Technology Transforming Preservation
The Challenges and Opportunities of Technology in Preservation

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This issue of Forum Journal highlights the deployment of new technologies within historic preservation, covering a great variety of current work within the field. The articles address the use of virtual reality; the digitization of cultural resource documentation; the use of drones for heritage documentation; digital storytelling; and, crucially, the questions surrounding when to adopt new technology. Many of the ideas and questions that the authors in this issue raise are familiar to me from my work at George Washington’s Mount Vernon.

In a maturing digital age that has already transformed how documentation is undertaken within historic preservation, it remains difficult to keep up not only with the technology itself but also with how digital recording standards may change and how newly generated data will be archived for future use. If we go back
to one of the origin points of the historic preservation movement—the passage of the National Historic Preservation Act in 1966—we see that most federal, state, and local entities have a legacy of recorded data in the form of mountains of paper records and slides, most of which probably have not yet been digitized. It takes money and time to do that, of course, but also a consensus regarding how to store information for easy and timely access. It’s harder to implement new technology if the back-of-house is not yet taken care of. As Tom Scheinfeldt states in his article, “cultural heritage organizations are understandably reluctant to adopt [new technologies] too often”—and this is just one reason why. It’s important to know where we’ve been and where we’re going before deciding what platforms to adopt, and Scheinfeldt provides excellent guidance for deciding on a path forward.

RECORDS AND DOCUMENTATION
Since the inception of a modern preservation program at Mount Vernon in 1987, a number of technologies has been integrated into the daily work of our archaeology and architecture teams. At that point, the records we kept related to work on the mansion and outbuildings, changes to the landscape through infrastructure improvements, and grounds restoration; these date back to 1858, when the Mount Vernon Ladies’ Association of the Union (MVLA) purchased 200 acres from George Washington’s heirs and made the site public. In 1987 one of the first initiatives of the program, which was then concerned only with archaeology, was an attempt to compile information from the MVLA archives by inventorying existing conditions of buildings, previous excavation work, and recovered artifacts. This work mostly involved photocopying documents, organizing a folder system, and creating collection-finding aids, but it was the first important step toward creating order; those early efforts made it much easier, years later, to scan the information and curate it in a digital system. While this is an ongoing process, it already pays dividends—we can immediately find the requisite documentation when we need to perform mitigation work.
In their article, Annabel Lee Enriquez, David Myers, and Alison Dalgity describe the new Arches Heritage Inventory Management System, which is designed to simplify the storage and management of large amounts of complex data. The open source platform provides users with a model for organizing legacy and new data and is versatile enough to suit the needs of diverse organizations. What’s more, Arches incorporates spatial information—geographic information system (GIS) data, for example—into the system, alleviating the need for those entering the data to be proficient in specialized software. At Mount Vernon, we have used ESRI ArcGIS software since 2004, but that use was initially restricted by limited employee time, software familiarity, and number of licenses. We were fortunate to get expert help from the National Park Service Cultural Resource GIS (CRGIS) facility to begin building our cultural resource basemap; still, it took years to develop the software into a robust management tool that many staff members can now use. The Arches system’s ability to bring the functions of two or more software programs together both keeps down cost and increases staff buy-in.

The articles in this issue remind us that with new technologies come learning curves—and that it is imperative to commit resources to training not only the specific staff members who will manage new systems in the short term but also institutions as a whole. In fact, one of Scheinfeldt’s key recommendations for making sustainable choices is investing in people rather than spending large sums on the latest technology.

And when should institutions hire technology specialists rather than do the work themselves? This is explored thoroughly in Terry and Belinda Kilby’s article about the use of unmanned aerial vehicles (UAVs) for taking photographs and recording digital data about buildings and archaeological sites. While the authors carefully weigh the pros and cons, based on personal experience, I would be hesitant not to use a professional operator, especially because the rules and regulations that govern drone flight vary from one location to another.

In 2015, after an attempt to begin a drone program that could document the Mount Vernon site and acquire aerial imagery for
both preservation and marketing purposes, we drew up an in-house drone policy. A number of factors limited the use of this technology on our site—most of all the restricted airspace around the nearby Reagan National Airport, as well as some airspace restrictions around Mount Vernon itself. Furthermore, there were qualms about potential damage to the mansion and associated outbuildings in the event of a crash. We ultimately obtained a waiver for flying through restricted airspace from the Federal Aviation Administration and hired a licensed pilot to fly several drone missions and shoot promotional footage.

Terry and Belinda Kilby certainly show the positive utility of recording standing structures, especially otherwise inaccessible ones, using drones. They point to Ellicott City, Maryland, where, despite limited access to unstable buildings in the aftermath of a disastrous flood that mostly affected a historic district, government and safety officials—including staff from the state historic preservation office—needed to assess the damage. Live visualization is critical in these types of disaster situations—far too often little attention is given to the cultural resources affected and hasty decisions can have lasting negative consequences.
Drones are also useful for documenting existing conditions over time—for example, when tracking the effects of climate change on cultural heritage. It seems that 2017 was a year of exceptionally devastating weather-related disasters, ranging from wildfires in the West to hurricanes impacting the Gulf Coast and Caribbean. While the extent of the heritage losses in these areas is still being calculated, triage efforts could employ drone imagery to better develop management plans for stabilization. The ability to program flight paths over places that are either unsafe or unsuitable for on-the-ground surveyors makes UAVs an important resource in a disaster toolkit.

**THOUGHTFULLY EMBRACING CHANGE**

This issue also calls attention to the challenges inherent in integrating technology into our field. Ross Tredinnick, Kevin Ponto, Erica Gill, and Destinee Udelhoven describe using virtual reality (VR) technology combined with light detection and ranging (LiDAR) scanning to model both extant environments and those that are no longer visible. The authors present two interesting case studies of deploying these technologies to educate and engage visitors to historic sites and museums, emphasizing that their use potentially attracts a younger demographic to the heritage sector. As people in all fields become more tech savvy, they are better able to recognize smart new trends, and preservationists need to prepare to welcome not only new audiences but also new colleagues. As the authors point out, building the right partnerships with technology specialists—and perhaps this must originate within the academy and spread—makes the implementation of technology for historic preservation uses more cost effective and sets a precedent that smaller institutions can build upon.

One of the easiest and most effective ways for any institution, large or small, to get the word out about its work and mission is through social media. In her article, Jessica Marie Johnson gives special attention to the power of social media in digital storytelling. This is a particularly dynamic realm for historic preservation, but also one that takes significant investments of time and effort. Using
Facebook and Twitter occasionally is one thing, but it’s quite another to keep a blog regular and current, continually coming up with and vetting content and presenting well-written posts. And while the format of short bursts of information and commentary is useful in the immediate term, Johnson also brings up the important question of how social media posts will be stored and curated over the long term. What happens after a week or two, when the news feed moves on? To ensure longer-term staying power when archiving is not guaranteed, other means of storing and sharing posts may be required.

The archaeology program at Mount Vernon tackles this challenge, using Facebook, Instagram, and the ESRI Story Maps platform to convey to-the-minute updates on current fieldwork. For example, for the past four years, we’ve run a public archaeology program at Mount Vernon’s slave cemetery, where little historic documentation exists to adequately interpret the space and no burial markers remain. The project is ongoing, and a full report is some years away from completion, but public interpretation on site is needed daily to inform visitors about this work. The Story Maps application has proven to be an excellent way to present site history and background as well as archaeological methods and project goals, including a regularly updated section on recovered artifacts and a brief drone flight video. By combining several platforms, we can engage on-site visitors through their smartphones and virtual visitors through our website and ESRI’s Story Maps gallery—all of which enable us to reach new audiences while simultaneously archiving the material.
The question of how to keep newly captured digital data around for the long term is of paramount concern, and I am not sure we’ve figured that out yet. I think of how we once used punch cards, 8 mm film, slides, floppy disks, and CDs for storage, and I wonder how we’re caring for the next generation of information. While this question has been asked before—and sometimes answered—it remains unresolved. I think in some ways we find it easier to curate paper and Mylar than a website or a point cloud scan of a building.

While I am hopeful and looking forward to embracing new technologies as they enter the field, we must approach their implementation with care to establish best practices and meet critical needs. New innovations move fast, and we need to be mindful of keeping a detailed institutional record of why decisions were made, what outcomes were expected and what was achieved, and how the institution or historic resource benefited—or didn’t. Institutions should then share information about their successes or failures. Crucially, we must always consider what will be most beneficial to an institution and the field over the long run, sustainable into the future. This is an exciting and dynamic time for preservation. There are limitless options, and we should be poised to take advantage of them, so long as we can keep the record straight. FJ

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TAKEAWAY
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