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Challenges in Harnessing Personal and Professional Digital Media

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Over the years, it has been interesting to watch the prevalence of rich media increase so dramatically. Digital photos and video clips have become an essential component in our daily consumption of content. It's especially conspicuous in social media and popular web destinations, but also in professional and scholarly resources. The production of digital media has become incredibly easy and accessible to almost anyone. Even within the relatively short life of social media, we've seen quite a shift: Posts without a photo or video receive scant notice. In both the personal and professional sphere, the quantity of digital media created demands better tools to store, organize, and manage it than most individuals or organizations have at their disposal.

It's never been easier to capture glimpses of daily life. A smartphone can take high-resolution photos and shoot video at a level of quality that not too many years ago required expensive equipment. Digital single lens reflex (SLR) cameras—now commonplace among nonprofessional photographers—take the quality of photo and video creation up even another substantial notch. The sophistication and quantity of professionally created digital content also continues to rise.

This proliferation of digital content introduces difficult challenges regarding how all this material can be managed, both for individuals and organizations. I see situations all the time in which photos and videos seem to be in jeopardy since their creators lack a convenient way to manage them. The creators may not even realize their vulnerability. Many are just one digital accident away from losing irreplaceable collections of photos and other digital representations of their experiences. Few have the time to think about a strategy for personal digital preservation, let alone even realize that they might need one.

From Organizational to Personal Digital Collections

At the organizational level, managing curated collections of digital materials is standard operating procedure. Many libraries and cultural heritage institutions have developed specialized programs for creating and managing digital collections built through digitizing materials of the past and ingesting interesting and relevant selections from natively digital content. These programs tend to target selected materials deemed important in some aspect of art, history, or culture. They aren't necessarily oriented toward managing the accumulated digital output of individual community members.

The proliferation of digital content opens opportunities for libraries to create new collections or services to manage an ever broader range of materials. Many individuals need easier and more secure ways to manage their accumulations of photos and images. Who knows whether these

individual collections might happen to include important and significant materials with potential interest for institutional or cultural collections? How our current times are represented for future historians will depend on the extent to which this digital content is managed and preserved.

The procedures, processes, and technical infrastructure for managing digital collections have become well-established and are routine areas of activity in many libraries, archives, and related institutions. The types of libraries involved in managing and preserving digital collections have expanded well beyond the national, state, and large research academic libraries that have been involved in programs and projects in this area for decades. Many public libraries, for example, have also established digital collections that document the history and culture of their communities or other topics of local or regional interest.

I see a pressing need for libraries to help their communities deal with the problems of managing the proliferation of digital content. Such assistance might take the form of training or advice on how to better manage collections of photos and videos. Some libraries might want to expand the scope and capacity of their digital collections programs to include more content contributed by community members. Although I don't imagine that most libraries necessarily want to become the next Flickr, it seems consistent with their missions to facilitate the responsible management of citizen-created content. Libraries may also be able to provide educational services to other community organizations in the area of digital content management and preservation.

While the brand or image of the library is well-established for anything to do with reading and literacy, there is interest and opportunity in expanded and innovative areas of service. For example, many libraries offer facilities and equipment that aid in the creation of content or physical objects. Many libraries have digital studios that provide equipment for capturing and editing text, photographs, and videos. Interest continues to grow in constructing makerspaces equipped with a variety of high-tech devices for community members to explore and employ for creative projects. 3D printers are hot items in the library makerspace movement. In this context, a set of services surrounding the organization or preservation of digital materials could be an additional channel of outreach for a library that highlights its technology expertise.

Managing Personal Digital Content Through Consumer Technologies

Libraries involved in their own large-scale digital collection projects will invest in deploying specialized technical components for storage, management, access, and preservation. This infrastructure may be too expensive and complex for taking care of personal collections. However, it's important to guide community members toward equipment or services that will offer them as much protection as possible, with the highest level of convenience and at the least expense. Libraries that are interested in services that might involve the actual ingesting of community-supplied digital objects will need to invest in industrial-strength technical infrastructure.

LIBRARIES THAT ARE INTERESTED IN SERVICES THAT MIGHT INVOLVE THE ACTUAL INGESTING OF COMMUNITY-SUPPLIED DIGITAL OBJECTS WILL NEED TO INVEST IN INDUSTRIAL-STRENGTH TECHNICAL INFRASTRUCTURE.

Fortunately, parallel to the explosion of digital content, the tools and technologies for storing and managing digital objects have seen improvements in capabilities and decreases in cost. Multi-terabyte disk drives can be purchased for around $100. The free levels of storage available through cloud-based services continue to expand, and their premium services offer competitive values.

It's essential to store digital material in a way that preserves content at the highest possible quality with the least possibility for loss. Almost any digital collection will consume ever-growing amounts of storage. A good strategy might employ some combination of physical devices and cloud-based services that will easily expand in order to ensure files are safe from damage or loss due to human error or technical failures.

Ideally, the storage should be outside of any proprietary content ecosystem. Apple's iCloud provides a user-friendly environment for storing media within its cloud-based storage service, which is a great level of protection against the likelihood that any given device might fail or become lost or stolen. However, these closed or proprietary environments should be considered an initial layer of protection that needs further reinforcement. While there may be confidence in the technical reliability of such cloud services, the main point of vulnerability lies in the terms of service and in any circumstances that may cause a user account to not be in good standing.

A digital collection should reside on durable storage controlled by its owner that is based on several technical characteristics, including ease of use, multiple layers of redundancy, and affordable cost. Arrangements that require too much effort or that impose too much cost are less likely to be consistently followed.

Ease of use is essential, especially given that people creating photos and videos today are not likely to be technical experts. It should be easy for those working with the materials to place, move, view, and remove files. Ideally, the storage should be available through the native file methods associated with the computer. This ease of access can be accomplished through a drive directly connected to a computer, through a network file server, or through add-in drivers from services such as Dropbox, Google Drive, Microsoft's OneDrive, or the many other cloud-based storage services.

Any storage arrangement should also be automatically backed up or replicated to multiple physical devices

or storage services. If working files are stored on a computer's built-in drive, they should be backed up to a separately attached local hard drive. Some external hard drives are designed specifically to serve as a backup for a computer's internal drive and come with software for automatic replication or synchronization. Given that theft or catastrophic events (such as a flood or fire) could impact both devices, it is essential to have copies of important materials in separate physical locations. In the consumer arena, cloud-based storage services provide a convenient means of off-site storage. Many of these services also include options to automatically replicate all of the files on a local device.

IN THE CONSUMER ARENA, CLOUD-BASED STORAGE SERVICES PROVIDE A CONVENIENT MEANS OF OFF-SITE STORAGE.

An alternative strategy might rely on cloud storage as the primary storage for collections. Many individuals with growing collections of photos and videos may not have a desktop or laptop computer. The popularity of tablets has taken a toll on the sales of conventional computers, so for many people, cloud-based solutions may be the only viable option. Cloud-based storage should have multiple copies on separate services. For collections that are added to occasionally, individuals might make a point to manually place files on multiple services, but in most cases, the process can be automated by some type of scripting or scheduling utility.

It's important to have reasonable expectations about the cost of storing digital collections. In some cases, it may be possible to operate within the free allotments of storage space offered by many cloud hosts. However, when the collections grow to exceed multiple terabytes, they may far exceed the free levels of service and require an ongoing paid subscription. While the fees associated with these subscriptions may have been a bit more onerous in the past, they have dropped substantially in recent years. There are some projects for which I previously decided that a cloud-based storage option—such as the Amazon Simple Storage Service (Amazon S3) from Amazon Web Services (AWS)—would be too expensive. But by current pricing standards, they are now affordable, possibly even less expensive than purchasing local disk drives.

Whether relying on free or fee-based storage, pay close attention to the terms of the service agreement. And even if the service includes built-in replication or backup, it's generally not wise to entrust it with the only copy of your digital assets. Always maintain multiple copies in or across different physical or virtual locations.

Helping Them Organize Their Collections

Beyond basic storage, patrons may also need advice in organizing their digital collections. Librarians can tap their organizational skills to set up the hierarchical folders for any given assortment of accumulated photos or videos. Many of the techniques that libraries use for managing their own archival collections might be passed on to community members to apply to their own personal collections.

Larger-scale projects typically employ a digital asset management (DAM) system that provides a suite of features related to the organization, management, access, and preservation of digital collections. While the features vary, some of the capabilities include providing ways to create or import metadata that describes each digital object, to ingest the digital objects, and to provide interfaces for the search, retrieval, and display of items from within the collection. DAM systems support a descriptive metadata schema appropriate for the collection and track technical or administrative metadata describing the details of the objects, such as file and media types, dates and timestamps of creation, equipment used to create the object, checksums, and any other relevant data. Most of the technical metadata can be automatically extracted from the media files.

A variety of library-oriented products are available that follow the metadata schemas, standards, and procedures that were well-established in our profession as well as those used in other industries to manage large-scale inventories of digital objects. These products may include integrated digital storage for the objects themselves or may be able to store objects in a pre-established environment. Libraries that offer a service to ingest community-provided materials will likely need a robust digital asset management environment.

In most cases, individuals may not want to share and provide public access to all their digital assets. They may want to share selected items of interest. Facebook, Flickr, Instagram, Snapchat, and other social networks are great tools for sharing photos and videos, but they are not necessarily the right place for comprehensive collections.

For those libraries whose mission includes helping their communities with the creation of content, it may be of interest to explore services related to harnessing the flood of digital content. Libraries have a legacy of helping their communities with new technologies, including training and workshops in basic computer literacy and how to use various productivity tools. It seems to be a logical extension to lend assistance and give advice that might facilitate the survival of artifacts of potential interest and importance for the next generation. These services also have the potential of unearthing exceptional materials worthy of adding to the library's own collection or that might be contributed to other cultural heritage institutions. Personal collections of digital objects may be the raw material that will document this generation for posterity. ■

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