations, one subgroup of individuals may make the adoption
decision, but implementation may be handled by another group of individuals, and organizational structure can impede the implementation.\textsuperscript{28} In the case of digital photographic archives, the individuals who work with the images may make the decision to implement an archive, but the technology staff may be responsible for its implementation, and if the eventual users were not consulted regarding the design or necessity of implementing the technology, they may be reluctant to change their behavior to put it to its best or full use.

The implementation stage also may contain a phase known as “re-invention.”\textsuperscript{29} Rogers noted this phase of the innovation-decision process was ignored until the 1970s but came into consideration as adopters became seen as active modifiers of an innovation rather than passive acceptors.\textsuperscript{30} Re-invention may be considered undesirable by the vendors who provide solutions for creating digital photographic archives and desire to keep alterations to a minimum, but it is often beneficial to the adopters of the technology, who want the technology to fit well with the operation of the organization.\textsuperscript{31} An organization that adopts packaged software has some flexibility in how an archive is set up but is limited to working within the parameters of the software. An organization that seeks a customized solution may create an archive that fits better with the overall culture of the organization, but at a higher cost.

Finally, confirmation occurs as the individual or organization seeks reinforcement of the decision or decides to reverse the decision. It is in this stage that an organization may evaluate both the process used to adopt an innovation and the implementation of the innovation itself. In the confirmation stage, organizations might gather comments from
those who use the digital archive to identify issues that need to be modified to improve usability or identify problems that had been overlooked in the earlier evaluation stages.

Rogers saw the effects of diffusion in multiple fields and was drawn to the interdisciplinary nature of the subject, and as Katz noted, the theory has been explored in disciplines as varied as anthropology, archaeology, rural sociology and marketing. The research has explored different specific parts of the theory in areas ranging from adoption of engineering or manufacturing practices to adoption of changes in health care. Rather than exploring the process of adoption, the research has generally addressed influences on the process, such as factors that affect adoption of an innovation, aspects of social networks that influence diffusion, differences when comparing individual adoption to organizational adoption of an innovation and the pattern of adoption over time.

Economic factors that play a role in decisions to adopt innovations have been explored. A methodology combining models of diffusion of innovations and economic costs suggests individuals or organizations base part of the decision to adopt an innovation on the level of willingness to invest in the necessary technology and the training to become proficient in its use. Adopters weigh whether the economic benefits will justify the cost of the innovation, and they weigh whether other individuals or organizations have already adopted an innovation.

Economics are but one factor affecting a decision to adopt an innovation. Other factors include recognizing a need that an innovation might fill, the availability of infrastructure to support adoption of an innovation, past experience or personal trials with an innovation, the ease of use of the innovation and whether use of the innovation will comply with existing standards of the organization. These factors have been shown
consistently to be applicable over time and should, therefore, be among the factors present in decisions related to the creation of digital photographic archives.

Rogers’ theory recognizes the influence of opinion leaders, change agents and champions in the diffusion process, and scholars have noted the impact of interpersonal persuasion on behavior change for more than 50 years. Human interaction affects the adoption of innovations, and like-minded people tend to create a critical mass that enables adoption. Opinion leaders are at the center of an organization’s interpersonal communication networks. They can either promote or oppose change, but they necessarily connect with like-minded people, as people of differing opinions would not recognize them as leaders. Opinion leaders may be self-selected, nominated by members of a group or selected by the group in general.

Change agents are different from opinion leaders. Change agents seek to influence the innovation-decision process in a way that favors a change agency. The agency could be a subgroup of an organization, such as a photography department within a newspaper, or it could be an outside organization such as a software vendor seeking to sell a solution for creating an archive. Change agents generally seek to influence opinion leaders within the organization to either adopt an innovation or to slow down the process. The interaction between opinion leaders and change agents suggests the idea to create digital photographic archives may have originated at various points within the organization, even from outside the group responsible for its development and maintenance or from outside the organization all together.

However, opinion leaders are not always the most effective people for fostering the adoption of an innovation. Maienhofer and Finholt found circumstances exist where non-
opinion leaders might be more effective at promoting adoption of the innovation. “For instance, an opinion leader surrounded by innovative followers might be a less efficient target than a non-opinion leader who has at least some influence on yet undecided potential adopters.” In this instance, a change agent may approach someone else in the organization who can influence other people but who is not generally seen as an opinion leader within the organization. This person could be seen as a champion for the innovation. Rogers identified a champion as an important person in the innovation process within organization. A champion is a charismatic individual within an organization who supports an innovation. The involvement of a champion tends to lower resistance to a new idea within the organization. Champions, according to Rogers, are often powerful individuals high up within an organization. With respect to this study, a champion might be the head of a photography department or archiving unit who can convince others why adopting the technology and processes necessary to create digital archives is a good idea. The functions of opinion leaders, change agents and champions should all be considered in the diffusion of innovations as influences on the overall process.

Both individuals and organizations adopt innovations, with different factors affecting each. When examining organizational adoption of innovation, factors related to organizational structure and culture and networking relationships between organizations come into consideration. Size and complexity of an organization tends to have a positive effect on diffusion, while formalization and centralization have a negative effect. Rogers noted an organization’s size has consistently been positively related to the innovativeness of the organization, possibly due to the relationship of an organization’s
size to other factors, such as available resources and technical skill of the members of the organization.  

Walker and Whetton also found organizational culture played a role in the diffusion of telemedicine technology. Use of remote technology for medical care required an adjustment of traditional roles and practices in addition to learning the technology. User resistance to learning the new practices affected diffusion of the telemedicine innovation. Their findings suggest that creation of digital photographic archives and learning how to use them may have been slowed by organizational cultures that rely on “the way we’ve always done things.”

Diffusion of innovations theory initially was concerned with decisions by individuals. Later studies began to investigate the adoption of innovations by organizations, but the research treated each organization as a single adopter in the same manner as an individual. Later studies have examined the adoption process within an organization, but these studies have suffered from a reliance on quantification that did not fully address the process of innovation as well as a reliance on data provided by the organization head with little attention to how adequately the data represented the entire organization. Lundblad argued that diffusion of innovations theory fits less well when research relies on it to address adoption of innovations by organizations, noting the need to more fully describe interactions within the social system of an organization and to further explore the general area of how innovations are adopted across organizations. Reddy, et al, agreed that meaningful evaluation of diffusion of innovation must be examined across organizations rather than at the level of an individual or a single firm. In addition to the social system within an organization, networks of weak ties outside the organization have been
effective in promoting diffusion of an innovation between organizations.\textsuperscript{50} Weak ties are informal networks between organizations and professional associations, universities, government agencies or other organizations. In the case of digital photographic archives, professional associations of news librarians or librarians in general would be likely considerations for the location of these weak ties. The agencies might offer formal information related to an innovation, but the interpersonal communication aspects of the network connections had a greater impact on adoption. However, once an organization adopts an innovation, similar organizations are likely to follow suit.\textsuperscript{51}

Beneficial innovations are not always adopted,\textsuperscript{52} and the successful diffusion of an innovation does not mean that the innovation itself is successful. The shantytown protests\textsuperscript{53} on college campuses during the period of financial divestiture from South Africa are an example of successful diffusion of an unsuccessful innovation. The shantytowns were popular with college students who believed media reports that the form of protest was successful.\textsuperscript{54} The shantytowns actually had little impact on decisions colleges and universities made to withdraw their investments in South Africa, but the example indicates that media attention to an innovation may have a great impact on its adoption. Similarly, accounts in professional literature about digital photographic archives may have affected the process of adoption by an organization.

Innovations that are adopted also are sometimes later abandoned as innovators become disappointed with the results of adopting an innovation. The new technology or process might not live up to expectations, or the innovation may simply fall out of favor.\textsuperscript{55} This concept addresses the confirmation step of the diffusion process and suggests that organizations may have tried a method for presenting digital photographic
archives but then found it to be an unsatisfactory solution. It is possible that some organizations will have completed the diffusion process and determined the solution did not perform as expected, causing users to simply avoid using the archive, modifications to be made to its implementation or the whole idea to be dropped altogether.

One last area of diffusion research has explored the institutional changes that have occurred from widespread adoption of an innovation. Redmond found adoption of some innovations has produced a ripple effect throughout other parts of the system. The adoption of the automobile not only changed the use of horses and trains for transportation, it changed society as well by opening doors to development of suburbs and moving retail commerce out of the downtown area to the suburban mall.56 In a similar manner, the development of digital photographic archives also could become a path to a new revenue stream for these organizations. By placing the images in an archive accessible to the public at large, the organizations open the potential for a larger audience to view and perhaps purchase copies of the images, even though that might not be the organization’s primary mission. The *New York Times* does make photographs available for sale through the newspaper’s web site, but Davenport, Randle and Bossen noted that while 37 percent of the newspapers responding to their survey offered images for sale, only four percent allowed public access to their archives.57 The result suggests that news organizations, at least, pick the photographs to be presented for sale. As more organizations open digital archives to the public and make images available for sale, the larger effect may be to change public expectations of how current and historic images may be found and viewed.
Organizational Literature

Organizational management research affirms the role characteristics such as size, culture and complexity play in an organization’s ability to change. Humans in general are naturally resistant to change, and since organizations are made up of humans, that resistance is present within organizations as well. Many organizations would rather stay with the comfort of the status quo, but innovative organizations can overcome anxiety and contemplate the uncertainty that accompanies change. The key is to impart in members of the organization a willingness to step out of their comfort zones and attempt change. One factor in fostering a willingness to contemplate change is to create a mature culture that allows the organization to grow and progress. A feature of this mature culture is that the organization provides a “holding environment” for its members that can counteract the uncertainty that accompanies change.

Uncertainty accompanies innovation. Rogers noted “computer-related innovations create uncertainty in an organization” which can lead to resistance to the new technology. More radical innovations create greater uncertainty, especially if the innovation also requires the user to acquire a great amount of knowledge in order to operate the technology. At this point, members of organizations that work with photographs should be comfortable with computers and databases, and they may have knowledge of how photographs have been catalogued within the organization. However, if the technology to create the digital archive involves learning new ways of saving images, assigning data to accompany the images, retrieving the images or learning routines to guard against data loss, the uncertainty that accompanies the innovation increases.
The holding environment of an organization is similar to the environment adults create for their children. As babies become aware of themselves as separate from others, they can experience anxiety. In a “good enough” holding environment, babies will feel secure that their emotional needs will be met and can explore their own autonomy with little anxiety. The alternative is that parents do not meet babies’ emotional needs, and the roles can even become reversed with parents relying on children to provide them with assurance.\(^2\) In organizations, these roles play out between supervisors and subordinates. In an organization with a “good enough” holding environment, members will trust each other and feel safe enough to explore change, overcoming anxiety that the change may not be successful and learning from the experience. In addition to the formal communication channels of the organization, the members will feel safe utilizing informal channels, a “shadow system” that supports personal politicking to build support for adopting or rejecting an innovation.\(^3\) In an organization in which the holding environment is not “good enough,” fear of learning new technology or the potential impact on one’s job will result in resistance to adopting an innovation. When it comes to digital photographic archives, the holding environment concept would suggest the innovation would be more successfully adopted in organizations where employees participate in the innovation-decision process and are not worried the technology will negatively impact their jobs.

Innovations also stand a greater chance for successful adoption when they have a minor impact on the established routines and practices of the organization.\(^4\) The rate of introductions of new innovations also can result in resistance to adoption. Technology constantly evolves, and new tools and practices may be quickly overtaken by even newer
tools and practices. Some employees will react positively to continuous innovation, while
others will reach a point where they resist the changes.\textsuperscript{65} Resistance is not necessarily bad
though. While some resistance comes from unwillingness to learn new skills or practices,
other resistance comes from questioning why a successful operation needs to be tinkered
with.\textsuperscript{66} The ability to raise questions about whether a change is best for the organization
indicates a “good enough” holding environment within the organization. The questions
also cause innovators to consider carefully the reasons for adopting an innovation and
how to present them to others within the organization. Individuals will react differently to
innovations they perceive to be introduced for rational reasons than they will to
innovations they perceive are introduced for motives related to organizational politics.

Taylor, et al, affirmed the role of the social system within an organization as it relates
to adoption of an innovation. The sociotechnical systems approach (STS) utilizes an
analysis of roles and relationships in the work process from the orientation of the purpose
of the organization. The purpose orientation suggests innovation should be managed as
part of the overall mission of the organization rather than on the tasks performed by
individual departments.\textsuperscript{67} Decisions regarding the creation and presentation of a digital
photographic archive should be viewed from the perspective of the mission of the
organization rather than the goals of the individual departments that might work with
photographs or an archive. Many organizational change programs fail or have limited
success because they attempt to apply prepackaged programs or emulate features of other
organizations without considering the unique features of the organization that is the focus
of the attempted change.\textsuperscript{68} Indeed, organizational type in general has been considered
equally important to organizational size with regard to an organization’s pattern of
adoption of innovations. The three types of organizations in this study all work with images, but it is not the primary mission of each of the organizational types to digitally present images to an audience. The perspective suggests there will be a difference in the way the different organizational types managed this particular innovation.

One way to foster an organizational focus is to foster communication through formal and informal networks between the departments of an organization. Kanter noted companies do not generally look to rank and file employees to facilitate innovation, but organizations that thrive on innovation do not ignore any source of ideas. The 3M company encourages employees to communicate informally across departments but has also established a technical forum for employees from different divisions to share ideas and solve problems. The practice has resulted in creative solutions that enhance products and revenues for the company. The example highlights a successful interplay of the legitimate and shadow systems of organizations outlined by Stacey and again suggests exploring within the different organizations where the idea to create the digital photographic archive originated.

Examinations of the introduction of innovations in news organizations affirm the concepts from organizational and diffusion literature. Garrison’s study of the diffusion of online information technologies in newsrooms supported the concept of a “critical mass” of like-minded people as a component in the diffusion process that was later outlined by Hugill. Adoption of innovative practices in the St. Louis Post-Dispatch newsroom found positive reaction from employees over the course of change. However, after experiencing the new system, a connection between the innovation and a better newspaper was not apparent and individuals determined the innovation did not live up to
their expectations. Their attitudes toward the innovation became negative. The study not only provides an indication that satisfaction with an innovation is linked to expectations for the innovation but also provides an example of using responses to scaled questions to develop an overall measure of satisfaction with the processes that have been introduced. The method was incorporated in this study.

Library Literature

Authors in the library science field have addressed a variety of aspects of the topic of digital archive creation. One area of study has offered guidance to those developing digital archives in how best to go about the process. The topics in this area have ranged from standards for image resolution and catalog data to examinations of the expected life of the media on which the images and data are stored. Research also has focused on assessing the process of adopting digital archive technology and its implementation. But before considering aspects of creating or maintaining a digital archive, an examination of literature in the library science field provides the means to determine the purpose of an archive.

Bradsher begins by providing a distinction between libraries and archives.

Archives and libraries both exist in order to help preserve valuable information. They share the common objective of making their holdings available as effectively and economically as possible. But they are essentially quite different, not only in the physical and substantive attributes of their holdings, but also in the way these holdings are created, acquired, maintained, and administered.

Archivists are concerned with records, papers, and manuscripts; mostly unique, non-printed material. Librarians are concerned with multiple copies of books and publications. The quality that distinguishes an archives from a library is the uniqueness of its holdings.
Bradsher’s distinctions provide a means to define what constitutes an archive. He notes that archival institutions are receiving institutions in that they preserve the materials created by the body they serve. This is obviously true of the newspapers and photographic agencies that are the focus of this study. Neither of these types of organizations generally collects photographs from people outside their own organization, and their archives exist as a record of the work those in the organization have created.

The third group that is the focus of this study, presidential and historical libraries, can be considered archives as well, at least for the purposes of their photographic holdings. As Bradsher specified, the photographic archives of these organizations contain unique, non-printed materials. The photographs may not have been created by a specific agency the archive serves, but they have been collected in accordance with the purpose of those agencies. Presidential libraries collect photographs that relate somehow to the life and term in office of a president, while state historical libraries collect images that illustrate the history of the area they serve. From this perspective, the photographic holdings of the three types of organizations examined in this study have a common purpose and can be considered archives. For the purpose of this study, then, a photographic archive is a collection of images that have been gathered to preserve materials associated with a specific institution.

Although archives are repositories of work related to the purpose of an organization, the question of archival management must, at some point, consider what the archive is required to hold. Must an archive keep and maintain everything that it receives? Some historians may answer in the affirmative, seeing photographic archives as collections of all images ever made to be available for study, but that is an impractical goal.
Photographic materials degrade over time, especially when not preserved under the best conditions. Some photographs and negatives will become unusable and unsalvageable over time, and the content of those images will be lost. The question remains of whether archives must keep and preserve everything else.

When news photographers worked with film and prints, a newspaper archive might have consisted of every image made. Envelopes could contain 4-inch by 5-inch negatives or entire rolls of 35mm negatives as well as contact sheets and any prints made. In the Bossen, Davenport and Randle study, 61 percent of the National Press Photographers Association members who responded indicated every 35mm image was archived at their papers, compared to 41 percent who reported that every digital image made was archived. The study did not, however, explore for how long the images are preserved in the archive or procedures for determining when to remove an item.

Leary suggests that archival institutions undertake a process of “weeding and sampling” as they determine materials, especially audio-visual materials, to keep in an archive. Sampling involves examining a volume of materials to narrow them down to a manageable collection of unique items, much as an historical library might do to determine which photographs of those offered to it fit the mission of the organization and add unique information to the archive. Weeding is undertaken to remove images that do not contain relevant content, are duplicates of images already in the collection or are of poor quality. “Because audio-visual materials are studied for details and are meant to be reproduced, appraisers must emphasize the importance of satisfactory technical quality, which includes proper exposure, clear focus, good composition and audible sound.” Archivists, therefore, are not necessarily required to accept and preserve every image
offered to them, though some organizations may have differing policies. A newspaper or photographic agency may see more importance in following a policy of saving all photographs or a subset, such as all published photographs while an historical library may place more emphasis on the unique content of the image to create a sample rather than a complete work of every image related to the topic. However, all three types of organizations may face similar questions of determine what images to include in the archive and re-evaluating them from time to time to determine whether the images still contain usable content or whether they have degraded beyond their ability to be salvaged.

One point at which to evaluate images is when considering whether to develop a digital archive, and it is at this point the “best practices” literature seeks to provide guidance. Some of the same questions applicable to archive creation in general are applicable to the creation of the digital archive. The creators must ask what the purpose of the digital archive will be and what will be gained from its creation. The planning process should include asking questions about the intended audience for the archive, project management, necessary equipment for digitizing, quality control and access to the finished product as well as considering ownership of the images and copyright issues.

Ownership and copyright are two separate issues that are intertwined. A copyright applies to any work that is fixed in some medium and refers actually to a group of rights reserved by the author of the work. Included in these rights are the rights to make copies of the work, to create adaptations from it, to distribute copies to the public and to perform or display the work publicly. The owner of these rights may keep them all or may license some or all of them to others. In this manner, a photographer may keep the right to display his or her work but may grant an agency the right to allow others to publish
copies in exchange for a fee. Ownership may refer to the actual copy of a work, whether it is the original image or not, and ownership of a copy of a work does not necessarily grant that owner control of the copyright. An archive may own a copy of an historic photograph but does not necessarily have the right to make and sell copies of that image.

There are exceptions and limitations to ownership of the copyright of an image. In the first US copyright law, enacted in 1790, the creator of a work controlled the copyright for 14 years and could renew it for another 14 years at the end of that period. At the end of the copyright period the work passed into the public domain, meaning it is no longer protected by copyright privileges and has become freely accessible to anyone to reproduce or to adapt. The term of copyright has been extended at various times since then, culminating in the current law in which copyright is protected for the life of the author plus an additional 70 years for a total of 95 years for corporately authored works. The effect, according to Lessig, is that American law has no mechanism to ensure works automatically pass into the public domain or even whether it is possible for works to pass into the public domain. There are other limitations on copyright. Libraries are allowed to make copies of works in their collections to guard against damage or theft, and exceptions are made for “fair use” of copyright materials. Fair use would allow photographs to be reproduced for purposes such as news reporting, teaching and research, as long conditions regarding the amount of work to be reproduced and how it was to be used were satisfied.

In the analog world, ownership and copyright of photographs was less problematic for archivists. The archive contained individual images that could only be viewed at a certain location, and access could be controlled. Fair use exceptions might have allowed
patrons to photocopy images for ease of study, but acquiring a photographic copy to be made would have involved placing a request. At that stage, the archive manager could determine the intended use of the photograph and whether it complied with fair use standards and clarify to the requesting party that acquiring a copy of an image did not grant that person rights to make and distribute further copies.

Digital technology has complicated these considerations. While digitizing images and making them available electronically for many people to view has increased exposure to them, the technology also has usurped the role the librarian played in controlling access to the images and requests for reproduction. With digital technology, every image that is put on a web page is available for viewing, copying to the user’s computer and potential reuse or distribution unless restrictions are put in place to prevent such activities. To counteract the loss of physical control of access to images, electronic controls can be put in place that limit access to images without authorization. In addition, low-resolution files can be displayed that meet the requirements for providing access to images but that are not suitable for printed reproduction. Placing a mark on the images provides another means of discouraging downloading and unauthorized use, as does embedding the images within other technological tools such as multimedia authoring software. The switch to digital technology has forced archive managers to consider questions of image ownership and stewardship during the process of planning the digital archive. As Ester noted, giving up ownership or decision-making power with regard to digital conversion of photographs “is essentially to abdicate virtually all future control over how the image will be used.” For organizations that create digital archives but generally do not make them available to the public, such as newspapers, questions of ownership and protection of images may not
need great consideration. For photographic agencies in the business of selling rights to use photographs and for libraries that may house digital collections of photographs but not own the copyrights to them, protecting images from unauthorized use may be a great consideration. Taking all these aspects of digital archive creation into consideration, it is clear “the digitization process is not as simple as merely ‘scanning.’”

While current digital photographic archives might contain images that were created digitally, especially by newspapers and photographic agencies, they also are likely to contain copies of photographs and negatives that have been digitized. Creating digital copies of historic photographs and negatives is one method for making those images available to viewers while protecting the original materials from further handling. The digital image can be made available for simultaneous viewing by many people who otherwise may never see the image, and fragile materials can be secured in climate-controlled areas to guard against further degradation. However, the catchphrase among librarians is “digitization is not preservation.” The sentiment means that while digitizing an image can be seen as a means to present it to the audience while preventing its further deterioration of the original materials, digital images themselves are not permanent either.

Digital photographs may be stored on a variety of media. Davenport, Randle and Bossen determined newspapers most often store images on optical discs such as CDs, and DVDs, but photographs also were stored on hard drives, either connected to a single computer or as part of a file server system. The ability to make multiple perfect copies of digital files has created trust in the longevity of the media. However, digital media may not be as stable as had been thought. Some manufacturers claim optical discs will
last for more than 100 years, but these types of media have not been in use long enough to put those claims to the test. Lab testing has shown that the dye layers used in optical media can break down, especially if the discs are not stored in optimal conditions, resulting in loss of data that can render a photograph irretrievable. Hard disc drives, whether on computers or file servers, also are susceptible to failure due to deterioration of the magnetic surface of the disc or physical damage caused when read/write heads bump into the rapidly spinning media.

Aside from physical limitations of media, a more immediate concern for digital archives is obsolescence of technology to read the stored data. Whether storage media lasts 10 years or 100 years is of little concern if the hardware and software necessary to read the stored data becomes obsolete sooner. Rothenberg suggested all media are usable for as little as five years before the technology to read the stored data becomes obsolete. Some types of obsolescence are related to the physical format of the medium. In 2006, floppy disk drives, once a standard feature on all computers are not often found on laptop computers. Without access to a floppy disk drive, any data stored on those disks is useless, even if the disks themselves have not physically deteriorated. The SyQuest disk format of the 1980s is no longer used, and the ZIP format of the 1990s has all but disappeared as well. In addition, before a storage media format disappears the way in which the information is stored on the media may become obsolete. Even if hardware still exists to access the storage media, file formats may change as software is updated. In other words, while a CD-ROM may physically last 50 years and CD-ROM may still be a usable storage option at the time of access, the method in which information is stored on the disc may have changed, making discs recorded in 2006 unusable even though the
information on the disc is theoretically intact. Current versions of imaging programs such as Adobe PhotoShop may not read files saved in previous versions. Rothenberg notes, “Information technology continually creates new schemes, which often abandon their predecessors instead of subsuming them.”

Tennant bases his conclusion that “there is no accepted format for digital preservation” on these reasons of technology and format obsolescence.

Strategies for combating technological obsolescence and data loss due to deterioration of media have been addressed by the tactic of refreshing, the transfer of data from one storage medium to another. The process of copying files to new media can be planned for and executed at regular intervals, but it still must be considered in the maintenance of a digital archive. Concerns over file format obsolescence have been addressed through strategies of migration or emulation. Through migration, files are opened and saved in updated versions of the existing format or converted to new formats to extend their usability. However, migration carries with it concerns over preserving the integrity of the original data. Smith noted data loss during migration means a new file might not be identical to the original. While the content may not have been fundamentally changed, the file has. The emulation approach seeks to develop software that could mimic older programs and open files created under them or mimic older operating systems to allow old software to operate. However, as the market to keep older software running diminishes, so does the incentive to develop emulators. The alternative is to keep computers on hand running older versions of software to access files that cannot be read by the newer versions. An exploration of how organizations create and maintain digital photographic archives must include exploration of how those organizations address these
questions of file format and media longevity. The “best practices” literature suggests a blueprint for an ideal type of adoption process of this type of innovation for the purposes of the organizations targeted for study. The ideal type provides a framework for developing the instruments to be used in the study as well as a potential comparative framework for the results.

Research in the library science field has gone beyond suggesting the best way to undertake a digitization project to provide an assessment of programs already in place. Marcum provided a general overview of the types of institutions that have undertaken digitization programs, providing a means for institutions to assess whether similar types of institutions also are developing archives. Her examination was limited to federal programs, non-profit organizations, libraries and international groups, but the knowledge could either provide someone considering development of an archive with likely sources of information about the process or provide motivation to an organization to develop its own archive for fear of lagging behind the competition.

Research assessing the adoption process by institutions has determined, however, that not all projects follow the “best practices” advice. Kaiser determined libraries that undertook projects to digitize special collections were not always based on careful planning and assessment of the adoption process. She also found that despite flaws in the planning process, the successful projects were those that were created in line with institutional objectives, affirming conclusions from the organizational change literature. White placed academic libraries offering digital reference services into Rogers’ classifications of adopters (early, middle, late, etc). Her study of Carnegie Foundation class I and II college and university libraries noted similarities in
organizational characteristics like expenditures per student affected the adoption of the innovation while characteristics like enrollment or staff capacity did not.\textsuperscript{103} Overall, the library literature has been based on content analysis of either library web sites or studies written about them with little attention to collecting data from users. A notable exception utilized interviews with users to determine their perceptions of digital library services. Cook and Heath found assessments of an innovation’s success are contingent upon whether the innovation performs as the user expected,\textsuperscript{104} confirming Gade and Perry’s conclusions regarding assessments of change in a newsroom. Cook and Heath’s study further indicated innovations that do not meet expectations negatively impact assessments of quality of the organization offering the service, giving creators of digital photographic archives more reason to focus on developing a good product.

The research from these different fields of scholarship lends support to the belief that characteristics of the different types of organizations under study will affect how the innovation of a digital photographic archive was adopted by the organization. The research suggests this study should explore not only the physical aspects of the archive, such as how images are added and stored and plans for protecting against obsolescence, but it also suggests exploration of the process used to arrive at the policies that shape the archive, such as where the idea originated, how it was explored and how its success has been measured.

A common theme arises in a comparison of the research related to the diffusion of innovations, organizational change management and the creation of digital archives in libraries. The research consistently shows that the type of organization affects the diffusion process, with successful adoption occurring most often when the diffusion
process considers organizational goals and routines. Based on this research, this study explores three hypotheses that have been developed in relation to the way in which digital visual archives are created and presented.

**H1:** Policies for building digital photographic archives will differ between the different types of organizations in the following ways:

A. Archives at newspapers will be built to facilitate internal use by staff over searching by the general public.

B. Archives at photographic agencies will be built to facilitate searching by the public while securing the images from unauthorized use.

C. Archives at libraries will be built to facilitate public searching and use of the images.

The research suggests organizational culture and purpose can have a positive or negative effect on the diffusion process. The different types of organizations targeted in the proposed study will exhibit different characteristics of size and purpose. Therefore, different patterns of diffusion process should emerge. For example, newspapers may consider recording a community’s history as their guiding mission, but the presentation of that history to an audience is generally limited to one edition of the paper unless an event is ongoing or the publication collects items for inclusion in a special publication. The archive will reflect that mission in that current photographs and special collections related to specific topics will be shown to an audience, but the overall archive of images generally will not be available for public searching. Usage of the archive will be internal to the organization and will be created in a manner that will reflect the needs of the primary users. Photographic agencies, on the other hand, profit from making images
available to a paying audience. It is in an agency’s best interest to make versions of the images and necessary data as accessible as possible to potential customers. However, the high-resolution, reproducible versions of the images must be secured from unauthorized access or the agency will lose its source of income. The archives of photographic agencies will reflect a desire to make images as accessible as possible while still keeping them secure. The mission of libraries and museums is to make items in a collection available to patrons for viewing. Like photographic agencies, a library seeks to make photographs available to interested users. Unlike agencies, libraries often provide more detailed information to accompany the image, adding context to the content. Libraries may have to protect some images from unauthorized use due to copyright restrictions but also make images that are in the public domain freely accessible to users. The archives of libraries and museums will reflect this general mission to make images and information freely accessible to a community of users.

H2: The specific process used to develop digital photographic archives will differ between the different types of organizations in the following ways:

A. Archives at newspapers will be created by photographic and technical staff with minimal consultation from other departments.

B. Archives at photographic agencies will be created by technical staff with final approval from agency managers.

C. Archives at libraries will be designed by a committee of representatives from multiple departments to ensure integration of the photographic archive with other cataloging systems in use by the organization.
Walker and Whetton specifically noted the effect of organizational size and complexity on the diffusion process. Again, the different structures associated with the different types of organizations in the proposed study suggest different patterns will be apparent in the progression through Rogers’ five steps of the innovation-decision process. Newspapers tend to be compartmentalized organizations, so the photography department will most likely determine the needs the archive must fulfill with little input from other departments of the newspaper since they are unlikely to search for images. The technical staff will create the archive with little consultation from users while the project is in progress. Photographic agencies, on the other hand, require an archive that is usable by customers as well as staff. Overall requirements will be communicated to the technology staff, which will do the work of creating the archive structure and interface. The agency manager will approve the archive or specify changes to be made. Libraries will require an archive that will smoothly integrate with the cataloging systems already in use by patrons and staff. Staff from multiple departments who might have contact with the archive will participate in the initial specifications for the data to be included and how it is to be presented and will evaluate the archive’s usability as it is developed.

**H3:** The purpose of the organization will determine the physical presentation of the digital photographic archive in the following ways.

A. Archives at newspapers will display images, captions and information necessary for file retrieval but little else.

B. Archives at photographic agencies will display images and basic descriptions, available sizes and prices but little else.
C. Archives at libraries will display images along with detailed information such as a description of the content, subjects, photographer name, when the image was taken, size and usage restrictions.

This hypothesis also is in keeping with the effect of organizational culture and purpose on the adoption of an innovation. The three types of organizations targeted in the proposed study have different purposes in relation to digital images. Newspapers are more concerned with presenting the day’s news than with making a digital visual archive available to the public. While some photographic galleries are featured on the newspaper web site, the ability to peruse all the images in a newspaper’s collection is generally reserved for users within the organization. Photographic agencies are based on the selling of images. Their digital presentation should be oriented toward showing potential customers the available items while also protecting the images from unauthorized use. Libraries with an historic preservation mission often deal with photographs that are in the public domain. The purpose of the organization is not to profit from the sale of the image nor to keep the collection of images exclusive to an internal audience but rather to make them available for public viewing. They may implement methods to secure the image from unauthorized use. These three different purposes suggest different considerations for access to images, how copyright and intellectual property questions are addressed and protecting the use of the image.

As organizational characteristics are expected to influence the diffusion process within the organizations, it is likely that the assessment of the process and the resulting product will differ within the organizations as well. The prior studies indicate the assessment of the innovation is determined by its fit with organizational goals and
purpose. What the studies do not suggest is the impact of how the innovation-decision process is carried out on the assessment. Therefore, this study also asks the following two research questions:

Q1: What will be the perceived success of the development process in each type of organization?

Q2: What will be the perceived success of the end product in each type of organization?

The answers to these two questions will provide assessments of the process of creating the digital archive and of the resulting archive itself. Each assessment can then be evaluated in light of organizational characteristics that might affect the innovation-decision process. In addition, with both assessments in hand a comparison can be made to determine whether the evaluation of the process matches the evaluation of the resulting archive. The comparison will allow exploration of the whether a poor process can still yield a successful archive and whether a successful process can result in a flawed archive.
This study employed a two-phase approach involving an online survey and then follow-up interviews to provide both a broad overview and a more detailed examination of the approaches taken by different types of organizations when creating digital photographic archives. Daily newspapers, photo agencies and historical libraries/museums were studied. The scope of the study was limited to organizations within the United States, with the additional inclusion of photographic agencies that might be based in other countries but provide editorial (news) photographs to organizations within the United States. Photographic agencies that focus on advertising or other commercial forms of photography were excluded from this study. The scope was limited in this manner to ensure the organizations in the study approach development of their archives within the same legal and economic frameworks. The study also was limited to daily newspapers of various circulation sizes because they produce and publish more photographs than non-daily newspapers and are more likely to have a larger organizational structure comparable to those of photographic agencies or historical libraries and museums.

Phase I

The first phase of the study utilized a web-based questionnaire. The use of a questionnaire in general is a suitable method for gathering large samples from dispersed
populations while posing minimal risk of participation to the subjects of the study.\textsuperscript{106} The use of questionnaires is generally a cost-effective method of data collection given the amount of information that can be obtained,\textsuperscript{107} and the cost of an online survey can be even lower while allowing a shorter response time. Since the intended respondents work with digital archives it was assumed they would have a high level of comfort with computers and could easily access a web-based survey instrument.

There are some drawbacks to the use of questionnaires. They are generally limited in the complexity of the questions that may be asked and require attention to structure to minimize the possibility of spontaneous response by participants. They also do not permit the observation of non-verbal behavior, provide little control over the order of response, and can produce relatively low response rates and a high degree of missing data.\textsuperscript{108} Some of these drawbacks can be addressed through the use of a web-based questionnaire.

For this study, an online survey was administered through a third-party firm, Free Online Surveys.\textsuperscript{109} To minimize the possibility of missing data the survey was coded to require a response to every question before the respondent could continue to the next page or submit the completed survey. For each question, an option of “No Answer” was provided, giving respondents the choice to not answer a question while also providing some assurance that the respondent viewed and considered the question rather than simply missing it. The web-based questionnaire also offered some degree of control over the order of response by breaking the questions into groups on multiple pages. The order of answering could be forced for every question, but the structure could dictate that a certain group of questions be answered before moving on to the next group.
Another advantage of the online survey is that respondents could complete and submit the survey at their desks rather than requiring the extra step of carrying the survey to another location for mail pickup. The web-based questionnaire process also yielded a retrievable data file that was downloaded to the researcher’s computer and then imported into statistical analysis software. The direct importing of results lowered the likelihood of data entry error.

A group of 522 survey participants was created from the three types of organizations that are the focus of this study. For the newspaper group, a stratified sample of 400 newspapers was drawn from the 1,455 U. S. daily papers listed in the *Editor & Publisher Yearbook*. The sample figure was arrived through use of EX-SAMPLE, a computer program for determining sample size.\(^{110}\) The program indicated the minimum sample size for an analysis of variance (ANOVA) test of significance is 30 cases from the sample of 400, suggesting that with even a low response rate from newspaper participants enough data would be collected for statistical analysis.

The newspaper names, mailing addresses, telephone numbers, circulation figures and web site URLs were downloaded from the online version of the *Editor & Publisher Yearbook*. The print edition of the *Yearbook* separates the newspapers into eight circulation groups. Those were collapsed into four groups for this study to reduce the number of comparison groups.\(^{111}\) The categories and number of papers in each category were: 10,000 and fewer – 632 papers; 10,001 to 50,000 – 609 papers; 50,001 to 250,000 – 176 papers; and more than 250,001 – 38 papers. The stratified sample was then selected by calculating the percentage of the total number of newspapers accounted for in each group. The figure was then multiplied by 400 to determine number of newspapers to
select from each group so that the total sample of papers selected reflected the
distribution of all papers across the circulation categories. Figures were rounded up, with
the result that 402 newspapers were selected.\textsuperscript{112} The individual newspapers were selected
by ordering each circulation group alphabetically according to the city in which the
newspapers were located. Newspapers were then selected from each group at random
using a random sequence of numbers generated for each circulation group using the
utility on the random.org web site. One selected newspaper was listed twice, another had
no electronic contact information and a third had ceased publication since the \textit{Editor &
Publisher Yearbook} was updated. In these cases, the closest newspaper in the list that had
not been selected already was used.

After the newspapers were selected, a contact person was chosen to receive the
survey at each newspaper. When possible, a librarian was selected, followed in order of
preference by a photography editor, chief photographer, managing editor or editor of the
publication. The contact names and their email addresses were first gathered by visiting
the web site of each newspaper and searching for a staff list. When no name could be
identified in this manner, the \textit{Editor & Publisher Yearbook} was used to provide the data.
If a specific email address could not be found, a general newsroom address was used. The
newspapers contacted are listed in Appendix A.

To identify photographic agencies, a list compiled by the web site Canadian Content
was referred to.\textsuperscript{113} The web site listed 58 photographic agencies that supply editorial
content with links to each agency’s web site. The list was compared to directories of
photographic agencies on Google and Reference.com to ensure no other agencies were
overlooked.\textsuperscript{114} As the number of photographic agencies is relatively small in comparison
to the sample of daily newspapers, every agency on the list was identified as a potential survey respondent. The web site of each agency was visited to gather a mailing address, the name of a contact person and an email address when possible. If no specific contact person could be identified, the survey was addressed to Archive Manager at the general email address given for the agency. In the course of verifying the agencies it was learned that one agency, Network Photographers, had gone out of business and another agency, Locophoto, focused on news and standings of the Indycar Racing League rather than supplying editorial photographs. In addition, the Katz/IPG agency had merged with Gamma, so there was no direct contact information for that agency. No email address could be found for two other agencies, MITI Info Image and Dern Images, making it impossible to send them email with their unique link to the survey. These five agencies were excluded from the study, leaving 53 photographic agencies that were included. The agencies are listed in Appendix A.

The third group included in the study consists of libraries and museums that would have an orientation toward archiving and preserving collections of photographs of historical interest rather than focusing on lending materials in the manner of a public library. This group included organizations that were national in scope, such as the Library of Congress, the Smithsonian Institution and the 12 Presidential libraries that operate under the umbrella of the National Archives and Records Administration (NARA). Since the Presidential libraries operate under NARA, the NARA itself was also included. Another addition was the New York City Public Library, which recently made 250,000 photographs available on its web site. To make the size of this group comparable to the group of photographic agencies, the historical society or museum of each state and the
District of Columbia were also included. To identify the appropriate agency, an internet search was conducted to identify the historical library for each state. Web sites for each organization were examined to ensure the appropriate organization with an archive of photographs was selected. Following identification of the 67 organizations in this group, the web site for each organization was visited to identify the appropriate contact person. In some cases, email was sent to a library representative asking for the contact information of the appropriate person to answer questions about the photographic archive.

Other types of libraries and organizations collect photographs as well but were excluded from this study. Organizations that focus on collection of photographs for exhibition, such as the Museum of Modern Art or the International Center of Photography in New York were excluded, as were university collections, which may vary greatly due to the demands of donors or topics that are unique to the university. The emphasis in this group was kept on organizations likely to have a more common focus, such as presidential and historical libraries, in an effort to reduce the likelihood of the content of the archive to affect the organizational processes at work in its creation and maintenance. The libraries that were contacted are listed in Appendix A.

The survey was created to gather responses related to several dependent and independent variables. The survey contained 36 questions separated into five pages. The first page of questions sought “demographic” data related to the independent variable of organization type, operationalized as either a daily newspaper, a commercial photographic agency or a library/museum. A secondary independent variable was the circulation size of the newspaper represented by the survey respondent. These
“demographic” questions also sought information about the respondent’s job title and title of the person or people primarily responsible for the organization’s photographic archive. The questions on the second page related to the characteristics of materials in the organization’s photographic archive, the ratio of traditional photographic items such as prints and negatives to the items in the digital archive, the age of the digital archive in the organization, the frequency of its updating and how images were stored.

Questions on the following pages explored dependent variables related to the innovation-decision process. Rogers conceptualized the process of deciding whether to adopt an innovation as progressing through phases of knowledge, persuasion, decision, implementation and confirmation. The knowledge phase is defined as the period in which the idea to develop a digital photographic archive was presented. The persuasion phase is defined as the period in which proponents of competing systems to be implemented present the merits of their choices. These phases were explored on page three of the survey with questions about the origination of the idea to create the digital archive, how technical information was gathered, factors affecting how the archive presentation was designed and the people involved in the process.

The implementation stage is defined as the period in which the hardware and software are procured and put into operation, images are loaded into the archive and the system is put into service. The final phase, confirmation, is defined as the period following implementation and may be ongoing. Questions on page four of the survey focused on this phase, seeking information related to the implementation of the archive, methods for evaluating the success of the archive and any post-implementation revisions that were made.
Perceived success was operationalized along two constructs: the process of development and satisfaction with the final product. These constructs were measured using variations of constructs related to organizational development created by Gade and Perry. Questions related to this variable began at the bottom of the fourth page of the survey as respondents were asked to rate the success of the digital archive and the process through which it was created. Responses to these questions were on a seven-point Likert-type scale. Possible answers to the questions were not numbered, but responses ranged from Very Satisfied to Very Dissatisfied. An eighth choice of No Answer also was provided. The Likert-type questions continued on the fifth page, where respondents were asked to indicate their level of agreement with several statements about the process of creating and implementing the archive. The statements were worded so that agreement with the statement indicated agreement with the construct. On all the scaled-response questions, the range of responses was presented horizontally with the most positive responses to the left, as suggested by Christian, Dillman and Smyth. The survey is reproduced in Appendix B.

The survey was voluntary but not anonymous, due to the need to identify respondents for follow-up interviews in the second phase of the study. The survey was submitted to the University of Missouri Campus Institutional Review Board and approved March 21, 2006.

Web-based surveys have suffered from response rates lower than those of mailed questionnaires. Dillman, Weisberg and Thomas outline similar strategies to follow to achieve the maximum possible response rate. The strategies include sending advance letters to those who will receive the survey and the use of follow-up messages to
encourage participation. Weisberg points to social exchange theory as the basis for survey participation. The concept suggests people are motivated to respond to a survey based on whether the expected benefit of participation outweighs the cost of participation. No monetary incentive was offered for participation in the survey, but the contact materials sent to the respondents were worded to indicate the results of the survey would be a benefit to them by providing information about how other organizations create and maintain digital photographic archives.

Following the strategies to increase response, on April 20, 2006, a postcard was sent to the identified representatives of newspapers, libraries/museums and photographic agencies located in the United States. Letters were sent in envelopes to the photographic agencies located outside the United States in improve the likelihood that the message would arrive intact. The postcard introduced the topic of the research and informed them they would receive email in the coming days with a link to the online survey. The postcards and letters were personalized to include the individual’s name, the organization name and the email address to which the survey would be sent. The text of the postcard is included in Appendix C. As a result of the postcard, seven respondents contacted the researcher to update email addresses or suggest a different person within the organization to receive the survey.

The list of representatives with their organization and email address was uploaded to the Free Online Surveys system on April 27, 2006. An email message was composed that reinforced the purpose of the survey and invited the respondent to follow an embedded link to participate in the survey. The text of the email invitation to participate is included in Appendix C. The email message was sent through the Free Online Survey system
using the contact list that had been uploaded so that unique links for each respondent could be generated. This procedure allowed the participation of each individual respondent to be tracked, which aided in identifying those who would receive follow-up invitations to participate and potential participants for the second phase of the study. After a successful test by sending the message to the researcher’s email address, the personalized messages were sent to the 522 survey participants.

After 11 days there were 76 responses to the survey, for a response rate of 14.5 percent. A second email message was sent May 9, 2006, which resulted in an additional 57 responses for an overall response rate of 25.5 percent. The text of the second email message is included in Appendix C. A final email invitation to participate was sent May 16, 2006, with the notification that the survey would come to an end on May 19. The text of the final email invitation is included in Appendix C. That message resulted in an additional 34 responses, yielding a total of 167 responses for an overall response rate of 32 percent. The figure is much higher than the response rates of 19 percent to 21 percent achieved in previous web surveys. More specifically, 40 of the 67 library/museum representatives responded for a 59.7 percent response rate from that group. Of the 53 photographic agencies, 22 responded for a 41.5 percent response rate. Of the 402 newspapers, 105 responded for a 24.9 percent response rate. A follow up email message thanking respondents for their participation was sent May 24, 2006. The text of the email thank-you message is included in Appendix C. The survey responses were downloaded from Free Online Surveys and imported into SPSS for statistical analysis.

Following the survey submission, a follow-up email message was sent to each respondent on July 11, 2006. The purpose of the follow-up email message was to inquire
about the data each organization includes in its archive and methods, if any, used to protect any images from unauthorized downloading or usage. The body of the message explained the purpose of the email and two questions with multiple possible answers to each, including a response of “other” to allow respondents to include items not represented among the offered answers. Recipients were asked to respond to the email message and to place an X next to any chosen answers. The text of the follow-up email message is included with the survey in Appendix B. Responses to the follow-up email message were received the same day, and responses continued over a period of about two weeks. Of the 167 organizations contacted, 76 responded with additional data for a response rate of 45.5 percent. Of those 76 responses, 46, or 60.25 percent, came from newspapers; 21, or 27.6 percent, came from libraries; and 9 or 11.8 percent, came from photographic agencies. The answers contained in each email reply were added to the data set in SPSS for statistical analysis.

Phase II

The second phase of the study utilized follow-up telephone interviews with selected respondents who completed the online survey. The interviews were conducted with representatives of organizations selected from each of the groups under study. The purpose of the interviews was to probe more deeply the answers provided on the survey and to explore related items to create a “case history” of sorts of the process of adopting the digital photographic archive within the selected organizations.

Interviewing is an “adequate and efficient” technique for gaining information about cases or incidents and about organizations and has been employed in a “wide variety of studies of media organizations.” Qualitative interviews, unlike those conducted for
surveys, are flexible. They can be customized to individual respondents, allowing the interviewer to form questions based on the answers given by respondents. The technique also encourages subjects to talk at length, creating opportunities for the subject to reveal more information, which can take the interview in new directions. Generalizability can be a problem with interviews, but the goal of the interviews in this study was to provide depth and context to individual cases, not to achieve data that can be generalized to a population. Face-to-face interviews would provide non-verbal feedback that cannot be achieved with telephone interviews. However, telephone interviews are more economical and allow for a greater number of organizations to be included in this phase of the study.

Several criteria were used to select the organizations for the follow-up interviews. First, the respondents were grouped according to their organizational type. Within each type, potential interview subjects were identified based on the completeness of the individual surveys. Those who skipped questions or selected the “No Answer” option to questions were excluded in favor of respondents with more complete survey data. Within the organizational type categories, the organizations were compared to one another to identify ones that seemed to represent the typical practices reported by that group in the survey. For the newspapers, the organizations also were examined within their circulation categories. Following that, the survey responses were examined to identify organizations that also brought to the analysis some unique characteristic regarding the creation of a digital photographic archive. The result of the comparisons was that organizations were identified that could broadly represent their organizational type or size but that also could
represent a unique aspect of the adoption process. Nine organizations were identified for the follow-up interviews.

**Newspapers with less than 10,000 circulation: Norwalk (Ohio) Reflector**

The *Norwalk Reflector* is a small paper with an archive tied to the publication system. Photographs are automatically archived as part of the production process, which makes the newspaper somewhat unique in this category. The *Reflector* is representative of the majority of papers this circulation group in that one person handles the archive. The respondent’s answers indicate the organization seems to manage the archive well and the staff is happy with the result, though it is not apparent the approach used follows the guidelines suggested by organizational literature.

**Newspapers with circulation of 10,000 to 50,000: The Jackson (Mich.) Citizen Patriot**

The librarian at the *Citizen Patriot* is primarily responsible for the archive and is the person who completed the survey. The newspaper is representative of the majority of papers this size in that three people work with the archive. The survey answers indicate the *Citizen Patriot* largely followed the approach suggested by organizational literature in creating the digital photographic archive and was in line with most papers in this circulation group in terms of satisfaction.

**Newspapers with circulation of 50,000 to 250,000: The Virginian-Pilot**

*The Virginian-Pilot* in many respects represents the mainstream of the newspaper respondents. The paper has had an archive for five to ten years and adds images to it on a daily basis. Backups are kept in case of data loss. The paper is unique though in that two different groups are responsible for adding images to the archive. Librarians had sole responsibility for archiving images, but following a change in 2005 librarians now
archive published images while photographers archive unpublished images. The newspaper appeared to follow the approach suggested by organizational literature in that a committee structure was used to develop and implement the archive. An outside vendor wrote and presented the software for the archive, but changes were made once it was put into service. The Virginian-Pilot also is unique in that it is one of the few organizations to register dissent in terms of the process used to develop the archive and the solutions that were considered.

**Newspapers with circulation of more than 250,000: The New York Times**

The survey responses from The New York Times indicate the newspaper is pretty exemplary in terms of how organizational literature suggests an archive should be created and maintained. There is room to probe the answers, however. For instance, the survey indicated the committee that participated in the archive construction comprised only of editors. Why was only that group represented? In addition, The New York Times aggressively markets an online store featuring images from the newspaper’s archives. The interview offered an opportunity to explore the relationship of the digital photographic archive to the online store.

**Libraries and Museums: Utah State Historical Society**

The survey responses indicate the Utah State Historical Society is representative of the mainstream of state libraries in terms of the organization’s reason for building an archive, the ratio of prints in the organization’s overall archive to electronic images in the digital archive, the process of creating the digital photographic archive and satisfaction with the finished product. This organization is unique from other libraries represented in
the study though in that it is one of the few to indicate images in the archive are opened and resaved on a schedule to guard against file corruption or format obsolescence.

**Libraries and Museums: Harry S. Truman Presidential Museum and Library**

The Harry S. Truman library in Independence, Mo., provided the most complete survey from among Presidential libraries, all of which would be governed by National Archives and Records Administration policies. It represents in many ways the archive creation process and level of satisfaction reflected by the other Presidential libraries. The Truman Library is somewhat unique though in that it stores images on multiple hard drives instead of CDs or DVDs, and an outside consultant wrote software specifically for the Truman Library archive. The archive is viewable and searchable over the web.

**Photographic Agencies: Contact Press Images**

Contact Press Images is a 30-year-old agency with a large print archive. The agency is headquartered in New York City and is representative of many photographic agencies specializing in editorial content. The organization is unique though in that its digital archive is just one to two years old and is still in the development. As the archive is being finalized, images are added daily and saved on multiple hard drives, but a backup scheme is not in place. The organization represents the perspective of one currently in the process of creating its archive.

**Photographic Agencies: Magnum Photos**

Also headquartered in New York City, Magnum is an agency with a legacy of historic images. Like Contact, Magnum has an overall archive that is mostly print with some electronic images. The agency has had a digital archive for five to ten years, about the same length of time that its members might have been using digital images. Given the
size of Magnum’s print archive, one thing to explore is whether the digital archive is comprised strictly of images created digitally or whether print images are being converted to a digital format. Unlike Contact, Magnum is a collective of photographers rather than an agency that represents photographers. Magnum represents an agency with a long history and an organizational structure different from that of other agencies.

**Photographic Agencies: Aurora Photos**

Aurora provides contrast to Contact and Magnum. The agency has shorter history than the other agencies, and it is headquartered outside New York City. The Aurora archive is mostly electronic with few prints included. The agency seems to be more technology oriented than other agencies, with images added to the archive on a daily basis and stored on a RAID hard drive array. The array allows for immediate backups and/or quicker file access, depending on how it is structured. Backups of the archive are kept. Aurora also is somewhat unique in comparison to other agencies in that the respondent indicated the archive creation process considered the needs of the agency’s clients as well as the likelihood of selling images.

An email message was sent to the survey respondent from each of the selected organizations. The message explained the interview phase of the study, including informed consent information, and requested the recipient to participate in a telephone interview. Recipients were asked to respond to the message indicating whether or not they would participate. Two organization representatives did not respond to the email message and one did not have a direct email address. A telephone call was placed to those representatives to set up the interview. When possible, the interviews were conducted with the person who completed the online survey. In two instances, *The
*Virginian-Pilot* and *The New York Times*, the survey respondent suggested conducting the interview with another person in the organization who would be better able to discuss the archive and its creation.

Appointments were made with a representative of each organization. A telephone call was placed to the respondent, and an interview was conducted with each. Notes were taken during the interview, and the notes were transcribed into the computer as soon as possible after the interview was completed. The notes were reviewed and combined with the survey responses to allow the “case study” of each organization to be created. All but one of the interviews was tape-recorded. The recordings were also transcribed and reviewed. The transcriptions are in Appendix D.

Either of the methods employed in the study would have provided sufficient information on its own. The survey would have provided the broad overview that would be appropriate for a quantitative approach to the study of diffusion of innovations within organizations, though some might criticize that variations within the survey responses would indicate the process is not standardized across a given type of organization. Likewise, interviewing would have provided the qualitative examples and depth of the diffusion process within a few organizations, though some might criticize that the organizations chosen might represent unique examples that are not indicative of the whole. Combining these methods resulted in a richer study that could broadly investigate theory while also providing explanation of practice.
The results of the online survey provide a broad picture of the landscape of digital archives, their creation and ongoing operation. Using descriptive statistics, the details of that broad picture can be examined.

As noted at the end of the previous chapter, the response to the survey was distributed among the three types of organizations targeted in the study, though the response rates were different with respect to each type of organization. There were 22 responses from representatives from photographic agencies, 40 responses from representatives from libraries and museums and 105 responses from representatives of newspapers. All strata in the newspaper sample were represented in the responses. Of the 105 newspaper responses, 26 came from newspapers of less than 10,000 circulation. The largest group of newspaper responses was 48 from newspapers between 10,000 and 50,000 circulation. Another 23 responses came from newspapers of 50,000 to 250,000 circulation, and the final eight newspapers responses were from papers with more than 250,000 circulation.

The newspaper response rates do not reflect the distribution of papers across the strata of the sample. The smallest group of newspapers, those with less than 10,000 circulation, is underrepresented in the survey results. The newspapers in this group made up 43.28 percent of the sample but only 24.76 percent of the responses. The other circulation groups are somewhat overrepresented in the survey results, with the disparity between
sample proportion and response proportion increasing along with the circulation sizes. Newspapers of between 10,000 and 50,000 circulation comprised 41.79 percent of the sample but accounted for 45.71 percent of the responses. Newspapers between 50,000 and 250,000 circulation comprised 12.19 percent of the sample but accounted for 21.9 percent of the responses. Newspapers of more than 250,000 circulation comprised 2.74 percent of the sample but accounted for 7.62 percent of the responses (Table 4.1). The skew toward larger papers among the responses is not surprising. Davenport, Randle and Bossen reported an average circulation of 112,477 and median circulation of 50,000 for newspapers responding to their survey of archiving practices. The skew toward larger papers among the survey responses may be related to the availability of greater resources at those organizations. What is not known is whether the lack of resources at smaller newspapers is related to a lack of personnel and time to respond to a survey, a lack of a digital archive, disinterest in the topic or some combination of the factors.

Table 4.1. Percentage of sample size to response size of newspapers by strata

<table>
<thead>
<tr>
<th>Circulation size</th>
<th>Sample percentage</th>
<th>Response percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10,000</td>
<td>43.28</td>
<td>24.76</td>
</tr>
<tr>
<td>10,0001 – 50,000</td>
<td>41.79</td>
<td>45.71</td>
</tr>
<tr>
<td>50,001 – 250,000</td>
<td>12.19</td>
<td>21.90</td>
</tr>
<tr>
<td>More than 250,000</td>
<td>2.74</td>
<td>7.62</td>
</tr>
</tbody>
</table>
The organizations represented in the survey generally are not newcomers to working with digital archives. One third of the respondents, representing 56 organizations, report having had a digital archive for three to five years. A slightly larger group, 58 organizations, reported maintaining a digital archive for five to 10 years. In other words, more than two-thirds of the respondents report their organizations have maintained a digital photographic archive for between three and 10 years. Another 19 respondents report maintaining a digital archive for more than 10 years, with an equal number reporting only having maintained a digital archive for a year or two. Only seven of the respondents reported that their organizations were in the first year of maintaining a digital archive, but eight respondents chose not to divulge how long their organizations have maintained a digital archive. Between the different organization types, representatives of libraries and museums most often reported maintaining a digital archive for three to five years. Representatives of newspapers and photographic agencies report maintaining a digital archive longer, with the largest number of responses from each of those types of organizations reporting maintaining an archive for five to 10 years.

The difference in length of time the different types of organizations have maintained a digital photographic archive may be related to the nature of the industry they are associated with. Newspapers and photographic agencies both concern themselves with the creation and storage of images related to topics in the news on a daily basis, while libraries and museums are not as often involved in creating the photographs and may not receive new ones on a daily basis. As the newspapers and photographic agencies that are the concern of this study are generally concerned with the regular creation of images related to news events, it would be sensible to conclude both types of agencies would
adopt similar technology at similar times. Digital cameras started to make their way into photojournalism in the early 1990s, with digital imaging in use at most newspapers with a circulation of more than 7,500 by 1997.\textsuperscript{128} Digital imaging at that time generally referred to scanning film, though some digital camera use was reported.\textsuperscript{129} The time frame for the adoption of digital imaging at newspapers corresponds to the survey response of maintaining a digital archive for five to ten years at newspapers and photographic agencies.

Of the 163 organizations that indicated the forms of images maintained in their archives, 110 indicated a mix of image types in the archive. Of those, 60 were newspapers, 36 were libraries or museums and another 14 were photographic agencies. Representatives of 47 organizations reported maintaining an archive comprised solely of digital images. Of those, 40 were newspapers and the other seven were photographic agencies. No libraries or museums reported maintaining an archive comprised solely of digital images. At the other end of the scale, 4 respondents indicated maintaining only prints and negatives in the archive, though their answers may not accurately reflect the makeup of the image archive in the organization. The four organizations indicating their archives were comprised solely of prints and negatives included two newspapers, the \textit{Urbana Daily Citizen} and the \textit{Island Packet}, but both organizations also reported a ratio of at least 50 percent digital images in their archives. The other two organizations were historical libraries, the Historical Society of Delaware and the Illinois Digital Archives. Ironic though it may be for an organization with the words digital archive in its name to report few digital images in the archive, the response reflects the large holdings of prints
some libraries have accumulated and the small percentage that have been converted to
digital formats thus far.

The length of time organizations report maintaining a digital archive does not
necessarily suggest a high ratio of digital images to traditional prints and negatives in the
archive. In fact, the highest number of responses came in the same categories for time but
at opposite ends of the scale for ratio. Of the 63 respondents indicating their
organization’s archive is comprised of 80 percent or more digital files and less than 20
percent traditional images, 21 of them reported maintaining an archive for three to five
years. Another 24 reported maintaining an archive for five to 10 years, while nine
reported maintaining a digital archive for more than 10 years. Another eight
organizations report being fairly new to digital archives, maintaining them less than two
years. At the other end of the scale, 44 organizations reported maintaining an archive
with 80 percent or more traditional images and 20 percent or less digital ones. Of those,
20 organizations reported maintaining a digital archive for three to five years. Another
nine organizations reported maintaining their archive for five to ten years, while four
reported maintaining a digital archive for more than ten years. Organizations with
archives comprised mostly of prints are slightly more likely to be new to digital archives
than those working mainly with digital images. There were 11 organizations at this end of
the scale reporting they have maintained a digital archive for two years or less. See Table
4.2 for a complete comparison of the length of time reported maintaining a digital archive
to the ratio of digital to traditional images kept in the organization’s archive.
Table 4.2. Comparison of length of time maintaining a digital archive to ratio of digital/print images in the organization.

<table>
<thead>
<tr>
<th></th>
<th>Almost all digital</th>
<th>80% digital</th>
<th>60% digital</th>
<th>50/50</th>
<th>60% print</th>
<th>80% print</th>
<th>Almost all print</th>
<th>No answer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6 months</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>6-12 months</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>1-2 years</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>3-5 years</td>
<td>19</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>56</td>
</tr>
<tr>
<td>5-10 years</td>
<td>17</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>15</td>
<td>58</td>
</tr>
<tr>
<td>10+ years</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>No Answer</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>13</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>19</td>
<td>25</td>
<td>35</td>
<td>163</td>
</tr>
</tbody>
</table>

The ratio of digital images to traditional prints and negatives in an organization’s archive may be an indicator of the digital archive’s completeness as an historical record and its room to grow. One of the fears of scholars has been that the age of digital images also has become an age of edited archives. Photographers can delete digital images from the camera’s memory, erasing those frames from existence in a way that could not be done with film. Photographers may select a fraction of the total images from an event, deleting the files that are not sent on to an editor, and an editor may further winnow the selection of images. The result is that a fraction of the photographs taken are preserved in
an archive. This practice stands in contrast to the days of film where an entire strip of developed negatives could be preserved along with a contact print. An interested person could potentially search through the prints and negatives to uncover images of interest, but if the digital files have been deleted, there are no images to be searched. An organization with an archive consisting mainly of digital images may be an organization whose record is complete. A few unpublished or overlooked images may come to light in later years, but there is no way to know whether the images that are uncovered represent as complete a record as possible of the event. For organizations that have just scratched the surface of creating a digital archive from the existing prints and negatives though, the potential for a more complete historical record exists. As the digitization process continues, more of the traditional images can be scanned to build a complete digital duplicate of the existing archive with the potential to be even more usable due to the ability to electronically search the information associated with the digital file.

However, the potential for a more complete record does not ensure one will be created. Digitizing thousands of prints and negatives may take years to complete, and organizations may be unable to invest the resources to digitize the entire collection. Instead, those organizations may choose to create collections of images related to specific topics, digitize the most used images or focus on the most fragile images that might otherwise not be available to users. The survey responses confirm that some organizations have created digital archives for purposes other than creating a complete digital record of all images collected by the organization. One respondent to the survey wrote, “Digitization of photographs in the collections mainly takes place when we want to make highlights of these original photographs available on our website.” Another
respondent wrote, “The digital photo archives is strictly an in-house tool created to preserve a digital file as photographs are scanned to fill a reference request.” For that organization, the digital archive will only be as complete as the archive of traditional prints and negatives when a request is made for a copy of each image in the collection.

Digital images are stored on a variety of media within the organizations, including hard drives and removable media, with many organizations using more than one storage method. Of those that report using a single point of storage for images, compact discs are the most popular choice. There were 31 organizations storing images on compact discs, and another 15 organizations storing their images on DVDs. The total of 46 organizations reporting using a sole form of removable media for storage accounts for 27.6 percent of the respondents. The alternative to removable media is to store images on a computer hard drive, which was the choice for 21 organizations, or 12.6 percent of the respondents. Another 41 organizations reported storing images across multiple hard drives in the organization, but the 47 organizations choosing the option of “other” to this survey question, the largest group of respondents, the indication is that photographs are stored on more than one medium. Typical comments from this 28 percent of the respondents included images are stored on a combination of hard drives and removable media. For those organizations, the images generally are stored on the hard drives and later backed up to compact discs or DVDs. A few organizations indicated storing images on a network computer servers with backup drives. At one newspaper, the backup server is even at a remote location in the event of disaster at the newspaper’s main office.

Each type of organization expressed different preferences for storage media. Newspapers, while the most evenly distributed among the storage possibilities, were most
likely to store photographs on compact discs. Of the 104 newspapers that indicated a practice, 29 reported using that medium for storage, with another 14 reporting that DVDs were used and 13 storing images on a hard drive in their organization. There were 20 who reported storing photographs on multiple hard drives. Another 22 fell into the “other” category, often storing photographs on hard drives and a form of removable media as outlined above. That storage strategy was the overwhelming choice for libraries and museums. Of the 38 that indicated a storage preference, 23 indicated using more than one medium. For libraries and museums, the next largest group was the nine who indicated storing images on multiple hard drives, but that was the overwhelming preference for photographic agencies. Of the 21 agencies responding to this question, 12 reported storing photographs on multiple hard drives. A single hard drive was used at four agencies, while three more indicated using more than one of the storage media.

The use of multiple storage media by organizations may indicate they are aware of the potential for storage media and equipment to fail, making images irretrievable. A question inquiring about the organization’s practices to address the potential for files to become corrupt or lost resulted in a response from 92 organizations that backups were kept for that purpose. Of the 18 respondents who chose the “other” option and elaborated on their responses, another five explicitly indicated a backup system was in place to guard against the loss of digital files. That means 58 percent of the organizations represented are saving multiple copies of their digital files to guard against loss. More than 45 percent of those organizations have invested heavily in digital image technology, reporting that 60 percent or more of the images stored by their organization are digital. In fact, the largest single group of organizations indicating backup files are kept are the 30
that report maintaining archives comprised almost entirely of digital images. But that does not mean the organizations with high ratios of digital to traditional images are the only ones concerned about backups. Another 25 organizations in this group maintain archives that are 80 percent or more traditional images, accounting for almost 26 percent of those indicating backups are kept.

The first hypothesis stated that policies for building digital photographic archives would differ in specific ways. The hypothesis stated that newspaper archives would be built to facilitate internal use by staff rather than use by the general public. It also stated that archives at agencies would be built to facilitate searching by potential clients while securing the images from unauthorized use. Finally, the hypothesis stated archives at libraries would be built to facilitate public searching for and saving images.

Overall, the most frequent response indicated digital archives are primarily intended for internal use only. The answer largely reflects newspaper practice though, accounting for 67 of the 75 responses that there is no public access to the archive. The other eight responses came from libraries. On the other end of the spectrum, the least frequent response was that permission is required to view the archive from a remote location. That response is reflective of organizations engaged in the daily photojournalism routine though, as four newspapers and three photographic agencies selected that response. The picture changes somewhat though when the responses are broken down by organization type.

As noted, of the 105 newspapers participating in the survey 67 indicated the archive is limited to use within the organization itself with no access available to the public. The archive at those newspapers then is a tool for storing photographs and publication
information to be retrieved later by the newspaper staff. Another 18 newspapers indicated members of the public could view the archive if they came to the newspaper’s location, making the newspaper’s files available to parties interested in using it for research. Only 14 newspapers indicated some level of remote access to the archive is available to the public. Of those, only one indicated a viewer could view the archive and download images from it remotely without taking some sort of extra step. At four other newspapers, a viewer needed permission to even access the archive from a remote location. Another nine newspapers responded that viewers could view the archive and then pay to download images from it. Six newspapers did not indicate the level of public access to their archive. A one-way chi-square test for goodness of fit indicates a significant difference in the level of public access to the digital photographic archives of newspapers overall \( (x^2=149.03, p=.0001) \). 

The level of public access differs when considering photographic agencies. While engaged in a similar business as newspapers, agencies do not make their primary income from publishing the photographs they acquire. They rely instead on the sales of those images to clients, and web sites are the way to give clients access to those images. Where the majority of newspapers indicated there was no public access to their archive, no agency representative selected that response. Instead, the most common response for photographic agencies was that clients can view the archive but must take additional steps before they can obtain an image. For seven agencies, that extra step is to acquire permission from the agency before downloading photographs. Another six agencies indicated users must pay to download the images. In other words, of the 19 agencies that reported the level of access to the archive, 13 will let the public view the images available
through the agency but do not make them freely available to download. One agency did indicate that users are able to view and download images remotely without indicating additional permission was needed. At three agencies, viewers need permission before even searching the archive remotely, while two agencies indicated the archive could only be viewed at the agency’s location. Three agencies did not indicate the level of public access to the archive. A chi-square test for goodness of fit did not indicate a significant difference in the level of public access to the digital photographic archives of photographic agencies ($\chi^2=7.05$, $p=.1333$), but it should be noted that the chi-square test expects a frequency of at least five in each cell. With 19 agencies indicating five different levels of access, it is impossible to reach a frequency of at least five in each cell.

However, a different outcome is reached if the data are collapsed to group all agencies that indicated some level of permission is required before viewing or downloading images. If the 19 agencies are collapsed into three groups (those that did not indicate permission is necessary to view remotely, those that indicate some type of permission is required to view or download and those that indicated the archive is only viewable at the agency) the chi-square test for goodness of fit does indicate a significant difference ($\chi^2=22.21$, $p=.0001$).

In contrast to newspapers, at libraries digital photographic archives are most often freely available with 11 respondents indicating the archive is available for the public to view and download images remotely. However, the archive at eight libraries reflects the usage at newspapers as those respondents indicated the archive is for internal use only. There was an even split reported by libraries between archives where online users can view the archive remotely but must pay to download images and those where users must
come to the library to access the archive. Another three respondents indicated online users can view the archive but need permission before downloading any images. Confounding the ability to reach a conclusion about this distribution are the eight libraries that chose not to indicate the level of public access available to their archives. Adding this 20 percent of the library respondents to most of the response categories would make that category the most frequent. A chi-square test for goodness of fit did not indicate a significant difference in the level of public access to the digital photographic archives of libraries ($\chi^2=7.05$, p=.1333).

To determine whether the apparent differences in the level of public access to the archive are significant an analysis of variance (ANOVA) test was conducted. The unequal size of the groups of organization types violates the assumption of the homogeneity of variance in the ANOVA test. To address this characteristic, the analysis was conducted using the Games-Howell post hoc test, which provides the best control over committing a type I error than other post hoc tests and is considered the most justifiable procedure when the data exhibit heterogeneous variances. The ANOVA test determined a significant difference exists between the types of access to the digital photographic archive offered at newspapers to that offered at photographic agencies and libraries (p=.000). However, the test determined there was not a significant difference between the types of access offered at libraries and at photographic agencies (p=.667) (Table 4.3). Taking each type of organization individually, the first hypothesis is partially supported. However, agencies and libraries are organizations for which the photograph is the product they provide to clients while at newspapers photographs are a component of the finished product. By classifying the organizations in this manner, the significant result
of the Games-Howell test supports the hypothesis that the organizational mission influences aspects of the digital photographic archive.

Table 4.3. Analysis of variance of type of public access to digital archive by organizational type

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Groups</strong></td>
<td>176.282</td>
<td>2</td>
<td>88.141</td>
<td>49.027</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Within Groups</strong></td>
<td>264.278</td>
<td>147</td>
<td>1.798</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>440.560</td>
<td>149</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Games-Howell Test

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Organization Type</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>Library</td>
<td>2.13*</td>
<td>.385</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Agency</td>
<td>2.52*</td>
<td>.273</td>
<td>.000</td>
</tr>
<tr>
<td>Library</td>
<td>Newspaper</td>
<td>-2.13*</td>
<td>.385</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Agency</td>
<td>.39</td>
<td>.449</td>
<td>.667</td>
</tr>
<tr>
<td>Agency</td>
<td>Newspaper</td>
<td>-2.52*</td>
<td>.273</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Library</td>
<td>-.39</td>
<td>.449</td>
<td>.667</td>
</tr>
</tbody>
</table>

*The mean difference is significant at the .05 level.
The second hypothesis stated the specific process used to develop the archives would differ between the different types of organizations in specific ways. The hypothesis stated that photographic and technical staff would be most responsible for the archive development at newspapers, while technical staff would be almost entirely responsible for developing the archive at photographic agencies. The hypothesis stated the most collaborative process, involving diverse groups of employees, would happen in libraries as they created their archives. To explore this hypothesis, results from survey questions regarding the origination of the idea to create a digital archive, the method of implementing the idea and, when applicable, the makeup of an implementation committee were analyzed.

At newspapers, the impetus to develop a digital archive primarily came from those closest to creating and using the images. Of the 92 newspaper respondents who indicated an origin to the development of the archive, 32 said the idea came from photographers while another 25 gave credit to editors. The response was so overwhelming that the next largest response came from the 15 respondents did not know where the idea originated. In only nine cases did a respondent indicate the head librarian proposed the idea. Only one newspaper indicated an archivist proposed creating the digital archive, while another four said the idea came from some other staff person. The head of the organization got credit at six newspapers.

The responses to this question vary somewhat with regard to the circulation category of the newspaper. At newspapers of less than 10,000 circulation, editors were slightly more likely than photographers to have proposed the idea, but at newspapers with circulations between 10,000 and 50,000 photographers were nearly twice as likely as
editors to have proposed the idea. As the circulation rises, newspaper resources and staffing increase as well, making it more likely that someone not directly involved with image creation might have proposed the idea to begin the digital archive. At the 20 newspapers with circulations between 50,000 and 250,000 the lead librarian was cited at six as the originator of the idea with editors right behind at five. Photographers were only credited with proposing a digital archive at three newspapers in that circulation category. The pendulum swings back slightly in the top circulation category though, with photographers getting credit at three of the seven papers in that category. Editors got the credit at two, and the head librarian or another staff member got credit at the other two. The absolute differences in the circulation categories do not reach statistical significance, however, as the distribution does not satisfy the requirements for a chi-square test\textsuperscript{134} (Table 4.4).

Business considerations are apparent at photographic agencies, where the idea to develop a digital archived originated in the front office about as often as all other parts of the agency combined. Of the 19 agencies that reported where the idea originated, the agency head got credit at nine of them. The photographers got credit at another five agencies. However, two of those agencies, VII and Blow-up, are collectives. Unlike traditional agencies that represent photographers and sell their work, collectives are organized and guided by the photographers themselves. The photographers, therefore, also are the head of the organization. Editors were identified as the idea originators at two agencies, and archivists were identified at two more. One agency representative did not know where the idea originated.
Table 4.4. Cross tabulation of newspapers by circulation size to the origination of the digital archive

<table>
<thead>
<tr>
<th>Circulation</th>
<th>Organization head</th>
<th>Photographers</th>
<th>Editors</th>
<th>Head Librarian</th>
<th>Archivist</th>
<th>Other</th>
<th>Don’t Know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10,000</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>10,001 – 50,000</td>
<td>3</td>
<td>20</td>
<td>11</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>44</td>
</tr>
<tr>
<td>50,001 – 250,000</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>&gt; 250,000</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>32</td>
<td>25</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>15</td>
<td>92</td>
</tr>
</tbody>
</table>

When it comes to libraries and museums, the people who work most closely with the photographs get the credit for the idea to develop a digital archive as well. Of the 31 libraries responding to this question, 15 respondents said archivists proposed the idea to develop the digital archive. The next largest group was only about half that size, as seven respondents gave credit to the head librarian. Another three respondents said the organization head was responsible, while four respondents said the idea came from another staff person. There were two respondents who did not know where the idea originated.

Once the idea was presented to build a digital photographic archive in an organization, the method used to implement the idea varied. Committees were often involved, as organizational literature would suggest, but individuals often bore the responsibility for creating the archive, either on their own initiative or at the behest of
someone else in the organization. Of the 84 newspapers that indicated the method of implementation, 30 responded that a committee was involved. The next most common response came from 23 newspapers where someone was told to create the archive and did, followed by 14 newspapers where the survey respondent was the person told to create the archive. There were 10 respondents who indicated an individual in the organization created the archive on their own initiative and six where some other method was used, such as adopting an existing solution presented by corporate owners. The responses from newspapers were collapsed into four categories depending on whether someone was directed to create the archive, whether someone created the archive independently, whether a committee was involved or some other solution was indicated. A one-way chi-square test for goodness of fit indicated a significant difference in the distribution of the implementation method ($\chi^2=31.52, p<.0001$).

The likelihood that a committee was involved in the archive creation process at a newspaper increases along with the circulation size. No newspapers with circulations of less than 10,000 reported the involvement of a committee, but 13 indicated someone within the organization was directed to create the archive. A committee was involved at 11 newspapers with circulations from 10,001 to 50,000, but at 20 newspapers in that category someone was directed to create the archive. An individual created the archive independently at another eight newspapers in this circulation category. A committee was most often the implementation method at newspapers with circulations from 50,001 to 250,000. Respondents at 13 newspapers in this category identified a committee as part of the process. Only four respondents in this category indicated someone was told to create an archive, and only one reported creating the archive independently. Of the seven
newspapers with circulations of more than 250,000 a committee was involved at six of them. The other respondent indicated he or she independently requested to implement an existing archival system known as Merlin, which was approved. Again, these absolute differences do not satisfy the requirements of the two-way chi-square test, so significance cannot be tested.

Photographic agencies were almost evenly split between implementation by committee and implementation by direction. Of the 15 agencies that indicated an implementation method, a committee was involved at six. Respondents at five agencies indicated someone at the agency was told to create the archive, and at another two agencies the survey respondent was the person directed to create the archive. One agency respondent was the person who created the archive on his or her own initiative, and one respondent indicated some other method was used. A chi-square test for goodness of fit indicated the differences in distribution were significant at the .05 level \( (\chi^2=8.2, p=.0421) \), but the expected frequencies are below five, making the test of limited value.

Digital photographic archives within libraries and museums are most likely to have been developed by a committee. Of the 31 library respondents that indicated an implementation method, 13 reported that a committee was involved in the process. Respondents at three libraries indicated they had been told to create the archive, and three more respondents said they created it on their own. Two respondents indicated someone else had been told to create it, and two more indicated someone else in the organization created the archive on their own. The second largest group of responses came from eight libraries where some other process led to creation of the archive. In some cases creating the archive was a secondary result of some other activity the library was focused on, such
as responding to patron requests for copies of images or creating an online presentation for the library’s web site. “Much of the digital collection is a reaction to requests from the public for that format, and our increasing placement of images on our website,” wrote one library respondent. A respondent from the Smithsonian Institution wrote that many of the archives there are “formed around the research activities of the organization,” rather than from a primary plan to create a digital archive of photographs. The approach at some of these libraries is understandable as their archives may contain thousands of photographs that would take years to digitize and catalog into an electronic database. These libraries may focus their efforts on creating thematic presentations of images or responding to requests for prints, with the result that sets of images are digitized and collected into a digital archive. A chi-square test for goodness of fit indicated the apparent tendency for committee involvement within libraries does not represent a significant difference in the implementation method used ($x^2=5.52$, $p=.1374$).

To determine whether the apparent differences between the organizational types regarding implementation of the idea to create a digital photographic archive are significant an analysis of variance (ANOVA) test was conducted, once again using the Games-Howell post hoc test to account for the different group sizes. The ANOVA test determined the implementation method employed at libraries is different from that used at newspapers ($p=.015$) or photographic agencies ($p=.046$). However, the test determined there was not a significant difference in implementation method between newspapers and photographic agencies ($p=.939$) (Table 4.5).

As noted, organizational literature would indicate that the involvement of a committee in creating the digital photographic archive is important to ensuring the
acceptance of the innovation throughout the organization. However, simply creating a committee to guide adoption of the innovation may not be sufficient if the makeup of the committee does not reflect the interests of those in the organization who will use or be affected by the innovation. Therefore, exploring the representation on the committees created by organizations is important to investigation of how these different organizational types adopted this innovation.

Table 4.5. Analysis of variance of method used to create the digital archive by organizational type

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>22.588</td>
<td>2</td>
<td>11.294</td>
<td>5.660</td>
<td>.004</td>
</tr>
<tr>
<td>Within Groups</td>
<td>253.412</td>
<td>127</td>
<td>1.995</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>276.000</td>
<td>129</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Games-Howell Test

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Organization Type</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>Library</td>
<td>-.96*</td>
<td>.328</td>
<td>.015</td>
</tr>
<tr>
<td></td>
<td>Agency</td>
<td>.12</td>
<td>.351</td>
<td>.939</td>
</tr>
<tr>
<td>Library</td>
<td>Newspaper</td>
<td>.96*</td>
<td>.328</td>
<td>.015</td>
</tr>
<tr>
<td></td>
<td>Agency</td>
<td>1.08*</td>
<td>.433</td>
<td>.046</td>
</tr>
<tr>
<td>Agency</td>
<td>Newspaper</td>
<td>-.12</td>
<td>.351</td>
<td>.939</td>
</tr>
<tr>
<td></td>
<td>Library</td>
<td>-1.08*</td>
<td>.433</td>
<td>.046</td>
</tr>
</tbody>
</table>

*The mean difference is significant at the .05 level.
The makeup of these committees reflects the distribution among the organizations of the origin of the idea to create a digital photographic archive. As noted, at newspapers the idea most often originated with the people who create and work with the photographs. Respondents to this question could select multiple types of organizational members as appropriate to reflect the committee makeup within that organization. At the 42 newspapers where a committee was involved, photographers were involved in 38 committees and editors at 34. Librarians were involved at 28 newspapers, and another eight reported the involvement of an archivist. The technology staff was represented on committees at six newspapers, and business officers were involved in five cases. A newspaper also was the only organization to report the involvement of the public or the organization’s client in the committee process. The Maryville (Mo.) Daily Forum was the lone organization to indicate a member of the public or of the newspaper’s clientele was involved in the committee process. However, the respondent also noted that while the newspaper was involved in the process of creating an archive, one did not yet exist at the time the survey was completed.

When considered by circulation group, committee representation at newspapers again reflects organizational characteristics noted with the origination of the digital archive idea. Committee involvement was indicated least in the smallest circulation group, those newspapers with circulations under 10,000. Photographers were involved with two committees, as were editors. One respondent indicated a business manager was involved, and this circulation group was the one in which public involvement was noted. However, one newspaper, the Maryville Daily Forum, accounts for most of that response within this group. The Daily Forum representative noted the involvement of photographers, editors,
a business manager and the public representative. Another newspaper, the *McCook* (Nebr.) *Daily Gazette*, accounts for the other response of photographers and editors in this circulation group. See Table 4.6.

### Table 4.6. Distribution of committee representation by organization type

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Photographers</th>
<th>Editors</th>
<th>Librarians</th>
<th>Archivists</th>
<th>Business Managers</th>
<th>Public/clients</th>
<th>IT</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspapers</td>
<td>38</td>
<td>34</td>
<td>28</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Libraries</td>
<td>4</td>
<td>1</td>
<td>14</td>
<td>16</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Agencies</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

The committee involvement becomes more inclusive throughout the organization as the circulation size of the newspaper increases. As shown in Table 4.7, within the 10,001 to 50,000 circulation category, photographers and editors were still involved most often, but librarians and archivists participated as well, along with input from technology staff on one committee. In the 50,001 to 250,000 circulation category, photographers are again the most represented group, with editors and librarians represented on the same number of committees. More archivists and business managers are represented, but no respondents in this group indicated technology staff representation on a committee. Finally, among newspapers with more than 250,000 circulation, photographers, editors,
librarians and technology staff were equally likely to be represented among the responses.

Table 4.7. Distribution of committee representation among newspapers by circulation

<table>
<thead>
<tr>
<th>Circulation</th>
<th>Photographers</th>
<th>Editors</th>
<th>Librarians</th>
<th>Archivists</th>
<th>Business Managers</th>
<th>Public/clients</th>
<th>IT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10,000</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>10,001 - 50,000</td>
<td>14</td>
<td>13</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>50,001 – 250,000</td>
<td>17</td>
<td>14</td>
<td>14</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>250,000 +</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

At photographic agencies, the idea to develop an archive most often came from the head of the agency, but when a committee was involved in developing the archive it was photographers who were most often involved. Of the ten agencies reporting that a committee was involved, photographers were involved with six committees and editors were involved on four. Business managers were not left out though as respondents reported their involvement with five committees. Three committees included archivists, and another one each included a librarian or technology staff, as shown in Table 4.6.
At libraries, those who work most closely with the photographs were again the ones represented on the committees. Table 4.6 also shows that of the 20 library representatives indicating committee involvement, an archivist was involved 16 times and a librarian was mentioned 14 times. Responses also indicated photographers were included on four committees, and one included an editor. Business concerns were not excluded, with a business manager involved in five committees. The technology staff did not play a large role with involvement on only two committees. The libraries also included involvement from other individuals, including historians, copyright specialists or a consultant. One Alaskan respondent indicated the committee was comprised of the head of major libraries or archives in that state.

Summarizing the responses related to the origination of the idea to create a digital archive, the method of implementing the idea and the makeup of an implementation committee, a picture comes into focus of the process at these different organizational types. At newspapers, the photographers and editors are the ones who proposed creating a digital photographic archive and, when a committee was formed to explore adoption of this innovation, were the ones most often represented on those committees. Even when considering newspapers in different circulation categories, photographers and editors are most often represented on committees and were most likely to have presented the idea to create an archive, except at the very largest newspapers where specialized staff members were likely to have suggested creating the archive. Thus, this part of the hypothesis is supported.

At photographic agencies the business concerns were apparent in the initial idea to create a digital photographic archive as the head of the organization most often received
credit and generally directed someone to create the archive. When a committee was formed, photographers were represented but were outnumbered by the business and library staff. However, the hypothesis suggested technical staff would be almost entirely responsible for creating the archive. The responses indicate IT staff did not play a large role in development of the archive at agencies, so this part of the hypothesis is not supported.

At libraries and museums, the librarians and archivists most often were credited with the idea to create the archive. These organizations also had the highest percentage of those in the category for using a committee to explore adoption of the digital archive and included a diverse range of individual on the committees. It was hypothesized that the staff at libraries and museums would be most inclusive in the development of digital photographic archives, and this part of the hypothesis is supported.

There are differences in the method of creating the digital photographic archive among newspapers, photographic agencies and libraries and museums, but not always in the manner hypothesized. Therefore, the second hypothesis is only partially supported.

The third hypothesis stated the purpose of the archive would determine the presentation of images and their associated data. The hypothesis stated archives at newspapers would display captions and the information necessary to retrieve the file, but little other information would be included. Archives at photographic agencies would include a little more information, including the prices and sizes of images available for sale. The hypothesis stated archives at historical libraries and museums would contain the most detailed information, including descriptions of content and subjects, the
photographer’s name, when the photograph was made, the size of a photograph and restrictions on its usage.

As noted in the previous chapter, 76 of the 167 organizations contacted responded with additional information about the data included with the photographs in the digital archives. Of those 76 responses, 46, or 60.25 percent, came from newspapers; 21, or 27.6 percent, came from libraries; and 9 or 11.8 percent, came from photographic agencies. The ratios of organizational type to the number of responses to the follow-up email is similar to the ratio of organization type to overall survey responses as outlined earlier in this chapter. However, the ratio of newspapers in the various circulation categories differs somewhat from the ratios found in the survey responses. Newspapers of less than 10,000 circulation accounted for six of the 46 responses, or 13 percent, as opposed to the 24.76 percent of overall survey responses accounted for by this group. A higher response rate was achieved with newspapers of circulations between 10,001 and 50,000, with 25 responses. The circulation category accounts for 54.3 percent of the follow-up responses as opposed to 45.7 percent of the original survey responses. There was less difference in the upper circulation categories. Newspapers with circulations between 20,001 and 250,000 accounted for 11 responses, which is a 23.9 percent rate compared to the 21.9 percent response rate to the survey for this category. The four newspapers with circulations above 250,000 account for 8.7 percent of the responses to the email in comparison to the 7.6 percent of responses to the original survey from this group. The smallest group of newspapers is somewhat underrepresented when considering the content of the digital archives while the next higher group is somewhat overrepresented.
Among newspapers, data about the creation of the photograph are most important to include in the archive. Of the 46 newspapers represented, 43 indicated the date the image was made was included in the archive data, and 41 indicated the photographer’s name was included. Next in inclusion after the image creation information came data about the content of the image. There were 38 newspapers that indicated the caption associated with the photograph was stored in the archive, and 38 newspapers also indicated a list of subjects in the photograph was included in the archive. As the frequencies for these types of data match there is obviously some overlap. Some respondents indicated keeping both types of data, while others indicated keeping one or the other. Another 35 newspapers indicated the location depicted in the photograph was kept in the archive, but after these types of data, the frequency for any other data associated with images in the digital photographic archives of newspapers falls off quickly. Only 18 of the 46 newspaper respondents indicated keeping track of whether the image had been published, and only 16 indicated including the date of publication. The image size is recorded in the archive at 15 newspapers while 10 newspapers include usage restrictions and only nine record photographer’s notes. There were five papers that indicated technical data about the photograph are saved in the archive. Another five assigned keywords or some other type of data associated with the photograph’s publication. Only one newspaper indicated the prices for reprints of the image were included. As the hypothesis suggested, the items of data most frequently included at newspapers are those that would facilitate searching for photographs from a particular event or photographer. Knowledge of the date of the photograph, the photographer or words that might be in a caption would allow one to more easily identify appropriate images when looking for file images of past events. The
hypothesis also suggested little else would be in the newspaper’s digital archive. The inclusion of a variety of other data items, such as image size or the publication history of the image, would seem to contradict the hypothesis, but those items are represented in fewer than 40 percent of the responses while the more dominant categories are represented more than twice as often in the newspaper archives. This part of the hypothesis is supported.

The same data that newspaper respondents identify as important to include in the archive are important for photographic agencies as well, but in even higher proportion to the responses. All of the nine agencies that provided data indicated the date the image was made, the photographer and the caption were included with the image in their digital photographic archives. Eight of the agencies indicated their archives include the subjects of the photograph, the location, the image size and usage restrictions. Agencies generally do not seem to be concerned about including other data in the archive. Only two agencies indicated including photographer’s notes or other information, such as keywords. Only one agency indicated information regarding whether the image had ever been sold or published, the date of sale or publication or technical data about the photograph is part of a digital archive. The need for an agency to include information about the creation or content of the image or the available sizes and restrictions on its usage is not surprising. The lack of data regarding pricing and whether the photograph had been sold seems counterintuitive since the agencies are in the business of selling photographs, but that information is part of the business dealings of the agency and does not affect offering the image for further sale. Pricing also may vary depending on the purchaser and the usage sought. Including pricing information in the archive would negatively impact an agency’s
flexibility to set or update its prices. The hypothesis suggested the photographic agency archives would include mainly descriptions, sizes and prices. While the pricing information does not appear in the archive, the other expected information does. This part of the hypothesis can be considered supported as well.

Information about the content of the photograph is included in the digital archives at libraries and museums as well, but there is a slight shift in priority. Of the 21 respondents representing this organizational type, 20 indicated the location depicted in the photograph is included in the archive. The date the image was made is included by 19 of those respondents, making it second in priority with this group as opposed to the most often included information at newspapers and agencies. Other items of importance for inclusion included the name of the photographer (18 responses), caption information for the photograph (17 responses) and information about the subjects in the photograph (16 responses). After information about the creation and content of the image has been included, libraries and museums are concerned with information about the image itself and its use. There were 13 responses indicating information about the size of the image is included and another 13 responses indicating usage restrictions for the image are included in the archive. Another 10 respondents include technical data about the photographs, while six include photographer’s notes and only two indicated information about the cost of prints is included. Finally, six respondents include additional information, such as keywords to facilitate searching or the accession number of the image. The hypothesis suggested the digital archives at libraries and museums would display detailed information about the content of the image as well as the date the photograph was taken, its size and usage restrictions. The responses indicate that while all three organizational
types place an emphasis on including data about the creation and content of the photographs, libraries and museums also place importance on descriptive information about images. The difference in information illustrates the differences in the content of the digital archives between the organizations. As noted above, the digital archives at newspapers and agencies largely include images that are “born digital,” meaning the images were created with digital cameras and never existed as physical artifacts.

Libraries and museums, on the other hand, have large collections of physical prints. The digital archives at these agencies often have been created as a result of a desire to share collections of images with a larger audience or to provide access to frequently sought images while preserving the integrity of the original print. Rather than being the image, the items in the digital archives at libraries and museums most likely represent another image, one that is described by the data regarding image size and technical aspects included in the digital archive. Thus, the third part of this hypothesis is supported.

The slight shifts in priority between libraries and newspapers or photographic agencies reflect the differing missions of the organizations as well as the relationship between the organization and the photographs the preserve. Newspapers and photographic agencies generally create the images in their archives and have access to complete information about the creation of the image and its content. Libraries and museums, on the other hand, generally collect images created by others, sometimes a number of years after they were created. The location depicted in the image may be more easily determined and of more relevance to the mission of a state historical library than the identity of the photographer or of those depicted in the photograph. On the other hand, documenting information about the size and type of photograph would be
important to the study of how photography was conducted during a specific period of
time or by a specific photographer as well as for providing an interested person with
some idea of the condition and level of detail to expect from the image due to its method
of creation and age. Taken as a whole, then, the purpose of these organizations is
reflected in the way the archives are presented to users, supporting the third hypothesis.
The complete breakdown of responses regarding the type of information included in the
digital photographic archives of each organization type is represented in Table 4.8.

<table>
<thead>
<tr>
<th>Information</th>
<th>Newspaper (N=46)</th>
<th>Library (N=21)</th>
<th>Agency (N=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption</td>
<td>38</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Subjects of photograph</td>
<td>38</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Location</td>
<td>35</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Photographer</td>
<td>41</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Date image was made</td>
<td>43</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Whether image has been published</td>
<td>18</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Whether image has been sold</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Date image was published/sold</td>
<td>16</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Image size</td>
<td>15</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Technical data</td>
<td>5</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Photographer’s notes</td>
<td>9</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Price for prints</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Usage restrictions</td>
<td>10</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Other Information</td>
<td>5</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>
In addition to the three hypotheses discussed, the study asked two research questions. The first research question asked about the perceived success of the development process in each type of organization. Respondents were asked specifically to rate the success of the process used to develop the digital archive in their organization as well as the success of its introduction into use. Respondents also were asked to indicate their level of agreement with five statements regarding the necessity of the archive to the organization, the appropriateness of the personnel involved with the archive creation, the degree to which a variety of solutions were offered, the open-mindedness of the organizational members in adopting the digital archive and reflection of the process of creation in the archive itself. Following the process used by Gade and Perry, the means of responses to those five statements were averaged into an overall process quotient. The response options to these questions on the survey were not numbered, but locating the positive response to the left end of the scale as outlined in the methods chapter resulted in an inverse relationship between the level of agreement and the number assigned to the response by the online survey software. Therefore, when calculating the means for the statements, a lower number indicated a higher level of agreement.

In answering the research question, an ANOVA was conducted to compare the differences between the organizational types, again using the Games-Howell approach. Representatives of all three organizational types gave a positive assessment to the archive development process. The newspaper representatives gave the process a slightly better than neutral rating with a mean of 3.15. Library representatives were more positive, with a mean success rating for the process of 2.54. The agency representatives provided the most positive rating with a mean of 2.15. The differences between newspapers and
libraries and between libraries and photographic agencies are not significant, but there is a significant difference between the newspaper and agency responses (p=.021). A similar pattern was observed in the ratings of the success of the introduction of the archive into use, though the respondents in each category gave slightly more favorable responses than they did to the creation process. The mean rating of 3.02 by newspaper respondents was not significantly different from the rating of 2.4 provided by respondents at libraries. That rating also was not significantly different from the rating of 2.2 provided by photographic agency representatives. However, there was a significant difference between the responses of newspaper and photographic agency representatives (p=.007).

Overall, the organizational representatives agreed with the statements that comprised the process quotient. The highest level of agreement came with regard to the statement “Creating a digital photo archive was necessary to our organization.” The mean of responses from newspaper representatives to this statement was 1.35, which was very close to the strongly agree response. The mean of responses from library representatives was 1.6, slightly higher and not significantly different from that of newspaper representatives. The representatives of photographic agencies were the most positive, with a mean response of 1.06. The response was significantly different from the response of representatives at newspapers (p=.006) and at libraries (p=.004).

While the respondents think the overall process was a success, they do not believe to the same degree that all the proper people contributed to that success. The least positive responses came with regard to the statement “All personnel involved with using or maintaining the archive were given the opportunity to participate in its creation.” The lowest response was again that of the newspaper representatives. The mean of 3.8 is close
to neutral on the scale of responses. Library representatives gave the statement a slightly higher level of agreement with a mean of 3.31, and representatives of photographic agencies gave the highest level of agreement with a mean of 3.08, which is close to the choice of Somewhat Agree on the scale. None of the differences between groups were significant. Whether or not the respondents believe the right people were involved in the creation of the archive, they do agree their colleagues have been open minded about implementing a digital archive. Agreement among newspaper respondents was a 2.44, with a mean of 2.26 among library respondents and 2.12 from respondents at photographic agencies. The differences between groups for this statement also are not significant.

The pattern of lower levels of agreement coming from newspapers and the highest levels of agreement coming from photographic agencies continues throughout the statements regarding the process of creating the digital archive. Newspaper respondents barely agreed that a variety of solutions for creating the archive were considered (3.73), while respondents from photographic agencies were more positive (2.19). The representatives of libraries and museums were again in between with a mean response of 3.14. The only significant difference was between the responses from newspapers and photographic agencies (p=.000).

Finally, the respondents also agree that the work that went into creating the digital archive is reflected in the end product. Again, the lowest level of agreement came from newspaper respondents with a mean of 2.71. The library respondents had a slightly higher level of agreement with a mean response of 2.54. The differences between those two groups are not significant. The photographic agency respondents exhibit the highest level
of agreement that the product reflects the process with a mean response of 1.93. The response is not significantly different from that of library respondents but is significantly different from the newspaper group (p=.007).

The varying levels of agreement among the organizational types to the different statements make determining the overall perceived success of the development process difficult. However, the process quotient provides a means of answering the question. By averaging the means of the five statements a single measure can be obtained that will reflect the perceived success of the process. Again, representatives of all organizational types provide a favorable response to the process of creating the archive. Newspaper respondents averaged a response of 2.73, which was not significantly different from the response of 2.55 attributed to respondents from libraries. The responses from photographic agency representatives fell exactly on the Agree response, with a process quotient of 2.00. The response was not significantly different from that of library respondents but was significantly different to the response from newspapers (p=.008). The means of the responses and indications of significance are presented in Table 4.9. The process quotient provides an opportunity to compare the respondents’ overall rating of the adoption process and their rating of individual aspects of the process. Among newspapers and photographic agencies the process quotient is more positive than the response given when asked to rate the success of the process. The mean rating of the success of the process by newspaper respondents is 3.15, but the process quotient for the same group is 2.37. While the difference is not as great, a similar pattern was observed in the responses from photographic agencies. Among those respondents the mean rating of the success of the archive creation process was 2.15, while the process quotient was 2.00.
Table 4.9. Process success by organizational type

<table>
<thead>
<tr>
<th>Statement</th>
<th>Newspapers</th>
<th>Libraries</th>
<th>Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the success of the process used to develop the archive?</td>
<td>3.15a</td>
<td>2.54ab</td>
<td>2.15b*</td>
</tr>
<tr>
<td>How would you rate the success of the introduction of the archive into use?</td>
<td>3.02a</td>
<td>2.4ab</td>
<td>2.2b**</td>
</tr>
<tr>
<td>Creating a digital photo archive was necessary to our organization.</td>
<td>1.35a</td>
<td>1.6a</td>
<td>1.06**</td>
</tr>
<tr>
<td>All personnel involved with using or maintaining the archive were given the opportunity to participate in its creation.</td>
<td>3.8a</td>
<td>3.31a</td>
<td>3.08a</td>
</tr>
<tr>
<td>A variety of solutions for creating the archive were considered.</td>
<td>3.73a</td>
<td>3.14ab</td>
<td>2.19b**</td>
</tr>
<tr>
<td>The staff has been open-minded about implementing a digital archive.</td>
<td>2.44a</td>
<td>2.26a</td>
<td>2.12a</td>
</tr>
<tr>
<td>The process of creating the archive is reflected in the final product.</td>
<td>2.71a</td>
<td>2.54ab</td>
<td>1.93b**</td>
</tr>
<tr>
<td>Process quotient (mean of the 5 statements)</td>
<td>2.73a</td>
<td>2.55ab</td>
<td>2.00b**</td>
</tr>
</tbody>
</table>

Lower numbers indicate greater level of agreement.

a, b: Means with common lowercase letters are not significantly different (p < .05) from one another by a Games-Howell post hoc test.

* ANOVA is significant at p < .05

** ANOVA is significant

In contrast, the responses from representatives of libraries exhibit little variation. The mean rating of the process success among library respondents was 2.54, while the process quotient for that group was almost identical at 2.55. While the data do not address why, it appears respondents from libraries have a more consistent perception of both the individual elements involved in adopting an innovation and the process as a whole.
To determine whether differences in perceived success might be related to organizational size in addition to organizational type, an ANOVA also was conducted using the responses from the different circulation size groups among newspaper respondents. There were fewer items for which significant differences were observed than in the comparison between organizational types, and the differences were all related to the highest circulation group.

When asked to rate the success of the archive development process, the mean response from newspapers of less than 10,000 circulation was 3.42, which was not significantly different from the mean response of 3.15 from the 10,001 to 50,000 circulation group or the mean response of 3.36 from the 50,001 to 250,000 circulation group. However, the mean response of 1.71 from the newspapers of more than 250,000 circulation was significantly different from two groups, the newspapers of less than 10,000 circulation (p=.034) and those of between 50,001 and 250,000 circulation (p=.039).

The newspaper respondents generally were close to neutral in their assessment of whether all the personnel involved with the archive were given the opportunity to participate in its creation. The mean response from the smallest circulation group was 3.79, which was only significantly different from the 2.29 mean response from the largest circulation group (p=.044). The mean response from the 10,001 to 50,000 circulation group was 3.93, which again was only significantly different from the response from the largest circulation group (p=.013). Finally, the mean response from the 50,001 to 250,000 circulation group was 4.05, which also was only significantly different from the response from the largest more than 250,000 group (p=.013).
The only other statement in which there was a significant difference between the groups concerned the open-mindedness of the staff to the implementation of the digital archive. The respondents generally agreed that the staff has been open-minded. The mean response among newspapers of less than 10,000 circulation was 2.63, which was significantly different only to the response from the more than 250,000 circulation group (p=.012). The mean response from the 10,001 to 50,000 circulation group was 2.36, which also was significantly different only to the response from the more than 250,000 circulation group (p=.037). The lowest level of agreement came from newspapers with circulations between 50,001 and 250,000. The mean response of 2.76 was only significantly different from the response of the largest circulation group (p=.011). While there were some significant differences in the response to the rating of the overall success of the process, when combined into the process quotient there were no significant differences between the different circulation groups. The means of the responses and indications of significance among circulation groups are presented in Table 4.10.

In answer to the first research question then, the perceived level of success between the organization types with the process of creating the digital archive is positive with some significant differences noted between organizational types and size.

The second research question asked about the perceived success of the digital photographic archive that was created in each type of organization. The process used to answer this question was streamlined from that used for the first research question. Respondents were asked specifically to rate the success of the digital photo archive in their organization. Respondents also were asked to indicate their level of agreement with three statements regarding the ability to retrieve materials from the archive, the ease of
Table 4.10. Process success among newspapers by circulation size

<table>
<thead>
<tr>
<th></th>
<th>&lt; 10,000</th>
<th>10,001-50,000</th>
<th>50,001-250,000</th>
<th>250,000+</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the success of the process used to develop the archive?</td>
<td>3.42ab</td>
<td>3.15ab</td>
<td>3.36ab</td>
<td>1.71b*</td>
</tr>
<tr>
<td>How would you rate the success of the introduction of the archive into use?</td>
<td>3.26a</td>
<td>3.00a</td>
<td>3.27a</td>
<td>1.71a</td>
</tr>
<tr>
<td>Creating a digital photo archive was necessary to our organization.</td>
<td>1.77a</td>
<td>1.23a</td>
<td>1.23a</td>
<td>1.14a</td>
</tr>
<tr>
<td>All personnel involved with using or maintaining the archive were given the opportunity to participate in its creation.</td>
<td>3.79a</td>
<td>3.93a</td>
<td>4.05a</td>
<td>2.29*</td>
</tr>
<tr>
<td>A variety of solutions for creating the archive were considered.</td>
<td>4.53a</td>
<td>3.63a</td>
<td>3.71a</td>
<td>2.43a</td>
</tr>
<tr>
<td>The staff has been open-minded about implementing a digital archive.</td>
<td>2.63a</td>
<td>2.36a</td>
<td>2.76a</td>
<td>1.57*</td>
</tr>
<tr>
<td>The process of creating the archive is reflected in the final product.</td>
<td>2.93a</td>
<td>2.75a</td>
<td>2.62a</td>
<td>2.29a</td>
</tr>
<tr>
<td>Process success (mean of the 5 statements)</td>
<td>3.13</td>
<td>2.78</td>
<td>2.87</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Lower numbers indicate greater level of agreement.
a, b, c: Means with common lowercase letters are not significantly different (p < .05) from one another by a Games-Howell post hoc test.
* ANOVA is significant at p < .05
** ANOVA is significant at p < .01

working with the interface to the archive and the ease for users to find desired materials on their own instead of relying on assistance. The means of responses to those three
statements were averaged into an overall product quotient. The differences between groups also were analyzed by ANOVA using the Games-Howell approach.

Representatives of all three organizational types provided a positive assessment of the digital photographic archive, with representatives from libraries providing the most positive rating. The mean of responses from representatives of libraries was 2.15, which was significantly different from the 2.93 mean response from representatives of newspapers (p=.011). Photographic agency representatives provided a mean success rating of 2.31, which was not significantly different from the response of either of the other groups.

As with the first research question, the respondents generally agreed with the statements that comprise the product quotient. The strongest agreement was to the statement that the digital archive has improved the ability to retrieve materials when requested. The mean response of newspaper representatives was 2.22, which was not significantly different from the mean response of 2.0 from library respondents. The strongest agreement was from photographic agency representatives with a mean response of 1.31. The response was significantly different both from the response of newspapers (p=.000) and from the response of libraries (p=.007).

The organization representatives also agree that the digital archive has made it easier for users to retrieve materials instead of relying on specialized staff to perform that task. Newspaper representatives were most neutral in their responses with a mean of 3.48, while representatives of libraries were a little more agreeable with a mean response of 2.89. The photographic agency representatives provided the strongest agreement with the statement with a mean response of 1.94. The response was significantly different from
the response provided by newspapers (p=.000) and almost significantly different from the
response provided by libraries (p=.055). The responses to this statement may reflect the
different relationships of the organizational types to their clients. The archives in
newspapers are used internally, where staff who seek images may be used to relying on
an internal library staff for assistance and have not yet become comfortable with using
the digital photographic archive. At libraries, the archives consist of, at least in part,
frequently requested images from the existing print archive. As these images are made
available through a library web site, the need for patrons to personally visit the library to
search for and retrieve images has diminished. In a similar manner, photographic
agencies work with external clients who are often physically removed from the agency’s
location. Clients seeking images had no choice but to contact agency representatives to
inquire about the existence of desired types of images. The agency’s clientele is likely to
be more homogeneous than that of libraries, and as the agencies have moved to an online
business model it may have been easier to redirect the clients to use the new tools.

There was no significant difference between groups in their assessment of the
interface to the digital archive and the ease of its use.

The means of the three statements were averaged to create a product quotient to
describe the assessment of the digital archive itself. The product quotient for newspaper
respondents was 2.94, close to the Somewhat Agree choice. The product quotient for
library respondents was a little more positive at 2.65. There was no significant difference
between the responses. Agency representatives provided a more positive assessment of
the archive with a product quotient of 1.81. The response is significantly different from
that of newspapers (p=.000) and libraries (p=.023). When comparing the product quotient
to the direct rating of the success of the digital photographic archive, a different pattern emerges than that observed between the organization types for the first research question. The product quotient of 2.94 for newspapers is nearly identical to the direct success rating of 2.93. The 2.15 direct rating of the archive success provided by library representatives is more positive than the 2.65 product quotient for that organizational type. However, at photographic agencies the 1.81 product quotient is more positive than the 2.31 direct rating of success provided by representatives of that organizational type. The means of the responses and indications of significance among circulation groups are presented in Table 4.11.

Table 4.11. Product success by organizational type

<table>
<thead>
<tr>
<th></th>
<th>Newspapers</th>
<th>Libraries</th>
<th>Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the success of the digital photo archive?</td>
<td>2.93a</td>
<td>2.15b*</td>
<td>2.31ab</td>
</tr>
<tr>
<td>The digital archive has improved our ability to retrieve materials when requested.</td>
<td>2.22a</td>
<td>2.00a</td>
<td>1.31**</td>
</tr>
<tr>
<td>The interface of the archive is easy to work with.</td>
<td>2.99a</td>
<td>2.81a</td>
<td>2.29a</td>
</tr>
<tr>
<td>The archive has made it easier for users to find what they want directly instead of relying on staff.</td>
<td>3.48a</td>
<td>2.89ab</td>
<td>1.94b**</td>
</tr>
<tr>
<td>Product quotient (mean of the 3 statements)</td>
<td>2.94a</td>
<td>2.65ab</td>
<td>1.81b**</td>
</tr>
</tbody>
</table>

Lower numbers indicate greater level of agreement.
a, b: Means with common lowercase letters are not significantly different (p < .05) from one another by a Games-Howell post hoc test.
* ANOVA is significant at p < .05
** ANOVA is significant at p < .01
Again, the responses from newspaper representatives can be examined to determine whether relationships exist between organizational size and the process of adoption. The means for each element of the perceived success of the archive become more positive as the circulation size of the newspaper increases, and the analysis of variance determined some significant difference between the circulation groups for each element.

The lowest direct rating of the success of the digital archive was reported by representatives from newspapers with circulations of less than 10,000. The mean response of 3.45 was only significantly different from the mean response of 1.57 associated with newspapers with circulations of more than 250,000 (p=.005). Representatives of newspapers with circulations between 10,001 and 50,000 provided a mean success rating of 2.91, which also was significantly different from the response of the highest circulation group (p=.012). The 50,001 to 250,000 circulation group also reported a mean success rating of 2.91, which again was significantly different from the rating from newspapers of more than 250,000 circulation (p=.035).

There were significant differences in the level of agreement between the circulation groups with respect to the statement that the digital archive improved the ability to retrieve items when requested. The mean agreement of 2.78 for newspapers with less than 10,000 circulation was significantly different only from the mean response of 1.29 from the highest circulation group (p=.017). The mean agreement of 2.19 for newspapers with circulations between 10,001 and 50,000 also was significantly different from the highest circulation group only (p=.011). The mean agreement of 2.14 for newspapers with circulations between 50,001 and 250,000 was not significantly different from the response of any other group.
The same pattern of significant differences between groups was observed with regard to the ease of use of the archive interface. Respondents from newspapers with circulations of more than 250,000 provided a mean level of agreement of 1.57. The response was significantly different from that of newspapers with circulations of less than 100,000 (3.71, p=.004) and from that of newspapers with circulations between 10,001 and 50,000 (2.96, p=.01). The mean response of 2.95 from newspapers with circulations between 50,001 and 250,000 was not significantly different from the response of any other group.

The range of mean responses between the circulation groups was greatest when considering the statement that the digital archive made the task of finding materials easier for users, with significant differences between the highest circulation group and each of the other groups. The mean response of 1.43 from newspapers with circulations of more than 250,000 was significantly different from the 4.29 response from newspapers with less than 10,000 circulation (p=.000), significantly different from the 3.83 response from newspapers with circulations between 10,001 and 50,000 (p=.000) and significantly different from the 2.82 response from newspapers with circulations between 50,001 and 250,000 (p=.018).

This pattern of significant differences is again repeated when considering the product quotient for the different circulation categories. The mean response of 1.43 from newspapers with circulations of more than 250,000 was significantly different from the 3.69 mean response from newspapers with less than 10,000 circulation (p=.000), significantly different from the 3.06 response from newspapers with circulations between 10,001 and 50,000 (p=.000) and significantly different from the 2.64 response from
newspapers with circulations between 50,001 and 250,000 (p=.022). The means of the responses and indications of significance among circulation groups are presented in Table 4.12.

Table 4.12. Product success among newspapers by circulation

<table>
<thead>
<tr>
<th></th>
<th>&lt; 10,000</th>
<th>10,001-50,000</th>
<th>50,001-250,000</th>
<th>250,000+</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the success of the digital photo archive?</td>
<td>3.45a</td>
<td>2.91a</td>
<td>2.91a</td>
<td>1.57*</td>
</tr>
<tr>
<td>The digital archive has improved our ability to retrieve materials when requested.</td>
<td>2.78ab</td>
<td>2.19ab</td>
<td>2.14ab</td>
<td>1.29b*</td>
</tr>
<tr>
<td>The interface of the archive is easy to work with.</td>
<td>3.71ab</td>
<td>2.96ab</td>
<td>2.95ab</td>
<td>1.57b**</td>
</tr>
<tr>
<td>The archive has made it easier for users to find what they want directly instead of relying on staff.</td>
<td>4.29a</td>
<td>3.83a</td>
<td>2.82a</td>
<td>1.43*</td>
</tr>
<tr>
<td>Product success (mean of the 3 statements)</td>
<td>3.69a</td>
<td>3.06a</td>
<td>2.64a</td>
<td>1.43*</td>
</tr>
</tbody>
</table>

Lower numbers indicate greater level of agreement.
a, b: Means with common lowercase letters are not significantly different (p < .05) from one another by a Games-Howell post hoc test.
* ANOVA is significant at p < .05
** ANOVA is significant at p < .01
Discussion

The results of the survey provide insight into some aspects of the process of adopting the innovation of a digital photographic archive at different types of organizations. The survey of literature related to diffusion of innovations, organizational structure and library practices provided some guidance for inquiry. Literature related to the diffusion of innovations outlined a process of adoption, from knowledge and persuasion on through decision and implementation and winding up with confirmation. However, the literature also acknowledged the process may vary depending on variables such as the perceived need for an innovation and economic factors that affect the ability to adopt an innovation or perhaps limit the extent to which it can be adopted. Organizational literature, meanwhile, suggested that organizational size, culture and complexity play roles in an organization’s ability to adopt change. The literature also addresses the impact of uncertainty on change and reasons why an organization might choose to adopt an innovation. Literature from the field of library science offers some practices for digitizing and backing up digital files as well as reasons for creating a digital photographic archive.

The survey results affirm the expectations generated by these areas of literature. From the analysis of data related to the hypotheses and research questions one can see the process of diffusion is indeed different among different types and sizes of organizations. The purpose of the organization and the relationship of the archive to that purpose are reflected in aspects of the archive. At newspapers, in which the images in the archive are components of a product that is created for public consumption, the archive is structured for internal usage with little or no public access. The archive also contains data that support the way newspapers would use the archive. Photographer’s names, creation dates
and information about the content of the image is included in the archive, but information that would not affect retrieving an image at a later date is less likely to appear. On the other hand, organizations that provide photographs directly to a client, such as photographic agencies and libraries or museums, offer a degree of public access to the archive that is different from that offered by newspapers. The information included in the archive is different as well. While the same types of information about the photograph are kept, information describing the format or technical aspects of the photograph also is included. The additional information reflects the position of the image in these organizations as the commodity being offered as opposed to a component of a separate product as it is within news organizations. As the source of revenue for photographic agencies and a type of service provided by libraries, the additional information is important to finding images that meet the needs of clients.

Organization size plays a role in the innovation adoption process as well. The responses from newspapers of varying circulation sizes reflect the greater degree of staff and monetary resources available to newspapers with larger circulations. Those papers have larger staffs than papers with smaller circulation sizes, including more specialized positions where employees may be directly involved with the archive creation and maintenance. The larger staff size also makes more people available to comprise committees to investigate innovations and guide their adoption. At smaller newspapers, which employ fewer people, staff members may have to perform a variety of duties, and the number of people who will make use of an innovation such as a digital archive is likely to be smaller than at larger newspapers. Committee involvement in the diffusion process is less likely at the smaller newspapers than at the larger ones.
Of note is the indication from the research questions that despite the differences in the adoption process between types of organizations, the respondents generally have a positive attitude toward their digital archive. They believe the innovation was necessary to their organization and has improved operations related to images within the organization. There are differences between individual assessments of the adoption process, and there are differences in the assessment of different aspects of the process between types and sizes of organizations. The significance of some of those differences also supports the position that features of the organization, such as size, complexity and purpose, influence the innovation adoption process in organizations. Clearly, adoption of innovations is not a “one size fits all” process. The following chapter illustrates some individual examples of the adoption of a digital photographic archive in different organizations.
The survey responses provide an overall view of the process of adopting a digital photographic archive within different types and sizes of organizations. The analysis of the survey responses also indicates some variance exists in the manner in which the innovation was adopted by different organizations. To provide some depth of understanding to the survey responses, interviews were conducted with representatives from nine organizations. The organizations were chosen from each of the three organizational types and from each of the circulation groups represented by the newspaper respondents. The complete rationale for the choice of each respondent is outlined in Chapter 4.

In each interview the survey responses were used as prompts to start a line of questioning. For example, one of the survey questions asked the respondent to select from choices the position that most closely matched the respondent’s job title and relationship to the archive in the organization. In the interviews, each subject was asked for their specific job title and to describe their relationship to the operation of the archive. The questions confirmed the subjects’ knowledge of the digital archive within the organization and were especially helpful for the two organizations in which the survey respondent was not the person interviewed, *The Virginian-Pilot* and *The New York Times*. From there, general questions were asked about areas covered in the survey, with follow-
up questions based on the answers given to the previous question to probe the specific areas that were unique to each organization. Following this process allowed for unique vignettes to be compiled of each organization’s process of adopting and implementing its digital photographic archive and its perceived success.

Diffusion and organizational theories provide the broad framework for guiding and understanding the adoption of innovations, but the individual examples illuminate the end result of whether those broad guidelines actually get implemented or ignored. In general, the interviews support the conclusion drawn from the survey results, that there is no “one size fits all” explanation for how innovations are adopted by organizations.

*The Norwalk Reflector*

At *The Norwalk Reflector*, staff size and the age and experience of employees is credited for a successful adoption of a digital photographic archiving system despite its introduction in a manner inconsistent with the best suggestions of organizational change scholars. The Ohio newspaper represents the category of newspapers with circulation of less than 10,000. Managing editor Joe Centers completed the survey for the organization and participated in the interview.

There are actually two digital archives at *The Reflector*. There is a collection of images taken by photographers and a searchable archive of images published in the pages of *The Reflector* or on its web site. Both systems provide greater access to images in comparison to how photographs were saved at the paper before the shift to digital technology. Like most of the newspapers in the study, the digital archive at *The Reflector* coincides with the newspaper’s transition to digital photography.
The newspaper shifted to digital cameras around 2001 or 2002. Prior to that time the newspaper used black-and-white film and made prints that were converted to halftone negatives and combined with the rest of the newspaper page to make plates for the printing press. The black and white prints were saved but were not organized or indexed in any way that would allow someone to quickly retrieve an image. If someone did want to find photographs about a specific topic, “they’d come in and they’d rifle through all the pictures and hope to find them.” With the switch to digital there are no more boxes to go through. Instead, when the photographers return from assignments they download all the images from their digital cameras to a computer. All the images are then burned to a compact disc, which is indexed by date. The photographs are not searchable by means of a keyword or caption, but if someone knows the date of an event or an assignment the search can be narrowed to a specific disc and the photographs from the assignment can be found and reviewed, whether they were published or not. “That’s a great benefit there.”

The second method of archiving photographs is part of the newsroom production system in use at the paper. The Reflector was one of the few newspapers to indicate photographs are automatically archived as part of the production system. The paper upgraded to a new system within the past two years, which matches the one-to-two year timeframe for the existence of a digital archive indicated on the survey by Centers. The current system automatically archives anything that is published in the paper or on the paper’s web site. Photographs are given a name, and that name can be used to recall the photograph at any time. “We can slug it and search for it, and if everything works right it’ll pop up for us.”
A potential danger of a digital photographic archive is that everything may not always work right. With a physical archive of negatives and prints, the materials may outlast generations of staff if proper preservation steps are taken. With a digital archive, however, if the information on a disc becomes corrupt the file is lost. Backups of the digital files are a safeguard against the potential for data loss or corruption, and the backup strategy at *The Reflector* mirrors the methods used to archive the images. Centers said when photographer Lou Reda burns a disc of images, he makes a duplicate disc. The duplicate is kept at Reda’s house, providing an off-site backup in case of disaster at the newsroom. In addition to automatically archiving published images, the newsroom production system is also supposed to create a backup file of the images. Centers was not sure, however, whether those expectations were being met. “We were supposed to have it, but I’m not quite sure.” Centers noted that on the day of the interview the newspaper’s technical support employee was working on the advertising part of the system. It had crashed two days earlier, and the staff was not sure whether everything on the system had been lost or not.

The system of backing up all photographs taken to compact discs seems to have been developed internally by the newspaper staff, but the choice of the newsroom system that includes the archive of published images was mandated by the publisher. Rather than involving the newspaper staff in exploring options and needs for a newsroom system, the publisher determined what system would be used based on his familiarity with its use at another newspaper. The method of introduction could have created a high level of uncertainty and resistance to the change, but overall that was not the case at *The Reflector*. Centers believed the size and age of the staff played a role in the successful
introduction of the upgrade to the newsroom system. The newspaper has a small staff with only nine people in the newsroom and another five in the production area. In addition, much of the staff is relatively new to the newsroom and had been familiar with better systems at their previous places of employment. “A couple of them stepped back when they came here, so they knew this was a good step forward.”

Providing on-site training on the operation of the new system reduced the potential for uncertainty. A representative came from New York for two weeks to train users in the newsroom. “The way we did things changed, and that was quite a process there.” While the new system did require the users to learn some new procedures, they were already familiar with an electronic system of newspaper production, and the publication cycle of the paper did not change. As Kimberly noted, innovations stand a greater chance of successful adoption when they have a minor impact on the organization’s already-established routines and practices.\textsuperscript{137} Despite the top-down introduction of the new digital archiving technology, the characteristics of the organization and its staff coupled with the relatively slight impact on the organization’s established routines allowed a successful adoption of the innovation. Centers summed it up. “It was a pretty good transition for us.”

\textit{The Jackson Citizen Patriot}

The digital photographic archive was considered a successful innovation at \textit{The Jackson Citizen Patriot}, but the method of selecting and introducing the technology was not rated as favorably. The Michigan newspaper represents the category of newspapers with circulation of between 10,001 and 50,000. Newspaper librarian Suzanne Weible completed the survey for the organization and participated in the interview.
The *Citizen Patriot* is similar to *The Norwalk Reflector* in that both published and unpublished images are kept in the paper’s digital archives. The process is somewhat different at the Jackson newspaper however. Weible said the photographers are the first ones to determine which images from an assignment are saved. When the photographers return they review their photographs from the assignment and make an initial selection of images, which are saved into a folder in the newspaper’s computer system. The initial edit means that some photographs that are taken may disappear, unlike the days of film when every negative was saved in a file. The historical record represented in the *Citizen Patriot* digital archive may be incomplete as photographers decide which images to save and which ones to delete. However, photographers are encouraged to save more, rather than fewer, images as the photography editor’s philosophy is, “If you shoot it, we save it.”138 The photographers enter captions and keywords for the images that are saved.

Once the photographer’s images are placed into the folder in the computer system, the editors select the photographs that will be published. Following publication, Weible assigns additional information to each published photograph, including the day and page of publication, any additional keywords necessary and any information not in the original caption. The chronological information has been useful for the paper to retrieve images and fulfill requests for reprints from the public. Both sets of images, published and unpublished are saved in the newspaper’s archive system.

One unique aspect of the archive at the *Citizen Patriot* is that the computer system is shared with another paper within the company. “We are piggybacked with the Kalamazoo Gazette.” The archiving system is housed at the Gazette, 66 miles from the
Citizen Patriot, which electronically places its files into the archiving system. The Citizen Patriot does have an in-house backup to the shared archive but has not had to use it.

The process of introducing the archive at the newspaper was somewhat collaborative but took a long time to accomplish. Weible has been with the newspaper since 1989 and had been told when she started that an electronic system would be in place in about two years. Those two years stretched to about 16 as the newspaper became the last in its chain to implement a digital archiving system in 2005. A committee was formed to explore the options for an electronic archive system. Photographers, reporters and editors were represented on the committee along with Weible but did not necessarily participate equally in the process. Weible strongly disagreed on the survey with the statement that all personnel involved with using or maintaining the archive were given the opportunity to participate in its creation and was neutral toward the statement that a variety of solutions were considered. Instead, corporate representatives showed the committee the available options for a solution and steered the committee toward the desired product. Weible was involved in the process for input but had no decision-making power when it came to the selection of a system. “I resigned myself to ‘just tell me what you want me to drive and I’ll drive it.’”

The incident illustrates a pattern of communication within the organization in which employees who are affected by decisions are often not informed of them directly. Weible said being out of the loop of communication is common. The newspaper’s management had talked about implementing an archiving system six or seven years earlier, but at decision time the management directed the money toward a project for the advertising department instead. Rather than hearing about the decision from management, Weible
said she heard about it from a fellow employee in the lounge. There was no follow-up communication regarding the decision either, which Weible said is one of the things she’s had to deal with. In a more recent incident, a decision was made to move photographs from one system and place them into another one. Weible said the decision was made without consulting with or informing her of the change. The migration began during working hours and slowed the performance of her system. The newspaper’s IT consultant looked for a solution for two days before someone mentioned migrating the photographs. Once the problem became known the process of migrating the photographs was changed so it would not interfere with the performance of the system during the times she needed it to work at its best.

Despite the centralized decision-making in the adoption process, the archive itself has been considered a success at the newspaper. Weible agreed that creating the archive was necessary to the organization and has been a success in practice. “I’m not really disappointed in the system.” While her workload has not changed with respect to archiving the images, there is less traffic in the library as reporters retrieve needed items on their own. The reporters Weible works with most are the older ones who have not become as adept at using the digital archiving system.

The experience at The Jackson Citizen Patriot is another illustration where the innovation to be adopted did not fundamentally change the mission or operation of the organization. The centralization of the decision-making regarding adoption of a solution, at least from the librarian’s point of view, could have created a high level of uncertainty and resistance. However, benefits of the system and its fit within the organization’s operation of publishing a newspaper allowed the innovation to be considered a success.
The Virginian-Pilot

Centralized decision-making played a role in the selection and acceptance of a digital archive system at The Virginian-Pilot, though the paper shares some characteristics of the actual archiving process that have already been examined. The Virginia newspaper represents the category of newspapers with circulation of between 50,001 and 250,000. Newspaper librarian Ann Kinken Johnson completed the survey for the organization but suggested director of news technology Steve Dandy could better describe the daily use of the archive. Dandy participated in the interview.

The Virginian-Pilot switched its archiving systems in early 2005. The prior system was the newspaper’s primary production system but was also the repository for all the images. The newspaper librarians were responsible for archiving all the photographs, but Dandy said the system was not structured well and did not support the needs of different departments. For instance, if the advertising department needed a photograph from the news system, that image had to be exported from the system, printed and taken to the advertising department for use. Dandy described the new system as a comprehensive, database-driven publication system that serves all departments of the newspaper, making it easier to share items between departments.

Like the system at the Jackson newspaper, photographs are added to the Virginian-Pilot archive in two ways. Photographers first edit the images they take on an assignment. The selected images are dropped into a folder in the newspaper’s computer system, and those unpublished images are automatically added to the newspaper’s digital archive. From there editors decide which images to publish. The Virginian-Pilot librarians add published images to the archive, whether taken by staff or from the newspaper’s wire
services, adding data about the date of publication, etc. to the image as they go. In the case of images taken by staff photographers, the system recognizes that the file is already in the archive and simply appends the data to the information associated with the file. If the image is used again, the new date of publication is also added, making it possible to tell how many times a file photograph has been used.

Like the situation at the Jackson paper, not all images taken are necessarily selected to be uploaded into the computer system. The historical record represented by the archive is an edited one, illustrating the concern scholars have raised about the historical record that will be available to future generations. Dandy agreed that images are disappearing but believes the situation is “not as extreme as it sounds.” Photographers at the newspaper take numerous photographs on their assignments, perhaps as many as 150 or 200 when covering a college football game. When returning to the newsroom the photographers will delete images with technical flaws that would prevent the images from being published and from the remainder select eight or 10 photographs to enter into the computer system for the editor to choose from and may go back later and add a few more. As far as the newspaper’s record is concerned, that event is captured in those images that are saved.

“That seems like an awful lot of pictures lost forever due to the technology.” However, Dandy said, even in the days of preserving prints and negatives images were not easily retrievable and went unused. “Although technically the possibility of being able to retrieve any of these images existed because they existed on a negative in a sleeve, the reality is most of them were no more really available than those digital images that you’ve deleted because you’d never be able to find the time or the manpower to look
at them anyway.” In other words, the mere existence of the images does not mean they will be useful, especially without the indexing capabilities offered by the digital archiving system. “The reality is, if you’ve ever worked in a newspaper, after about a year you’re never going to find them anyway.” The digital archive contains fewer images from an assignment than would have been preserved on sleeved negatives, but the digital images are more accessible and, therefore, of more potential use. Historians who, if granted access, may have the time to sort through sleeves of negatives to research a topic may disagree that the ability to retrieve images outweighs the shortcomings of the edited historical record. From the perspective of publishing a daily newspaper though, where deadlines occur on a regular basis and time spent looking for an image that may not be accessible is time wasted, Dandy’s point of view is understandable.

There was some resistance to the new system when it was introduced. The librarian responded on the survey that she was somewhat dissatisfied with the process used to develop the archive, and Dandy noted there was resistance from the staff. Despite the indication that a committee was formed to explore options for an archive system, there was no indication user input was considered in the purchase decision. One reason for conflict might be differences in priority between the newsroom staff and the business side of the paper. “A business decision was made to acquire a system that would help grow the business.”

Management did provide training on the new system when it was introduced, but Dandy noted flaws in the initial system that was adopted made a smooth transition impossible. There are still aspects of the system the newspaper staff does not like and that represent a big change “from the way were doing things to the way we are doing them.
now.” Ironically, one of the strengths Dandy noted of the digital archive, the ability to search for and retrieve photographs, is one of the problems of the system in use. Currently, searches require a user to perform multiple steps; missing any one of which will impact the search results. The inability of the reporters to find items they are looking for leads them to seek out the librarians for assistance, which, Dandy said, adds to the frustration felt by the librarians. That frustration with the system may be reflected in Johnson’s survey response of dissatisfaction with the adoption process and neutral responses to the statements that the archive interface is easy to work with and the archive has made it easier for users to find what they want directly instead of relying on staff. The newspaper continues to work with the vendor to implement a better search solution.

Overall, the benefits of the digital archiving system seem to outweigh the problems with its introduction and some aspects of its operation. For Dandy, at least, the efficiency gained through the interconnectedness of the overall system is a benefit to the company as a whole. “We still barely make our deadline every night, but we’re doing more in the same amount of time.”

The New York Times

The newspapers already discussed have considered digital archiving systems as parts of overall newsroom systems that would better organize a growing collection of digital photographs. At The New York Times, the archive system was developed as part of the initial transition to digital photography. The newspaper represents the category of newspapers with circulation of more than 250,000. Deputy photography director Dave Frank completed the survey for the organization but was unable to continue his participation through the interview. He suggested Nancy Lee, vice president for business
development and former picture editor at the Times, would be a better source with whom to discuss the role of the archive at the newspaper. Lee participated in the interview.

The Times uses an archiving system known as Merlin. The company’s Content Manager product is in use at a number of newspapers of varying circulation size, including the Virginian-Pilot before the upgrade to the newspaper’s current system. Lee said Frank worked on developing the Times archive using Merlin at the time when more photographers were making the transition to digital cameras. The paper started with the off-the-shelf Merlin system, but Frank noted the paper pushed the vendor to make changes to the system that would meet the newspaper’s needs before it was purchased.

As at other newspapers, not every photograph made for The New York Times finds its way into the archive. When photographers send “from the field they would certainly send the top one or two pictures and then later on bring the rest of it into the office” to copy onto compact disc. More of those images could also be entered into the Merlin system to be available for publication in the newspaper or on the web site, but there is no guarantee that any more of the images would be saved to the archive. Another issue is the information that accompanies the photographs in the archive. Lee said some photographs, even ones that are included in the archive, might have incomplete or very general information that broadly describes the location depicted in the photograph but is of little use to determine the identity of the subjects or the activities in which they are engaged.

Before making the transition to digital technology the New York Times photographers made images on film and selected negatives from which to make prints. The newspaper still keeps its archive of “about seven million” prints as well as the negatives that were made. “So we, in fact, have three archives at this point. We have a hard copy archive, a
negative archive and a digital archive.” The prints are indexed, which provides a means to search for images on a specific topic and then locate the appropriate prints. The negatives were not indexed in the same manner, and if the negative was filed without being printed, “you don’t really know that it’s in there.” The Times is not systematically converting its archives of prints and negatives into digital images. The cost of digitizing the entire archive is too great when most of the images will not be needed in a digital form. However, the newspaper staff has been creating a digital catalog of the keywords from the captions associated with the negatives. The digital catalog will allow users to search for and locate negatives that were not printed.

The feature that makes the New York Times digital photographic archive unique from many others is its relationship to the newspaper’s online store, www.nystore.com. Among the items for sale on the site are prints from the Times archives. Many of the photographs are from the print archive, but digital images are included as well. The digital archive is meant for internal use and is not accessible through the store, but the archive is used to search for photographs or create collections of photographs that are then transferred to the online store for sale. Lee said the more popular images on the store are from the print and negative archives, but that will change with time. “Pretty soon what’s in the digital archive now will be vintage and people will be interested in this view of events.”

The sale of photographic prints has created a significant revenue stream for the newspaper, but it is also forcing the newspaper to consider an issue that was not reported by the other newspapers: digital storage. The number of images in the archive increases on a daily basis, requiring more and larger computer hard drives to hold them all. In
addition, to make high-quality prints for sale the images must be saved at a higher resolution than would be necessary for publication in the newspaper alone. Both factors together mean the Times is approaching the limits of its current digital storage abilities. “We haven’t hit a storage limit yet, although I think we’re approaching it. We’re just in the process actually of talking about this right now because we are selling so many more pictures and we need such a higher resolution, this requires more storage.”

Lee said the editors at the newspaper are considering two separate issues as part of the plan to alleviate the concern over storage space. One question to be considered is the resolution at which photographs need to be saved in the archive. The higher the resolution of the image the longer it takes to transmit from the field and the longer it takes to appear when called up on the computer system. The staff is considering how to balance the desire for high-resolution images with the demands of the newspaper’s deadline. “It’s really, in many ways, up to the newsroom because the sale of pictures is secondary, obviously, to anything else that happens to them. Their (the photographs) first and foremost reason for existence is to enhance the journalism of the New York Times, so that really has to be a picture desk call.”

The second area of consideration is the contents of the archive. The Times is not considering editing the archive to get rid of images, but one option might be to divide the archive. Lee said this option might involve keeping the past year’s images in one archive and moving all the other images to a “deep archive.” Splitting the archive would not affect the day-to-day production of the newspaper or its web site, but users looking for older images would have to search a different section of the archive to find the files.
There was some resistance to the introduction of digital technology at the Times, but the resistance was not specifically to the digital photo archive and its operation. Lee explained the archive was a necessary offshoot of the transition to digital photography, which was the primary change at the newspaper. The transition was a gradual one at first but eventually became mandated by the company. She said some photographers hated using digital cameras and some would still prefer to use film, but the digital technology is standard for the industry now and cannot be beaten for the speed it offers for gathering photographs. “Change is difficult for most people, especially when the change involves a paradigm shift in their industry.”

The Times seems to have shared a characteristic with other newspapers in that a change was mandated without broad input from the staff, but in this case the group that had the most direct connection to the digital archive was the one making the decision. While the rest of the newspaper’s staff may have suggested some other aspects to consider, the needs of those responsible for getting photographs into print were the ones that were considered. Another characteristic shared by all the newspaper representatives interviewed is that the digital photographic archive has been a benefit to the organization. The Times also shares a characteristic with representatives of another organizational type in the study. It may not be surprising given the newspaper’s long history as a paper of record, but maintaining a physical archive of prints as well as a digital archive is a characteristic of historical libraries and museums as well.

Utah State Historical Society

A major difference between the archives at newspapers and at historical libraries and museums is the level of public access to the archive. Newspaper archives are meant to be
used internally, while organizations like the Utah State Historical Society make their
digital archives available to the online public. Susan Whetstone, the curator of
photographs, maps and architectural drawings for the library, completed the survey for
the organization and participated in the interview.

Patrons to the Utah State Historical Society can physically browse about 30,000
prints kept available in a “reading room” at the society’s research center, and that group
of prints is “a drop in the bucket” compared to the overall photographic holdings. The
collections of prints are described in online registers that give general information about
the content of the photographs, their origin and the call number for locating them in the
library, but the images are not viewable online. The digital photographic archive that is
viewable online is a drop in the bucket compared to the number of prints in the reading
room. Digitizing and offering all the prints in the society’s holdings would be impossible
to accomplish, so the staff makes choices about what to digitize and present online based
on theme or based on user interest. “If there’s a huge, really interesting collection we’ll
focus on that…. We’re doing a lot of high-use items, plus specific collections that are of
interest.”

Volunteers do the actual image scanning at the historical society. Scanned images are
saved to compact discs and then sent to the University of Utah. The historical society
does not maintain the actual digital archive but partners with the university library to
manage the large photographic databases. The society staff monitors the databases and let
the university staff know if there are errors to be corrected. The university stores the
digital images on multiple hard drives, which allows for a backup system in case of
system failure or the files become corrupt. The society keeps the cd and dvd discs the
images were originally scanned to, which provides another form of backup for the archive. Whetstone had indicated on the survey that images were open and resaved on a schedule to make sure the file formats are up to date. Organizational literature suggests management support aids change to be successful, but in this case management did not need much prompting. “We had a director that was just really quite digitally oriented and very good with computers, and he realized a lot of the importance of backups and generation changes…. Technology shifts, and photos don’t last forever.” While the philosophy is instilled in the society, the practice has not occurred. Whetstone said the society is aware the images need to be monitored to make sure they remain usable, but so far they have not had to update them.

Creating the archive was a collaborative process. Whetstone said the process started within the organization in the late 1990s. The director and library staff were involved in outlining the concept of the archive and how it would further the organization’s goals. The group would not represent the whole of the historical society staff but would represent largely the staff involved with the society’s photographic collections. The University of Utah staff was involved at an early stage too as consultants on technical matters related to the archive. Once the committee finished its work, Whetstone was responsible for selecting the photographs to be added to the archive. The archive’s users play a role in its maintenance too. Whetstone said the users do let the society staff know when there’s an error related to an image and have helped to identify people in photographs, but they do not comment much about the style or presentation of the archive. “When the whole setup was initially put on people were happy with it because it showed so much information.”
The ability to access the digital photographic archive online has drawn users to the society’s web site and raised awareness for the society overall. Whetstone said the number of visits to the site has increased while requests for prints have decreased.

**Harry S. Truman Presidential Museum and Library**

Drawing on the expertise at a state university is not unique to the Utah State Historical Society. University staff and students help maintain the digital photographic archive at the Harry S. Truman Presidential Museum and Library too. Amy Williams, supervisory archivist at the Truman library, completed the survey for the organization and participated in the interview.

The photographic archive at the library emerged as changes to the existing document database were being contemplated. The document database relied on proprietary software that had become outdated and needed to be upgraded or replaced. The library wanted a more modern solution that would comply with the Dublin Core standards for describing materials. Libraries use the standard to organize data about items such as photographs, making it easier to share information between different entities. As a presidential library the Truman library is part of the National Archives and Records Administration, and the staff had to consider the Archival Research Catalog (ARC) standards mandated by NARA in the design of the digital archive as well. However, the Truman library staff did not have the resources to undertake the project on their own. “We can build web pages, but we can’t build a database.” With a grant in hand from the State of Missouri, the library contracted with the Center for Technology Innovations in Education at the University of Missouri – Columbia to build the database and store the electronic images.
The process of creating the archive was a collaborative one between representatives of the Truman library and the CTIE.

The digital archive is structured so that the photographs are individually saved and the data about the photographs are saved in the separate database. A user accessing the digital archive through the Truman Library web site can search for information in the different data fields or simply browse the collection. When specific images are selected, the web page combines the image with the information from the database. The library staff does not view the database as a permanent version, and the relationship of the data to the photograph means that if standards change or as new information becomes available the data can be updated without needing to alter the digital image. Likewise, the way the data are displayed on the page can be changed without changing the digital photograph. “The beauty of the way the system is built is that we can change it.”

When changes are to be implemented, the CTIE staff assigned to the Truman Library project makes the changes on a “development” server. The library staff can test out the new version and comment on it, and the CTIE staff can make revisions and allow more testing. Once everyone is satisfied, the new version can be moved to the server that will display the information on the library’s web site. Thus, like the initial archive creation its ongoing evolution is a collaborative process between the two partner organizations. Williams said the arrangement with the University of Missouri has been wonderful.

Like the Utah State Historical Society, the digital photographic archive of the Truman library represents only part of the organization’s overall photographic holdings. The digital archive grew out of collections of prints the library staff had assembled. Williams said they noticed an increase in the number of high school and undergraduate college
students coming to the library to do primary research with the collection but without the knowledge of how to go about it. It took extra work for the librarians to not only find the materials for the students but to teach them how to use it. The situation led the staff to construct collections of documents on popular topics, resulting in 54 student research files. When the time came to move to a digital archive, the contents of those files were scanned and put online categorized by subject. The library staff prefers to stick with subject collections rather than trying to present a complete digital version of the library’s print holdings. Williams said the subject collection reaches a broader audience, while making everything available online would overwhelm users.

The Truman library staff is also aware of the possibilities of file corruption or format obsolescence. As at the Utah State Historical Society, the awareness of the issue is not reflected in a regular practice of opening the digital images to verify their viability and resaving them to update their format. Williams did note though that some of the most popular requests for prints come from the earliest scans, so in the course of fulfilling those requests the digital files are evaluated. The library would always have the original prints to go back to in the event of a digital file failure. The digital archive is a representation of the print archive rather than a replacement, as its purpose is to increase access to the images rather than for preservation.

For the Truman library, the benefit of the digital archive has been its ability to present material to a broader audience. The ability to look at prints at the research library is limited by its hours of operation, but the online archive is always available and is available worldwide. At the time of a ceremony held at the library to add three new nations to the North Atlantic Treaty Organization the staff noticed an increase in activity
on the web pages related to the library’s online collection of materials related to NATO’s founding. The increased traffic largely came from web users outside the United States. The library also has benefited as people who would not otherwise see the images are able to look at them online and identify subjects depicted in the photograph or update the data associated with it. “It helps our ability to complete our mission.” The drawback to the digital archive is that as users encounter the images that are available online they want more to be added.

The two organizations representing libraries and museums have different uses and expectations for their digital photographic archives from that at newspapers. At these organizations, the archive is meant to be viewed by the public rather than being limited to an internal production tool. The archive also represents only part of the overall photographic collection of the organizations. These features are also characteristics of archives at photographic agencies, even though the agencies have a somewhat different objective.

Contact Press Images

What images to digitize and make available online is a question the staff at Contact Press Images is considering as the agency creates its digital photographic archive. Contact executive director Jeffrey Smith completed the survey for the organization and participated in the interview.

Contact was founded in 1976 by Robert Pledge and David Burnett, who dedicated the small agency to the production of in-depth color feature stories focused largely on human rights issues. In that time the agency has created a physical archive of photographs. Contact staff members do most of the searching for photographs to fulfill client requests,
though some researchers have come in to search the prints themselves. The agency has a web site, but Smith said the site has showcased the portfolios of the individual photographers rather than presenting a collection of work that would define the agency.

Like the organizations that represent libraries and museums, Contact does not plan to convert all its prints to digital files, but the scope of work that would represent the agency in a digital archive has been a topic of an internal company struggle. As a small agency, the archive has not so much been created through the work of a committee but through the input of the agency’s managers. “We’re a small shop, and there are differences of opinion regarding what we should put out there.” One of the voices in the discussion belongs to one of the agency’s founders, who is the president and editorial director. “Robert feels there should be a tighter selection online.” That tighter selection would represent a small part of the population of images in Contact’s library. Smith, on the other hand, advocates including a wide selection of photographs that would reflect Contact’s profile but also include photographs that would be different from what other agencies offer. He believes Contact’s point of view, exhibited through the work of the agency’s photographers, is what makes Contact unique and should be the focus of the online archive. “People don’t come to us for a cow on a hill looking left. They’re looking for something different.”

The desire to create the online archive does not solely lie within the ranks of Contact’s management. The photographers represented by the agency also support the creation of the archive, and if they had their way all their work would be included. “They don’t really care how you do it, but they want it up there.” An idea was proposed to have each photographer select a certain number of his or her photographs for inclusion in the
online archive. The potential problem with the plan reflects the basic question of which master the archive is meant to serve most, the photographers or the agency. With no central unifying concept defining the subject range of the photographs or the type of client being targeted, the archive would become a collection of portfolios, as the current web site already is. The photographers have a point of view about their own work, but that point of view may not match that of the agency as a whole or what the clients are seeking.

Another voice in the debate belongs to Tim Mapp, who has been the person in the agency working full time to manage the archive creation process. Mapp makes informed decisions and recommendations to the other managers about the archive and, therefore, may be the person who tips the balance when it comes to the scope of the archive. “Tim’s professional opinion is that the database should be as complete as possible.”

The internal debate over the contents is not the only reason the agency does not have an online digital archive yet. The agency is small in staff, and people get pressed into service to work on projects as they arise. The staff has been working on developing the archive as they have time for two to three years. “It drags the process out with not necessarily the best results.” Mapp has recently relocated to the Paris office of Contact. The pace of work is slower there, which Smith hopes will give Mapp more time to spend on developing the archive.

The delays in developing the archive have given Contact a wider range of software products from which to choose. Smith said when the agency started exploring options for a digital archive they might have opted to have the software custom-built for their needs. Now there are more products readily available off-the-shelf that can be used to build an
archive. Not every product is an exact match to the needs though, and one of the weaknesses is in the software’s ability to store keywords and make them available for searching. Contact is planning to use a solution offered by PhotoShelter, which bills itself as “the industry standard for online archiving, distribution and sales of images for the independent professional photographer,” and Smith said Contact is trying to push the company in the area of keyword searching.

Working with an outside company to host the online archive will provide Contact with additional protection for backing up the digital photographs. PhotoShelter has redundant servers on the East and West coasts of the United States, so if all the data were somehow lost in one location it could be restored from the other location. Contact also keeps images on its own hard drives within the agency, providing another source of data recovery in case of disaster.

Contact’s archive should be online in early 2007, whether debate over the content and presentation of the digital archive is concluded or ongoing. “You don’t have to wait for 50,000 images” before making the archive available, Smith said. Rather, it is better to get the archive online sooner rather than later, even if the first version is not perfect.

Magnum

Magnum is an older organization with a different structure than Contact. The agency was founded in 1947 as a cooperative group of photographers rather than as agency that recruited photographers. Despite the differences in age and structure, Magnum and Contact share some characteristics regarding the approach to a digital photographic archive. Magnum archive director Matt Murphy completed the survey for the organization and participated in the interview.
Like Contact, the Magnum staff is fairly small. Six to 10 people in Magnum’s New York City office work with the archive. Murphy and two other directors are responsible for organizational aspects related to the archive. They meet weekly but exchange email daily to make sure they are all seeing the same issues. The New York staff’s primary responsibility is using the print and digital archives to assemble collections of images for display on the Magnum web site.

In addition to the characteristics shared with Contact, Magnum’s archive shares similarities with the other organizational types in the study. Like the archive at some newspapers, the digital archive does not contain all the images taken by photographers. The current work that is being added to the archive is initially edited by the photographer. As a cooperative, the photographers create their work and offer it for sale through the agency rather than being assigned by the agency to produce an assignment. The photographers determine which images to include, and those are added to the digital archive. “They give us a lot of trust, but in the end they have the final say. We’re working for them.”

And as with Contact and the libraries presented earlier in this chapter, the digital archive does not reflect the entire collection of prints in Magnum’s archive. Magnum claims a physical archive of about a million prints and transparencies, with 350,000 images available online. Magum’s archive staff selects and edits items from the prints and transparencies to convert to digital format for the archive.

The New York staff uses three strategies to identify images for inclusion online, and tracking views on the web site figures into the strategies. The web site allows the Magnum staff to see what keywords are being used to search for images and what photographs are being viewed, giving them general insight for identifying similar images.
that might be of interest to clients. “On a very steady level we try to scan for what people are requesting.” The staff also looks at where the requests are coming from and the content of the photographs that are sold. Murphy said they noticed most of the requests were coming from the United States, leading the staff to include more photographs depicting the United States. In addition to looking at the types of images that are steadily requested, the staff identifies requests that are topical at a certain period of time. In July 2006, Israel’s military had crossed into Lebanon and was bombing Beirut as part of its campaign against Hezbollah. Magnum clients were requesting current images of the conflict, but they were also requesting images from the 1950s, when Beirut was a cosmopolitan city and a popular vacation destination. The requests suggested a specific topic area that could be collected into an online gallery. “The strength of the archive is Magnum’s history.”

Magnum’s archive is a bit older than Contact’s and was developed specifically for the agency instead of through the use of off-the-shelf software. “They started the job of scanning and storing images in preparation for the digital database back in the mid-90s.” The actual digital database was first launched and tested in Paris about 2000. The database was later tested in London and New York, with the working version of the digital archive put into use in New York in May 2001. The archive was made available online through the Magnum web site about six months later.

Photographs make their way into the archive through one of two paths. Photographs the staff believes clients are going to want very soon are digitally processed to ensure the best quality and a high-resolution version of the photograph is put on the site. Clients can select that image and, upon approval from the agency, can download it for use. Other
photographs are also scanned at high resolution but are saved to compact discs, and a smaller version of the photograph is produced for the web site. If a high-resolution version of the image is requested it is digitally processed and moved onto the web site for client access. Once the photograph enters the archive and is available through the Magnum web site, it stays in the archive.

Magnum keeps backup copies of the archive to guard against data loss, but Murphy did not indicate that the agency takes steps such as opening and resaving files to ensure they remain viable over time. However, the agency may be achieving the same purpose as part of its continuing adoption of technology. As more advanced scanners become available, some of the existing work gets rescanned to produce images with better quality. Murphy said the first work scanned was the work of Magnum’s founders, and those images have probably been rescanned three or four times by now. “We’ll keep on scanning certain images over and over again as the quality improves.”

One of Magnum’s reasons for initially going online with a digital archive was to keep up with the competition. Other agencies were doing the same thing at the same time, and Magnum did not want to fall behind. But the perceived benefit has been greater than just keeping up with the competition. Murphy said archive is essential for sales, but its best feature is that the world can see the work of the Magnum photographers. Advancements in technology continue to impact the archive. A new web site and version of the archive was due for launch in the fall of 2006. The database aspect of the archive was not scheduled to be changed, but access to the production processes associated with the archive was going to become more accessible. With the correct security clearance, a
photographer or archivist will be able to submit images or make modifications to the data via the internet from anywhere in the world.

Aurora Photos

Aurora is a young agency and is somewhat a product of photography’s digital age. José Azel and Bob Caputo started the agency in 1993 as Aurora and Photos Productions to incorporate both traditional photography and digital media. As a relatively new agency, Aurora has some unique characteristics in comparison to its older competition, but as a commercial photographic agency, Aurora does share some common characteristics with Contact and Magnum. Aurora archive supervisor Karl Schatz completed the survey for the organization and participated in the interview.

Aurora is a stock photo agency. Its collections feature news-editorial photographs as well as photographs depicting travel and the outdoors. Where Contact and Magnum often work with picture stories or in-depth projects, Aurora works on the basis of single images. Photographers do not receive assignments from Aurora, but Aurora does let photographers know about the topics the agency would be interested in seeing. The arrangement means a photographer is not limited to submitting work solely through Aurora but could have images with several stock agencies.

Another difference is that Aurora does not rely on a production staff that prepares photographs for inclusion in the digital archive. Given its age, the agency does not have a large collection of prints, negatives or transparencies to convert to digital, and the photographers now submit nothing but digital images to the agency. A photographer may make images on film, and an Aurora staff member may work with the photographer in the process of editing the film. From that point though, the responsibility for creating and
submitting the digital image rests with the photographer, not with the agency. That relationship does not necessarily mean less work for the Aurora staff. “That’s sort of the goal, and that would be the ideal. It’s a lot of work on our end, in terms of… guiding the photographers. For some photographers it’s a steep learning curve to try to get us digital files in the manner in which we need them.”

Aurora has guidelines outlining the technical requirements for the digital images and the data that must be included. One of those guidelines is that photographers submit images as JPEG files instead of using the TIFF format. Photographers are encouraged to keep TIFF copies for themselves, but Aurora only works with high-resolution JPEG files. The decision has less to do with what clients expect than it does with more practical concerns within the agency. “We don’t have the storage capacity to hold 200,000, 300,000 high-resolution TIFFs.”

Aurora’s digital archive has evolved over the span of a decade, beginning when the agency still dealt primarily with analog images. “It’s something that has evolved over really probably 10 years, so it’s not like there was a committee that sat down at one point and said OK we’re going to design an archive or a digital archive or a web archive, and it ended up exactly what we have working today.” The first evolution of the archive was a database of text that related to an image. The next step brought digital images into the database with the text. From there a web presentation was created. That evolution became the Independent Photography Network, a “cost effective, browser-based application for stock agencies and photographers,” which is the engine behind presenting Aurora’s digital archive on the World Wide Web.
The ability to track where images go and how they are distributed is a feature that may make its way into the next evolution of the archive, but any evolution may also involve looking back at the archives’ past. Schatz said Aurora was one of the first agencies to take digital technology seriously. The agency’s early adoption of the technology meant they did a lot of “beta testing” for other agencies that were watching the process from the outside. “It’s great to be the first, but you also make a lot of mistakes for other people in doing that.” The early start and continuing evolution of the archive means there may be some artifacts from earlier versions that could be changed, but “you have to keep moving forward as best you can.”

The process of evolution for the archive has sometimes been collaborative within the agency, but not always. The specific change and the range of its impact on the staff is a consideration when deciding how collaborative the process will be. “Depending on what the issue is it may be something that we get together and talk about as a group in the office of the people who would be involved in utilizing a feature. If a feature is needed, deciding what that feature would be and how that feature would work. Or it may just be myself or Jose Azel, who’s the president of the company, working with IPN to create some new functionality for the web archive that we need or maybe coming up with some in-house solution that may be local in the office.”

Like most of the other organizations examined, Aurora keeps its own in-house backup copies of the digital archive. But the relationship with IPN provides another backup source, as that organization keeps backup copies of all the images on its web site. Aurora also does not make a practice of opening and resaving images to verify their
quality. Doing so might actually cause more harm than good in Aurora’s case as the compressed JPEG files actually are re-compressed and lose quality when saved again.

Whether the evolutions have been collaborative or not, Schatz considers the end result to be very successful. The biggest benefit is “…being able to have a user search the archive themselves and find the image they’re looking for so you don’t have to rely on an internal research staff.” Aurora also benefits from the ability to get files to a client quickly. “For a stock agency, the archive is everything. That’s how we make our money.”

Discussion

The experiences of these organizations illustrate the differences and similarities in the process of adopting a digital photographic archive by organizations with different goals and missions. Individually, the stories provide glimpses into nine different organizations and how this common innovation, the digital photographic archive, has been incorporated into their operations.

The survey analysis indicated variables such as organization size and type or mission are reflected in the manner in which the archiving system was developed or procured and the way the archive was introduced into use in the organization. The organizational type also affects the role the archive plays within the organization, ranging from a tool that is used to keep track of assets used in a production process to being the vehicle through which an organization’s wares are offered to and procured by clients. The examples provided in these individual stories support the survey findings. The different organizations did have unique characteristics in terms of the way their digital photographic archives were created. Some organizations were more collaborative, incorporating ideas from different representatives whose work would be affected by the
decisions made. The examples of the Utah State Historical Society and the Harry S. Truman Presidential Museum and Library illustrate collaborative ventures that even included incorporating partners from outside the organizations. The newspapers, on the other hand, generally illustrate a more centralized decision process that was not always focused on storing and retrieving photographs but gave priority to other business concerns instead.

For all their differences though, the individual stories illustrate some common characteristics between the organizations. The survey results indicated that despite the differences in the adoption process the organizations had positive attitudes toward their digital photographic archives. The respondents indicated the archive was necessary to their organization and improved operations with respect to digital photographs. The individual examples provide some illumination into just how beneficial the digital archive has been to organizations that routinely work with photographs. For a small newspaper like The Norwalk Reflector, the adoption of a digital archive has meant the ability to easily find and retrieve photographs that before had merely been stored in a box with no indexing system. At the other end of the newspaper spectrum, the archive at The New York Times has been an integral part of a new revenue stream. For the libraries, a digital archive has meant more hours of access to photographs for a broader audience, and for agencies the archive has changed the way they interact with and deliver photographs to their clients. For all the agencies interviewed, the digital archive has made storing, retrieving and delivering photographs a more efficient endeavor.

Rogers noted change in an organization, especially computer-related change, can create uncertainty in organizations. Collaboration among members of the organization
during the adoption process can reduce that uncertainty to increase the probability of a successful change. But these examples illustrate that centralized decision-making can also result in the successful adoption of an innovation. The successes support the position that innovations are evaluated based on their compatibility with existing values and needs\textsuperscript{157} and that innovations stand a greater chance of successful adoption when the impact on the organizations established routines is minor.\textsuperscript{158} One can conclude, then, that the attributes of an innovation and how the innovation fits within the existing organizational operations hold more sway than the degree to which the members of the organization can participate in the evaluation process. There is the possibility, though, that these specific examples all reflect organizational cultures in which the members feel secure enough to incorporate changes into their work lives.
This study explored how organizational characteristics affect the diffusion of a similar innovation, the development and operation of digital photographic archives, in different types of organizations that would use such technology. The study focused on the adoption process outlined in diffusion of innovations theory rather than on making an assessment of the merits of digital photographic archives in general or of specific implementations of the innovation. Diffusion of innovations has been studied at the individual level, but less research has been done to explore the effect of organizational characteristics on the diffusion process. Some research has been done regarding the use of new technology within journalistic organizations, but little has been done to explore the process of adopting the technology.

The results of the study affirm the conclusions of Rogers and others that organizations go through a process of adopting innovations that is similar to the process undertaken by individuals. Rogers’ five steps of knowledge, persuasion, decision, implementation and confirmation have been well studied, but more research into the applicability of the process to organizations was called for, specifically with regard to how innovations are diffused across organizations and variations related to organizational type, size or industry. The study results particularly provide knowledge related to the persuasion and confirmation stages of the diffusion process within these organizations.
The persuasion stage is the point at which favorable or unfavorable attitudes toward the innovation are formed.\textsuperscript{162} The study indicates that for these organizations little persuasion to adopt this innovation was necessary. The survey respondents and interview participants agreed that creating a digital photographic archive was necessary for their organizations. Some organizations, like Aurora Photos, recognized early that digital technology would be important to photojournalism, and some, like \textit{The New York Times}, recognized early that shifting to digital photography meant a means of saving and retrieving the digital images was necessary. Other organizations came to the innovation more recently, but the indication is that the timing was a matter of the organization’s ability to adopt the innovation at a given time rather than the need to persuade members of the organization that the technology was necessary. No participants indicated there was a question within the organization regarding the necessity to develop a digital archive.

The implementation stage of the adoption process is the time when the organization puts the innovation to use.\textsuperscript{163} Rogers noted the implementation stage is where “re-invention” occurs as adopters modify innovations rather than passively adopting them.\textsuperscript{164} There is some evidence in this study to support the re-invention concept and to suggest a link to organizational size or type. The re-invention process was likely to occur within photographic agencies as they evaluated the solutions available for creating a digital archive. Jeffrey Smith of Contact Press Images noted that organization’s discussions with PhotoShelter about the implementation of keyword searching, and Karl Schatz noted Aurora Photos is able to work with the Independent Photographers Network to pursue changes that would be beneficial to the agency. Newspapers also re-invent the
innovation, and the size of the organization may be a factor in determining whether the organization is likely to pursue this process. Nancy Lee noted *The New York Times* considered the off-the-shelf solution offered by Merlin to be a starting point from which customization to better meet the newspaper’s needs could be pursued, and *The Virginian-Pilot* continues to work with its software vendor to improve the search capabilities. There was little indication from the smaller newspapers that changes to the archive solution were sought from the vendor, although it was noted that a newspaper might add its own twist to the system, as with *The Reflector’s* development of a separate method for saving unpublished photographs.

Whether or not changes to the innovation are sought during the implementation phase, there is evidence from the study to indicate there is an ongoing process of reinvention at work within organizations. Rogers noted the implementation stage eventually ends when “the new idea becomes an institutionalized and regularized part of the adopter’s ongoing operations.” Certainly the innovation of a digital archive of photographs has become a regular part of the operations of the organizations represented in this study. There is no evidence to suggest a newspaper, library or photographic agency is going to turn its back on the digital archive and return to a physical archive of prints, but the implementation of the innovation in these organizations has not been stagnant. The organizations represented in the interviews offer ample evidence that the operation of the archive is evaluated and evolves on an ongoing basis, either by moving to a more sophisticated archiving system or making evolutionary changes to the existing one. Some of the evolution can be considered natural progression and compared to the somewhat regular updates in computer software titles. Features that are gained
incidentally to updating to a new version of software can hardly be considered deliberate evolution. It is apparent, however, that some organizations do evaluate and implement changes in their archives that can be considered evolutionary. Organizations may seek to implement evolutionary changes that better meet the needs of the organization and its clients, such as the decade-long process engaged in so far at Aurora Photos. Organizations may also seek evolutions that make the operation of the archive more streamlined, even automatic, as represented by the changes at the newspaper interviewed. Their systems have evolved so that published images automatically are added to the archive, requiring little human intervention. This practice of evaluation and evolution of the innovation once it has been implemented is not clearly explicated by Rogers as a feature of diffusion of innovations. Perhaps Rogers’ theory fits better when considering an innovation that represents a radical shift, such as shifting to digital photography from film, rather than the decisions about what to do with those digital images. Or, perhaps the continuing evaluation and evolution of innovations is an area that merits further study and some modification to diffusion of innovations theory.

Prior research indicated adoption decisions sometimes are based on the level of willingness to invest in technology and become proficient in its use.\textsuperscript{166} Decisions are also based on weighing the costs against the benefits and whether other organizations have already adopted the innovation.\textsuperscript{167} Nearly every organization represented in the study has made some sort of commitment to the technology, but one need look no further than the data from the interviews to affirm the role of economic factors in the innovation-adoption process. Again, Aurora Photos probably provides the clearest example of an organization that recognized the shift toward digital technology and made the commitment to invest in
the technology and learn how to use it. Contact Press Images has weighed the costs and benefits and concluded online access to a digital archive is necessary to the organization. Magnum clearly stated one of the reasons for adopting a digital archive was that the similar organizations were doing so. At newspapers, economic factors were not limited to the benefit of the archive but included the benefit to the newspaper as a whole. The centralized decisions made at The Reflector, The Jackson Citizen Patriot and The Virginian-Pilot were made in consideration of the entire production process and how it would affect the newspaper.

Other factors related to the adoption of an innovation include the infrastructure to support the innovation, the ease of use of the innovation and whether it complies with existing standards of the organization. The study indicates these conditions existed within the organizations adopting the digital archive. If the technology did not exist in-house, as it did not at the Truman library and Utah State Historical Society, then a partner was sought who did possess the required infrastructure. As the organizations represented in the study already had a system of archiving, standards and expectations existed to which the digital archive could be made to comply. In most every case the participants indicated the archive was easy to use.

Diffusion research has identified the role of opinion leaders, change agents and champions in helping convince others to adopt an innovation. Interestingly, none of the participants in the study gave an indication that a person fitting one of the above roles had to convince others within the organization to adopt the digital archive. Rogers noted an official with a high office in the organization is often considered to be a champion for an innovation. In some organizations in this study the decision to adopt the innovation
was mandated by a central authority figure, but it was not indicated that it was necessary
to persuade others within the organization to adopt the innovation. In fact, the interview
data indicate the innovation was generally embraced within organizations in spite of the
top-down centralized decision-making. Nancy Lee of The New York Times outlined the
closest example of resistance to the technology, and that resistance was from the
photographers to digital camera technology, not to the digital archive. The experience of
the Times is reflective of that noticed by Walker and Whetton with regard to telemedicine
technology, in which learning new practices affected the diffusion of that innovation. 171
The apparent message from the participants in this study is that the benefit of the
technology was apparent without the need for persuasion by an opinion leader, change
agent or champion. Therefore, no conclusions can be readily drawn with regard to their
roles and this particular innovation.

Redmond noted that the adoption of an innovation could effect other aspects of an
organization’s operation. 172 It was speculated in chapter two that the development of the
digital photographic archive could become a path to a new revenue stream for an
organization, 173 and it appears to be at least partially confirmed at newspapers.
Newspapers do not offer public access to their archives, however, and so the archive
itself is not tied directly to the revenue stream. Instead, the archive represents a tool that
can be used to enhance the ability to obtain revenue through the sale of photographs. The New York Times, again, represents the clearest example. The Times’ archive plays an
important role in collecting images to be offered for sale within the newspaper’s online
store and has contributed significantly to the revenue generated. At The Norwalk
Reflector, the archive has contributed to the ability to retrieve photographs when reprints
are requested. Another newspaper indicated links are made available on its web site for
the public to purchase prints, and the archive would play a role in locating those original
images. The impact on revenue does not seem to have been as great for libraries and
museums or photographic agencies, but the digital archive has had an impact on some
aspects of their operations. Most notably, the digital technology has assisted with the
creation of collections of images based on a common topic or theme. For agencies, an
online collection of digital photographs illustrating a particular topic or theme might
result in the sale of some additional images serendipitously found by a browsing user. At
a minimum it might cause a user to consider the breadth of an agency’s holdings, leading
the user to consider the agency for when seeking future images. The same could be said
of libraries and museums, whose ability to create online galleries of photographs related
to an event or period in history could also illustrate to a viewer that the organization is a
credible source for materials on the subjects.

The study also provides some insight with respect to the concepts related to
organizational change. Rogers noted computer-related innovations could cause
uncertainty and resistance in an organization, especially if the innovation requires users
to gain the knowledge required to operate the technology. The technology required for
the digital photographic archive did not represent a radical shift from the technology
already in use at the organization. Computers have been common in organizations for
some time, and digital imaging technology has been common in these organizations for at
least a decade. Overall, uncertainty within the organizations over the introduction of
the digital archive technology should have been low. The interviews did indicate some
level of resistance to learning a new system existed, particularly at newspapers, but there
were no indications the resistance was significant enough to cause a threat to the successful adoption of the innovation.

In addition to the necessary acquisition of knowledge, a factor in the successful adoption of an innovation is the degree of its potential impact on the established routines and practices of the organization. In addition, the sociotechnical systems approach indicates innovations should be considered from the point of view of the overall organizational mission. The results of this study lend support to these statements. The digital photographic archive, while representing a change, did not fundamentally alter the routines and practices of the organizations under study. The results do suggest the innovation caused changes within the organization, but overall the routines remained largely untouched. Newspaper staff members still took photographs, selected certain ones, published the image in the paper and moved the image to an archive. Agencies still received images from photographers and stored and cataloged them, and libraries still accumulated images related to their subject areas. In all these cases, while the specific tasks involved with storing or retrieving an image might have changed, the overall routine did not. In a similar vein, the adoption of the archive did not conflict with the mission of each organization. The organizations did not attempt to adopt technology used for keeping track of the inventory of canned goods, adapting it to the indexing of photographs. While they did differ in their specific process of adopting and implementing a digital archive technology, they all considered available solutions that were appropriate to their fields of endeavor. It is clear, then, that innovations that best fit within the established routines and support the mission of the organization will be successfully adopted.
There is, however, another factor to consider. Organizational literature also refers to the concept of a holding environment, which can counteract the uncertainty that comes with change. A “good enough” holding environment is a climate within an organization in which the members can trust each other and feel comfortable exploring change. The good enough holding environment allows the members of the organization to overcome the anxiety that may come with change. It is difficult to tell from the responses of most of the organizations whether the holding environment is considered good enough to contemplate adopting this innovation or whether the holding environment is secondary to the innovation’s impact on the organization’s routines. Some organizations clearly exhibited a “good enough” holding environment, however. Most notably, the climate at Aurora Photos was such that the organization could consider implementing the technology early in its existence, placing the agency in the early adopter category among agencies when it comes to digital photographic archives. That climate continues as Aurora continues to contemplate how to evolve the archive and its operation.

A question from the field of library science is whether an archive is required to keep and maintain everything that it receives. Archival institutions may systematically examine materials to pare down a collection to a manageable size or remove duplicate or substandard items. Archivists may make determinations about what images to preserve, and the organizations represented in this study reflect that practice. Newspapers and photographic agencies do not seem to require photographers to archive every image they make. Historical libraries and museums must generally consider physical photographs, as their mission would place the emphasis on images that predate digital
photography. That may not be the case with the newest and future presidential libraries, but for the time being the question of which digital images to keep is largely one librarians and archivists in those organizations do not have to consider. However, no organization in the study indicated consideration of converting its entire physical archive of prints, negatives or transparencies into a digital format. Those physical artifacts may still exist within the organization, but their digital counterparts are selected based on a variety of factors. In effect, two archives exist within these organizations, and there is no indication that one needs to mirror the other.

The “best practice” literature from the library field suggests an archive should be created with consideration of the intended audience, access to the finished product and ownership or copyright of the images. These considerations seem to have entered into the creative deliberations at the organizations represented in the study. The organizations have considered who is to have access to the digital photographs, which has impacted the other elements of the planning process. At newspapers, the archive is internal, making consideration of ownership or copyright less important than, say, the integration of the archiving system with the systems already in place. At agencies and libraries, however, the intended audience is the general public. At these organizations the planning has had to consider how to present the photographs while also keeping them safe from unauthorized use. Agencies have largely addressed the issue by offering small, low-resolution images in a public area but requiring users to register to gain access to the higher-quality versions. The technique allows the agencies to track the images and ensure that clients who have not yet paid for the images do not download them. Libraries and museums have taken another, fairly simple approach to the issue. The organizations will
often include statements outlining copyright and usage restrictions on their web sites. Representatives that indicated their means of addressing the issue also indicated that if the library does not control the copyright or usage of an image, it will not be made available in digital form to the public.

The results of this study have both theoretical and practical implications. In the area of theory, the study confirms several concepts related to the diffusion of innovations and to organizational change, as already outlined. The strength of the study is in the merging of these two theoretical areas and consideration of how organizational characteristics mediate the diffusion process. This study indicates the most important consideration in predicting the successful adoption of an innovation is the innovation itself. The characteristics of the innovation and how well it fits within both the established routines of the organization and the established skills of its members will determine whether the innovation is successfully adopted. Other factors related to the diffusion of innovations also seem to be of importance with regard to adoption of an innovation and its success. The examples in this study reflect cases in which the infrastructure already existed within the organizations or could be easily obtained. There was also an economic benefit to the organizations, or at least a clear benefit in terms of serving clients as was the case with the libraries making digital collections available online.

Communication among the members of an organization may be positively related to innovativeness within the organization, and some organizations in this study clearly incorporated input from the members when considering the adoption of the digital photographic archive. The representatives of photographic agencies and libraries both gave clear indications that the development of the archive was a collaborative process.
But it is clear from the information provided by the newspaper representatives that a centralized decision that does not directly involve the participation of other members of the organization can still result in a change that is embraced with little resistance and ultimately considered highly successful by members of the organization. Likewise, a “good enough” holding environment encourages members of an organization to explore change, but it is the innovations that are most closely reflective of the goals and mission of the organization that are likely to be successful.

Organizational characteristics do play a role in the adoption of innovations, but it is the suitability of the innovation to the organization that is the primary factor, as outlined by Rogers.\textsuperscript{182} Between the two areas of theory, the concepts encompassed by the diffusion of innovations have the greater impact.

One other area of theoretical implication brought up in this study relates to the ongoing evaluation process related to the innovation after it has been implemented. As mentioned, Rogers suggests the implementation period ends when the innovation has become a regular part of the organization’s operations, a process he refers to as routinizing.\textsuperscript{183} It appears, though, that according to the theory, once an innovation has been routinized, the process is over and new innovations are considered. What is not addressed is what appears to be the ongoing process of evaluating innovations that are already in place to improve their efficiency or adapt them to changing circumstances. A replacement to digital photography or digital archiving, for example incorporating holography, would represent an innovation to consider. The updates in software or incorporation of new features in the archive represent a continued evolution of the
innovation rather than adoption of a new one. There may be a subtopic of diffusion that requires further research.

The practical implications of the study address the area of historical research. A concern with respect to digital photography and archiving has been the completeness of the historic record and its availability to future generations. The concern is that as photographers select a set of images to save from among the total taken and, as publications officially archive only published images, the historic record will be an edited one, less complete and, by extension, less credible than the historic record represented by the storage of complete rolls of exposed negatives taken by photographers on their assignments.

The concern is a valid one for historians. An incomplete record may lead to incorrect conclusions. The published photographs may be enough to illuminate an event in history, but the rest of the images can provide context to the event, helping to explain the social climate in which the event occurred. The situation, however, may not be as dire as it has been made out to be. Certainly some images that are created will disappear, edited by the photographer never to be represented by pixels on a computer screen again. But what are the chances that those images will be the images that are key to understanding history? Libraries and museums evaluate photographic materials and make decisions about which ones to include in their archives, so the historic record is already less than complete. The newspapers and photographic agencies in the study have indicated they keep more than just the images that are published or sold, so the historic record will be more than those images. And to say the historic record will be incomplete if images are deleted from an archive is to suggest that they are the only copies of those images. In some cases
depicting daily life in the community, that might be true, but for newsworthy events, chances are there are other news archives that also contain photographs of the event, or the photographer himself or herself might be a source for those images. News photographers do keep their own collections of the images they have made, especially in light of the practices in place at some organizations to only archive a selection of images rather than all the ones from an event. In one notable case it was in the photographer’s collection that an important image was found.

A photograph of President Bill Clinton hugging White House intern Monica Lewinsky in 1996 had been passed over by TIME magazine and the Gamma-Liaison agency before it was returned to photographer Dirck Halstead. When the story about Clinton’s relationship with Lewinsky became a topic of news in 1998 those organizations could not find a photograph of the two subjects. Halstead hired a researcher to examine the images in his collection, and after reviewing 5,000 slides over four days one image was found. That image eventually became the one used in newspapers and magazines worldwide.

Images that are not saved in an organization’s archive, then, are not necessarily lost. Halstead’s photograph illustrates a case of a physical image, a slide that was not selected for publication and which was returned to the photographer. Negatives or slides can only exist in one location, unless a copy is made. The ability to make multiple prints might mean more than one copy exists in multiple locations, but making photographic prints requires time and the prints require space for storage. Digital technology increases the likelihood that images will be saved somewhere. Digital images can be copied easily, and multiple images can be saved on the same storage medium. Not only can the
photographers save the unused images, they can save a complete record of all images they made.

One must recognize that organizations may become more selective regarding the images they maintain in their archives. The results of this study indicate the organizations are saving more than just published images, but with the exception of The New York Times, none of the participants indicated they are running out of digital storage room for the files. A time may come, however, when the hard drives are full and images must be removed to make room for new ones. Will the unpublished images be moved to another medium and indexed, or will they simply disappear? It is conceivable that a digital image, like one of a President hugging a seemingly anonymous person at a campaign stop, will disappear from an organization’s archives because its potential significance was not recognized at the time. Unlike a physical negative or slide, once the photograph’s digital bits have been scattered and reassigned to depict children arriving on the first day of school, that copy of the image will be gone forever. Maybe that image will still exist in a photographer’s personal collection of all the images he or she has taken. Unfortunately, for a historical researcher seeking images of a specific event, the absence of images in an organization’s archive will mean the researcher will have to somehow determine who the photographer might have been and then track down the photographer to determine whether the images still exist.

Aside from consideration of whether the historical record is complete, the photographs only are useful to researchers if they can be located and studied. There are likely hundreds of newspapers in the United States with physical collections of prints and negatives but no index of their contents. At The Norwalk Reflector, the pre-digital archive
consisted of prints in a box, and that is probably not an isolated condition among small newspapers with limited resources. Minimally, digital files can be organized by their creation date, providing more organization to the digital files than might be found with prints in a box. As *The Virginian-Pilot*’s Steve Dandy indicated, with digital archiving the images can be found and retrieved more easily than unpublished prints and negatives and are likely to have data attached to explain the image. Individual photographers also can add data to their digital image files, if they take the time to do so. If information is attached to the digital files, and that information is searchable, the probability of retrieving a desired image increases.

Otherwise, if organizations or photographers cannot retrieve their own products, what is the likelihood they can be found when someone else is looking for them? An historian with unlimited time and access to the archives of an organization or a photographer may be able to spend hours viewing individual sleeves of negatives or even discs of digital images to find images that seem to be from the right time and depict the right events. If they are found but the images have not been captioned or photographer’s notes have not been saved, there is no way to tell what the images really show. Are the images of any more use if they exist but cannot be found or evaluated than if they did not exist in the first place? Or, to paraphrase a philosophical riddle, if an image rests in an archive but no one can find it, is it really missing?

There is a balance, then, to the shift to digital images and digital archives. The digital technology certainly makes it more likely that an image could exist in more than one location, providing a backup for files that have been corrupted or deleted. The technology also provides the ability to associate data with the image and for that data to be
searchable, making image retrieval more efficient. However, the shift to digital archive technology does have its pitfalls. Images are selected for inclusion rather than being included by default because they exist on a strip of negatives, and digital files are more likely to disappear than their physical counterparts, as bits are easier to delete than strips of negatives residing in a file drawer. The potential for missing data is something future historical researchers will have to consider as they investigate visual topics.

When it comes to the availability of the historical record to future generations, the main question may not be what the record contains. The bigger issue may center on how today’s digital files are stored and for how long they will be accessible. The results of the study indicate these organizations are saving files in either JPEG or TIFF formats. Files saved in those formats can be opened and read by a variety of programs, including pagination or web design programs and web browsers. They are less subject to format obsolescence than files saved in formats that are proprietary to a specific software title such as PhotoShop. The JPEG and TIFF formats have already been in use for a number of years and are likely to be readable for a number of years to come, if the media on which the files are saved holds up.

Most of the organizations studied save their digital photographs to hard drives, at least the current versions of the files. Organizations that might access the same files a number of times, such as agencies and libraries, may keep those files on hard drives for a number of years. Larger newspapers with the resources to add storage as necessary may also keep their archives on hard drives. The hard drive is a magnetic medium with a proven record of durability. The possibility for damage to the drive does exist but is not likely, as the drives generally are situated in a stable location with little disruption. Not
all images are stored on hard drives though. Smaller newspapers keep images on optical media, such as compact discs or DVDs, and many organizations in the study indicated images are stored to these media types at some time. The discs may be used to house the original images as a backup in case of hard drive failure, or they may be the destination for old files that are moved off the hard drives to free up space for new files. The longevity of data stored on these media is in question. The layers of these types of optical media begin to oxidize as soon as they are burned. Some manufacturers have claimed a life expectancy for the media of more than 100 years, but that assumes optimal storage conditions. Lab testing, on the other hand, has shown some discs will fail much earlier than that. Whether optical media is used to store the original scans, to store backup files or to hold the unpublished images saved by photographers, the potential exists for the media to fail, rendering the images unusable.

The results of the study do not give much comfort to the question of longevity of files in these organizations. Of the organizations that indicated storing files to compact discs or DVDs, only one indicated the files were regularly evaluated to verify their usability. Upon further examination it was determined that organization recognized the need to open and resave files but had not actually done that yet. So within the confines of this study, no organization is actually refreshing the files stored on optical media to ensure their longevity. Negatives and prints degrade with time too, but at a much slower rate. The question of longevity of the historical record is one in which the advantage tips away from digital technology. With these points in mind, it seems more important to address the issues of longevity of the historical record than its contents.
Limitations

As with any study there are some limitations. The overall response rate of 32 percent for the survey portion of the study is an improvement on previous studies, but some might argue the rate is low in the field of survey research. The survey did yield enough responses from the sample of newspapers to satisfy the requirements for statistical analysis, however, providing some measure of generalizability to the results. Of greater concern is the ratio of responses to the circulation groups in the sample. The newspapers in the smallest circulation groups are underrepresented in the results in relation to their proportion of the sample, but that has been typical of other studies of newspapers as well. It may be that the under-response reflects the lack of resources available at newspapers in that circulation group. The newspapers that did respond may be representative of that group as a whole, but a more proportional response rate would have improved the ability to relate the sample results to the larger population of newspapers.

Another potential limitation lies with the types of organizations selected for study. The presidential libraries and the state historical societies were chosen to achieve a group size somewhat similar to that of the photographic agencies. However, there may be many other similar organizations that create digital photographic archives. Many university libraries may have archives, as might county or local public libraries or historical societies. It is doubtful including those types of organizations would yield a result to contradict the findings that the size of the organization and the resources available to it play a role in determining how the archive is created, but this study cannot address that question.
A further limitation lies with the method in which data were collected. This study utilized a survey methodology in which one member of an organization supplied data for that organization. Rogers questioned whether diffusion studies that obtained data from a chief officer of an organization really reflected the culture of the organization. The same question could be asked of the participants in this study. One person in each organization supplied the data for that organization, and working with the digital archive was a primary responsibility for that person. The study reflects the assessment of those people with regard to adopting a digital archive. A survey involving a range of people in the organization with different relationships to the archive might have produced a different result, but it would also have made it more difficult to quantify an assessment of the process and of the innovation itself for each organization.

Along those lines, the sample size chosen for the interview phase of the study is a limitation. Choosing one organization from each category and interviewing one person within the chosen organization limits the conditions to which the information can be applied. Some similarities between organizations were reflected in the interview data, but the data can only be considered a snapshot of the situation at one organization. The interviews cannot be considered reflective of the responses that might be obtained at other organizations with digital photographic archives.

Future Research

This study focused on the adoption of a digital photographic archive by organizations that create, store and distribute photographs. The narrow focus of the study offers opportunities for additional research. As noted in the limitations, the study could be expanded to include a wider variety of types of libraries. It could also include a wider
range of photographic agencies than just those that offer editorial content. Further study could be done of smaller newspapers as well. That area of research might focus not only on the adoption process but also might explore the re-invention phase of the process as the organizations with less in the way of resources might have to be more creative in terms of making a solution fit their specific needs.

Another area for future research is to gain input for a wider range of members of each organization. With the results in hand from people responsible for maintaining the archive, it would be interesting to examine the perspective of those with other relationships to the archive. The perspective of editors who regularly use the archive to search for and retrieve images might be quite different from the responses represented in this study. The responses of the photographers who initially submit photographs into the archive would also make an interesting comparison, as would the perspective of reporters who might use the archive to search for images as research for stories. The various perspectives represented by these groups would provide a richer understanding of each organization and the cultural characteristics that might have affected the organization’s adoption of the digital photographic archive.

The study also focused on the process of adopting and implementing the archive. The results gave some indication that there is an ongoing process of maintenance as well as evaluating the archive for areas of potential evolution. Further research might explore these areas, particularly to compare organizational aspects of the initial adoption process to aspects of the ongoing evaluation. It would be interesting to compare the location of the decision making and level of collaboration within the organization during the initial
adoption process and during the subsequent decision-making related to the evolution of the archive.

In terms of general diffusion and organizational research, the concepts explored in this study could be applied to other studies. How organizations evaluate and adopt change and the perceived success of that change is an important area of study. If the only constant is change, and if change causes uncertainty within organizations, learning the best methods for evaluating and implementing change will help organizations be productive as they continually adapt to new circumstances.

The photographic record is important to the future of history as well. History relies not only on artifacts of the past but also in understanding what they represent and what is missing. Knowledge of the potential holes in the record and risks to its accessibility is necessary to ensure future studies are able to draw valid conclusions.
APPENDIX A
Organizations contacted to participate in the online survey

Newspapers (In order of circulation size)

News-Times, Hartford City, IN
The Lovington Daily Leader, Lovington, NM
Cape Coral Daily Breeze, Cape Coral, FL
Hugo Daily News, Hugo, OK
The Daily Citizen, Linton, IN
Jefferson City News Tribune, Jefferson City, MO
Columbus Telegram, Columbus, NE
Estherville Daily News, Estherville, IA
Augusta Daily Gazette, Augusta, KS
Times-Republic, Watseka, IL
Perry Daily Journal, Perry, OK
Kodiak Daily Mirror, Kodiak, AK
Portales News-Tribune, Portales, NM
The Register, Oelwein, IA
Charles City Press, Charles City, IA
The Daily News, Wahpeton, ND
The Courier, Lincoln, IL
The Daily News, Richmond, MO
Republican-Times, Trenton, MO
The Madison Daily Leader, Madison, SD
The Maryville Daily Forum, Maryville, MO
The Daily Clay County Advocate-Press, Flora, IL
Baker City Herald, Baker City, OR
The Humboldt Sun, Winnemucca, NV
The Franklin Banner-Tribune, Franklin, LA
The El Dorado Times, El Dorado, KS
Atlantic News-Telegraph, Atlantic, IA
Northern Wyoming Daily News, Worland, WY
Pauls Valley Daily Democrat, Pauls Valley, OK
Neosho Daily News, Neosho, MO
The Mountain Mail, Salida, CO
Oskaloosa Herald, Oskaloosa, IA
Deming Headlight, Deming, NM
Artesia Daily Press, Artesia, NM
Wellsville Daily Reporter/The Spectator, Wellsville, NY
Spencer Evening World, Spencer, IN
The Daily Sentinel/Sunday Times-Sentinel, Pomeroy, OH
The Daily Journal, International Falls, MN
The Daily Southerner, Tarboro, NC
Iola Register, Iola, KS
The Rochester Sentinel, Rochester, IN
The Leesville Daily Leader, Leesville, LA
Daily Sun News, Sunnyside, WA
The Daily Chief-Union, Upper Sandusky, OH
Alice Echo-News Journal, Alice, TX
The Fulton Sun, Fulton, MO
The Marion Daily Republican, Marion, IL
Wakefield Daily Item, Wakefield, MA
The Daily Reporter, Spencer, IA
Daily Globe, Shelby, OH
Okmulgee Daily Times, Okmulgee, OK
Daily Republican Register, Mount Carmel, IL
La Junta Tribune-Democrat, La Junta, CO
McPherson Sentinel, McPherson, KS
The Logan Daily News, Logan, OH
Camden News, Camden, AR
The Chanute Tribune, Chanute, KS
Fort Morgan Times, Fort Morgan, CO
The Lebanon Daily Record, Lebanon, MO
Slidell Sentry-News, Slidell, LA
The Clinton Daily News, Clinton, OK
Desert Dispatch/Press-Dispatch, Barstow, CA
Cordele Dispatch, Cordele, GA
Altus Times, Altus, OK
Herald-Republican, Angola, IN
The Times Journal, Fort Payne, AL
Taylor Daily Press, Taylor, TX
The McDowell News, Marion, NC
Star-Courier, Kewanee, IL
Waxahachie Daily Light, Waxahachie, TX
The Seguin Gazette-Enterprise, Seguin, TX
The Daily Press, Saint Marys, PA
Times-Gazette, Hillsboro, OH
The Tryon Daily Bulletin, Tryon, NC
News-Banner, Bluffton, IN
Herald Journal, Monticello, IN
The Reidsville Review, Reidsville, NC
Record Herald, Washington Court House, OH
Register-Star, Hudson, NY
Ellwood City Ledger, Ellwood City, PA
Woodward News, Woodward, OK
The Reporter, Lebanon, IN
Ravalli Republic, Hamilton, MT
The Paragould Daily Press, Paragould, AR
The Express-Star, Chickasha, OK
The Daily Tribune, Hibbing, MN
Coldwater Daily Reporter, Coldwater, MI
Lahontan Valley News & Fallon Eagle Standard, Fallon, NV
Moberly Monitor-Index & Evening Democrat, Moberly, MO
Parsons Sun, Parsons, KS
Laramie Daily Boomerang, Laramie, WY
Creston News Advertiser, Creston, IA
Daily Record, Ellensburg, WA
Greensburg Daily News, Greensburg, IN
Northwest Signal, Napoleon, OH
The Claremore Daily Progress, Claremore, OK
The Daily Star, Grenada, MS
Douglas County Sentinel, Douglasville, GA
Brenham Banner-Press, Brenham, TX
The Edmond Sun, Edmond, OK
McCook Daily Gazette, McCook, NE
Henderson Daily News, Henderson, TX
The Madison Press, London, OH
Urbana Daily Citizen, Urbana, OH
The Times, Frankfort, IN
The Weatherford Democrat, Weatherford, TX
Times-Tribune, Corbin, KY
Great Bend Tribune, Great Bend, KS
The Herald, Circleville, OH
Palm Beach Daily News, Palm Beach, FL
Albert Lea Tribune, Albert Lea, MN
Sturgis Journal, Sturgis, MI
Faribault Daily News, Faribault, MN
The Times-Bulletin, Van Wert, OH
The Peru Tribune, Peru, IN
The Daily Press, Ashland, WI
Plainview Daily Herald, Plainview, TX
Austin Daily Herald, Austin, MN
Banner-Graphic, Greencastle, IN
Leavenworth Times, Leavenworth, KS
Culpeper Star-Exponent, Culpeper, VA
The Evening Star, Auburn, IN
Salem News, Salem, OH
Marshall News Messenger, Marshall, TX
The Chippewa Herald, Chippewa Falls, WI
The Lompoc Record, Lompoc, CA
Columbia Missourian, Columbia, MO
Corsicana Daily Sun, Corsicana, TX
The Valley Times-News, Lanett, AL
The Winchester Sun, Winchester, KY
The Hillsdale Daily News, Hillsdale, MI
Morris Daily Herald, Morris, IL
Sentinel, Fairmont, MN
Wilmington News Journal, Wilmington, OH
The News-Herald, Oil City, PA
The Newton Kansan, Newton, KS
Manassas Journal Messenger/Potomac News & Manassas Journal, Manassas, VA
The Latrobe Bulletin, Latrobe, PA
Independent, Marshall, MN
The Daily Tribune News, Cartersville, GA
The Middletown Press, Middletown, CT
Daily Courier, Connellsville, PA
Big Spring Herald, Big Spring, TX
Kerrville Daily Times, Kerrville, TX
Muscatine Journal, Muscatine, IA
Herald-Banner, Greenville, TX
The Daily Telegram, Superior, WI
Fremont Tribune, Fremont, NE
Norwalk Reflector, Norwalk, OH
Casa Grande Dispatch, Casa Grande, AZ
The Washington Times-Herald, Washington, IN
The Key West Citizen, Key West, FL
Durango Herald, Durango, CO
Bellefontaine Examiner, Bellefontaine, OH
The Tribune, Seymour, IN
Sierra Vista Herald, Sierra Vista, AZ
Hobbs News-Sun, Hobbs, NM
Griffin Daily News, Griffin, GA
The Signal, Santa Clarita, CA
Troy Daily News/Miami Valley Sunday News, Troy, OH
Watertown Daily Times, Watertown, WI
McAlester News-Capital & Democrat, McAlester, OK
The Daily Courier, Forest City, NC
Elizabethton Star, Elizabethton, TN
Journal Review, Crawfordsville, IN
The Commonwealth-Journal, Somerset, KY
Waycross Journal-Herald, Waycross, GA
The Logan Banner, Logan, WV
Pharos-Tribune, Logansport, IN
Steamboat Today, Steamboat Springs, CO
Mesabi Daily News, Virginia, MN
The Daily World, Opelousas, LA
The Daily Home, Talladega, AL
The Daily Mining Gazette, Houghton, MI
The Caledonian-Record, Saint Johnsbury, VT
The Sanford Herald, Sanford, NC
The Houston Home Journal, Perry, GA
Log Cabin Democrat, Conway, AR
Tonawanda News/Tonawanda Sunday, North Tonawanda, NY
Daily Citizen, Beaver Dam, WI
The Bristol Press, Bristol, CT
The Cullman Times, Cullman, AL
The Times Record, Brunswick, ME
Vincennes Sun-Commercial, Vincennes, IN
Examiner-Enterprise, Bartlesville, OK
The Baytown Sun, Baytown, TX
Pekin Daily Times, Pekin, IL
The Advocate-Messenger/The Kentucky Advocate, Danville, KY
Benton County Daily Record, Bentonville, AR
Journal-Gazette, Mattoon, IL
The Times-Herald, Newnan, GA
The Alpena News, Alpena, MI
Courier, Conroe, TX
Columbia Daily Herald, Columbia, TN
The Times, Pawtucket, RI
Times West Virginian, Fairmont, WV
Auburn Journal, Auburn, CA
The News Herald, Morganton, NC
The Review, Alliance, OH
Corvallis Gazette-Times, Corvallis, OR
The Hays Daily News, Hays, KS
Ashland Times-Gazette, Ashland, OH
Daily Messenger, Canandaigua, NY
Effingham Daily News, Effingham, IL
West Hawaii Today, Kailua-Kona, HI
The Albuquerque Tribune, Albuquerque, NM
Daily American Republic, Poplar Bluff, MO
The North Platte Telegraph, North Platte, NE
The Hanford Sentinel, Hanford, CA
The World, Coos Bay, OR
The Citizen, Auburn, NY
Union-Sun & Journal/Lockport Sunday, Lockport, NY
La Grange Daily News, LaGrange, GA
The Daily News, Batavia, NY
The Daily News, Huntingdon, PA
The Ottumwa Courier, Ottumwa, IA
The Portsmouth Daily Times, Portsmouth, OH
Daily American, Somerset, PA
The Examiner, Independence, MO
The Lufkin Daily News, Lufkin, TX
The Index-Journal, Greenwood, SC
Rocky Mount Telegram, Rocky Mount, NC
Beloit Daily News, Beloit, WI
Lancaster Eagle-Gazette, Lancaster, OH
The Shelby Star, Shelby, NC
Portsmouth Herald, Portsmouth, NH
Jacksonville Journal-Courier, Jacksonville, IL
The Register-Mail, Galesburg, IL
San Mateo Daily Journal, San Mateo, CA
The Courier-Tribune, Asheboro, NC
Commercial-News, Danville, IL
Aiken Standard, Aiken, SC
Star-Herald, Scottsbluff, NE
The Daily Telegram, Adrian, MI
The Meridian Star, Meridian, MS
Herald Times Reporter, Manitowoc, WI
The Times Herald, Norristown, PA
The Exponent Telegram, Clarksburg, WV
The Union, Grass Valley, CA
The Yuma Daily Sun, Yuma, AZ
The Valdosta Daily Times, Valdosta, GA
Daily Courier, Grants Pass, OR
Herald and News, Klamath Falls, OR
Finger Lakes Times, Geneva, NY
Valley News/Sunday Valley News, White River Junction, VT
The Messenger, Fort Dodge, IA
Peninsula Daily News, Port Angeles, WA
Napa Valley Register, Napa, CA
The Reporter, Fond du Lac, WI
The Daily News Leader/The Sunday News Leader, Staunton, VA
The Island Packet, Hilton Head, SC
Killeen Daily Herald, Killeen, TX
The Holland Sentinel, Holland, MI
Hawaii Tribune-Herald, Hilo, HI
Bluefield Daily Telegraph, Bluefield, WV
Globe-Gazette/Sunday Globe, Mason City, IA
Journal-World, Lawrence, KS
Times-News, Hendersonville, NC
The Capital Times, Madison, WI
The Post-Journal, Jamestown, NY
Naperville Sun, Naperville, IL
Colorado Daily, Boulder, CO
Concord Monitor/Sunday Monitor, Concord, NH
The Times, Gainesville, GA

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Press-Republican, Plattsburgh, NY
Times Recorder, Zanesville, OH
Standard-Speaker/Standard-Speaker Sunday, Hazleton, PA
Visalia Times-Delta, Visalia, CA
Rutland Herald, Rutland, VT
Coeur d'Alene Press/North Idaho Sunday, Coeur d'Alene, ID
The Daily Times, Maryville, TN
The Hickory Daily Record, Hickory, NC
Kokomo Tribune, Kokomo, IN
The Free Press, Mankato, MN
The Morning Herald/The Daily Mail/The Herald Mail, Hagerstown, MD
News-Press, Glendale, CA
The Parkersburg News/The Parkersburg Sentinel, Parkersburg, WV
The News Sun, Waukegan, IL
Foster's Daily Democrat/Foster's Sunday Citizen, Dover, NH
The Quincy Herald-Whig, Quincy, IL
Salisbury Post, Salisbury, NC
The Times-Reporter, New Philadelphia, OH
Herald Democrat, Sherman, TX
Odessa American, Odessa, TX
Centre Daily Times, State College, PA
Santa Cruz Sentinel, Santa Cruz, CA
The Telegraph, Alton, IL
San Angelo Standard-Times, San Angelo, TX
The Jersey Journal, Jersey City, NJ
The Bulletin, Bend, OR
The Southern Illinoisan, Carbondale, IL
Messenger-Inquirer, Owensboro, KY
The Kentucky Post, Covington, KY
The Daily Journal/The Sunday Journal, Kankakee, IL
Tucson Citizen, Tucson, AZ
Charleston Daily Mail/Sunday Gazette-Mail/Saturday Gazette-Mail, Charleston, WV
The Cumberland Times-News, Cumberland, MD
Mail Tribune, Medford, OR
The Sun, Bremerton, WA
The Daily Sentinel, Grand Junction, CO
TimesDaily, Florence, AL
News Journal, Mansfield, OH
The Morning Journal, Lorain, OH
The Gaston Gazette, Gastonia, NC
Watertown Daily Times, Watertown, NY
Grand Forks Herald, Grand Forks, ND
The Citizens' Voice/The Sunday Voice, Wilkes-Barre, PA
Daily News-Record, Harrisonburg, VA
The Dispatch, Moline, IL
The Argus, Fremont, CA
West County Times, Richmond, CA
The Times-Tribune, Scranton, PA
The Dothan Eagle, Dothan, AL
The Tribune Chronicle, Warren, OH
The Olympian, Olympia, WA
Jackson Citizen Patriot, Jackson, MI
Victoria Advocate, Victoria, TX
Herald & Review, Decatur, IL
American Press, Lake Charles, LA
Charlotte Sun, Charlotte Harbor, FL
Anderson Independent-Mail, Anderson, SC
Northwest Herald, Crystal Lake, IL
The News-Gazette, Champaign, IL
Northwest Florida Daily News, Fort Walton Beach, FL
Waco Tribune-Herald, Waco, TX
Poughkeepsie Journal, Poughkeepsie, NY
The Tribune-Democrat, Johnstown, PA
Tri-City Herald, Tri-Cities, WA
Beaver County Times, Beaver, PA
Post-Bulletin, Rochester, MN
The Muskegon Chronicle, Muskegon, MI
Intelligencer Journal/Lancaster New Era/Sunday News, Lancaster, PA
The Saginaw News, Saginaw, MI
The Gainesville Sun, Gainesville, FL
The Herald, Bradenton, FL
Herald-Journal, Spartanburg, SC
Daily Southtown, Tinley Park, IL
The Sun News, Myrtle Beach, SC
The Columbian, Vancouver, WA
Hoy (Spanish), New York, NY
Ocala Star-Banner, Ocala, FL
Metrowest Daily News, Framingham, MA
Statesman Journal, Salem, OR
Star-News/Sunday Star-News, Wilmington, NC
The State Journal-Register, Springfield, IL
Argus Leader, Sioux Falls, SD
The Asheville Citizen-Times, Asheville, NC
Kalamazoo Gazette, Kalamazoo, MI
The Daily Challenge, Brooklyn, NY
Green Bay Press-Gazette, Green Bay, WI
New Hampshire Union Leader/New Hampshire Sunday News, Manchester, NH
The Christian Science Monitor, Boston, MA
The Bakersfield Californian, Bakersfield, CA
Journal Star, Peoria, IL
The Oakland Tribune, Oakland, CA
Daily Breeze, Torrance, CA
El Paso Times, El Paso, TX
South Bend Tribune, South Bend, IN
The Augusta Chronicle, Augusta, GA
Winston-Salem Journal, Winston-Salem, NC
The Greenville News, Greenville, SC
The Press Democrat, Santa Rosa, CA
Wisconsin State Journal, Madison, WI
Mobile Register, Mobile, AL
Ventura County Star/Ventura County Sunday Star, Ventura, CA
The Washington Times, Washington, DC
The Patriot-News, Harrisburg, PA
Daytona Beach News-Journal, Daytona Beach, FL
The Morning Call, Allentown, PA
News Sentinel, Knoxville, TN
The Journal News, White Plains, NY
The Des Moines Register/Des Moines Sunday Register, Des Moines, IA
The Fresno Bee, Fresno, CA
Asbury Park Press, Neptune, NJ
The Commercial Appeal, Memphis, TN
The Palm Beach Post, West Palm Beach, FL
The Tennessean, Nashville, TN
Daily News, Woodland Hills, CA
Contra Costa Times, Walnut Creek, CA
The Press-Enterprise, Riverside, CA
The Cincinnati Enquirer, Cincinnati, OH
The Hartford Courant, Hartford, CT
The Buffalo News, Buffalo, NY
The Virginian-Pilot, Norfolk, VA
The Oklahoman/The Sunday Oklahoman, Oklahoma City, OK
Fort Worth Star-Telegram, Fort Worth, TX
The Detroit News, Detroit, MI
The Charlotte Observer, Charlotte, NC
San Antonio Express-News, San Antonio, TX
Milwaukee Journal Sentinel, Milwaukee, WI
The Times-Picayune, New Orleans, LA
The Denver Post, Denver, CO
The Sun/The Sunday Sun, Baltimore, MD
The Oregonian, Portland, OR
Detroit Free Press, Detroit, MI
The Plain Dealer, Cleveland, OH
The Atlanta Journal-Constitution, Atlanta, GA
The Boston Globe/Boston Sunday Globe, Boston, MA
Chicago Sun-Times, Chicago, IL
Photographic Agencies

Ikon Pictures
EyePress
Celebrity Photo Agency
US Photo Press Agency
Pakistan News Pictures
Dobson Agency
Arabian Eye
Gamma
Way Press International
Axiom Photographic
NB Pictures
Mavrixphoto
VII
Scope Features
Exile Images
World Media Press
Artasia Photo Library
World Picture News
PP Tekst og Foto
Black Star
China Features
Mast Photography
Aurora Photos
Laif Agency
Sharp Images Editorial Photography
Panos
Contrast Photo Agency
Page One
Kadena Press
Agence VU
Rapho (Now Group Hachette Filipacchi Photos)
Sipa Press
Eyevine
PressCom
Patker Photo Agency
Redux Pictures
Camera Press
Contact Press Images
Flash90
Polaris Images
Libraries and Museums

Library of Congress
Smithsonian Institution
New York City Public Library
The National Archives and Records Administration
Herbert Hoover Presidential Library and Museum
Franklin D. Roosevelt Library
Harry S. Truman Library
Dwight D. Eisenhower Library
The John F. Kennedy Presidential Library and Museum
Lyndon Baines Johnson Library and Museum
Nixon Presidential Materials
Gerald R. Ford Presidential Library & Museum
Jimmy Carter Library & Museum
Ronald Reagan Presidential Library & Museum
George Bush Presidential Library and Museum
William J. Clinton Presidential Library & Museum
Alabama Dept. of Archives & History
Alaska Historical Collections
Arizona History and Archives Division
Arkansas History Commission
California Historical Society
Colorado Historical Society
Connecticut Historical Society
Historical Society of Delaware
City Museum of Washington, DC
The Florida Memory Project
Georgia Historical Society
Hawaiian Historical Society Library
Idaho State Historical Society
Illinois Digital Archives
Indiana Historical Society
State Historical Society of Iowa
Kansas State Historical Society
Kentucky Historical Society
Louisiana State Library
Maine Historical Society
Maryland Historical Society
Massachusetts Historical Society
Michigan Historical Center
Minnesota Historical Society
Mississippi Department of Archives and History
The State Historical Society of Missouri
Montana Historical Society
Nebraska State Historical Society
Nevada Historical Society
New Hampshire Historical Society Tuck Library
New Jersey Historical Society
New Mexico - Palace of the Governors History Library
New York State Archives
North Carolina State Archives
State Historical Society of North Dakota
Ohio Historical Society
Oklahoma Historical Society
Oregon Historical Society
Historical Society of Pennsylvania
Rhode Island Historical Society
The South Carolina Historical Society
South Dakota State Historical Society
Tennessee State Library and Archives
Texas State Library and Archives Commission
Utah State Historical Society
Vermont Historical Society
Virginia Historical Society
Washington Secretary of State: State Archives
West Virginia Division of Culture and History
The Wisconsin Historical Society
Wyoming State Archives
APPENDIX B
Instruments used in data collection

Contents of the online survey

Digital Photographic Archives Survey
Thank you for agreeing to participate in this survey. Your answers will provide a clearer picture of how digital photographic archives are created and maintained and help to determine what unanswered questions need to be explored. Your answers will be kept confidential. You will be asked to answer all questions. Unless otherwise noted, select the one best response for each question. If a question does not apply to you or your organization or you wish to not answer it, please select the “No Answer” option for that question.

1. Which of the following types of organizations do you represent?
   1. Newspaper
   2. Library or Museum
   3. Commercial Photo Agency
   4. No Answer

2. If you represent a newspaper, what is the circulation?
   1. Up to 10,000
   2. 10,001 to 50,000
   3. 50,001 to 250,000
   4. More than 250,000
   5. I don’t represent a newspaper

3. Which of the following most closely matches your job title?
   1. Photographer
   2. Editor
   3. Archivist
   4. Librarian
   5. Technology specialist
   6. No Answer
   7. Other (Please Specify) ________________________________

4. Who is primarily responsible for archiving photographs in your organization?
   1. Photographers
   2. Editors
   3. Librarian
   4. Archivist
   5. Technology specialist
   6. Business manager
   7. No Answer
   8. Other (Please Specify) ________________________________
5. What is your relationship to the photographic archive in your organization?
   1. I determine what photographs are archived.
   2. I add the photographs to the archive.
   3. I review the archive after someone else adds photographs.
   4. I show people how to use the archive.
   5. No Answer
   6. Other (Please Specify) ____________________________

6. How many people are involved with updating and maintaining the archive?
   1. One
   2. Two
   3. Three
   4. Four to six
   5. Six to ten
   6. More than 10
   7. No answer

7. What forms of photographic archives are maintained in the organization?
   1. Prints and negatives
   2. Digital archive
   3. Both
   4. No Answer

8. If your organization maintains both prints and electronic files, what is the ratio between the two forms?
   1. Very little print/almost all electronic
   2. Up to 20 percent print/up to 80 percent electronic
   3. Up to 40 percent print/up to 60 percent electronic
   4. About half print and half electronic
   5. Up to 60 percent print/up to 40 percent electronic
   6. Up to 80 percent print/up to 20 percent electronic
   7. Almost all print/very little electronic
   8. No Answer

9. Will your organization create or continue to maintain an electronic photo archive?
   1. Yes
   2. No
   3. I don’t know
   4. No Answer
10. How long has your organization maintained a digital photo archive?
   1. Less than six months
   2. Six months to a year
   3. One to two years
   4. Three to five years
   5. Five to ten years
   6. More than ten years
   7. No Answer

11. How often are images added to the digital archive?
   1. Daily
   2. Weekly
   3. Monthly
   4. Once a year
   5. No set schedule. We add images when we get them.
   6. No new images are added to the archive
   7. No answer

12. How are images stored in the digital archive?
   1. On CD
   2. On DVD
   3. On a hard drive
   4. On multiple hard drives
   5. I don’t know
   6. No answer
   7. Other (Please Specify): __________________________

13. How does your organization address the potential for digital files to become corrupt or unreadable by newer software versions? (Select all that apply)
   1. We don’t consider those possibilities
   2. We keep backups to guard against data loss
   3. We open and resave images on a schedule to make sure they are up to date
   4. I don’t know.
   5. No answer
   6. Other: (Please Specify): __________________________

14. What was the reason for creating an electronic photo archive in your organization?
   1. Shift to digital technology eliminated prints in our organization
   2. Keep up with current trend
   3. Make files more accessible to greater number of users
   4. Digital files need less physical storage space
   5. No Answer
   6. Other (Please Specify) __________________________
15. What is the level of public access to archive?

1. The archive is open to view and download remotely.
2. The archive is open to view remotely. Users need permission to download images but are not charged to do so.
3. The archive is open to view remotely and users must pay to download images.
4. The archive cannot be viewed remotely without permission.
5. The archive can only be viewed at our organization.
6. There is no public access to the archive. It is for internal use only.
7. No Answer

16. What technology was used to develop the archive?

1. We developed it internally using off-the-shelf software.
2. The technology support staff wrote software specifically for the archive.
3. An outside consultant created a solution with off-the-shelf software.
4. An outside consultant wrote software specifically for the archive.
5. I don’t know
6. No Answer

17. Where did the idea originate to create an electronic photo archive?

1. Publisher, CEO, administrator of organization
2. Photographers
3. Editors
4. Head librarian
5. Archivist
6. Other staff
7. Public/clients
8. I don’t know
9. No Answer

18. How was the archive project undertaken?

1. I was told to create it and did it myself.
2. Someone else in the organization was told to create it and did it.
3. A committee was formed to explore options.
4. No Answer
5. Other (Please Specify): _______________________________
19. If a committee was involved, who was represented?
   1. Photographers
   2. Editors
   3. Librarians
   4. Archivists
   5. Business managers
   6. Public/clients
   7. No committee was involved.
   8. No Answer
   9. Other (Please Specify): ____________________________

20. How was the structure and look of the archive designed?
   1. It was determined by the software available to us.
   2. It was determined by technical limits of our computer system.
   3. It was determined by an outside vendor.
   4. It was determined by looking at other archives and using the best features of them.
   5. No Answer
   6. Other (Please Specify) ____________________________

21. Were proposed solutions presented to a committee or to those in charge of maintaining the archive?
   1. Yes
   2. No
   3. I don’t know
   4. No Answer

22. How many versions of the proposed archive were presented for review before the final implementation?
   1. We only saw the final version.
   2. Two or three
   3. Four or five
   4. There were more than five revisions
   5. I don’t know
   6. No Answer

23. How was the archive introduced into use?
   1. A small group was trained to test the archive.
   2. Most users were trained in how to use the archive.
   3. No training was given. We just started using it.
   4. I don’t know
   5. No Answer
24. Once the archive was put into use, how was it revised?
   1. Comments from staff or users led to changes
   2. Technical problems led to changes
   3. There have been no revisions.
   4. I don’t know
   5. No Answer

25. How is the success of the digital archive measured?
   1. User statistics
   2. Sales of images
   3. User comments
   4. Staff evaluations/comments
   5. No Answer
   6. Other (Please Specify) _______________________________

26. How would you rate the success of the process used to develop the archive?

   1  2  3  4  5  6  7  No Answer
   Very  Satisfied  Satisfied  Somewhat  Neutral  Somewhat  Dissatisfied  Dissatisfied

27. How would you rate the success of the introduction of the archive into use?

   1  2  3  4  5  6  7  No Answer
   Very  Satisfied  Satisfied  Somewhat  Neutral  Somewhat  Dissatisfied  Dissatisfied

28. How would you rate the success of the digital photo archive?

   1  2  3  4  5  6  7  No Answer
   Very  Successful  Successful  Successful  Neutral  Successful  Unsuccessful  Unsuccessful

Please indicate your level of agreement with the following statements:

29. Creating a digital photo archive was necessary to our organization.

   1  2  3  4  5  6  7  No Answer
   Strongly  Agree  Agree  Neutral  Somewhat  Disagree  Disagree  Disagree
30. All personnel involved with using or maintaining the archive were given the opportunity to participate in its creation.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Neutral  Disagree  Disagree  Disagree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree

31. A variety of solutions for creating the archive were considered.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Strongly  Agree  Agree  Agree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree

32. The staff has been open-minded about implementing a digital archive.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Strongly  Agree  Agree  Agree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree

33. The process of creating the archive is reflected in the final product.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Strongly  Agree  Agree  Agree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree

34. The digital archive has improved our ability to retrieve materials when requested.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Strongly  Agree  Agree  Agree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree

35. The interface of the archive is easy to work with.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Strongly  Agree  Agree  Agree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree

36. The archive has made it easier for users to find what they want directly instead of relying on staff.

1  2  3  4  5  6  7  No Answer
Strongly  Somewhat  Somewhat  Somewhat  Strongly  Agree  Agree  Agree
Agree  Agree  Agree  Neutral  Disagree  Disagree  Disagree
Contents of the follow-up email message requesting data about the archives.

July 11, 2006

Dear <<Contact>>:

A few weeks ago you or someone else in your organization participated in an online survey about the digital photographic archive at <<organization>>.

Thank you again for your help with my dissertation research. The responses are very enlightening. As I compile and sift through the data, a picture is developing of how photographic archives have been developed and maintained at different organizations.

The responses bring to light some new questions to consider about the archives. Would you please take a few minutes to reply to this message with answers two follow-up questions to give more detail to the study?

1. What data is included along with the image in the archive at your organization? Put an X next to all that apply.

( ) Caption
( ) Subjects in photograph
( ) Location
( ) Photographer
( ) Date image was made
( ) Whether image is published or unpublished
( ) Whether image has been sold
( ) Date image was published/sold
( ) Size of image
( ) Technical data (type of print, exposure information)
( ) Photographer’s notes
( ) Pricing for prints
( ) Usage/copyright restrictions
( ) Other (please explain)

2. Many organizations include information about copyright and use of images on their web sites. In addition to any text outlining copyright or usage policies at your organization, what technical restrictions are implemented to protect copyrighted images from unauthorized access or use? Put an X next to all that apply.

( ) Visible watermark or logo on images public can view
( ) Invisible encoding that allows us to identify our images
( ) Using script to disable right-click or “Save As” functions in web browser
( ) Using Flash or other technology that prevents saving images from web pages
( ) Limiting the size and resolution of images to limit their usefulness
( ) We do not allow images to be viewed on our web pages if we do not control the copyright.
( ) Other (please explain)
( ) There are no technical restrictions on our images.

Thank you again for your assistance. If you have any questions, please contact me at the email address or telephone number below.
APPENDIX C
Text of communications sent to participants

Postcard sent prior to the online survey
Dear <<Contact>>: April 2006

Photographic archives are moving from file cabinets to computer files, raising questions along the way about how digital archives are created and presented to users. My dissertation research focuses on digital photographic archives. I am particularly interested in how the archive reflects the culture of the <<Organization>>.

In the next few days I’ll send an email to <<Email>> providing more information about the study and requesting your involvement, along with contact information so you can reach me if you have questions. A link to access the online survey will be included. I value your participation in my research project, so please take the time to complete the survey.

Email inviting participation in the online survey
Dear <<Contact>>:

Photographic archives are moving from file cabinets to computer files, raising questions along the way about how digital archives are created and presented to users. My dissertation research focuses on digital photographic archives. I am particularly interested in how the archive reflects the culture of <<Organization>>.

Your organization has been chosen as one that creates and/or stores photographs. As a representative of <<Organization>>., your participation in this online survey will be valuable to my research and will help to answer questions about the way digital materials are being preserved for future use. Your responses will be kept confidential, but a code assigned to each survey will allow me to determine which organizations have responded. Following the survey, I may contact you to request an interview to gain more insight into the development and use of a digital photographic archive in your organization. If you are selected and choose to participate in the interview, you may be identified in reports of the research, including conference papers or articles submitted for publication. There are no discernible risks to your participation in this project. You should be able to complete the survey in less than 20 minutes.

If you have any questions about this project, I can be reached at the address or telephone number at the bottom of this message. My adviser in this research is Dr. C. Zoe Smith, whose contact information also appears at the end of this message. If you have any questions regarding your rights as a participant in this research, you may contact a representative of the Institutional Review Board at the University of Missouri - Columbia Office of Research at (573) 882-9585. You may also contact a representative via e-mail at umcresearchcirb@missouri.edu.
If you agree to participate in this online survey, please follow this link:

http://freeonlinesurveys.com/rendersurvey.asp?pid=enjs9nt7kfp3h674643

If another member of your organization would be better qualified to respond to the survey, please forward this message with the survey link to that person.

I value your participation in my research project, so please take the time to complete the survey.

Thank you.

Second invitation to participate in survey
Dear <<Contact>>:

You recently received an email from me with a link to an online survey seeking your knowledge about how digital photographic archives are created and maintained. As a representative of an organization that creates and/or stores photographs, I thought you would be the perfect person to complete the survey.

If you have just finished the questionnaire, please accept my sincere thanks for your help. If not, I encourage you to take a few moments to do so today by following this link:

http://freeonlinesurveys.com/rendersurvey.asp?pid=enjs9nt7kfp3h674643

Your experience working with the photographic archive at [organization] will help answer questions about the way photographs are being made accessible to the public and preserved for future use.

To assure that my project is comprehensive, your participation is very important. However, if you feel another member of your organization would be better qualified to respond to the survey, please forward this message with the survey link to that person.

If you have any questions about this project, I can be reached at the address or telephone number at the bottom of this message.

Thank you.

Final invitation to participate in the online survey
Dear <<Contact>>:

In a few days the online survey I invited you to participate in earlier this month will come to an end. Representatives of more than 130 organizations that create and/or store photographs have responded so far, providing insight into how their archives of
photographs have been created and maintained.

Please take a few moments today to ensure [custom] is included in the results before the survey ends on Friday, May 19th. Follow this link to complete the survey:

http://freeonlinesurveys.com/rendersurvey.asp?pid=enjs9nt7kfp3h674643

Your participation is vital for helping to arrive at answers to questions about the way photographs are being made accessible to the public and preserved for future use.

If your organization is one that has not created any type of photographic archive, you can still participate in the study. Sending a reply to this message to let me know [custom] does not have an archive will ensure your organization is counted in the final survey results.

If you have any questions about this project, I can be reached at the address or telephone number at the bottom of this message.

**Thank-you sent to online survey participants**

Dear <<Contact>>:

Thank you for your participation in my online survey about digital photographic archives.

I’m very pleased that [custom] will be included in the results. By completing the survey or forwarding it to another member of your organization, you’ve helped me greatly with my research. The initial results look promising for determining how different types of organizations create archives and for providing some ideas for organizations that have not yet created one but would like to.

If you have any further questions about this project, please contact me. I can be reached at the address or telephone number at the bottom of this message.

Thank you again.
Just to refresh your memory, you helped me out with a survey earlier in the summer about the digital photo archive there and how it got created, how the system was created, and that’s what I want to talk a little more about just to try to learn about how it works there at the Reflector.

You’re the managing editor there, right?

Correct

So, what is your relationship with the archive? Do you actually have to do anything with it, or is it all in the hands of the photographers?

We actually, everything we do, our system’s set up that it saves everything, and so whether it’s our, you know we put a lot of stuff to the web site, or with our system here we can just type in a name, a slug, and it’s all automatic.

Everything that goes into your pipeline then to appear in print or on the web is automatically archived in the system.

Correct, we can slug it and search for it and if everything works right it’ll pop up for us.

That’s cool. What system are you using there?

We are…. Let me see. I knew you were going to get technical on me. And some of these questions I may have to write then down and answer them for you later.

OK, that’s fine.

So, I’ll say what systems. I can answer those questions. I’ll call you back on those… the technical stuff.

Sure, and I don’t really want to do much in the technical sense. What I’m more interested in is kind of how this process happened to get you from what you had before to this digital archive. Did you have, previously to this digital archive, did you have the standard prints in a file drawer sort of thing?

Well, you know, when I started here in ’79 we were black and white, all prints and we did our own film. So the photographer would come in. He’d roll his own film, and then
we’d have little cassettes. We’d pop them in and we’d shoot. So just as an example, say there was an accident. He’d run out, shoot the picture, come back, develop his own film, and you’re talking 20-25 minutes, just to process. There’s only so much you can do. You’ve got to stay in there and wait your six minutes, and the clock and the whole thing. So what he would do is he would get the negative, and then he would make a print. So now you’ve gone from the negative to the positive. Well then we take that picture and send it to the back, and they would have to shoot it again. And then when we’d send our page out, we would put, say where that picture is, we would put just a black piece of paper. When the negative would come out it was blank. We take a negative and make a picture. They would take a picture of our picture and paste it in, so now you’ve gone from negative to positive back to negative. Every time you do that you’re losing a little bit. And then we would send it out and we would make the print. So we went from negative to positive to negative and back to positive.

Now when he comes in with a digital, you know, there’s an accident out there or there’s a head shot we need, he can shoot it, put it in and in a matter of, depends on how fast he is, in two minutes I can call it up and put it right on the page. So we just go second generation, from negative to positive. That has been a huge thing there.

The old way, yeah, we used to have old prints. We’d have big boxes of them. And then of course when the girls would come in, you know, if their boyfriends played for the football team or they were doing a scrapbook, they’d come in and they’d rifle through all the pictures and hope to find them. Now we have nothing. We have none of those now. So Lou will take all his pictures. If he shoots, or if one of us shoots, like yesterday I was out shooting a Thanksgiving dinner thing. I put those in. He puts all those pictures on a disc. And then he makes double discs. He keeps one here and one at home - just an off-site backup. And so all of his pictures, or whoever takes, are all on disc. So say we have something and we need a picture of somebody, we can go back and say we don’t have a picture but we can find a story. Don Hollert’s here. He still clips all our stories. We can find that story, find the date. He can go back on his disc, pop it in and that date look for that assignment he shot and he’s got all those pictures. That’s our internal that we can get to that other people, you know, if you go onto our web site, you say you type in your name and we did a story about you, you can find that picture. But for us internally, he has everything on his cds. That’s a great benefit there. Of course, you still have to have a date, and you know say “I remember doing that story, when was that?” And you start thinking… We’ve got one guy here who remembers everything. If he’s gone on vacation or at lunch then we’re in trouble, but, you know, it’s all there. It’s just a matter of… it’s like the stuff at your house. “Well, I know it’s here somewhere.” So the better filing system you have, the better off you are. But we have… Every picture we take now we have.

OK
You know, in the old days, we used to have to keep our, you know the sleeves that you put your negatives in? We’d file all those. Now it’s just on CDs, so that makes it a thousand times better.

So when the photographer comes back, everything that comes out of the digital camera is going into that folder that goes on the disc.

Absolutely. So we may… he goes to a football game or an event, and he takes 100 pictures, and we only use one in the paper, all 100 will be saved. So, you know, those CDs will have thousands of pictures on them.

Do you know offhand whether, this is a little bit off topic, but whether the photographers tend to do a little self editing while shooting… review at halftime and then delete ones that obviously….

You know I don’t think he does. I know a lot of guys do. Now Lou, he went to some volleyball here recently with Don. Say if Don drove home, he could bring his laptop with him and then he would…. I think at times there are some, you know, real bad ones he’ll throw away, but generally… 99% of the time… everything he takes we’ll keep.

Now on the survey you mentioned that this basically came about because of the shift to digital technology

Yes

And, that you’ve maintained this archive for just one to two years, was what you said the organization has maintained the archive. Would that reflect your shift to digital technology?

Yes. And it’s probably a little bit longer than that. It’s probably 4 or 5 years now. I probably underestimated that. I can say just going back, what he used to do is we used to have a head shot file. You know, if we did a story on somebody and we had the print we would put in an envelope and then we would put it in our files. So if you did something, you know, Keith did this, we could go right there and have that picture. Some of those head files of important people we’d use 15, 20 times. And we still have it. I guess the only time we use it now is when the older people we have pictures of die, there’s some head shots in there probably 50 years old. That’s obviously something we don’t need any more.

Do you still keep a ready digital head shot?

We try to of everybody, and you know we used to have, you know, files of city workers, and we go to the cities, villages, school boards. We always had a good guy/bad guy file. We still have that. You know, the prosecutors and police chiefs and fire guys, and the bad
guys would be, you know, the criminals, and just, you know, people that we… We try to keep as many head shots as we could.

Now I want to talk a little about making this shift and developing, again, the digital archive that you have. And I guess I’m talking primarily about the things that go through your pipeline and go into this actual system that you call up, you know, keyword and it right up. Was that system already in place so that when you made the shift to digital that was just another asset that could be incorporated, or did that involve reengineering your publication system a little bit?

Well I think we just went to some new software a couple of years ago, and that’s what … our archiving system came with it. We bought that archiving system.

And that system the, that archiving system, how was that brought in? Was that kind of a committee evaluation process, or the editor, the publisher, said “This is what we’re gonna do?”

I think the publisher had it at one of his former papers.

OK. And do remember, then, when that came in what the process was like? Was there some training and bringing people along?

Oh, there was a guy came in for two weeks and sat here, and the way we did things changed, and that was quite a process there. The guy came in from New York City. You know, this whole change went, we talked about the pictures, but, you know, the way we would lay out the paper would send out… The old way we would send out, the stories would come out in long strips. The ladies would stand in the back at the light tables.

Right

You know, with the headlines, the cutlines and the stories. And now with the pagination that we’ve done for about the last 10 years, everything, when we send out our page, it’s done. So we eliminated that whole step there. The lady who did that is now, is retired, and we bypassed that whole thing. And so we went to, you know, this… every time you update your systems, your software and then, you know, it’s like buying a camera or a camcorder or a TV. It gets better every time you do it. And this stuff is like the TV. You know, you go to Wal Mart and buy a new TV and by the time you get it home and unpack it it’s outdated.

(Pause for Centers to speak to someone at newsroom)

So when you moved to this new system the guy comes in from New York to train people. How many people are on staff there?

We have nine in our newsroom, and I’m saying we probably have five in our back room. Two press people. Our whole operation is right here under one roof. About 9,000
circulation, so we do it from start to finish right here. When you called me earlier we were just finishing up, and by the time we got done talking I just noticed our pressman’s already punched out. So in that matter of time, you know, the paper is from start to finish. And now Matt’s over here. We have now… we’ll go, uh… We’re afternoon but now we have Saturday morning. He’s already got a good share of tomorrow’s pages already done. And we try to do that… get all the dead pages… you know the pages are dead, you know. They’re done. The church page, the outdoors page, the comics page. Stuff we know is going to be on there. Those are gone. And then we’ll save a couple sports pages and one and three, and have those ready to go. So tonight Lou’s going to a football game. He’ll come back, and I’m asking him for five…. It’s a big state semifinal football game. So I’ll ask him for five pictures. So either he’ll drive by himself and come back here and pop them in, or if his wife drives or he gets somebody to go with him he can do a lot of his preparation work on his laptop. It’s probably a 45-minute drive to Tiffin.

So in this process then of putting this new system in, did the staff react to it pretty well? Were they kind of “Well, we’re used to this other thing?”

No, no. You got a lot of young guys… guys who have been involved with it, and knew what we were getting into. A couple of them stepped back when they came here, so they knew this was a good step forward.

OK. That’s one of the things that interests me. The people who write the organizational literature would say that when the publisher comes in and says “Hey, we’re going to go with this new system, and nobody really gets their input on evaluating whether they should go to the system there can be a lot of resistance. But it sounds like in your shop, a little bit because of the age of the staff and the small size of the staff, that wasn’t really a problem.

Yeah. We don’t have too many people… I’ve been here a long time, but we don’t have any. You know some of those staffs have been there forever and it’s tough to do anything. You know, if you change the food in the snack machines they’re up in arms. But it was a pretty good transition for us.

That’s good. Looking over again some of the things you said on the survey it sounds like this system has been pretty successful for you. Have you had any hiccups with it?

Well, you know, right now I could say there’s a guy … for us it’s been good. Right now our techie is in the back, and our front end system for the ads, that went belly up on Wednesday afternoon and they’re scrambling to… you know you can always replace a drive, but they’re not sure they lost everything on it or not. We have not had any problems at all.

You mentioned keeping backup discs of the photographers’ takes. Are there regular backups of this internal system?
We were supposed to have had one, and I don’t know… I haven’t talked to him… he’s back there now and, of course, it’s for the advertising and so it’s not me as much as them. But something went wrong there. We were supposed to have it, but I’m not quite sure. I know one problem we have had lately is when we lose power, they’ll shut down and our wire feed from Columbus or New York will shut down and we lose that. That wasn’t supposed to happen. So there are a few hiccups.

Joe, those were the main things I wanted to explore more with you.

I hope I helped. I’ll get back to you with some exact names.

I would be interested in knowing what the system is just for comparison to see if some of the other people I’ve talked to are on the same on or not. And if you think there are any other things that would be useful for me I’d certainly be interested in your perspective.

I’ll give you a holler.
One thing I need to do from the outset Steve – I don’t think you’re the person who actually completed the survey. I know it was initially sent to Ann Johnson.

Yes, I think she sent back the first response to that and when you sent another one with a number of follow ups she felt like she really wasn’t the person to answer the questions because she really didn’t know. And that’s when she asked me who I knew who might be better equipped to answer them and I guess me. So the follow up responses did come from me.

You are the director of the news technology. So as director of the news technology what role do you play in the digital archive there for the newspaper?

Well, my role as director is primarily to be a liaison between the newsroom and our technology department - to insure that whatever processes we have, whatever applications we buy, systems we decide to use - that the newsroom needs - requirements we need to do our jobs the way we need to do them, are met. That’s my primary job. As a regards to actual photo archiving, whatever system we have purchased, is to come up with processes to allow both the ability for designated users to archive images. We also use, our archive system is designed, obviously, to retrieve images to be able to make sure we build processes to make it easy for users to find images, to pull them back into production. All of that falls to me to look at those processes when we’re building them to make sure that they work and then to make sure that our user community knows how to use them.

One thing that Ann had suggested or answered in the survey is that the librarians archive the published images; the photo editors select and archive unpublished images. You’re kind of the person who just makes sure or oversees that there’s a working process in place for them to do that and then retrieve them later?

In fact what we did was we built, we made the decision – this was our previous archiving system - was really kind of had a dual role – it was our permanent archiving system but it was also the repository for images by all of our photographers. They loaded all of their shoots to this location and then designers, editors – whoever needed them, went to this location to pull what images they wanted to use into the database. We decided to replicate that with the DTI system when we started using the DTI image archive so basically what all we’ve done is we’ve created a system where the photographers drop all of their shoots to this location and then designers, editors – whoever needed them, went to this location to pull what images they wanted to use into the database. We decided to replicate that with the DTI system when we started using the DTI image archive so basically what all we’ve done is we’ve created a system where the photographers drop all of their shoots; they edit their shoot first - they obviously don’t drop every image they take - they edit their shoot to the images they want to submit; they drop those into a folder that automatically archives them. It just when they drop them into the folder to put them into production, it sends a copy of them into the archive so every one they submit goes to our archive and then we know they’re there. No one has to make a determination after the fact to say well we’re not going to use this image but I want to put it into the archive so
that it’s a good image to have two years from now. Its’ going to be there because it goes in automatically. And then other images that get archived by the library staff – wire images, and other images that might not be taken by staff photographers.

So the librarians are archiving? I was reading this as the images that actually get published in the paper but what the librarians archive are the non-staff images.

No, they actually archive all the images that get published. What happens is if they’re staff images well they’re already there so they get rejected behind the scenes because wait I’ve already got this. But what the librarians do is make sure that all staff, that all published images get sent over to the archive. Some of them are already there. Which is the same situation - let’s say we take a picture a year ago and then use it and it gets published and archived and then we reuse it six months later. Well, the librarian is technically going to archive it again because it’s attached to a story and they have no way of knowing that’s a photo we’ve already archived so they just run the same process because it doesn’t require any more work on their part but it’s already there. So it doesn’t archive it again. The system looks at it and says I already have this because every image has an ID number and that ID number never changes – it just says I have this ID number and it just doesn’t put it in there.

Does the data that would be associated with that image and I’m kind of looking here to double check what kind of things are in there – whether the image was published or not. If that comes up again six months later does the data update to reflect that it was published twice?

Yes, in this particular system. In our previous system it did not. You just knew it was there. In this system when you go and look for it in the archive among the actual data that is attached to the image it is always the original data. In fact the way the system works is obviously images are changed, toned, things are done to images for publication – sometimes you cut them out, do fancy design work to them but our archive system is designed to always take the original, untouched image – not all systems do this but our system does - it always protects the original image and that’s the one that always gets pulled over to the archive. Along with the original captions written, all of that information however it does when you do this is why you archive a photo or send a photo to archive even though the actual image itself isn’t going to be duplicated to the archive. It recognizes the image and says heah I’ve already got the image I don’t need it. However it does pull down data like plan run date so that it attaches to that image so that if it gets used four times in a year when you go to get it out of the archive you can look at a list and say oh, we’ve used this thing four times in the last eight months maybe I should find a different image. So it does capture that kind of information but it only obviously captures the image only one time.

That’s a neat feature.
It allows you to be able to at a glance to see if you’re over-using an image. Which sometimes you will do – maybe you’ll have this nice scenic downtown picture that you kind of use in general situations and you may look and say I can’t believe we’ve used that this many times in the last year – maybe the public’s seen this particular picture enough. Let’s find something else.

Right.

So it does have that feature.

You said this was the DTI System.

Yes, the system we have was built by Digital Technology Incorporated.

Is that a pretty much off the shelf product that they have?

They’re a company in Utah that builds publishing systems. It’s a comprehensive database based publishing system that incorporates all of our pieces, as it were, that are tied into the same system; in other words, our advertising system is on DTI; our classified system, our news system, our page building process – all of them are in the same system – our billing system, accounting, so that there’s a much greater opportunity to cross over with information as opposed to the way most newspapers operated in the past where the accounting system had nothing to do with the publishing system – they couldn’t even talk to each other. Most of the time the advertising system couldn’t talk to the news system – they had to be joined in some third party in order to be able to get a page out that had editorial content and advertising content. It was a much different process than it is now where they’re really are in the same system; they just have to be managed by someone. Same thing with images – it’s actually made it easier. I just had a request from an advertising person just the other day that they were looking to get a photo to use in an ad that we had published some time back in the paper and I was able to find it in the news archive and transfer it to the advertising archive so they could pull it out and use it. That was a much harder process prior to this system. You basically had to find the image, print it out and go give them a copy and say here put it in your own system. But now it’s an easier process.

That’s good, it sounds like a great system. Were you around when that system was put together? How long have you had it?

We’ve been live - we started it - we did it in steps. The very first step for news was in the fall of 2001 and I was doing a different job then and I was the first one to go on live and produce products on DTI and that was in October 2001. I was the only one doing it. I was kind of a one man operation putting out a community – we have a number of weekly community tabs of publications - and I was in charge of two of them so since then we slowly turned it on; we’ve been completely on DTI for two years now I guess roughly.
How has it been received? Was it something that everyone embraced right away or took a little cajoling?

No, and I’ll be honest with you there are aspects of it that we still don’t like a lot. But no company, and I’m only speaking for newspapers because that’s what I know, but the change from the way we were doing things to the way we’re doing them now both in terms of the way we’ve had to change certain processes but in the way users have to change - how they find a story how they find an image - how they do almost anything. Some of those changes were so dramatic that a lot of people basically had to relearn their jobs. No one’s going to embrace that because it’s just an awful lot of work. They’ve gotten pretty good at it and our staff is pretty good at using the system but there are aspects of it that are too manual. Our archive, the search engine, the way that DTI built the archive system, in terms of how you search and find things is horrible. It’s absolutely horrible. So we’ve gone back to them and they have completed a web based search engine that allows for a more Google like ability to search for stories and we hope to have that implemented by sometime in October which is going to make a huge difference in the way the user community views the system. Because it’s one of the big thorns in their side – it would take me an awfully long time to explain to you how it works or doesn’t work but it’s just it’s not intuitive; it doesn’t find things. There are roughly 10 steps you have to take, little steps you have to take when searching for things and if you miss one of them you probably won’t find what you’re looking for or you’ll find the wrong thing or you’ll find some of them but not all of them. And it requires you to always remember, make sure you remember all of these steps. We try to automate everything we can but you still have a lot of manual steps - that’s what we’re trying to eliminate and as soon as we get the story archive, news story archive, up and running, bugs worked out and are happy with it, DTI has promised that they will duplicate that same type of search engine for images, so that we can find them easier. We can find them – we haven’t missed a day of publication but it’s just harder than it should be it really - should be a really simple process and it’s not as simple as it ought to be.

The story archive is kind of your beta testing platform and then you’re going to roll it out?

To make sure that people like the functionality and then we’ll just do it for the images. And plus it’s a little easier to find images, that it is stories. Images you tend to look for in a different way. You tend to look for images based on some fairly simple criteria – I’m looking for a picture of an apple – so I go in and do a search for a caption that contains apple so it gives me all the images that someone put the word apple in the caption field. That’s a little bit easier than story searching when you’re usually looking for several pieces of information because well if I say I want every story that contains apple I’m probably going to get 20,000. So I need to refine that search more by saying it’s a story about apples, but it was also written by this person and then I’ve got to put a range in because it ran sometime in 2004 so I have to tell it – the way it works now is to have to tell it to look between these two dates so I have to put two dates in so you have to do a lot
more to refine story searches than usually you do when you’re looking for images. So the image searching is a little bit easier but it stills needs to be much better.

Now the one thing that Ann had indicated on the survey that a lot of people had input into what the system needed to do. The photographers, editors, librarians, archivists, were represented. Is that pretty much still the case as you’re going through these evolutions?

Oh yes, absolutely. The genesis of the story archive that DTI has built at our request also came with our input. There was probably less IT input into how it would work than there was from our user community. I gathered together a group of reporters and editors and said okay how do you want the archive to work. What’s your expectation when you log into the archive in terms of what you should have to do to find what you’re looking for. They understand that you can’t you can’t just look at the screen – and go show me the story that said – you have to load criteria but it should be as easy as possible. You want people to be able to find stuff quickly and then once you find, it what’s your expectation of what you need to do? What do you need to do - you just need to look at it so how easy is it to see the story? Do you need to output it – how easy is that going to be? Right now printing out of the current archive once you find the story if you want to do a print out of it, to put it in a hard copy, to take it with you - you basically have to copy and paste it out of a window into a Word document so you can print the Word document. Because the steps you would have to take to print it out of the archive - well for every one you do that way I can do about five by copying and pasting it into Word but you shouldn’t have to do that. You should be able to hit a print button – select this story, hit a print button and send it to a printer. In this new system the new engine does exactly that. Ann was right there was a fair amount of user input when looking at these processes. You can get yourself bogged down in trying to pacify the whole user community because different people have different expectations so you could spin your wheels for an awful long time. So you have to kind of gather a staff a group of people that you kind of trust their judgment and then take that information - where we have conflict we obviously need to make a decision but try to incorporate as much of that as we can. So we try to do that as much as possible.

But it sounds like it’s an environment where the users do feel like they can say we need this to work better?

Oh yeah absolutely they do. It’s like any other company. You have your percentage of users who don’t feel that way but most of the time they don’t feel that way because they don’t take advantage of the fact that they can, they in fact - our editor it’s a pet peeve of his and it’s to the point where the people have finally gotten the message. He hates and I hate it too but he has more clout than I do so it’s better when he hate. He hates talking to a user who comes to him to complain about a process that doesn’t work or piece of equipment that doesn’t function properly or anything along that line and when asked well what have you done about that, basically the answer is nothing I’ve just complained and I’m complaining to you. In other words you haven’t called the help desk and reported that problem; you haven’t talked to Steve and said heah look this process doesn’t work can
we figure out a way to make this process work better. So in other words they sit in silence and stew or complain to their neighbor but never really mention it to someone who has the ability to maybe get it changed or help you find a different process. But you always have that – it’s a fairly small percentage of people. Most of the people understand that if something doesn’t work right or if I’m having trouble with it well then let me get help. Or let me make sure somebody’s aware – this is supposed to do a and it’s doing b. It’s encouraged here which I guess is not as usual as it is I find when I talk to certain people that work for other companies they’re not all like that – you’ve got a problem, well tell us about it and if it’s something that needs to be fixed or changed get involved in helping change it so that next time they build it or refine it they’re getting information from someone who’s actually got to use it. I certainly encourage it and that in the fact that it helps with the other people involved if it doesn’t work just right I can point to somebody else and say that’s what you wanted. I don’t want it all on my back and plus it’s not fair. I’m sort of the one at the center of all that but I’m not a user anymore. I was for many, many years but I’m not now but it would be presumptuous of me to always assume that I know how this should work better than the people who use it because I’m the director of technology. Well no you know I’m a better director of technology if I’m smart enough to know I better go down and talk to a couple people about how this works. They’d be much better apt to know what it ought to be doing then I do and then use my influence do my job and take that information to try to initiate change.

When this system was brought in and you mentioned it was a big change and a lot of people had to relearn their job how did the organization handle that resistance. Was it - we’re going to train and keep pushing?

After all of my talk here about how good this company is in involving people in change – that did not happen with the actual purchase of this system but that’s because it was purchased not with the idea that we want the system that the users like the most that the people who work with it are going to embrace it easiest– the decision to buy this system was a pure business decision based on what it could do to grow the business. I think they made a conscious decision that if they tried to sit down with all of the departments and hash through usability and functionality and all of that in terms of well that one’s easier to do that – we still wouldn’t have a system. We’re going to base it on we need it to do this list of things that will allow us to do things we can’t do now in terms of advertising and billing and accounting and news – all of these things so that decision was based on those criteria – once we had the system they said now we’ll do everything we can to make this transition work as easily as possible so they provided as much training as they could. You know they took the recommendations from DTI - you know how many hours of training for what particular job and stuff and they didn’t cut any of that stuff – you say that but we say that they did that they devoted people full time for a period of several years to the project. They didn’t do anything but work on the DTI project for a period of 3 years – internally to make sure that things were going to get done I mean we’re still doing it – it’s a system that constantly gets upgraded. We’re getting ready for one in early fall that will bring in some new features and correct some things that don’t work right - that sort of thing. I don’t think they’ve scrimped on training – they make it available to
people who for the most part, people who aren’t properly trained or don’t have the proper amount of training - oftentimes it’s their own fault they haven’t taken advantage of the training that was offered to them – the opportunity was there but they said they didn’t have the time and they muddle through – that’s what they do - muddle through.

**I think that sheds a little light on one of the answers that Ann supplied. One of the questions was rate the success of the process used to develop the archive. She didn’t give that as quite a positive response as she did to some of the other things.**

I think coming from Ann that would have been a fairly negative response. In fairness she’s right but I would if the response is indicating that it wasn’t well thought out, that it wasn’t set up properly internally from the company’s standpoint, I would disagree with her. I think it was, I think the problem was that the system itself was so flawed no matter how much training you did, no matter how much set up you did, no matter how much the company did internally to make that conversion process smooth, it wasn’t going to be smooth. I’m trying to draw an analogy. If I’m a mechanic and you bring me a car - it doesn’t matter if I’m the best mechanic you’ve ever met, if the car is missing two pistons and a transmission I’m not going to be able to make that car run. No matter what I do and that was really what it was – no matter what people did to train staff to utilize our archiving system, no matter how good they were, no matter how much time they took, the bottom line was, it was it is a flawed system – you’re only going to be able to do so much. You can teach them how to do this and work around this problem in the end yes they can do it; everyone who needs to use our archive system can use it - they find what they need but we started the DTI project in October 2001 and I can count in 5 years on one hand the number of deadlines we have missed because of the system, because of the inability to get something done because they couldn’t get something to work. We’ve missed deadlines because almost all of the them we missed because someone decides to hold a page to do something - you know they make a news decision - people get it done but that being said - but when it requires the use of the archive they get it done at a cost and the cost is usually their sanity. It’s frustrating and some people just flat out just don’t get it and I think that feeds into the library’s staff frustration. They find themselves doing more searching research for people that they really shouldn’t have to be doing – the reporters should be doing that themselves. But the reporter has become so frustrated to find things correctly they just call up to the library and say I need you to find this for me and that feeds into their frustration because it’s not like they’re just sitting around with nothing to do. They could be doing something other than looking up this story for the reporter that he really should have been able to find on his own but he finds it too difficult.

**That’s an interesting point. Can I shift to a couple sort of technical things?**

Sure, as best I can and remember I don’t know if this is important to you or not but I have very little formal technical training. I’m a news person – I’ve been a reporter and editor for thirty-five years. That’s by design. My predecessor, the person who had this job before me until last August when he left - exactly the same background, was an editor.
Our editor made a conscious decision once this project got going that the person that he wanted in charge of technology from the newsroom, he wanted it to be someone with a news background because you can learn the technical skills you need – you can rely on your technical department to handle actual technical tasks – he wants the person sitting in this chair to understand how a newspaper gets put out and what we need to do to put it out and IT folks by in large don’t know that or understand that or agree with it a lot of the times. They look at it through a different lens so I look at everything through a news lens and as I go along I learn the technical aspects that color, that shade that a little bit and say well this is what we need to do this from a newsroom perspective but you know what, we need to adjust that a little bit because it’s in too much conflict with what’s going to happen technically and we need to make these things work. All that being said – ask all the technical questions you want and I’ll be honest enough to say I have no idea, that’s something I don’t know.

This isn’t incredibly technical as far as software, gigabytes, anything else. Ann indicated that the images in the archive are initially stored on a hard drive and then there are backups kept to guard against data loss. Is that backup another hard drive or are you off loading them to other media?

Yes, everything is saved on a server and we have redundancy. We have a back up server - actually we just changed the technology. We had a replication server that basically saved everything to tape and then loaded it to the back up server, I’m not even sure how often. We now have what’s known as snap technology…

TAPE CHANGE

…it does that every hour. At the way we’re operating now if we lose our server and it crashes and we’re out of business with that server, the worst case scenario is that we’ve lost an hour’s worth of work. When we go back up to the replication server to work the worst case scenario is that someone did something an hour ago - it’s gone or did something 59 minutes ago and it’s gone - and they have to redo that work – that’s pretty good. When it comes to the archive it’s the same thing. Everything that gets put into the archive gets put into replication so we replicate everything - I mean that doesn’t mean that they both can’t go belly up. I’ve asked that question before – the IT folks tell me the chances of two different servers in two different locations with two different power sources, both failing to the point where you lose your data - happening is somewhat greater than getting hit by lightning It’s just like if we had an earthquake in Virginia Beach – both servers get sucked down into the magma – in that case, guess what, we’ve got bigger problems than moving data. Yes, there’s redundancy in everything including our archive. There is no single point of failure for any of those applications.

Ann indicated that one of the reasons or the reason for shifting to, creating this electronic archive, was this technology shift in creating the photos – the shift over to the digital technology basically eliminated prints. I’m guessing somewhere within
the Virginian Pilot there’s still a bunch of file cabinets with prints and negatives and things from the pre-digital age?

I suspect there’s still stuff there. The library still has image files of old black and whites – that sort of thing. They still have them – you can still go back and look for pictures. There’s a file of whoever the mayor was in 1950 and there’s probably a couple of images in there. But for the most part we’ve been storing images electronically and I don’t mean digitally since 1992. The Merlin system we had was where we had images stored. You’d log in and go find them and drag them over or you’d print them out. The processes have changed. You know there was at time when you’d find them electronically and then you’d print them because you wanted to resize them and then have them handled – that was a long time ago. This system isn’t, what we didn’t go to DTI because of this. The electronic archive is being used now because the technology exists. Now it’s made it easier to keep images because it’s pretty much automatic. An image gets dropped into a folder and that folder spins it into the archive. And it spins it into the production system so you’ve got the image to use right away; you don’t have to go get it - it’s already where you need it to be if you do want to go get it a year from now.

One of the things – I guess you guys are storing jpegs?

Actually we store – you know I’m not 100% sure that’s correct but I can tell you in about 5 seconds. I’m looking in the archive right now. Because we use in production, we use various formats jpegs, Photoshop documents, tiff files, what I don’t know is whether or not when it’s archived is it converted to a jpeg which is obviously a smaller image. My sense is that the answer to that question is no – we archive them in their original format whatever that might happen to be. Now that I’m thinking about it – we archive whatever format they’re dropped in it. One of the things that we’re able to do because of the size of the archive is that we’re able to keep images we want to keep large in original state large – we don’t want everything scaled down so if in a year from now I pull that photo out and we ran it six columns and now all of a sudden it gets stored in a way that if I blow it up to six columns I’m going to have too much degradation – you don’t want that to happen - you want to be able to do that or even run it bigger. That is one of the challenges that we’re facing in fact we talked about it in a couple of meetings and we need to probably address it more as time goes on is that technology in terms of image taking has advanced so that digital photography and the advancement with the new cameras allows the ability to take images much bigger, which allows you to put so much more data into the image and you have to be able to handle that. It was not 5 years ago you’d be hard pressed to find an image that was being used that was more than maybe a megabyte in size. I see images in here now that are 80, 90 megs. Because they’re going to use them as full pages and lay type on them and they don’t want to lose anything so they’re going to run this thing as a 13 x 21 image. You know what that’s big and if you save it as a 3 meg jpeg you’re probably not going to like what it looks like when you blow it up to a 13x21 so that technology allows you to be able to do more and to make things look better but you’ve got to be able to store it. So you’ve got to make sure you’ve got enough space to do that and enough space in your archive to do that. We’ve, our archive is big but it’s not
limitless. We couldn’t fill it up in the next 3 years with almost anything we did but after that we’d be dealing with problems and we have to be looking that far down that road. Are they going to get bigger even – do we need to be looking at – what we don’t want to be doing is looking at storage images outside of the database which now makes it harder for users to get to them. You want to be able to keep them in this environment where you can go get them anytime you want – you can search for them easily by subject matter or photographer or whatever and be able to pull them up and put them into production and use them. You don’t want it to be a laborious process.

When you say that you couldn’t fill up the archive in the next 3 years - are you talking physical megabytes, gigabytes storage or actual entries that the database can handle?

Ask me that again?

When you say that the archive is big but not limitless, my initial thought was sure at some point you’re just basically going to use up all the space on the hard drive. But wait a minute maybe he’s also talking about that the actual database itself will only recognize 500,000 entries and after that you have to rewrite the database.

There’s no limit to that. It’s merely a space issue and it’s expandable. But when you start to talk about buying database, buying servers, buying space, you’ve got to deal with the fact that it’s expensive, it costs a lot of money and I as a news person looking at this can see the need. You know if we start to tighten up, if disk spaces starts to become an issue, I can say well we just need to buy more and I’m not the person making that decision. And the person making the decision at the corporate level – they don’t have the same perspective and they’re looking at – the first thing they look at isn’t – news says we’re running out of space we need to portion, buy more. OK are we wasting any at all are we keeping things that really shouldn’t be kept are we using it as efficiently as we can – any competent company would do that. You show me that you’re wasting none of this space that everything is essential and you still need more of course you’ll get more but until you can do that they’re going to question. They’re not going to say oh you want more – it’ll be here tomorrow. It’s incumbent upon us and by us I mean news or advertising or whoever’s using archive database to make sure you’re saving everything you absolutely should; you should never not have something you’re going to need - by the same token you shouldn’t have anything in there that you don’t absolutely need - so you have to be careful in how you build it - how you manage it. You know one of the things we haven’t been doing with our old system, we didn’t do and we’re not doing it now and I have to figure out a way to periodically have someone be able to do this – images get dropped in that have no caption - now it should never happen. People who drop images into the database know they’ve been told numerous times you never put an image in the database that doesn’t have a caption on it - one that’s correct, one that’s free of errors, everything else - that doesn’t mean it doesn’t happen. In a production environment you find that – no you go find the photographer - you go find somebody and you say I need information for this photo. In the archive world you’re not going to use that again for who knows when
and by then there’s no way to capture information – you have an image with no information, no relevant information as to who it is, where it is, when it was taken, anything, who took it - it’s a blank caption. That’s useless - we might as well delete the image because you’re never going to see it in the archive anyway – whatever search criteria, whatever search you do for that image, for images, is going to require that something be in the caption field. That’s where it searches - it searches for the caption if the caption is blank then at that point what good is it, so one of the processes we have to figure out is how to periodically go through and say show me images that have no captions and get rid of them because they’re just taking up database space and no one’s going to be able to find them anyway.

It’s kind of one of the areas I guess the archival scholars or whatever are a little concerned about with this shift to digital is and you’d even kind of mentioned it earlier the perspective anyway is that in the film days a photographer would go out shoot the assignment, develop the film and maybe not every picture got printed up but that sleeve of negatives went in a file somewhere so all the outtakes were there whether they had information with them or not. But now in this digital world they’ve already got a situation where the photographers are dropping the things they think are good images and deleting things that – they’re already making one edit and now here’s another potential second edit because there’s no caption information – there’s a lot of images that are just going to disappear.

Absolutely but keep in mind I’m looking at it from my perspective and it’s not as extreme as it sounds. Yes, you’re right – if Chris Tyree who’s one of our photographers goes out and shoots a Virginia Tech football game. He might take 150 pictures over the course of that 3 and a half, 4 hours, he’ll come back and he’ll look at those obviously some of those are going to be out of focus, some of them are going to be - he missed the shot, and some are just automatically some images you would never care about anyway. But he’s going to probably boil that down to maybe 8 or 10 pictures and submit that group of 8 or 10 pictures for publication – make your choices based on those - those are my best 10 pictures and we’re going to use two or three. So for the permanent record, for the rest of time that shoot are those 10 images. And he may go back afterwards and say I’m going to archive another half a dozen here and these are really good pictures of the players and over the course of the season we may want to do a feature on this guy and these are good shots so let’s just say in the end 18 pictures out of a 150 he gets of actual images he clicked is what gets put in the archive and gets saved forever. That seems like an awful lot of pictures lost forever because of the technology but in the old days, what I call the old days – you went out and shot it, you souped your film you printed the ones you thought you were going to use and then you sleeved the rest of these negatives so you never really lost them. If you ever wanted to go back you could - the reality is if you’ve ever worked in a newspaper after about a year you’re never going to find them anyway that so many pictures get taken, so many negatives I mean I worked for 13 years at a paper that by the time I left it hadn’t gotten to any kind of digital yet so they were still sleeving all of their stuff and I would often have to go in and find images - I was the sports editor – 90% of what’s in there you’re never going to find unless you were going
to sit down and take hours and go sleeve by sleeve looking at these things under a glass or sticking them into a machine that gives you a little, you know pops the negative up on the wall. Although technically the possibility being able to retrieve any of these images existed because they existed on a negative in a sleeve. The reality is most of them were no more really available than those digital images you deleted because you’d never be able to find the time or the manpower to go through them to look at them anyway so you see what I’m saying?

**You’re keeping fewer images than you had but they’re probably more accessible.**

Right. And you’re probably keeping more images than you were anyway because the process of getting images pre-electronic was so laborious by comparison that you really made sure you were only printing the images you were going to use – ask any photo editor and they’ll tell you that they provide far more choices to editors and designers now than they did 15 years ago before it was electronic. Because to provide the choices meant to print the picture – to go into the darkroom and make an image. They’re not going to do that to a dozen images for a shoot that realistically is probably only going to use 2 or 3 pictures and except for special events that’s kind of the maximum you see in any newspaper – a lot of stories take one you know space is always, has been, that concern so then you had you know well I’m probably going to run 2 or 3 pictures. You’re probably going to get no more than 3 or 4. Here are the ones to run - basically here are the ones you’re going to run. I printed up this other one to kind of give you a choice here maybe this one is better than this one. Now it’s so easy to do – yes, it’s the Virginia Tech game we’re probably going to use maybe 3 pictures – okay here’s a dozen to choose from. It takes a matter of seconds. The restriction we place on our photographers now is don’t over do it. Remember these are all going to the archive so don’t - I don’t want you going out and shooting a Virginia Tech football game and dropping 50 images from one game into the archive because you know what the editor’s not going to have time to go through 50 pictures and decide what he wants. There needs to be some management there and there is – that’s why we have photo editors. Photo editors oftentimes will go you know you don’t really need both of these – they really kind of tell the same story - this is a better one so let’s go with that one. So there’s a lot of self editing and then there’s consultive editing with photo editors to get it down to a manageable number but the bottom line is that manageable number is significantly bigger than it used to be in the pre-electronic age. You’re technically losing images that you really didn’t completely lose in the old days but realistically you did because you’d never be able to find them off the negative anyway no matter how good your system filing system was and you’re actually getting better choices to start with but usually more choices because it’s easier to give them to you.

**Let’s say the photographer does make that kind of big edit and then the photo editors sits down and says well you don’t really need this and you don’t need this do they then have the ability to say well these two things are really the same thing we’re going to ditch this one and take it back out of the archive or once it’s there is it there?**
The process of the photo editor involvement in those shoots – that generally takes place before they’re loaded. They make those decisions and then say here’s the group that we’re going to drop into the database which will ultimately put them into the archive. So they make that choice first.

**For the Virginian Pilot what’s been the big benefit of the system you’ve got now? What’s the one thing that says yes, this was the greatest thing since sliced bread?**

Probably the biggest advantage and it’s going to be real hard for me to speak to this in anything but real general terms. As I’ve said before the ability to be able to have all of the different facets of the operation more easily connect to each other. So it’s not necessarily an advantage to news – that doesn’t necessarily make life easier for the newsroom but it makes life easier for the company. It makes life easier for the Pilot as an entity. That’s probably the fact that this system allows virtually every aspect of the organization to communicate in terms of their data, in terms of the things they do, allows the company to be able to better track across departments because they can share the data more easily, if you see what I mean. I think it’s the biggest advantage – I think it’s the reason that most newspapers use this type of system or at least one based on the same, whether or not it’s the same company or not because that’s what they want to be able to do. Newspapers of 20 years ago were like 5 different companies all operating in the same building – circulation, production, editorial, advertising – yeah the bottom line was they were all working to put a newspaper out every day but they operated so much in their own little universe because (a) they don’t do a lot of the same things and (b) it wasn’t easy to communicate – I’m not talking about talking to each other; I’m talking about being able to communicate in terms of their data and their processes. These kinds of systems allow that to happen. That’s probably the biggest advantage. From a news perspective I mean it’s a more if there were a group of people in this room when I said this they’d all start to cackle - you have to filter out the perspective of how users look at things – they only remember when things don’t go right. I have the advantage of being able to sit back and look at the things that work the way they’re supposed to. It is a more efficient system than we used to have. It does do things faster. It does allow you to do more. Our previous publishing system – we operated in a world where our designers of our front pages operated in a completely different environment than the people who edited copy and the people who did inside pages. Front page designers worked in Quark – they worked on Macs – everybody else worked in this environment - in the Atex world - they couldn’t talk to each other. When you edited a story once you were done editing the story you had to output it out of the system into a folder so a designer could grab it and bring it into their Mac, do what they needed to do with it and once they were done they’d send it back to you. Okay I’m using this much of the story, the rest of the story is yours, go ahead and lay the inside page out. Not an efficient way to do things – that’s the way it worked. Designers will tell you they loved it and they miss it and they wish we’d never gotten rid of it. But they’re looking at it from the perspective of you know what I operated in my own world every all day; I was never touched by anything else. Well, that is a real good way to work but not for the person who has to wait for the stuff. In other words you can
look at things from a purely centric – I’m not looking at this beyond the scope of my job, then some of these processes aren’t as good as they used to be but we don’t look at things that way – at least in the whole we don’t. The fact that everything is fluid now in news – everything interacts together – page one is in the same place as the others in that page set they interact - you can jump a story from page one to page two in a moment you don’t have to give it to someone else to do it you can just do it yourself and you can just flow it from one place to another. Those things are much more efficient than they used to be.

There has been significant, over the course of the time we started the project until now, significant time savings in terms of what you’re able to do. We’re still barely make our deadline every night like most papers – we push the envelope to the end every single night so the argument can be made that well we didn’t change anything we were barely making the deadline before we’re barely making deadline now but I would challenge those same people to say okay show me a copy of today’s paper, show me a copy of the paper 5 year’s ago - tell me if we didn’t do more in the same amount of time last night that we did 5 year’s ago in terms of how we used images. How complicated our graphics were, how complex our layouts were; we are accomplishing far more in the same amount of time now with this system than we ever did with the other system and that’s the biggest advantage. Without having to hire people, or extend deadlines which would affect the customers we’re able to give them more every day.

Sounds like a good result. Is there anything else we should add to this?

It’s been very comprehensive discussion.
The New York Times

Nancy Lee

I don’t know if you got a chance to look back over the material - the answers David had supplied for the survey - but for refresher what I’m exploring is how organizations that work with photographs have incorporated a digital archive? How they’ve moved into this technology? So not so much how the archive itself works but the process of getting there is what I’m after. You are, just in terms to verify, the term that David had given me was Vice President for Business Development - but you came through the photo side of the newspaper right?

Yes, I was the picture editor at the Times.

Were you in the process of developing the digital archive that the Times has?

You mean when I was picture editor? It was during that time, if memory serves, and Dave is probably more knowledgeable about this than me, because when he worked for me he was working to develop the Merlin archive because digital photography was just starting to be more and more used by shooters. The digital cameras, when they first came along, were extremely expensive so we had very few of them but over time as the price came down and it was clear that the quality was better and better, we started using more and more of them and then of course what came up for us is how do you store the images? And that’s where Merlin came in for us and Dave was really the guy who spearheaded that whole effort to create that archive.

He said that as far as this process of putting an archive together editors formed a committee to kind of outline the needs of the archive and how it needed to work. Is that pretty much the way the process went?

I think what he was talking about was a cross-departmental committee formed, probably as much as a decade ago, to discuss using the archive for commercial purposes – selling prints and stuff. I don’t know of any committee of editors that formed – I know about this other committee, and maybe I’m just having a memory lapse and he’s right that editors got together. But I think the truth of the matter was that we pretty much had to buy it off the shelf - Merlin. There may have been an archive before Merlin that we cobbled together ourselves – I’m trying to remember if that’s true or not. I know I’m trying to remember, it seems like a million years ago, but Dave was really very much involved in the creation of what is now the modern digital archive. So whatever he says I guess I would accept, but I don’t remember any editors getting together to decide how it ought to go. Just how we ought to -you know - whether we can make money from all these old prints we had but that’s more hard copy than digital.

The New York Times is one of the newspapers that does promote selling photographs from its archives and I didn’t know if those were somehow tied in with the digital side of things or if those are pretty much all the old negatives and prints?
It’s both – we sell both modern photography and the older photography so some of the prints that we sell are made from digital images. But I would probably say the more popular ones because people are interested in nostalgia are from the old printed negative archives. But that’s just a matter of time you know because what’s in the digital archive now will be vintage – people will be interested in this view of events.

**So as far as the New York Times store and the ability to get to those prints – is the entire digital archive of the Times accessible through that site or are selections, galleries created, a selection of prints made?**

It’s a selection. You can’t put the whole digital archive up because it’s really only meant for internal use – it’s not like the AP where everything that they put on the wire is vetted and captioned and all that. Our archive has outtakes in it and it has raw captions in it so you don’t want that to get out to the public. You want to be able to clean those things up so no one would be able to understand half the time what the real caption was because often a caption is everything that’s on a take. You would want to sort that all out and since there are millions of images - so the Merlin archive is internal only.

**So in terms of this connection to the sales then, just to make sure I understand, the Merlin archive is something someone might use to create a collection of images that would then be transferred onto the commercial site for sale?**

Yes. Yes.

**Does everything – I’ve talked to some different newspapers and they have varying methods in terms of what gets archived - does everything that photographers shoot at the Times go into the Merlin archive or is there some self editing that happens before they upload their pictures?**

Dave would be more knowledgeable about that then me. I would assume there’s some editing involved and they may download when they come back into the office their entire take onto a CD, but from the field they would certainly send the top one or two pictures and then later on bring the rest into the office. I don’t know how much they’re storing these days. Storage becomes cheaper and cheaper of course but there’s more and more stuff to store.

**And that was another issue. As you get to a certain point - if Dave has more direct contact with this - but as you get to a certain point, especially given the number of images the Times must deal with - have you had to kind of go back and shuffle some things out of the ready archive and put them into storage? Have you hit a storage limit yet?**

We haven’t had a storage limit yet although I think we’re approaching it. What I think will happen is not that Merlin will be edited per se because I think that would be too hard
to do but rather that you would create a deep archive and then a current archive that had a year’s worth of stuff on it. And then if people wanted to search further than a year back they would go into the deep archive. So you don’t have everything sitting right there - you have it in a separate container if you will, and then people can search that older container of stuff. But we’re just in the process of talking about this right now because we are selling so many more pictures and we need such a higher resolution and this requires more storage, so we’re trying to figure out - we’re working with Dave even this week – on how much storage is that and do we need to send everything at such a high resolution? Can we pick and choose - should we - does it interfere with the news deadline if you send things – does it take longer to send stuff at a higher resolution - so we are sorting that through.

That’s interesting because at the University of Missouri I’ve worked with the Pictures of the Year and they have a fairly high resolution that they want the pictures in for the ability to have an archive they can pull from later. But that’s one of the tradeoffs is that upload time to get the images there especially when they go to an online entry.

And the last thing you want to do is be on deadline - is to be drumming your fingers on the table top waiting for a picture to arrive because it’s at a higher resolution than you need for the newspaper at that moment. I’m not much of a techno person but apparently part of that decision has to be made at the moment you shoot. We have to kind of figure out what our position is on it. In many ways it’s up to the newsroom because the sale of pictures is secondary obviously to anything else that happens to them. Their first and foremost reason for existence is to enhance the journalism of the New York Times. That really has to be a picture desk call.

How is the archive accessible within the Times? Is it pretty much the photo editors who are the ones who use it or if a reporter is looking for a picture from an event a year ago or something, is it available generally through the newsroom to search?

I think almost anyone can search Merlin if they want to – certainly the art department can search Merlin. Whether an individual reporter – I think they can - I think reporters can also get into Merlin and search but Dave would know more about the capability of the general newsroom to tap into it. I know the news desk can – they can look at whatever that’s coming into the in box file for page one purposes and the like.

Before you went to the digital system with this transition what kind of an archive was kept at the Times?

It was a hard copy archive of photographs of prints we either collected from various places - whether they were free lance photographers, or television studios, corporate handouts or staff pictures that we shot and made into prints and they were stored. We still have them all – we have about 7 million prints and they were stored in this building so it
was all hard copy and negative so we in fact have three archives at this point - a hard copy archive, a negative archive and a digital archive.

Those prints and negatives - are they indexed, cross-referenced – the kind of thing if somebody said I’m looking for a picture from the mayor’s inauguration in 1972 – they could look that up and go to that drawer.

Yes.

Great. Again I think that’s one of the differences between a larger organization with the resources and some of the smaller papers I’ve talked to. I was talking to a guy on Friday – “well we had some prints in a box but you had to just rifle through them”.

No - ours - we have a cataloging system but the negatives weren’t as well cataloged as the prints were so what we’ve been doing is digitizing the captions of the negatives - the key words on the captions. So we can search for instance - the thing with the prints was that everything that got printed got put into a drawer but if you wanted to find a negative of Coney Island let’s say - someone was out on Coney Island and they shot a weather picture but it never got printed because it wasn’t needed that day in 1962 or whenever - it just got filed - the negative got filed. You don’t really know that it’s in there unless the print points back to that negative so that’s why we wanted to capture all of the captions digitally so we could search for Coney Island and find the negatives for every shoot we every did on Coney Island. It’s really valuable to us as well we sell prints and also for purposes of the news. There might be someone’s name who we’re looking after - let’s say even a world trade center bomber who we happened to photograph at some other time but whose picture we never used - and it’s sitting in there but there’s no real way to find it because we never made a print to point back to it.

So this will be a searchable text archive of what’s in the negatives? 7 million prints plus - how many ever million negatives that go with that - is a lot of material. Are there any plans to go back and systematically digitize the actual images?

You know it doesn’t really pay to do that. You have to be able to - a lot of what’s in the files now is stuff that was saved for a one time purpose that was important in that moment – that mug shot of some businessman in Little Italy or whatever that you may never use again. I would say maybe half of the images in there are images that probably have no further news purpose. They’re just there because they once appeared in the paper and so we saved them because we saved everything. I think newspapers that systematically digitized or like Time Life which systematically digitized, found that it was very expensive and it really didn’t make sense because they didn’t need everything that they then had to store. What we do is when we pull things out create a distinct file. Let’s say that we’re doing a piece on Times Square and we pull out whatever files we have on Times Square and we choose photographs from those files we have to run with the story. We already have the files out so that’s a moment when we can put it aside and digitize
what’s there – selectively of course – you don’t want everything and some of it’s wire stuff and some you don’t own – the stuff you do own that you think you might use in the future you can then digitize. That’s the smarter way to do it I think rather than do everything.

Right. Again, that seems consistent especially when you’re talking about that many images that - okay it’s one method of preserving just in case something should happen to the actual physical print - but is it worth the investment?

When you think about it, it probably costs $10 an image to digitize, right? Maybe somewhere between $5-10 and if there’s 7 million images that’s 70 million dollars. How can you justify that? You can’t. There’s no way you can get a return on that investment and there’s no way you can even say to yourself well that’s good for the newsroom – it’s not 70 million dollars good for the newsroom because the truth is you can find what you need anyway. You know you just have to open a drawer rather than type something into a computer and once you find what you needed it automatically goes into Merlin and then it’s in there forever.

Does everything then automatically go through Merlin – whatever the photographers upload, whatever’s published – everything would go into Merlin at that point?

I think you have to – Dave knows more about this than me – my understanding is not everything goes into Merlin. You have to choose to put it into Merlin. Everything that’s printed goes into Merlin I believe because it’s captioned and it’s in the mainframe, you know pagination system, but I think other than that if you have outtakes you need to select them and that’s a problem because it’s so easy to archive – you just push a button and what people do is archive things without looking to see if they have enough information on it. So that 50 years from now someone will actually be able to understand what’s in that image – they’ll just hit the button but they might not be able to ever find it again because it’s not properly indexed.

You were transitioning into digital photography and needed a way to capture the digital images and store them in an archive – the introduction of this then to use - was that a pretty smooth process or was that something that took a lot of getting used to for the photographers and editors – do you remember?

You know everyone reacted to it a little differently. Some people took to it really quickly and welcomed it. I remember when the AP decided it was going to take out its hard copy print machines – you know those laser fax printer things – whatever they called them – and send everything to use digitally – people were freaking out. They really thought they were going to lose – they didn’t think they were going to get everything this way – they thought somehow the system was going to break down and there would be no way to recover from that if everything came in and didn’t exist in real time. But then gradually it proved itself to be untrue but of course there were storage issues at that moment when the
AP shut off. You either had to make prints or find a way to internally store things electronically and that’s where of course Merlin came in. I think that - at first my memory - is that there was a mad scramble to sort this all out and get used to it. Some photographers also really hated the digital camera and still do. They much prefer film but of course you can’t beat the digital camera for news covering purposes because it’s immediate. You can send it instantaneously; you don’t have to develop film and the quality is very good - it made all kinds of sense but people were attached to the old ways of doing things and it was a tough transition to take film away entirely and force them into digital. And that of course was the time of conversion from black and white to color which we did gradually thank heavens. We just got people used to shooting color film and but published in black and white so they became comfortable with it, so by the time we got there, they were able to manage it. You know change is difficult for most people. I think especially change that’s that enormous when there’s a paradigm shift in how you do things. The news business in general is in a paradigm shift right now between a digital technology ad hard copy and no one has yet has figured out how this is all going to get done and that’s where we were with the shooting. But eventually it morphed over and now not only is digital photography the industry standard, it’s the human standard. It’s what everyone uses now – you see digital cameras everywhere. No one except me of course. I still like film but I’m going to buy myself a digital camera – no one really uses a film camera anymore.

So it sounds like it wasn’t so much the process of introducing this digital archive that was the change for the Times - it was the digital photography process itself – the archive was just one of the pieces that had to go along with it?

The archive was the by product. The change was the digital photography and moving away from film and not making prints and learning to tone and crop on a computer screen - that was the change

Was that pretty much mandated to the photographers – you’re going to go to this – or was it gradual as the photographers made their own shift?

It was gradual but eventually mandated.

Sounds like the shift to digital television.

We were spending hundreds of thousands of dollars a year on film and at a certain point there was no reason to do that - as long as we could figure out a way to store the images that we shot.

Are the print and the online products of the New York Times both tied into the same archive – everything that would run online if there were an ability to run more images as a photo story but not necessarily running them in the paper – all of those things go into the archive equally or are there separate systems for those?
I think the online nytimes.com people use the Merlin archive to get the images that they use – there’s no other way to get them. You know they have to go into that archive and pull them down onto the digital site – there’s no other place for them to go. So it’s one system that the *Times* uses for news.

**Once it’s published online it’s tagged as published in the archive?**

That’s a question I don’t know the answer to.

**Overall David seemed to be pretty satisfied with how the archive’s been working and what it’s meant for the *New York Times* as far as ability to retrieve images – people to find what they’re looking for. What would be your assessment of it from your position?**

I completely agree with him. I think it’s been a very good system for us and so far we’ve had very little failure of it. We have a redundant system now so that if we have a failure we have another way to retrieve the images. That’s always everyone’s fear of course – that one day some power surge will come along and wipe out every image we ever had and there’s no going back because there aren’t any hard copy prints. But we have a redundant system and it’s very easy to find what the stuff you need as long as it’s tagged. Sometimes it isn’t and that’s the only time we come into trouble – stuff that’s published we can easily find because it’s marked as published and if you know when it’s published you can go by date and find what you want – very simple – it’s been a good system for us.

**Is there, other than increasing the storage, a next phase for this archive - something you need to address from this point?**

I don’t think so. I don’t think it really pays to have someone go through - we thought for awhile about paying someone to be a gate keeper - somebody who made sure everything that went into Merlin was properly captioned and tagged but it just - I don’t think it’s really worth it for what you lose. You have so much the ability to find what you want – one thing - all the wire photos that go in there are appropriately tagged and they have great captions on them – some of the outtakes from the staff work - that can be a bit of an issue if you want to go back and find it again especially if it’s tagged in a very general sort of a way - Bryant Park or Central Park – then there will be 10,000 images in there and you’d have to sort through them all to get what you needed. I can’t think of what – wouldn’t it be great if we had the AP-like system that everything that went into the archive also went up for sale but you know I just don’t think I don’t know there’s a justification for that.

**You’re right as far as the justification because you have to think about how many different views of this topic or this event are people really looking for. One of the other groups I’ve been talking to is archivists at state historical libraries that may also have a few hundred thousand prints in their archives. But maybe ten thousand**
of them that if that many that get regular use or are on topics that people regularly search for and so those are the ones that we are going to digitize and make accessible – if somebody ever shows up asking for one of the others we’ll deal with it then.

We just published a book called New York 365 Days through Abrams and we had to do a lot of searching through the archives for photographs for that book and that created a whole little mini archive that we then digitized and then can sell the prints from. So it’s that kind of thing that really helps you the most – not doing it all – doing it all just clogs up your system so you have everything including things you don’t care about in there and it just isn’t worth it.

**Are the print sales pretty strong revenue source for the Times?**

They are. They are. They are a very strong revenue source for us. And we represent other people’s work as well. We try to provide for people a really good site to go for fine art. We have watercolors up there and signed work of famous shooters – it’s been a good revenue source for us and for them.

**You’re kind of a representative or agent for other photographers or some of the other people whose work you’re handling in that way?**

Yes, in fact we represent the work of our own photographers – the personal work of our shooters if they want us to. It doesn’t hurt to put it up because you never know who wants certain topics. We’ve represented New York Historical Museum, Mystic Seaport Museum, the Audubon Society, individual shooters – Neil Leifer – Magnum, several photo agencies.

**Anything else I need to know about this archive and what it means to the New York Times?**

It means a great deal to us – it’s our history and we have only recently I think appreciated that to its fullest. Before – prints had no meaning - I’d say thirty years ago they were easy to make, you stored them and you didn’t care if you folded them or stepped on them. A lot of the prints we made were actually bad prints when it comes right down to it because they were made for publication in a newspaper so they had to be flat. If they were contrasty they didn’t come off very well in a newspaper. But now of course prints have value because no one makes prints anymore because everything is digital and so there’s this history - that someone began saving in the early part of this last century - has become not only a news vehicle for us but also a source of additional revenue as well as nostalgia of what the prints represent - get bought by other people and hung on their wall – it’s very satisfying actually. To sell these prints to people and to know they’re looking at them every day and appreciate them and they mean something in their lives. I really enjoy this work.
Utah State Historical Society
Susan Whetstone

You are the photograph curator there at the library?

Yes - photographs, maps and architectural drawings.

You mentioned in the survey that you do various things with the archive – it sounds like you probably manage more than put the actual images into the archive?

Right, yes.

So more of a management function. How many people there are involved there with putting the images actually in?

Well it’s just more or less volunteers that do it. We have two people who scan it and then put it on a CD and then it goes up to the University of Utah where they manage – they do most of the work.

They’re housing the electronic part of the archive for you at the university?

Right. Well, just for the photographs – the big databases. We have our own website here that another person manages - for the whole website for the division.

The state library where you are – the state historical society – has the files, the actual physical prints and then the university people manage the database of the electronic versions of those files?

We can go in and manipulate but we’d be careful with the changes kind of things – we can change things. Well no we don’t. We actually indicate that there are problems and then we have someone changes them for us.

What’s the goal in terms of the electronic archive? Are you scanning certain high interest kinds of things to make them more accessible?

Right now – if there’s a really interesting collection, we’ll focus on that - right now we’re actually looking at putting in – we have about 30,000 images in what we call our reading room, library, where patrons come in and they can browse – and we’re actually working on putting those up – the biographies that we just put on are from there – then we’re working on, I think, government buildings right now. We’re doing a lot of high use items plus specific collections of varying interest.

When you say 30,000 in this kind of image reading room so to speak, is that your entire physical archive?
Oh, no – that’s a drop in the bucket.

That’s kind of the impression I’m getting especially with historical sorts of libraries like yours. The process of scanning everything would take decades.

Oh, right, we just couldn’t do it.

The goal then for what you guys are doing would be these more public type, the more high interest, the special collections - the long term goal is not to try to make a digital back up of everything in your collection?

No, we just couldn’t do it.

One of the things that was unique about your organization, is that of all the organizations that responded to the survey, you’re one of the few who said you actually open and re-save the images.

What do you mean by that?

One of the questions on the survey was addressing the potential for digital files to become corrupt or unreadable by newer software – you responded that you keep back ups but you also open and re-save the images to make sure they’re up to date.

Otherwise, what’s the point? We haven’t had to do it yet. We’re just aware that it needs to be done but we haven’t had to do it yet. Right now we have things on CDs or DVDs like we’ve got a grant from the NEH to do the huge 10,000 image of the Shipler photograph collection that we put on. They’re all on DVDs, and that’s our back up, but then the university has the – no they’re on the database – but we haven’t had to actually do any back up yet. But we’re just aware that it needs to be done.

So you’ve said you’ve got these DVD or CD back ups there and then the university is where they would actually be stored on the multiple hard drive. You mentioned that a committee of librarians and archivists were involved in undertaking this digital project. How long ago was that? How long ago have you had this digital archive?

I’d say the Shipler stuff we did maybe 10 years. We tried for about 3-4 years with the NEH to get a grant and finally got one. I’d say roughly maybe 8 years. That was the start and we’ve always wanted to, but that kind of got us started.

Were you part of that initial committee?

Initially - I was kind of the project chair because I was the one who selected the photographs that we put online. Yes, I was definitely involved with that.
What can you tell me about that process in terms of this committee – did they pretty much encompass everybody that had the expertise – or were they soliciting input from outside people during this development process?

Originally, it was just our organization, period. There was a director and then the library people involved – so maybe 4 who were kind of working on it. But everybody in the library kind of got involved. But I was pretty much the one who selected the photos but then the university – we had to set that up with them too originally because I was the one who brought the collections up to the university and then picked them up kind of thing. They were totally involved from the beginning also.

Then you developed the archive system – an outside consultant created the solution. Was that the university?

Yes. We picked their brains.

So once you had this up you mentioned it’s kind of gone through some revisions and comments from staff or users. Do you get a lot of feedback on the archive from users?

Not so much about the style - it’s more or less the content. Sometimes they’ll find an error on the image – like it wasn’t the right person – that kind of thing. The way the whole set up was initially put on – people have been happy with it because it showed so much information.

Do you have viewing statistics – has it been something that your clients, your constituents, have really taken to?

Our collections have gone up a lot in fact we don’t do nearly as many – hard copies – people like the digital images. I don’t have the statistics – I don’t maintain that at all. But I know the viewing has gone up – we’ve had a lot of hits on them.

Has that been a positive overall for the library in terms of raising your awareness within the community and bringing people to for other things?

Yes, definitely.

Again, going through the survey and from what you’ve told me, it sounds like the process has been pretty successful overall and in terms of how it all came together and the public response to it. The archive itself – say I’m in Utah and want to sit down and look at this – is the actual interface to the archive all web-based?

No.

So your digital archive is more of a stand-alone, separate feature?
Right. We have our – the main card catalog is online and you could actually access that anywhere in the world and you can look at what we have and fill out call slips or have it written on paper, and come in and look at things. So a lot of the things we have are online and a lot of the things are not. Not everything we have is ever going to be online either.

So you might put some collections or feature some pictures on the website to let people know about it. But if they actually wanted to use this digital archive, they’d need to come to the library to search the database?

No, all the digital stuff is on now. The digital stuff you can access anywhere. We have a lot of stuff like registers that show up that you can search but they’re not online – the photograph part – the registers are but not the images and they probably won’t be.

I see. So you can search for the images anywhere.

On specific collections. The collections we have up online are listed under digital collections. If you’ve looked on the website there’s a link that goes right to the digital online photos. And then there’s another link where you can go to the registers and they’re not going to be the same.

Of the pictures that are online, what sort of considerations – this may depend a lot on your collection, what’s chosen – what sort of considerations have to be made for copyright protection to make sure those images aren’t just pulled down and used somewhere else? Are they watermarked? Do people need permission to actually be able to?

Yes, I think there’s a little copyright thing on the bottom of the photo. We scan them at high resolution here but when we put up on the internet, it’s not. There’s trust issues involved too, you know, but we do have a little thing that says copyright on there or used with permission and most people seem to do it. You can probably download things or whatever but it probably wouldn’t give you a very good copy.

So if find something online they’d like and want a higher res version, that’s the point where they contact the library and ask permissions?

Right.

Well, that fills in some of the context that I was hoping for. Is there anything else I should really know about your archive and how it works?

It’s just interesting – I was slower getting to the interview, or filling out the survey, and then you wanted to interview me on top of that – that was kind of interesting. I think you’ve got it covered. We’re just sort of – we had a director that was just really was quite digitally-oriented, good with computers and he realized a lot of the importance of back
ups and generations, changes because things, technology shifts and photos don’t last forever – you have to be able to migrate and shift and just kind of grow with the technology. That’s where that aspect of it came from. We’re just aware digital images are the way of the future and we’re just trying to make people aware of what we’ve got.
So, Amy you’re with the Truman Library and you did the survey yourself, right.

Yes.

You are an archivist or the archivist?

I’m the supervisory archivist.

What does that entail?

I run the archives program here. I supervise 8 different people. I’m the manager of the archive. I pretty much plan programming. In consultation with the rest of the staff, I project what processing priorities we have, what re-processing priorities, preservation efforts, that sort of thing.

It says on the survey that you supervise the department. As the supervisor do you actually do much of the direct adding and updating and maintaining or are you kind of supervising the people who have their hands on it?

Yes. I became the supervisor about two years ago and before that for five years I was an archivist on staff. So the photograph database that’s online was actually my project to build when I was an archivist here. So it’s still kind of my baby. Also we do have a small staff in a very busy research room. I’m not as involved in day-to-day processing as I used to be but I do still keep my hand in it a little bit. And I do oh quite a bit of reference just because we have to.

What was the genesis of the digital archive? I’m guessing there was a print archive there in the Truman Library and then at some point the decision was made to start scanning and putting these in a digital format.

We don’t have a digital archive in the way I think you might be referring to it. What we have been doing is putting up subject-oriented online sections essentially. We are not scanning for preservation – we are scanning for access. Because we still consider our paper copy the master copy. We do have approximately 15 million documents and about 140,000 photographs and the document images that are online came about – we have 54 student research files and what we’ve found – about 15 years ago now – we started to see more and more undergraduate and even high school students coming in to do primary research in the research room – because that’s when the trend became more and more popular that professors and teachers were requiring this. But what we were learning was that these students had never done primary research before and the process itself was overwhelming because it’s obviously a very different approach than books. You get a book on your topic as opposed to 500 boxes of a man’s life where your topic is tucked in
there somewhere. So the process of teaching these students how to get to what they needed was asking a lot of them right on the spot. And then to down and also learn how to analyze original documents and make them useful for your research. So what the staff at the time – I wasn’t here when this program started – what they started to do was to create artificial collections essentially. They identified the top 50 topics that these younger students were coming in to research – the bomb, the Marshall Plan, Berlin airlift all those – and they selected what they considered the top documents in our collections on that topic, photocopied them and put them in a box. So that now when these high school kids were coming in they could pull a box and devote all their energies to analyzing those documents. So it’s an artificial collection created by us but it’s proved very, very useful. What we’ve done online is we’re taking those student research files and now we’re scanning those documents and putting them online. So we’re not scanning a collection – we’re scanning by subject essentially. And we’re scanning for access. We do scan at 300 dpi tiffs and we serve jpegs online so you could argue that’s a bit of preservation there. With our photograph database – it came about because the electronic catalog we have, our electronic database that we used to have for our photograph collection was extremely outdated. I don’t know how old you are but I don’t know if you’ve heard of Datastar for word processing.

I don’t think I know that one but I remember Wordstar.

It’s kind of the database equivalent of what Wordstar was. It was an old database. It was on a stand alone computer and it was proprietary software so we couldn’t network it – we couldn’t do anything with it. So we decided we really needed a more modern, a slicker, and more generally Dublin core compliant way of accessing our photographs. We actually got a grant from the state of Missouri to build that database. Again, it’s primarily an access database. We do serve everything – we serve up as jpegs but we scan as tiffs – so we do have the master tiffs and for us it works very nicely because we don’t have to rescan now because a 300 dpi tiff is publication quality. So when we have requests for photographs, we can give them those tiffs.

Your online database would have the jpeg file that somebody could look at and perhaps right click and save as far as the sorting and so on but then if they wanted to use this for publication of some sort they would need really to come back to the Truman Library and work out all of the permissions and everything before they would be able to get their hands on the publication quality version?

Right. You know a lot of people just right click and put them on their websites which is fine because we don’t display copyrighted images so any of the images you see on our website are public domain.

I’ve looked for a photograph of I think it’s Truman in the Rose Garden but I forget exactly where. But there’s the lone female photographer in the press corps in 1943 - I think her name is Margaret Collins. I had looked it up once and oh yeah great
they’ve got a copy of it but when I went further into it, it was copyright restricted. I guess AP or UPI still owns that image or something.

Usually in the full record it will tell you who owns the image. We just suppress them, it’s easier. We do display images that are of an undetermined copyright because we’ve got a lot of old family pictures and that sort of thing – who knows who took them. Technically, legally they’re still copyrighted but we have no clue who owns them. We do display those and we pretty much decide if someone says that’s mine, we’ll take that down. And we’ve never had an incidence where that’s happened actually.

In the survey, you were talking about a grant from the state of Missouri said that you had help from a staff member then and then contract technicians to do your archive. Were those a commercial firm or other people within the state of Missouri system?

No, the contract was actually part of the grant provided us a staff position. We do have a contract with University of Missouri, with your CTIE department. We have a web-hosting contract with them as well as a development contract. The person that is employed on our contract at CTIE at MU actually is the person who puts the database together. While staff here defines the fields and works with them as what we wanted it to do, didn’t want it to do, what fields we needed, he’s the person who actually built it. We don’t know how.

I don’t know if you know who all the UM people are you work with - is Tom Kochanek part of the project?

Tom’s in charge of the guy we work with. Tom’s worked with us for years.

I thought so. I actually took an online course in digital libraries from him a year ago and thought that the way he talked about the Truman Library and the projects up there they had some involvement with it.

He has a bit of proprietary interest in archives. He’s been around us for years on this. Actually Jim Borwick, who works with him, is our main contact guy.

I haven’t talked to everyone I’m going to be talking with in different organizations for this study. How’s that relationship worked out? Have there been times when the Truman Library has said you know if we had this in house, this would be better because we could get these other things done – or do the benefits of having the expertise at UM outweigh any sort of concerns like that?

From my perspective it’s a wonderful arrangement. Jim Borwick is our primary guy and he is just extremely responsive. If I email him right now, usually within usually 10-15 minutes I get something back from him. It’s almost instantaneous – he’s always available if we need to set up an actual meeting which we do a few times a year – let’s us know
when he’s going to be out of town and who to get in touch with if he is out of town. We don’t have the computer, technical expertise the CTIE department has. We can build web pages – we have a webmaster here – I’m his back up. The two of us update the web page constantly – we do the html work. What we’ve hired CTIE for – (a) the storage space because we just don’t – they have an amazing amount of storage space and we don’t. And also for the backbone – the database work. We can build a web page – we can’t build a database and that’s kind of where the division of labor is. We have complete control of our website – they help enhance it. So bringing it in house wouldn’t gain us any more control because we do control it. We would lose that technical expertise of building the databases that run behind so much of our website now.

**What’s been the top benefit to the library for having this archive in a digital format and available to the public?**

The best thing is a lot of these – for both sides – for the archives and the public – it’s getting that material out there to a broader audience in a much more accessible medium. Anyone surfing anywhere in the world can find those documents or find those photographs. As a little aside, we’re getting some people identified in photographs that we’ve never known their names. People look at them and say that was my great uncle and send us other pictures of the great uncle and sure enough that’s that guy. So we can change our records and actually make our descriptions better and more complete. And also a lot of those photographs and the documents – now that they are out there – people don’t need to come to us for some of that stuff. They can get it right there. Putting up documents and the photographs on our website basically make us a 24/7 operation. Whereas on the ground, we’re only open to researchers 8:45 to 5, Monday through Friday. It helps our ability to complete our mission which is to make everything we have as readily available as possible.

**Any downsides?**

Of the database? People want more – I think that’s really the only downside I can think of.

*I was kind of expecting that from of my own experiences with it. Once you start putting materials up there there’s always well but we want this but we want these things.*

Why don’t you have it all online yet. We only have 15 million documents for heavens sake.

*I think that’s something that a lot of users just don’t have a concept of. They think everything’s on the web now – you go to the Library of Congress site and think about their archive – I think they said 2% of their archive is online.*
You go to their website and think holy cow look at all this great stuff but when you put it in context with their actual holdings it’s a fraction. We have absolutely no plans to digitize our holdings – that is not something we are interested in doing.

Why is that?

I don’t think it’s a feasible option. I think our approach of putting up the subject-oriented documents reaches a broader audience on the web than if we were to put up the 400 boxes of the Dean Acheson papers. A lot of that is going to get back to – people are going to get bored because they’re not going to know how to find the cool stuff. In a manuscript collection there’s a lot of stuff that’s not going to interest anyone but someone who’s writing on that specific topic. And if you’re just wading through it that’s going to narrow down that focus of who’s interested in using it; whereas, our putting up these subject-oriented sections of the website – if we put up 40-50 documents on the Berlin Airlift, that’s going to help high school students - it’s going to help undergrads - it’s going to give grad students actually a taste of what we’ve got – that was actually something we didn’t anticipate – grad students and scholars use these things because then they know they’ve got that much done already before they get here. Obviously they don’t stop there. It also reaches the general public – it’s interesting – its all on a topic and you can access it very easily. It’s kind of like the History Channel – it’s 30-40 documents on a particular topic – on the dropping of the atomic bomb – also with a chronology and a description of what’s going on – it’s all right there. So I just think it reaches a broader audience than if we were to start with box 1 of the Harry Truman papers and just go. I don’t think that would be as appealing to everyone across the board online. But that’s my opinion.

I wanted to touch on a couple technical issues – these may be things that’s not so much in the sense of the actual technology – the scanning and so on – but more of the policy. You indicated that the images were stored on multiple hard drives and I’m guessing that’s with the MU people?

Yes.

They probably handle back ups and so on?

Yes, we have a development server we work on and then we’ve got the live server.

One of the questions that you didn’t put an answer in or it didn’t come through – if there’s anything that you do in terms of file obsolescence but I guess tiffs are going to be pretty well standard but I know if some formats if you do it in one version of PhotoShop then two versions later the software won’t open it anymore. Have the tiffs proven to be pretty stable or is there a plan to start going back and opening and resaving some of these images to make sure that they’re still good?

So far, so good. We haven’t had a problem yet and we’ve been scanning for a couple years. We have not methodically open and closed tiffs but a lot of the tiffs we pull fairly
regularly for researchers are some of those early, early tiffs, though. Because when we first started the photo database – it’s still a baby but when we first went live with it, it was very small. So we made an effort to put up the most popular photographs that we get requests for – we made sure they were up first. And those oldest scans still seem to be just fine. I have to admit we don’t actually have a plan for an obsolescence back up issue.

You’re almost in a way kind of doing that just by practice – some of the most popular ones are some of those earlier scans.

Our database – we’ve never viewed it as a preservation database. We still have the negatives – we’ve still got the hard copy photographs – we’ve always viewed it more as an access database.

You’re pretty agreeable to the ability, the interface, easy to work with, makes it easy on the users, everybody – it looks like everybody who needed to be part of developing this thing got their chance to put their two cents in. If you could step back a few years and say we have a chance to take the knowledge we know now and then back up and do this over – is there anything you’d do differently about the archive or how it’s put together?

We are actually revamping the documents that we’ve got online. The documents we have online started in – a long time ago – with a project that actually was a Department of Education grant that several school teachers in the area obtained. It was called Project Whistle Stop – it was from 1996 to 2001. It was a 5-year grant that they partnered with us and their grant was to take our paper student research files that I mentioned earlier and to scan them and put them online. These were the early days of scanning and what they did – in the research room those research files are in folders in a box and that’s how they originally presented them online. As a bunch of little yellow folders, if you clicked on them, you got hot linked document titles – if you clicked on the link it showed you the document – and that was it – it was just a static html display page. What we’ve been doing – this is essentially what you said – if we could go back and do it again – what would we do – well, we are going back and what we’re doing is we’re loading – we’ve got a database running behind each of our online student research files now that attach to each image of a document – we’ve got a full meta-data description of the document; whereas, in the early project Whistle Stop there was no meta-data at all. It was just there’s your document. In a sense we are going back and doing it over again. We are putting up more research files too. We’ve also gone back to those early ones and reconstructed it basically – we’ve made it much more dynamic – you can sort them now – you can sort them by year – we’ve put them in categories – all the meta-data is there so they’re Dublin core compliant meta-data. I can tell you exactly what we’d do with the images – with the documents – because we’ve done it. With the photo database we’re very fortunate in our partnership with CTIE because we don’t have to go back – we can just say – we really need to think about handling this differently, what can we do? Our partners on CTIE on the development server will just take the photo database and fiddle with it until it’s doing what we want it to do and we test it – and we give feedback – and
they fiddle with it again – and we test it more and we give more feedback – and when we’re happy with the way it looks – they push it to the live server and boom we’ve fixed it. That ability to fix things like that is very, very nice.

**It sounds great – for both definitely, but for the photo archive in particular, this is an ongoing, evolving sort of a process.**

Very much so. It was so small when we started – we had a list of every single date – you could browse by date. And it would show you this huge page that listed every single date that was mentioned in the photo database. At first it was one, little nice page but we’re over 8,000 records now and that page was (a) it was taking forever to load and (b) you’d almost get seasick scrolling through it because it was page after page of November 1, November 2, November – we’ve got to re-do this page. It was just about a month ago when we re-did the browse by date. Now you can click on a year – all the years are listed – you can click on a year and go in from there – so we’re lucky that we can just revamp and go as we learn.

**You mentioned in the survey that user statistics are your measurement for success, how would you rate the success?**

Of the database itself, the photo database I think is doing absolutely great. We get constant feedback via email about how happy people are with the photo database. Our web statistics – the photo database has been in the top five of our webpage hits – pretty much since it launched. The documents – it’s the same way – people get a taste online and come to us for more. For a lot of high school kids, it’s one stop shopping. Interestingly we’ve also been able to track through our web stats – when a program is coming up or when something is happening – what’s the best example – a few years ago NATO accessioned three new countries into the organization and that accessioning ceremony was here at the Truman Library because have the table that the first NATO documents were signed on and also NATO of course came into being under President Truman. Madeline Albright and the representatives from the three new nations that were coming into NATO were all here for the ceremonies. We saw our NATO student research file spike in the statistics in about two weeks leading up to the ceremony – and they were all overseas hits. People in these three nations that were being accessioned were hitting the Truman Library website and were going into our NATO student research file. It’s been kind of interesting to watch what pages bump up and down erratically – the photo database is steady – it’s always in the top five. But watching what spikes is interesting because you can typically peg it to something happening outside of the library which is interesting I think.

**It sounds in a lot of ways like the website has really raised the profile of the Truman Library?**

Most definitely. Our website was getting more monthly hits than the National Archives website for awhile – for a couple years actually. We average between 5-and-a-half to 7
million hits a month. For actual visits, which is a more significant number – because that means people stayed – it ranges between a quarter of a million to three quarters of a million monthly.

**Speaking of the National Archives – the Truman Library – if I’m understanding the hierarchy right, is actually part of the overall National Archive.**

Correct.

**Were there guidelines from the parent organization there in Washington that you had to take into account in terms of building this archive and putting these things together?**

We made a point to make sure that our databases are compliant with the National Archive Archival Research Catalog Standards. It’s the ARC catalog that launched a few years ago. It’s roughly Dublin core but it’s also specific – they have several specific requirements for their fields – they call them elements – but they’re database fields. We make sure our meta-date meets Dublin core standard because we upload our photo database into the state of Missouri’s Virtually Missouri database so we have to be Dublin core to get in there and we’re a partner in that project. But then we also made sure that our meta-data meets the National Archives Archival Research Catalog standards because our goal is to eventually to push all that material, all that item level stuff into ARC as well. So we worked very closely with the people who are in the ARC development team while we were building the photo database especially to make sure we were getting it right.

**It sounds like that was the initiative on your end as opposed to the NARA saying okay if you’re going to do this, here’s what we need you to do?**

Our website, you may have noticed is a dot.org – it’s not dot.gov. It’s sponsored by our not for profit partner, the Harry S. Truman Institute. Being a dot.org – if we were on the National Archive’s website we would absolutely have no choice but to follow their guidelines. It behooves us to follow their guidelines whether we’re on their website or not. It is mom after all. We still made ourselves compliant with them and like you said it was our decision. They strongly urged the libraries, several of the libraries have their own websites independent of NARA - they strongly urged the libraries to follow as closely as possible NARA standards – for the most part I think all of us do. That is our parent organization – that is our obligation – but it was our decision to make sure our databases matched their requirements.
Jeffrey Smith
Contact Press Images

I’m looking at the responses you put down on the survey – and you are one of the managers at Contact?

I am the executive director.

You said you don’t have a live version of the archive at this point. You wouldn’t be the person who’s putting the items into the archive. You’d be more of the supervisory role?

Because we’re a small shop and because there are differences of opinion about what go in there, what will sell, what we should be putting out there as evidence of who we are – which is in large measure mostly driven by the kind of website we presently have now – which is a portfolio site, which yes, does showcase the photographers, but does so via showcasing the agency. The agency intentions sort of pre-perceived those of the photographers. In other words, Robert Pletcher, who was one of the founders of Contact, and David Burnett, a co-founder – Robert has a distinctly different point of view from myself. While commerce is surely on everyone’s mind, I think Robert feels that a much more, tighter selection of images should be available on the web - a very, tight, a very small population of images. Where I feel the selection needs to be wider. So there is sort of this internal company struggle over what gets in, who decides what gets in, who’s the ultimate gatekeeper and on, and on, and on. That continues to be an internal debate. It’s not solely the reason we’re alive at this point – it’s one of the reasons why we’re not.

Being a small shop people just get pressed into – things get triaged – during the period when we may have not a lot of things cooking, we’ll work on it. Something else comes up that it needs our immediate attention that gets set to the side and doesn’t get worked on.

That’s got to drag the process out a bit.

It does and not with the best of results because I just think that the longer that we’re not on it – the more we don’t see. Everyone who I’ve spoken to has encouraged me not to wait until there is a critical mass – put it up there, give it life, add to it, create a buzz around the collection - brings people to the hive and you just add to it. You don’t have to have 50,000 images up there on the theory that the first time people don’t find something, that’s it, they don’t come back. My anecdotal evidence is that people don’t come to look for us for a cow on a hill looking left – they’re looking for something because they’ve seen other places and they’re looking for something that we might have or might have more differently than others. Some months ago we put up a search box on our site that defaults to an email that allows people to sign up for an email alert when we’re about to go live. I follow up personally with every person – this email comes to me – invariably they’re coming to research something and I also think it’s good business to show them we’re on it and in the absence of a live site, we’re still able to deal very swiftly with a
request that they need. Everyone is interested and everyone is looking for something very specific that we would normally have so the people seem to know they’re coming not just to do a wide research but looking for something that they know we have or have might shot in a different kind of way.

**As you’re discussing these options of a very tight portfolio versus something broader, is Contact thinking about at some point, making all the back log, all the catalog of images available in a digital format or do you think there will be like a collection – these are the ones we know we’re going to be researching and we’ll still have our print catalog to go back to?**

We don’t have a print version of our catalog – what exists now is basically a closed stack. In the past, years and years ago, when our office was bigger, we had space for researchers and that was the tradition. We had researchers come in and do their own research specifically, some researchers. But most of the time we do the research ourselves and send it out. There is sort of this internal debate over making it a collection – just drawing the line and saying look this is what we have up here - we don’t have everything. By its definition, we don’t have everything. We’re not a Getty – we’re not a Corbis. At any one time, there may be between 20-25 photographers represented by us and there’s only so much that we’re going to have. I just think that besides having things that we’re known for we should have some of the more unusual photographs that might work for stock purposes.

**But the goal would be to have a publicly searchable web interface, that whatever gets put into the archive, would be accessible by the public?**

Yes. I mean I think there are going to be levels of access. We might decide to put Annie Liebovitz’s work up there, who we represent, but not make it available to everybody – but might make it available on a password protected basis.

**How long have you been going through this process?**

Probably about 2 or 3 years – maybe a little bit longer when you include discussion of selection of software and things like that.

**It would seem to me that there’s a danger in that time that the technology changes, the software changes, have you had to kind of go back and deal with some of these, oops, that’s not available anymore? Or this has really changed and gives us some new directions we can go in?**

Not really – I think we might have started off with something that was sort of deluxe, custom, off the shelf thing and enough kind of product has come along that has enabled us to not have to make a custom system a necessity – there are things out there.
We were talking about the technology changes and that one of the results of this process so far has been that, the archive industry, so to speak, has caught up with what you guys sort of need.

Right. I should say that there are certain holes. The whole issue of key words is an important discussion. It’s one area that some of these off the shelf databases don’t really address. Having sort of key words thesauruses sort of built in are things that these databases have yet to (like PhotoShelter, like Digital Railroad) really deal with. We’re trying to push PhotoShelter in that direction - that’s who we intend to go live with.

**Does Contact have the in-house resources to customize what you want or are you working with an outside consultant?**

Could I ask you to phone me back in 10 minutes? *(Tape stopped)*

*(Tape restarted)*

**What were we talking about – oh yes, software and PhotoShelter I think is what you had mentioned. You mentioned a couple of times of being a small agency. How big is Contact as far as staff?**

We’re about 10 in New York and 2 in Paris.

**This has been on-going for awhile. Is there an actual sub-group that’s working on developing this archive and the way it should go or is it pretty much a committee of the whole?**

Well, the fella who was in charge of the digital side of things – my digital czar so to speak – Tim Map – was the one who was managing the whole thing and advising. He has relocated to Paris because his wife relocated to Paris. The pace is and the demands on the digital side are somewhat less demanding there than there are here so it gives him more time to spend dealing with that. He’s certainly been the one who’s been riding this full time and been keeping myself and the pledge apprised - making informed decision and things like that.

**So he investigates, creates and then says this is where I am what do you guys think?**

Right, or makes a recommendation based upon two options.

**You mentioned that there are kind of conflicting views of the direction and the completeness that is going to be developed. Are those going to get funneled back to Tim?**

I think that Tim’s personal, professional opinion is such that the database should be as full-bodied as possible, not clotted with stupid pictures that someone can get elsewhere.
On the other hand, these are our pictures, and sometimes the Getty image or the Getty take for a particular subject has been used or over-used, so people search out someone else’s material to use. Invariably there will be some duplication in the market – how is that not possible? Just because someone else uses someone else’s shot it doesn’t mean we shouldn’t distribute it and that’s sort of one of the points of view that exists or to the conflict here.

I know that different agencies have different relationships with the photographers, in terms of their involvement - have the photographers weighed in on what they’d like to see in the archive?

I think photographers generally want all of their stuff up there. They want every possible, potential sale to possibly come their way. They don’t really care how you go about and do it. It doesn’t mean they want the entire kitchen sink up there. We’ve sort of proposed the idea of having them choose 3,000 or 1,000 of their best images and I don’t know how far that’s gotten. I also don’t know how useful that is because they have a particular point of view and it ends up looking like portfolio as opposed to being to a collection of images that has a utility.

And there are probably some differences in terms of, as you’re saying, what they want to present and the image they want to present as an archive versus what the clients might be looking for and those could be very different points of view?

Sure.

What about the clients – have you gotten feedback from the people who come to Contact looking for images saying this is how we need an archive to work or the kinds of things we’d like to see?

Not as yet. I think by in large; everyone has said, like any site, is probably the most user-friendly. What everyone has indicated to us – if you build it, we will come. That’s the most sort of input that people have given us so far. For those of us that work with clients on a day-to-day basis, we are ultimately the users of the system. If it’s easy for us to use, it’ll be easy for other people to use. That’s not saying what’s good for the United States is good for the world; it’s not that kind of perspective. I wouldn’t allow a system to be built that wouldn’t be user-friendly. It just has to be intuitive.

Are you looking at any other agencies and how they’ve built their sites and as far as things you’d like to incorporate?

Sure. I look at the Magnum site – I look at the Getty site – you just tool around on the internet and see the different sites. I like a lot what Magnum has done.

In terms of some image management would you adopt a process of – I don’t know if you’ll require registration to even get into the website…
I think so.

So somebody out there like me might make an initial registration and search and see some low resolution or some watermark sorts of images. But to get to the high end requirements, is it going to then take another level of access or once you’re registered and have an account set up, you can get what you need?

I think probably the last option.

When do you think – how much longer do you think there is in the process before Contact says okay here we are?

I really want to try to be live with something by the New Year. It’s my goal for every possible reason – it’s about time. You can learn a lot more by attracting people to it – this is what I like, this is what I don’t like – I think it’s a living, breathing thing and everyone is served, in every way, by getting it up there and live-ing it. We see how it’s being used – we will be able track every part of it – and I think that’s an exciting thing. Right now, yes, I do have some anecdotal evidence just from dealing with the people who are coming and sending me emails, but I think we’re going to gain a lot more by doing the wrong things. I’m of the mind that that’s fine – that’s the beauty of this of the media. It doesn’t have to be perfect right out of the box. Is your research such, if I can ask this question, that users are forgiving, or they’re unforgiving?

I think it depends where the flaw is. I think users are pretty forgiving in terms of some glitches here and there – oh, this works a little bit differently or I have to learn how this site works. If it’s something that just gets in their way they seem to be pretty unforgiving. My experience in terms of this research is more dealing with people on your side of the computer than the people who’d actually be using the archives. In terms of general internet sort research – as long as they can find what they’re after and as you said, it’s fairly easy to use.

What about not finding it initially?

The research I’m familiar with is that people are into instant gratification and fairly impatient and if they can’t find what they want – they’ll go someplace else.

And never come back.

I won’t say never – again it depends on what their options are. There’s a fair number of photographic agencies that specialize in editorial content as opposed to some of the stock advertising agencies. A smaller group of them are centered to where you are as opposed to working out of India or China or something like that. So there’s a fairly small world there. I think for people who are seriously looking at something - I don’t necessarily think that, okay I had a bad experience at Contact
once, I’m never going back there. I think given time they’ll probably come back around and check the site out again - because they do know that things change.

But as you’re developing this process – obviously you’re having images coming in, in a digital format, and I’m guessing you are scanning negatives or prints that might be in your files. What about redundancies and things like that – is there a back up system or a disaster plan in case the drive crashes on you?

I think that’s one of the beauties of the PhotoShelter system is that they have mirror systems on the east and west coasts. If the east coast goes down, or the west coast, you’re protected. Everything that we do here we’ve got on local drives, on two drives. We ourselves have a mirror system. The beauty of the PhotoShelter system is also the redundancy of the east and west coast.

Sounds like a good plan. Not so much with the agencies, but especially with the newspapers, they’ve got them on CDs here, DVDs there, and I’m fearful that at sometime the drive going to go down and they’re going to lose a year’s worth of work.

It’s happened for sure – it’s not something that could possibly happen – it’s happened. It’s definitely an issue that’s for sure.

The main thing’s I was mainly interested in was this process that you’ve been going through and wondering how it’s been going. It sounds like it’s been a little bit of some differences of opinions in terms of how you get to the end of the road but everybody wants to get to the same destination. Would that be a fair way to characterize it?

I think so. There’s a sort of critical mass that happened, I think, once you sort of get it up – once you have a website up there you’ve got to be – part of your work flow is, you’ve got to figure a way, given whatever your workload is and how many ever few people you have to change that regular put up a database – you’ve got to feed it. You’ve got to be responsive to criticism. There’s a lot of stuff that we talk about and theorize and are fearful of, but until you get it up there, you’re still playing and you’ve just got to make it happen. That’s my hope that we do that very, very soon.

I’ve seen the Contact website – do you see the database itself, the archive, as kind of a live tool that the technology can allow it to put some new things on the website or are these going to be completely separate structures – we have an archive and then we have a website that’s created.

We would definitely integrate the search as part of our website. In terms of it being a feeder, I think that Magnum uses that and that’s a good model. The ability to search on keywords for ourselves - and find certain themes in pictures that we didn’t really think about and then draw upon that – if you’re stuck for an idea as on online piece to be able
to do a keyword search on summer – and pull together 6 or 8 images that are evocative of summer, by a half a dozen photographers – you’d be derelict if you didn’t use something like that. I’m hoping that it is really, really helpful to come up with interesting ideas to put online. The way Magnum does it – it’s just very smart. As news events demand, things just change on their site. If Castro dies suddenly, they have a Castro feature that changes every time you log in. That’s the way it should be – it just makes sense. I’m right there now – they’ve got a photographer’s spotlight – they’ve got a new editorial feature – they’ve got current exhibitions – they’ve got a new book and then they’ve got their Magnum in Motion feature. It’s smart, it’s elegant, and it looks like some thought went into it. That’s the way it should be.

**Is there anything else you think I should know?**

Maybe at some point, if you wanted to speak to Tim - I don’t want you to break the bank there because he’s in Paris but you could certainly email some questions back and forth to Tim Map who’s absolutely an integral part of this whole thing,
Magnum Photos
Matt Murphy

One of the things I want to make sure I understand as I talk to everybody Matt is – your specific position there within the organization and how it relates to the archive. On the survey you said you’re kind of an archivist, web coordinator – I see on the website you’re the online coordinator – so where does that put you – do you supervise the overall archive?

Basically I work in conjunction with two other archive directors. One in Paris and one in London. We have a Tokyo office too but no production is done there – it’s basically a sales office. So all production is done in New York, London and Paris with each office being responsible for the photographers that are closest to that office geographically. Basically all of the quote “New York photographers” are all from North and South America.

I’m guessing this is related specifically to the New York office, you said that there were 6-10 people involved with updating and maintaining the archive?

Only in our office there’s myself and another person who works in the archive. There’s a team of scanners – 3 full-time and 1 part-time and then after that there’s a guy who works on captions and also works in assembling distributions - basically editorial packages for the editorial department. Lastly there’s one more person who takes care of key wording or indexing - everything that’s been scanned, uploaded and captioned. In the other offices they basically, give or take a few people, it’s the same sort of operation.

I’m talking with different types of organizations – libraries, newspapers and photographic agencies – as far as a contrast to libraries, you guys are a little unique in that you have photographs coming in on a daily basis. Is everything coming into you electronic now?

It depends. If, for instance, someone is working on an editorial assignment for a weekly magazine – it’s really important that wherever that person is he’s able to transmit the photos he just shot to the client and to us. With that in mind, it’s almost always, these assignment guys that are working on editorials are shooting digitally so the transmission is digital. Some of the photographers have switched completely to digital – some are doing half and half - some of them stick to film – when they have a little bit more time some of them prefer to stick to film. Especially if they’re working on something with a low deadline and again I’m just talking about recently shot material. Some of the transition is to digital but still we get plenty of hard work in.

You mentioned with the group there – the scanners and captioners and so on – is that pretty much the current stuff or have you started to go back and scan some of the things that are in your historic Magnum archive?
We are constantly - matter of fact what I’m primarily responsible for in New York - is making sure that the right material and a good amount of material is coming out of the archive. At certain times it seems that most of the production is going into the scanning and production from archive at other times it could a lot more coming in through recently shot material. Since the strength of the Magnum archive is history, everything that has been shot, that’s very important to keep on scanning all that old material.

Do you have a plan, a road map, for eventually getting the entire archive scanned or are you doing things as they come up on a more topical basis?

There’s a few different ways we pick stuff for submission. On a steady level we try to scan for what people are requesting – we tracked what people are requesting on our website by looking at web reports and we can see who’s searching by what keywords, who’s searching what countries – basically we get those reports so we try to respond to those. But most importantly, since we are a business, periodically we look at which images have sold and if we find trends in - for instance, a major trend that’s existed for the last couple years - it seems as if somewhere around 40% were photographs of the United States. We tend to scan more material from the United States. We have all these reports where we track all types of different trends and we try to scan in response to those trends to produce more sales. But also it could be topical – for instance, this past week obviously we’ve had all types of requests for Beirut and Lebanon – some relating to past conflicts, but then also we found out we had a little bit of a hole in the online archive as far as Beirut in its height in the 50s and 60s – it was a fashionable vacation spot – so in reaction to that since it’s something that’s popular right now, we’ve gone back into the archive and that stuff’s falling from production so there’s a few different methods we use when deciding what’s going to go in from the archive.

I was just looking over the survey and you had indicated you have a digital archive for 5-10 years. Were you part of that original set up?

I know they started the job of scanning and storing images in preparation for the digital database back in the mid 90s I think they started. I was not here for that. What happened in around 2000 they introduced the digital database to the Paris office as kind of a test out that was purely an in house digital database – basically weeding out the bugs and figuring it out. After those were ironed out then the London and New York offices got that digital database and we worked through that. It was always the intention of the designer that the digital database would be used as a resource for online sales, and online archives. I think in May of 2001 the New York office got its first version of the digital database which is called Quartex and around 6 or 7 months later we launched the online database. I was here for that.

One of the things I was curious about with the 5-10 years you mentioned they starting to scan things in preparation for the database coming along – I guess peering into the crystal ball and seeing okay this is where the world is headed – but I
wondered also if it were related to photographers starting to work more with digital or if you had more digital images coming in?

That’s a good question – I’m not too sure. In the 90s how many, if any of the guys, were really shooting digitally because I know even when I started here in 2001 there was complaining about the slow exposure rate with the pro cameras of the time. Even back in 2002 that’s one they were still trying to shoot more on film whenever they could but even in this short time you can see that most of them had switched over to digital – for some jobs and some were exclusively to digital.

Some of the things that are different between different respondents – you guys had an outside consultant who wrote the software specifically for your archive and then you looked at two or three different versions – you said this rolled out in different places. Was that on the Paris version or you guys got to see two or three different versions after that initial testing?

Actually there was this first version – I’m not sure when it was introduced – it was before I came in. It had to have been in maybe ’98 or ’99 I’m taking a guess. It was just the framework – it was very little work in it. It was really basic – there wasn’t a lot of production going into it. I mean on our end – we were basically guinea pigs for it. Then in 2000 the Paris office got the version of what we’re currently on. There were periodic updates to fix bugs and then once we got it since then we do get updates. It’s like any software – the first year you can have a lot of updates because a lot of bugs are going to be found – the second year there’s going to be even less bugs found – and now it’s not very often that we have software updates. We’re going to be launching a new site this fall and then hopefully – all the search and all the archive stuff is still going to be based off this Quartex database. But hopefully, can’t really give it a time – within a year what we’re going to be doing is changing all production - will be accessed online. All that captioning, key wording and referencing and database management – instead of it being done through this local Quartex software – it’s going to be done online.

What will that change about how the archive is managed?

We’ve had discussions with the library director – the good and bad – but it means with the right security authorization you’ll be able to modify images from anywhere in the world. If anybody’s home sick, there’s no reason why they may not be able to continue doing work on the database from home.

Does that open up possibilities of somebody who shouldn’t have the right security access making some changes?

Oh, yeah, as is right now there’s only person in each office with total administrative rights. It would probably stay the same with only one person in each office with those rights to make those modifications. We have a few different security levels – obviously the people who do the uploading, the captioning and the key wording – need to be able to
make alterations to those fields but they’re not able to do certain other things. Those people obviously need to have access to invoicing and contact information and be able to modify that so they have a different type of security profile.

So they kind of have access to specific areas or specific fields based on their job function?

Right.

From your survey answers you were pretty satisfied with the operation and agreeable that you’ve got a good product there and it’s making it easy for your users in retrieving materials and so on. Is that pretty much the feeling around Magnum or are there people who would like to see some changes?

I think when you’re dealing with any software, any system, in any sort of job, there’s going to be people who then only look at the bugs and don’t look at in on a, as a tool and really step out of their shoes and look inward and think about how beneficial the software really is. I think it is great software. But it is buggy and it does require a lot of maintenance so sometimes it can get annoying but I suppose that goes for anything, for any web business there’s always going to be bugs like that. They can get confusing because not only do you have three offices inputting information and managing information in a database. You also have - it’s also web-based - so then you’re adding another couple servers to it. The bigger something like this gets and the more accessibility there are to the public and then to the staff people, the more chances you’re going to have for problems. There are some issues but they’re dealt with fairly quickly. It’s definitely a good tool.

On the organizational end you’ve talked about what your involvement with the archive and what different people do with it, when things do come up that perhaps require some discussion over - we need to change this or we’re running into this problem – is that usually kind of a committee function or delegated to one or two people to go ahead and make those decisions?

When it comes to plain old archive maintenance and database maintenance we have me and two other archive directors as well and someone who in Magnum is responsible for basically being to go-between between the designers and the staff. The four of us have a meeting every Wednesday where we basically discuss whatever needs to be discussed – problems, solutions, new methods – so we’re in daily communication through email and I’m making sure we’re on all on the same page. Then we also have these weekly meetings.

Do you think that other people, like at the scanning level or the captioning level, do they bring suggestions or things they run into – do they have the ability to say I think we need to do something different and make those suggestions.
Yeah.

**What would you say has been the best feature of putting this digital archive together for Magnum?**

The best feature is it’s accessible to anybody – the best feature is actually to improve sales – but Magnum being what it is – what’s incredibly important is that the world’s available to see the photographer’s work – that’s what’s most important. But from a survival standpoint it also is essential for sales - n a nutshell more accessibility for everyone.

**Everyone gets a few phases through some project and then says oh shoot, now if I knew this, I’d like to go back to the beginning and start over. Have you run into things where you’ve kind of said if we could back up and do version 2.0 or whatever it would be at this phase – are there things you would say yes we definitely need to do this differently or these are things I would change? I know you’ve done incremental changes as you’ve gone along.**

Are you asking is there anything we did with hindsight that we could have done better?

**Yes, what would you say would be the big thing that if we knew this when we started we could have avoided a problem?**

We’re basically been working off essentially the same database – Magnum’s first database. Lord knows in 20 years how the business will run and how the online archives and the digital archives will work. Since it was our first digital database and our first online database – there are some things – in hindsight – we wish we would have done that we didn’t do.

**One of the things I thought was unique about your survey – the structure and look of the archive was determined by looking at other archives and using the best features of them. Did you find, as the web develops and people do different things with their archives, a lot of good things to pick out there or was it pretty obvious these are the three or four things we need to get and these are the 18 or 20 that we definitely don’t want to do?**

That’s hard for me to answer because I wasn’t on that exploratory committee that was looking into the production of the first. Looking into features for our new site and then our online maintenance version – we did look at some other – some other online photo archives and ordering systems – just for ideas and concepts to see if we could make what we did and did not like from other companies. We did look a little bit at other people’s. But this was in preparation for something else. As for the original database I’m not quite sure how that was handled.
One of the other things I’m finding out as I go along – people’s job duties change or they move along and these are just getting to the point where some of these archives have been here long enough that the people who were involved in building them have moved on. If I could move along to a couple more technical related questions - you said you store the images on CDs and DVDs and then those are the original images so when find something or somebody requests something out of the archive you can go back to okay this disk has these numbers on it?

Basically submissions in the offices are done in two different ways. If there’s material that we feel clients are going to be requesting very soon and that we don’t want to delay in delivering, what’ll happen is once a submission is made the images will be completely retouched – 100% retouched – and the high res version uploaded to the site. So upon the client’s order being approved they will be able to immediately download the image. The second level that we use so that we can speed up scanning production and entry production is where the image will be scanned – high res of course – it’ll be retouched enough just so it’s be good enough to view as a thumbnail. What will happen if the client orders it the people in the digital department will see the order and they’ll know by looking at the image number that the image has been scanned high res but not retouched right away – the high res isn’t currently on the site – so even if it was approved someone wouldn’t be able to download it so what they’d have to do is go to the back up CD with that file on it, do the 100% retouching and then upload that new version to the site so the client can see the download - two different ways to do it.

So once it’s been retouched and put on the site, do they always stay there for future requests or at a point or do you say the interest in this topic is waning so we can free up some server space and pull these back off somewhere else?

No. Once the work’s been done and it’s been put up it stays until, unless, the photographer requests that the image be taken down. There’s a tremendous amount of material that’s not even available for the public to see that we put into the database – stuff like tear sheets or outtakes sometimes even from digital shoots – we will store that material – but what is on the site for the public to see – what is searchable – is an edit. Once the work’s been done it’s put in – some of the stuff that’s put in out of public view will only be useful to staff people maybe only a couple of times but our thinking is that if the work’s been done, it should be retained.

You mentioned things like outtakes of digital files, who decides what goes in archive? Do the editors there at Magnum reviewing submissions or does everything that gets submitted go in? You pretty much answered that didn’t you – everything that’s submitted is in some form of the archive – maybe not just publicly available.

The photographer’s as a rule – they’re all very experienced - they’re all well accomplished and they’re all pretty good at editing the raw material. In addition to that sometimes we’ll get submissions that have already gone through editorial review by whatever client’s they’re shooting for – if it hasn’t already been edited by the
photographer or it had already been edited by one of the clients. Sometimes we’ll go in and put extras aside from the edit that was made by the client, but I’d say most of the other stuff is made by the photographer. The stuff that’s coming out of the archive – the older stuff – is usually the edit from the archive directly and sometimes in conjunction with the photographer’s.

One of the things you talked about the advantage, the benefit, improved sales – can you definitely tell over the course of time that this online archive has brought a lot more sales into Magnum?

I’ve only been tracking stock sales reports for the last three years. Before that someone else was doing that and before that it was all physical, I really can’t draw a comparison.

Especially with the history and reputation of Magnum, you know people are going to come to you anyway. It can be kind of a hard thing to put a finger on and say, yes definitely, this online archive has boosted sales this much.

Obviously the online archive was launched so it’s more accessible to everybody but at the same time it is very much survival. Other agencies are doing the same thing at around the same time. It was a survival thing but then again, of course, you have to make things more accessible to everybody.

What other things should I understand about how the archive works in Magnum?

It should be noted that plain old Magnum history then though we have a very large and old archive, going back to the 1930s, various photographers weren’t even members – photographers have the ultimate say over what is on the site and how Magnum functions. The photographers – it is their agency. It is a cooperative and we basically run it under their guise. They give us a lot of trust to do what we will with their archives but in the end they have the say. So it’s not like they’re contributing to a business. It’s like we’re basically working for them. That probably sets us apart from some of the other online licensing agencies. The Magnum archive is going to continue to grow. Like you were saying before, we will scan everything in the archive eventually? Oh, man, probably not. In the New York physical archive alone, it’s estimated that we have somewhere between 1 and 1.4 million images, hard copies – and I’d say probably around 700,000 to 800,000 of those are slides – some of those originals, a lot of duplicates, some outtakes from corporate shoots that were just thrown in – it seems as if a dumping ground for second string material – not all of it will ever go in. We’ll just continue to work the way we do with submitting stuff to the archive – stuff to predict sales trends, stuff in reaction to sales trends, topical stuff reacting to what’s in the news, what people are looking at – I doubt that they are going to switch to a scan everything – start here and go all the way to the end, I doubt they’re ever going to do that.

And you’ve still got the originals there to go back to if something if suddenly a file should become corrupt or a CD should fall apart on you.
Absolutely – for instance, a lot of the first work to get scanned was the stuff from the founders – like the classic, iconic work. Since that material was scanned first, it’s quite possible that since the first scan was done in the late 90s the same image was scanned four times. As scanning material and production software improves, it’s capable to get a better and better looking image. We’ll keep on scanning certain images over and over I’m sure as the reproduction can improve.

**Are the photographers giving you much feedback on the site and the archive?**

Yes, we obviously urge them to be active with their own archive – the photographers as well as the people who manage their estate – these are the estates where the photographers have passed away. We ask them to make submissions and to make sure that what is on the site is the best representation of their work. We ask them to be as active as they can – some of them are very good with that, some of them are just too damn busy to look through what we currently have on there. So it varies from photographer to photographer.

It’s been very helpful information. I’ve been thinking about all these different types of organizations and how many things you have in common but also how many things when I put them all together, the uniqueness and this is going to make one nice, big picture when I get all the information plugged in.
I’m doing this study on photo archives, digital archives, in different types of organizations so I wanted to talk with you about the digital archive there at Aurora and follow up some on the survey answers that you put in – one of the things I wanted to start with was getting a little better understanding of your relationship with the archive. If you’re kind of involved in the daily operation or more in the management of the people that are operating and how images find their way into the archive there at Aurora.

At this point probably more in the management of the people who are doing things on a daily basis - as far as getting the images into the archive.

It says you’ve got 4-6 people that handle actually putting the images in.

It’s actually probably well yes in a rough sense it’s 4 people. It’s really closer to probably 2-3 people. It could be expanded to 4 people I suppose.

Can you give me a quick walk through the process? Images come into Aurora I’m guessing from photographers that are part of the staff there or have been made assignments to as opposed to things coming in on a freelance spec kind of basis and then what happens from there?

There are no assignments from Aurora. We are a stock agency. We simply let our photographers, our contributors, know if there are certain topics or types of pictures that we’re looking for. We generally don’t assign photographers certain things. And in general photographers are – we work with photographers on an image basis, not necessarily on a complete body of work basis. So a photographer who had images with us may also have images with other stock agencies. So we have a pretty extensive set of submission guidelines that we’ve put together to guide the photographers in their submission in terms of the technical quality of the scans they are submitting and the meta-data that’s associated with those scans. We’re at this point pretty much 100% digital. Occasionally we’ll work with a photographer with you know slides or film, but it’s only really to edit and then the film goes back to the photographer and they would be responsible for getting it scanned and then sending us the scans.

So your group really doesn’t have to do any of the technical work of putting the images into a format for the archive. You’ve got the submission guidelines there and the photographers give it to you in the size and resolution.

That’s sort of the goal and that would be the ideal. But we, it’s a lot of work on our end, to in terms, of sort of guiding the photographers to. The digital process is a steep learning curve for a lot of photographers. There are a lot of photographers these days, young photographers, who have sort of come into the business or really made the transition to
digital pretty early so are pretty savvy when it comes to these things. But there are a lot of photographers who are not and a lot of photographers still who are shooting film. For some photographers it’s a steep learning curve to try to get us digital files in the manner in which we need them.

**Out of my own interest on the technical side, are you having them submit 300 dpi tiffs or is everything jpegs.**

Jpegs – we tell photographers that they should be keeping tiffs for themselves. We don’t have the storage capacity to hold 200-300,000 high resolution tiffs. So we work exclusively with just the high resolution jpegs.

**I noticed one of the things on the ratio you mentioned you were very little print and almost all electronic, and I thought that was interesting.**

When you say print…

**For your archive - if your organization has print and electronic files the ratio between the two forms – for the agencies that had responded to the survey, I thought that was kind of interesting, you know, that Aurora doesn’t have as much of a print archive. But I understand what you’re telling me now…**

Again, when you say print archive, I’m not sure…

**I’m thinking of it as you know cabinets of photographs of slides that would be turned around.**

When you say print, I’m thinking of printed material as opposed to transparencies or negatives or that kind of stuff.

**I had initially thought it was just because of the age of the agency. But I see a lot of that’s tied to how your structure is set up of having the photographers submit the images to you in the digital format.**

I think most agencies are going that way now. I’d be surprised if there were a lot of agencies that were not doing that.

**In terms of how your digital archive – how the look of it and everything was put together – you had mentioned that no committee work was involved at all. Was this just the staff there, the IT, the technical people that are a part of Aurora or one person in Aurora? Do you know the background?**

There probably was some – it’s something that has evolved over really probably ten years. So it’s not like there was a committee that sat down at one point and said okay we’re going to design an archive or digital archive or a web archive. It ended up exactly
what we have working today. It started, like I said, when we were still doing mostly, or almost entirely analog - when the archive was entirely analog and we had a FileMaker database that basically contained text records that were associated with slides and we had researchers who would search the database and find information that they would then go into the file cabinets and pull the slides that were associated with that information and send slides out. So that sort of text database was really the first version of a digital archive. Eventually that text database was changed and adapted and evolved to hold images and then eventually adapted to be on the web and holding images and eventually that is what became the Independent Photographers Network - which is what Aurora is currently a member of and that’s sort of what powers our digital archive on the web.

And as this continues to evolve, what are the kind of things, what are the kinds of feedback, I guess ideas, that come up that Aurora then looks and says we need to be changing this or this is something new that we can add to our archive.

I think just tracking – being able to track images and where images are going and the distribution of images. You know we have a sales staff that licenses images but we also distribute our images through foreign partners and other agencies that we have partnerships with and being able to track where we send, who we distribute images to, who has those images. That I think is probably our next challenge as far as internally – where are internal archive goes.

Do you get a lot of feedback from the archive users in terms of how they’re able to use things?

Yes, I guess so. I think the website, IPN, from a user standpoint as it is now is pretty easy to use. We don’t seem to get a whole lot of feedback from people as to how the website works. Whether they have trouble accessing the archive – we don’t seem to have too much trouble along those lines.

This thing has evolved – when something comes up for instance like the ability to be able to be able to track where the images are going to and then where they’ve been distributed, how does a feature like that or a change like that then get worked into the system?

Could you repeat the question again?

As something comes up that would be some sort of an evolution to the archive and the data that’s in it like you were mentioning being able to track where the images are distributed to – then how does that idea eventually work its way into the archive – is like a working group that says this is what we need to do or like you saying to an IT person or a programmer, I want this function make it happen?

Probably a combination of those two things – depending on what the issue is. It may be something that we get together and talk about as a group in the office – the people who
would be involved in utilizing a feature. If a feature’s needed - deciding what that feature would be and how that feature would work. Or it may just be myself or there’s always the president of the company sort of working with IPN to create some new functionality for the digital, for the web archive. Or maybe coming up with some in-house solution that would just be local to the, in the office.

It seems like it’s been a pretty positive development for you in terms of – you’d said that the archive’s been very successful and the process of putting this all together shows up in the final project – it seems like it's been a pretty good development for Aurora. What would say has been the main, the biggest benefit of this digital archive that you’ve put together.

I think just definitely the speed and the ability to distribute images to people, ease of use – I think that’s the biggest thing – the biggest thing with digital today – how fast you can deliver an image to someone that’s probably the greatest benefit. And being able to have a user search the archive themselves and find the images they’re looking for so you don’t have to completely rely on an internal research staff to do all that research. Being able to take the archive and put it out there for anyone to come and search – that may actually be the biggest benefit. And then following that is being able to very quickly and easily get the client the images they need.

I would imagine that it's a very important sort of thing – everybody wants the instant gratification so being able to find that and get it turned around to them very quickly probably is something the clients, the users are very impressed with. Hindsight’s 20/20 – have there been things as this has evolved that if you are sitting at it now saying man I wish we had known this five years ago.

Absolutely there are always things like that. I think Aurora – was one of the first agencies to take digital seriously and we did a lot of sort of beta testing for a lot of these things for a lot of other agencies. With being the first one to do a lot of these things it’s great to be the first but you also kind of make a lot of mistakes for other people in doing that. Certainly we made mistakes and you can’t foresee the way that everything is going to go in the industry and the way things will evolve and certain IPTC fields will be used for certain things and how that’s all going to pan out over time. I think it’s just because our evolutionary process was over such a long period of time and started so early in the digital game it’s just meant we have a lot of legacy stuff from early decisions that we made that at the time - seemed to be good ones or were made for certain reasons that probably now looking back if we had those decisions to make over again, we might change the. You just keep moving forward as best you can.

That’s an interesting comment you made about being a beta-tester for a lot of other agencies. You’re the first person to mention you guys were far enough out front that people were looking at you and what you were doing as they developed their own things. It’s an interesting – at least from where I’m sitting and with the people I’ve talked to – kind of an interesting perspective on this. I had a couple other technical
sort of things – one of the things you mentioned was that your images were stored on a Raid Array and then you keep backups to guard against any sort of data loss. The back up’s part of the Raid Array or a separate system?

Well it’s, in a sense, it’s kind of built in with our relationship with IPN. IPN has a server that keeps a copy of all the high res jpegs that are on the website for delivery. Then we also have copies of all of them on the Raid in our office. Essentially between those two storage places there’s duplication and back up.

Then do you find that you have to – I don’t think the jpeg format has changed that much but I know that the things PhotoShop does changes over different versions. Have you found that you needed to go back to some of the earlier files and kind of open and re-save or have they been pretty accessible as you go on?

You wouldn’t want to do that with a jpeg because every time you open and re-save a jpeg you’re losing information. So we try not to do that if possible. We’ve got some older scans that were made in some batch processes and were sort of scanned and never really examined or cleaned so we’ve got some older scans that need to be cleaned up. So as we find those we open them, clean them and re-save them. It’s more of an image quality thing than any sort of technical file format issue.

This relationship with IPN - does that kind of set some guidelines in terms of data and how the data has to be formatted so that all the different partners of IPN can fit in with I guess how the image has to be presented or is it pretty much up to you guys?

There are some formatting things and some of it may have to do with IPN although in general everyone’s trying to reach a kind of industry standard, including IPN. We’ve been able to work with IPN if information was going in a certain way that we felt was not industry standard, not good for Aurora - we’ve been able to work with them to adjust some of those things if necessary and figure out workarounds for other situations.

And that works out pretty well – they’re pretty amenable to working with the different organizations like that?

Absolutely.

Those are the main things that I’ve wanted to delve into a little more and find out a little more detail. Are there other aspects of this archive and what it means to Aurora and how it works that you think we ought to add to this?

For a stock agency the archive is everything – that’s how we make our money is the archive. Other agencies – I’m not sure who the other agencies, or the other organizations you’ve spoken to – I can see how if you’re talking to a newspaper or a magazine and they make keep an archive of images they’ve published just for whatever reason – I can see an
archive like that while maybe important is of secondary in importance to what the organization or publication does. But for Aurora, where basically our business is archiving and selling images from that archive the archive is of complete primary importance to what we do. So it’s really important that we have the ability to adapt and adjust the archive to new business models as that happens and that’s what we try to do is create an archive – really, really solid base and foundation but also the flexibility to be able to adapt to new situations as they photo market changes. And certainly over the past ten years the photo market has changed drastically.
NOTES

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17. Ibid., 15-16.
18. Ibid., 20-22.
25 Rogers, 165.
26 Kets de Vries, 177-178.
27 Rogers, 171-172.
28 Ibid., 173.
29 Ibid., 20.
30 Ibid., 174.
31 Ibid., 177.
33 Katz: 145.
40 Rogers, 27.
41 Ibid.
43 Rogers, 398.
44 Walker and Whetton: 74.
45 Rogers, 379.
46 Walker and Whetton: 74.
47 Rogers, 377-378.
48 Lundblad: 59.
50 Robertson, Swan, and Newell.

The 1980s-era protests involved students building small buildings, called shanties, which were to be similar to the housing the students understood to be available to many South Africans. Students would live in the shanties for a few days to call attention to the conditions they believed to be prevalent in South Africa and to call for university administration to withdraw financial investments in the country.


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78 Ibid.


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Walker and Whetton.

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The categories and number of papers in each category are: 10,000 and fewer – 632 papers; 10,001 to 50,000 – 607 papers; 50,001 to 250,000 – 181 papers; and more than 250,001 – 36 papers.

There were 174 newspapers from the 10,000 and under group, 168 newspapers from the 10,001-50,000 group, 49 newspapers from the 50,001-250,000 group and 11 from the 250,000 and more group.
The URL for the list of photo agencies is http://www.canadiancontent.net/dir/Top/News/Media/Journalism/Photojournalism/Agencies/

The URL for the Google directory is http://www.google.com/Top/News/Media/Journalism/Photojournalism/Agencies/. The URL for the directory on Reference.com is http://www.reference.com/Dir/News/Media/Journalism/Photojournalism/Agencies.

Rogers.

Gade and Perry.

Research indicated means on web surveys were actually higher when the negative option was presented first, but locating the positive option first facilitate the task of responding to the question. Leah Melani Christian, Don A. Dillman, and Jolene D. Smyth, "The Effects of Mode and Format on Answers to Scalar Questions in Telephone and Web Surveys," in Second International Conference on Telephone Survey Methodology (Miami, Florida: 2006).


Weisberg, 165.


Wimmer and Dominick, 122.


Wimmer and Dominick, 122.

The time the representative from The Jackson Citizen Patriot was available to be interviewed meant the interview had to be conducted at a location different from the one used for the other interviews. The ability to record the interview was not available at that location.

Davenport, Randle, and Bossen, 8.

For more on the value of photographic archives to historic research see Bossen, Davenport, and Randle, Davenport, Randle, and Bossen. Some newspapers make galleries of photographs available on their web sites with information for ordering reprints. Some newspapers use a third-party company like Pictopia or MyCapture to handle reprint sales, rather than handling it internally. (See Marcia MacVane, "[Newslib] Photo Sales Vendors," (2005), Mike Meiners, "Re: [Newslib] Photo Sales Vendors," (2005).) What is not clear from the survey responses is whether the organizations that indicated people can view images remotely and pay to download them were thinking about these web presentations that are built specifically for photo sales or whether their entire archive is truly open to the public for viewing and for the purchase of images.

The five types of public access to the digital archive indicated by photographic agencies are that users can view and download images remotely without restriction, can view but need permission to download, can view but must pay to download, need permission to view remotely or can only view the archive at the agency’s location.

To be valid, a chi-square test requires 80 percent of the cells to have an expected frequency of five or greater.

All quotes taken from the telephone interview conducted on November 24, 2006, with Joe Centers of The Norwalk Reflector unless otherwise noted.

All quotes taken from the telephone interview conducted on October 11, 2006, with Suzanne Weible of The Jackson Citizen Patriot unless otherwise noted.

All quotes taken from the telephone interview conducted on July 21, 2006, with Steve Dandy of The Virginian-Pilot unless otherwise noted.


All quotes taken from the telephone interview conducted on November 28, 2006, with Nancy Lee of The New York Times unless otherwise noted.

All quotes taken from the telephone interview conducted on October 6, 2006, with Susan Whetsone of the Utah State Historical Society unless otherwise noted.

All quotes taken from the telephone interview conducted on July 20, 2006, with Amy Williams of the Harry S. Truman Presidential Museum and Library unless otherwise noted.

All quotes taken from the telephone interview conducted on November 20, 2006, with Jeffrey Smith of Contact Press Images unless otherwise noted.


All quotes taken from the telephone interview conducted on July 20, 2006, with Matt Murphy of Magnum Photos unless otherwise noted.


All quotes taken from the telephone interview conducted on July 21, 2006, with Karl Schatz of Aurora Photos unless otherwise noted.

JPEG is a file format for digital images. Images saved in the JPEG format are compressed and lose some of their quality, depending upon the degree of file compression. The format is used for images for publication in print or online. TIFF is also a file format for digital images, but TIFF images are not compressed. Organizations such as the Library of Congress keep high-resolution TIFF files in the digital archive but present lower-resolution JPEG images to users on a web site.


Rogers, 397.

Ibid., 15-16.

Kimberly, 238, Rogers, 15-16.


Rogers, 20-22.


Rogers, 20.

Ibid.

Ibid., 174.

Ibid., 173.

Teotia and Raju.

Hall.

Mustonen-Ollila and Lytytinen. Rogers, 15-16.


Rogers, 398.

Walker and Whetton.

Redmond.

See page 21.

Rogers, 397.

No organization indicated on the survey having a digital archive for longer than ten years. The timeframe corresponds with the introduction of digital cameras to news organizations.
Kimberly, 238.
Taylor, Gustavson, and Carter.
Diamond, 81, Stapley, 148, 168.
Stacey, 125-126.
Leary, 109.
Besser and Trant, "Introduction to Imaging: Issues in Constructing an Image Database.", Child, Smith, _Why Digitize?_
Rogers, 15-16.
Ibid., 399.
Bossen, Davenport, and Randle. Davenport, Randle, and Bossen.
Davenport, Randle, and Bossen, 21.
Ibid.
Gilbert.
Rogers, 378.
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VITA

Keith Greenwood was born June 18, 1962, in Sedalia, Mo. His family moved to Marshalltown, Iowa, in 1970, where he lived until graduating from Marshalltown Community High School in 1980. After graduation with a bachelor’s degree in mass communication from Northeast Missouri State University in Kirksville in 1984 he worked for KFBD-FM/KOZQ-AM in Waynesville, Mo, for two years. In that time Greenwood was an announcer, news, sports and public service director and maintenance engineer and he sold advertising. He worked as a freelance photographer too.

Greenwood attended Michigan State University beginning in 1986 and joined the staff in 1989, eventually graduating with a master’s degree in journalism in 1992. He continued to teach and provide technical support there until moving to the University of Oklahoma from 1998 to 2003. He has taught courses ranging from Introduction to Mass Communication to print and broadcast news writing to photojournalism and multimedia.

Greenwood is married to the former Cynthia Shinabery. They have a daughter, Kayleigh Maureen, born in 1997.