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The Practice and Theory of New Heritage for Historical Archaeology

ABSTRACT

New heritage refers to the intersection of new media technologies and traditional heritage studies. This includes the use of digital technologies to virtually reconstruct archaeological objects and contexts. This article presents readers with an overview of these approaches through two case studies drawn from African American archaeology. The first case study explores the reconstruction of Kingsley Plantation, near Jacksonville, Florida. This study uses SketchUp and Google Earth to create and share the site. The second case study examines a similar project in Rosewood, Florida that combines a wider range of data, while exploring a mixed methods approach to sharing the virtual reconstruction. The authors also examine the ways such work intersects with historical archaeological studies of African American identity and landscape.

Introduction

The use of digital technologies to investigate and interpret cultural heritage represents a rapidly expanding arena of archaeological practice. This is evidenced by dozens of recent projects, annual conferences, and new journals that focus on these developments. The conferences include the International Symposium on Virtual Reality, Archaeology, and Cultural Heritage and the long-running Computer Applications in Archaeology meetings, while new journals include *Digital Applications in Archaeology and Cultural Heritage* and the *International Journal of Heritage in the Digital Era*. These opportunities to share research primarily attract specialist audiences, archaeologists and computer scientists who possess the technical knowledge to utilize an ever-expanding array of software and hardware.

At present, only a minority of practicing archaeologists possess the ability to create three-dimensional (3-D) models representing artifacts, structures, and entire landscapes. This is changing as software becomes easier to learn and hardware becomes more affordable. The advent of Web 2.0 in the early 2000s and the ability to deliver interactive and immersive online content plays an important role. These developments are affecting communities in new and powerful ways. The interaction of culture, community, and digital technologies has been investigated by a handful of cultural anthropologists (Hine 2000; Wilson and Peterson 2002; Eisenlohr 2004; Boellstorff 2008). Ongoing concerns with authenticity and the so-called real (read: non-virtual) world means that the majority of archaeologists have been less inclined to view these new technologies with the same enthusiasm (Harrison 2009).

While specialist conferences and journals will continue to proliferate, it is important for archaeologists experimenting with these technologies to maintain a dialogue with their broader disciplines. As this article represents the first of its kind in the pages of *Historical Archaeology*, it is important to clarify terminology. Therefore, the first section of this article provides an overview of the term "new heritage," which refers to the intersection of new media technologies and traditional heritage approaches. We then present two case studies showcasing common methodologies and techniques for the creation of new heritage using digital tools available to historical archaeologists. The available digital tools include geographic information systems (GIS), 3-D modeling software, and game engines. Our case studies also highlight the variety of data usable for reconstructing archaeological landscapes. These data include material culture, historical documents, and oral history; the classic combination of evidence that has come to characterize the field of historical archaeology (Barber 1994; Deetz 1996).

No single article can offer an exhaustive overview regarding the use of 3-D modeling and virtual world environments to reconstruct historical landscapes, but the following case studies do introduce resources that can be quickly accessed by a wide range of historical archaeologists. The case studies involve reconstructing sites related to African-diaspora archaeology in the United States. The vast majority of digital reconstructions of past

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landscapes focus on monumental and elite sites. As such, the majority of previous work in virtual archaeology and digital heritage unconsciously reproduces what Laurajane Smith (2006) refers to as the authorized heritage discourse. This discourse "privileges monumentality and grand scale" (Smith 2006:11) at the cost of more local, subaltern, and hidden histories. Heritage thus becomes a tool of the present, erasing the contribution and existence of past minority communities. In addition to providing a unique way of representing archaeological contexts, we view the reconstruction of non-elite landscapes as a powerful form of social activism, in that it recovers lost histories and contributes to new knowledge regarding the history of minority disenfranchisement in the U.S.

The first case study focuses on Kingsley Plantation in Jacksonville, Florida, to examine the use of free and intuitive software to create and deliver an interactive 3-D model of the site. This reconstruction is based on archaeological evidence, including standing ruins and ongoing excavations. The second case study explores the town of Rosewood, Florida, which was destroyed in 1923 during a week-long episode of racial violence typically referred to as the Rosewood Race Riot. The reconstruction of Rosewood's vanished landscape involves the use of more complex software and a mixed methods approach combining virtual world environments, online worlds (e.g., Second Life), and digital storytelling to translate academic research into publically accessible content. Neither approach is intended to provide an authoritative methodology, but rather to illustrate a range of possibilities.

The discussion section focuses on theoretical considerations of new heritage for historical archaeology. This includes the ability of virtual contexts to act as more than empty space. The ability to interact with these digital reconstructions allows them to become meaningful places. The relationships among space, place, and landscape are well known within archaeology, and archaeologists working with African-diaspora sites have played a significant role in historical archaeology's investigation of these concepts (Delle 1998, 1999; Epperson 1999; Singleton 2001). Reconstructing archaeological contexts renders landscapes visible to nonspecialist audiences (e.g., the public). There is also a potential to support emerging theoretical investigations of the complex ways African Americans experienced their local landscapes. Theorizing African-diaspora homespaces by Whitney Battle-Baptiste (2011) suggests a new value of new heritage to aid interpretations of the African American past.

Virtual, Cyber, Digital, and New Media Technologies for Archaeological Visualization

An array of terms and associated approaches now exists to describe the creation of virtual, digital, and online 3-D content representing archaeological contexts. Overlap exists between the various terms, and each signals a unique approach with an associated literature. Brief explanations of these concepts will provide the reader with a set of working definitions articulating central differences and core similarities. The four terms that have emerged in the past three decades are "virtual archaeology," "digital archaeology," "cyber-archaeology," and "new heritage." These approaches are methodological, each stressing specific techniques, goals, and outcomes. As such, understanding the history of these terms not only provides the reader with a window into this exciting avenue of academic inquiry, but may prove useful when contemplating the application of these technologies to new archaeological contexts by others.

Virtual and Digital Archaeology

The term virtual archaeology entered into the archaeological vernacular in the late 1980s, referring to the use of 3-D computer models to represent archaeological objects and contexts (Reilly 1991). The majority of this early work centered on producing images for publication and primarily focused on Greek and Roman sites across Europe (Forte 1997). Virtual archaeology, however, should not be seen as synonymous with virtual reality (VR). Jennifer Whyte's (2002:2–3) discussion of VR demonstrates the subtle difference. She articulates the core elements of VR by discussing the differences between VR as a system and a medium. The system refers to the software and hardware required to produce 3-D models. VR as a medium involves the interaction of three key characteristics. First, it allows users to interact with virtual models representing physical objects and structures through some form of human computer interaction technology (e.g., keyboard and monitor). VR is also spatial and

allows users to move in three spatial dimensions. Finally, it supports interaction between users and virtual objects in real time. The majority of virtual archaeology prior to the late 1990s does not meet the definition of VR as a medium, but, rather, as a form of archaeological visualization.

Visualization is itself a multivalent term. Classic works on data visualization, such as Tufte's (1983) *The Visual Display of Quantitative Information*, involve the translation of large and confusing datasets into more accessible formats, such as charts and infographics. The recent surge in data visualization reflects an era of "messy data," and some see the "messiness of archaeological data" as providing rich terrain for addressing anthropological questions through these new types of data visualization (Hauser 2012:184). For others, visualization refers to new methods of querying and displaying quantitative archaeological data (Llobera 2011). A more familiar meaning of visualization draws upon architectural visualization and centers on the construction and artistic display of 3-D buildings. While archaeological visualization can encompass these diverse meanings, for the purpose of this article we use the term specifically to denote the use of computer technologies to reconstruct and display archaeological contexts.

The late 1990s was an important time for the investigation of digital and virtual technologies in archaeology. The relative decline in computing costs meant that more archaeologists were able to start their own 3-D projects (Koller et al. 2009:73). This was a relatively small part of the larger digitization of archaeology. This digitization was an extension of archaeology's early adoption of GIS, global positioning systems (GPS), and various remote sensing technologies during the 1980s and 1990s (Kvamme 1999, Zubrow 2006).

Unlike many other social scientists, archaeologists readily integrated computers into their toolkits. The resulting digital archaeology explored "the basic relationships that archaeologists have with Information and Communication Technology (ICT) and digital technology to assess the impact that such innovations have had on the very basic ways that archaeology is performed and considered" (Daly and Evans 2006:3). While many saw these developments as purely methodological, early adopters insisted that their work held theoretical promise for the field as a whole. Indeed, the development of theory and digital technologies acted together to foster new forms of scholarship (Zubrow 2006:17). This reciprocity allowed processualists to embrace GIS and computer-generated simulations, while post-processualists drew on digital technologies to develop reflexive field methods (Hodder 2000). In practice, the majority of archaeologists who explore emerging digital technologies restrict themselves to specific techniques, such as the use of GIS for data management and spatial analysis, but this need not be the case, and leading archaeologists in the adoption of these technologies have always intersected method and theory in their discussions of emerging technologies (Kvamme 1999; Connolly and Lake 2006:3–10; Zubrow 2006).

Cyber-Archaeology

If virtual and digital archaeology are primarily concerned with displaying, documenting, and analysis of archaeological contexts, then cyber-archaeology focuses on the immersive and interconnective aspects of virtual world environments (Forte 2010:13). In the late 1990s cyber-archaeology emerged as a term for the application of archaeological settlement theory to the development of online communities (Q. Jones 1997). It arose as "a new way of understanding virtual communities through the study of their cultural artifacts" (Harrison 2009:4). Cyber-archaeology, in this sense, examines virtual world environments and, more specifically, online worlds through the virtual objects that are collectively created by residents of places such as Second Life.[1] Cyber-archaeology is less concerned with authentic reconstructions of archaeological contexts and more concerned with the ways the "potential pasts" created through a variety of digital technologies and presences are explored (Forte 2010:10).

Rodney Harrison's (2009) investigation of heritage in the online world of Second Life examines how some of the earliest virtual structures have become heritage sites for the denizens of this online world. He finds virtual heritage discourses in online worlds paralleling conversations about heritage and archaeology in more traditional contexts. These online contexts face the same challenges of countering elite narratives and restricted views of the past as do sites in non-virtual spaces. Harrison (2009:16) believes the study of virtual heritage and cyber-archaeology "has the potential to provide insights into the ways in which the notions of heritage are transforming in the early

twenty-first century" because it allows heritage workers to witness the process of heritage creation unfolding in real time.

New Heritage

New heritage is the intersection of new media technologies with the concerns of documenting and interpreting cultural heritage (Kalay et al. 2008). Lev Manovich's seminal work *The Language of New Media* defines new media as the "translation of all existing media into numerical data accessible through computers" (Manovich 2001:20). This includes the digitization of analog materials (e.g., photographs, movies, and records), as well as the creation of digital artifacts, such as computer images and 3-D models. New heritage functions as an all-encompassing term that embraces the range of practices embedded within virtual, digital, and cyber-archaeologies. It is not our intention to take an adversarial or polemic stance toward virtual archaeology, cyber-archaeology, or digital archaeology. That said, we believe that new heritage denotes a specific form of practice significantly different from other approaches. New heritage embraces a mixed-methods approach to the use of new media for archaeological and heritage research. Mixed methods refers to the combination of quantitative and qualitative data, as well as the fluid use of techniques (i.e., method), methodologies, and types of research (Creswell and Clark 2011:2–6). The flexibility of new heritage encourages the adoption of methodologies from a range of disciplines, including historical archaeology, oral history, digital humanities, and even social-justice education (E. González-Tennant 2013).

Virtual and digital archaeologies tend to focus on technical experimentation. Our case studies outline a methodology with specific techniques and steps (i.e., workflow) for digitally reconstructing archaeological landscapes. In this sense, they are good examples of virtual and digital archaeology. Cyber-archaeology and new heritage share concerns regarding user interaction with technology. Our case studies embrace this concern and explore numerous outputs, including Google Earth, virtual world environments, interactive online worlds (e.g., Second Life), and digital storytelling. Drawing on heritage studies, new heritage embraces additional concerns, such as the use of the past in the present (Lowenthal 1985; Smith and Akagawa, 2009) and the interaction of tangible and intangible forms of heritage (Kalay et al. 2008; Smith and Akagawa 2009). New heritage's inherently mixed-methods approach to social-science research supports additional goals. The complementary approaches and outputs common to new heritage intersect recent calls to produce a more ethnographic engagement at archaeological sites. This line of inquiry investigates the ways groups value heritage resources, and the conflict that often arises between local communities and traditional archaeological approaches (Meskell 2005; Smith 2006; Schmidt 2010; E. González-Tennant 2014). New heritage offers a powerful method for resolving these difficulties by making research available to a wider audience. Our use of these approaches in Rosewood has already produced new and positive engagements with local landowners and African American descendants (E. González-Tennant 2013). We return to this aspect of new heritage in greater detail below. The following case studies draw on new heritage's mixed-methods approach to situate traditional archaeological evidence alongside historical documents and oral testimony. Ultimately, it is new heritage's flexibility in combining quantitative and qualitative data, and its ability to address concerns regarding the importance of the past to the present that motivates our adoption of the term.

Reconstructing Kingsley Plantation and Rosewood, Florida

Virtual, digital, and cyber-archaeologies, as well as many new heritage projects, begin with digitally reconstructing archaeological contents. There are two primary ways of doing this. The first uses expensive 3-D scanners to record a series of tightly-spaced points representing artifacts, structures, or entire landscapes (Koller et al. 2009:2). The recent increase in computing power and digital photography supports a related technique taking advantage of software to extract accurate models from a series of photographs (e.g., AgiSoft's PhotoScan—available at <http://www.agisoft.ru>). This technique is referred to as photogrammetry. Ongoing research suggests that 3-D scanning and photogrammetry approaches often produce comparable results for the 3-D documentation of archaeological materials and sites (Optiz 2012). The second method uses 3-D software to model archaeological contexts and

can use expensive software utilized by the entertainment industry. Examples of these programs include Autodesk's 3DS Max (<http://www.autodesk.com/3dsmax>), which retails for more than $3,000. Alternatively, archaeologists can also use less expensive software, such as Trimble's SketchUp (<http://www.sketchup.com>) or free and open-source software (FOSS), such as Blender (<http://www.blender.org>). Many FOSS programs are capable of modeling 3-D archaeological contexts at the same quality as the expensive, entertainment-industry software.

A few examples of 3-D scanning for historical archaeology include the University of South Florida's Alliance for Integrated Spatial Technologies' documentation of Fort Matanzas in St. Augustine, Florida, which can be viewed online at <http://aist.usf.edu/projects/fortMatanzas.aspx>. This project uses large-scale 3-D scanners to virtually document the largely complete remains of a small fort south of St. Augustine, Florida. The Virtual Curation Laboratory at Virginia Commonwealth University uses small-scale 3-D scanners to curate virtual versions of artifacts. This project also explores 3-D printing of artifacts for public outreach and museum displays. The project's blog is available at <http://vcuarchaeology3d.wordpress.com/>.

The following case studies represent examples of modeling past landscapes. They also explore different ways of interacting with the resulting content. Whether using 3-D scanners to record extant features or 3-D modeling programs, all virtual content will be manipulated with 3-D software. This allows for the integration of models created by scanning technologies and those created using software. The necessity of this step means that data captured by 3-D scanners can be easily integrated with 3-D models created by hand in software. The nature of 3-D scanning data does not produce complete models and always requires some amount of post-processing. This is accomplished with the same programs used for hand modeling. As such, the use of modeling programs is a central skillset for new heritage projects.

Kingsley Plantation

Kingsley Plantation is on Fort George Island, north of Jacksonville, Florida (Figure 1). The site occupies a central place in the development

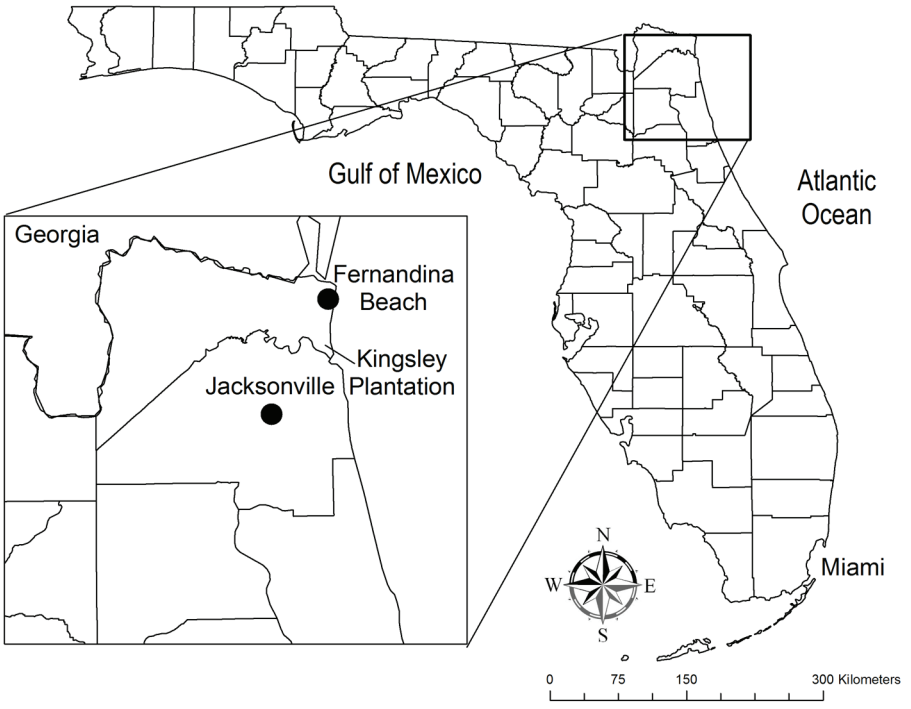

FIGURE 1. Location of Kingsley Plantation, Florida. (Map by E. Gonzalez-Tennant, 2014.)

of African American and plantation archaeology. Investigations at the site, undertaken by Charles Fairbanks beginning in 1968, represent the first archaeological efforts to study slave life. In addition, Fairbanks's students went on to explore numerous other contexts, giving rise to plantation archaeology in the United States during the 1970s and 1980s (Fairbanks 1974, 1984; Otto 1984; Moore 1985; Singleton 1985). In the early 19th century, the plantation was owned by Zephaniah Kingsley, who is well-known for his marriage to Anna (originally Anta) Madgigaine Jai, a girl from Senegal he purchased during a slave-trading trip to Havana, Cuba, in 1806. He married her shortly after, when she was 13 years old and Kingsley was 40. They moved to the area now known as Kingsley Plantation in 1814 and remained there until 1839. Kingsley manumitted Anna on her 18th birthday in 1811, and she played an active role in the management of Kingsley Plantation. As a result of Kingsley's particular view on slavery and Anna's management of the plantation, the enslaved Africans there were allowed to maintain many of their cultural practices and traditions (Walker 1988:50–51). The central role of Anna and the relatively tolerant attitude of Zephaniah are often referenced when speaking of the unique spatial patterning of the site.

The landscape of Kingsley Plantation consists of a main house, a kitchen (which also served as Anna's domicile), and a barn. An arc of 36 cabins to the south of this area housed the enslaved Africans. The original plantation included nearly 1,000 ac. that was used to grow cotton, citrus, sugarcane, and other crops. Archaeological investigations of the site were renewed by James Davidson of the University of Florida in 2006 and recently concluded in 2013.

*Reconstructing Kingsley Plantat*ion

The virtual model of Kingsley Plantation was constructed as part of Diana González-Tennant's (2008) graduate thesis in anthropology at the University of Florida. It is an example of 3-D content creation using hand modeling and SketchUp.[2] The process of modeling archaeological contexts involves five steps. The first step centers on the collection and organization of supporting evidence. In the case of Kingsley Plantation, this includes measured drawings completed by the Historic American Buildings Survey (HABS) in 2006, as well as archaeological investigations begun in the same year by the University of Florida. Unfortunately, several of the original cabins were destroyed in the early 20th century when the property became a resort. In order to determine the locations of these missing structures, we spent considerable time investigating the position of existing cabins within the greater arc through a combination of total station mapping and GIS analysis. We were able to determine that the arrangement of the cabins was deliberate, with each cabin's location mathematically planned—likely a result of the influence of Anna Kingsley, who oversaw the development of the plantation at this time. We discovered that the plan for each cabin's location began with the placement of a central point on the landscape. Then, a standard distance and angle was used to place each cabin along the arc. This hypothesis was proven through excavation. In fact, some of the stakes we attempted to place in the ground to denote potential foundations struck several of the destroyed cabins' outer-wall corners.

The second step in modeling archaeological contexts involves "blocking out" the general layout of the virtual reconstruction (Figure 2). This step draws upon the supporting written, archaeological, and architectural evidence to arrange rectangular blocks on the virtual landscape corresponding to the location of various structures. In regard to Kingsley Plantation, the placement of these rectangular blocks is derived from three primary datasets: architectural documentation by the HABS, archaeological excavations, and the use of total-station data-mapping site features. We view the use of GIS software, such as ArcGIS, as central to new-heritage projects because it supports exporting data into a variety of formats, including AutoCAD drawings. Data formatted as an AutoCAD drawing can be imported into many 3-D modeling programs. Alternatively, an image can be exported from ArcGIS and used as a base map in a 3-D modeling program. A final method available for blocking out the Kingsley Plantation reconstruction is unique to SketchUp and allows users to import aerial images from Google Earth for use as a base map. Each of these three methods has its strengths. The first two allow for tighter spatial control regarding the placement of structures, while the third method is useful if the user is seeking a quick visualization of a site's spatial arrangement. The third method is only

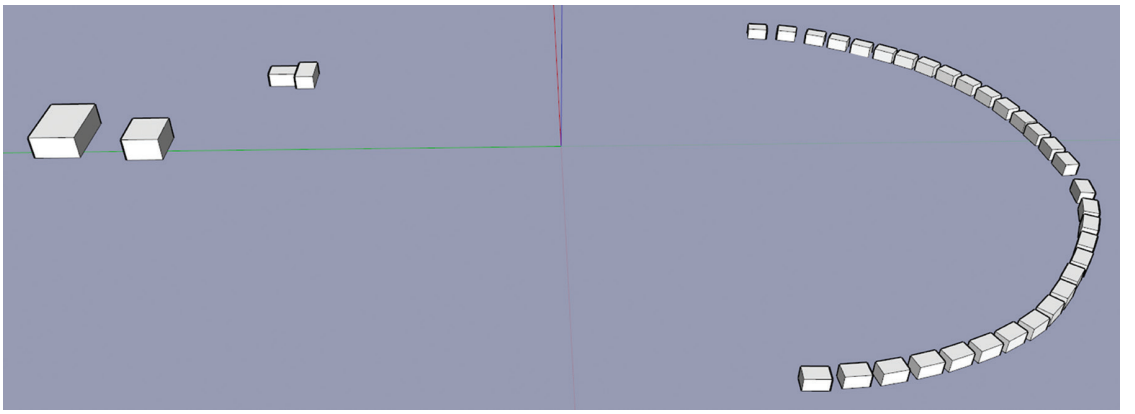

FIGURE 2. Blocking out Kingsley Plantation in SketchUp. (Figure by E. Gonzalez-Tennant, 2014.)

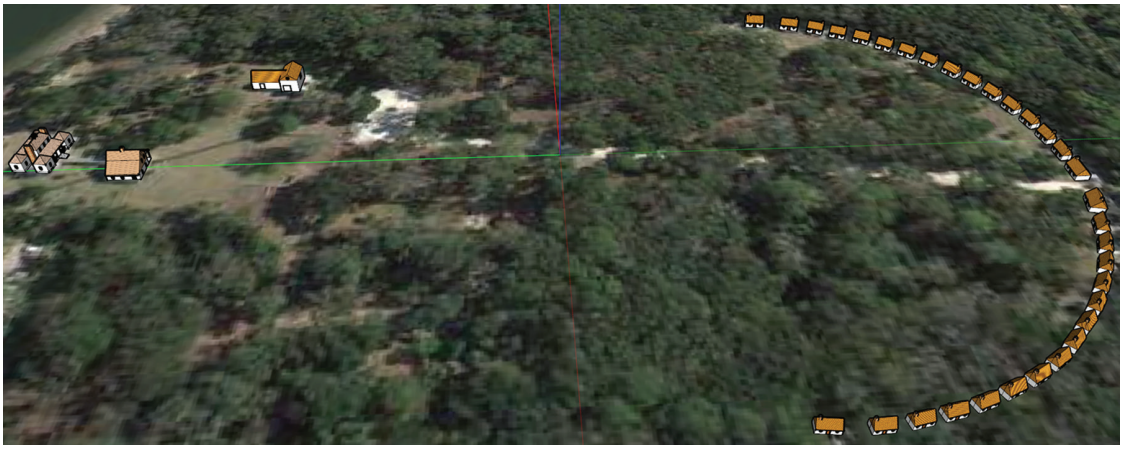

FIGURE 3. A 3-D model of Kingsley Plantation in SketchUp. (Figure by E. Gonzalez-Tennant, 2014.)

applicable for sites with standing ruins. In regard to the virtual reconstruction of Kingsley Plantation, a combination of GIS exports and aerial images was selected to construct the model of the missing cabins discussed above.

The third step involves adding details to the model (Figure 3). All the cabins at Kingsley Plantation are ruined, except for one that has been repaired and restored by the National Park Service to assist in interpreting the site for visitors. As such, the HABS drawings record the physical remains in 2006. A 3-D scanning of the site would result in documenting the current state of the ruins. The Kingsley Plantation 3-D model was created using SketchUp and represents a conjectural interpretation of the structures as they would have appeared in the early 1800s. Understandably, the majority of virtual reconstructions involve varying amounts of conjecture. This is particularly the case with ruined, destroyed, or heavily modified features. A mix of comparative structures and archaeological interpretations are typically drawn upon to render a complete virtual reconstruction.

The fourth step involves adding textures to the 3-D model. This refers to the use of images to reproduce the surface qualities of a reconstructed feature. For example, adding an image of wooden boards or tabby walls provides greater realism in regard to a structure's physical appearance. Texturing 3-D models often takes as long or longer than constructing the model itself. While the Kingsley Plantation reconstruction uses basic textures included with SketchUp, this is still a lengthy process. A lengthier and more photorealistic texturing process is explored in the following case study.

The final step in creating a new heritage project for historical archaeology centers on exploring various methods for sharing the virtual reconstruction. As previously mentioned, virtual and digital archaeologies typically create still images,

while cyber-archaeology and new heritage focus on the creation of immersive and interactive ways of sharing 3-D reconstructions. In addition to cost and relative speed, another important benefit of using SketchUp to create spatially accurate models is the ability to add the resulting content to Google Earth. This program is freely available to download at <http://earth.google.com> and comes equipped with a "3D Buildings" layer. Users can submit models of structures created with SketchUp for inclusion in this preloaded layer. The addition of 3-D content to Google Earth's buildings layer is controlled by Google and involves verifying the presence of the content being modeled. The presence of ruins at Kingsley Plantation is sufficient, but many new-heritage projects reconstructing destroyed and buried sites cannot be added to the 3-D buildings layer (as is the case for Rosewood, Florida). Regardless of whether a 3-D model is added to this layer, users can manually add their models to Google Earth. Regardless of the specific method for adding data to Google Earth, doing so provides unique possibilities for exploring archaeological sites. Since the virtual model of Kingsley Plantation is included in Google Earth's 3-D buildings layer, the virtual reconstruction of the site coexists alongside other forms of user-contributed content. Users are able to move around freely in a reconstructed version of the past landscape, while simultaneously viewing the site in its present state via a series of photographs taken by tourists (Figure 4).

SketchUp represents a useful tool for new heritage. The ability to display archaeological interpretations alongside physical remains allows archaeologists to communicate the past and present alongside one another effectively. There exists a potential to avoid the creation of a static representation of a place's history. The Kingsley Plantation reconstruction allows virtual and physical visitors to travel between time periods, to move between past and present and understand the ethereality of the built landscape. Less traditional uses of the model have also been explored. These include using the model as a virtual backdrop for a local play celebrating the life of Anna Kingsley (Figure 5). This play, written and performed by University of Florida students in 2009, explored the complex ways Anna's experience and the landscape at Kingsley Plantation affected her and

FIGURE 4. Kingsley Plantation in Google Earth. (Figure by E. Gonzalez-Tennant, 2014.)

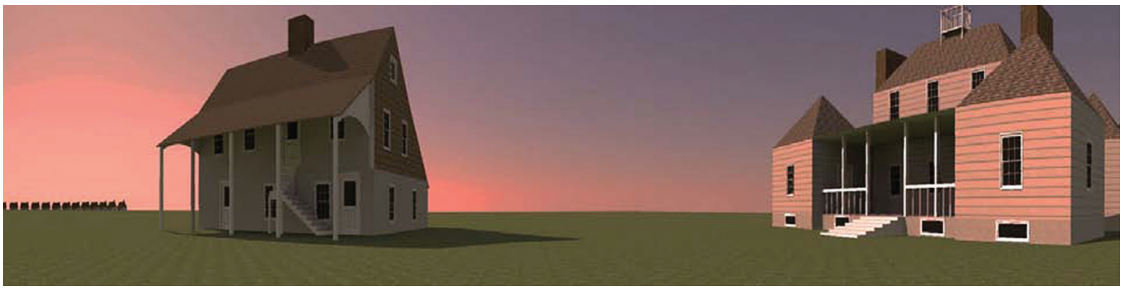

FIGURE 5. Virtual Kingsley as Play Background. (Figure by E. Gonzalez-Tennant, 2014.)

her descendants through time. The play was performed in a theater equipped with large-format projectors, allowing a 21 × 100 ft. image of the model to be displayed behind the actors. This represents another unique opportunity for outreach between archaeologists and the public, one rarely explored by our discipline.

We are planning a number of improvements to the Kingsley Plantation virtual model. The principle update will concentrate on improving the model's design and textures with Blender, an FOSS program. This centers on adding details to the structures, modeling additional features and structures identified during fieldwork, and providing new ways for visitors to explore the site. The future updates will require importing the model into different programs and retexturing it for increased realism. Our future work will draw upon the more complex workflow use for the virtual reconstruction of Rosewood, Florida.

Rosewood, Florida

The former site of Rosewood is approximately 9 mi. from the Gulf of Mexico in Levy County, Florida (Figure 6). The town was initially settled in the mid-19th century and experienced rapid economic growth following the Civil War (Hawks 1871:57; Dye 1997:29). By the early 20th century, Rosewood's majority African American population was experiencing a degree of freedom and self-determination rarely afforded black communities in the United States at this time (M. Jones et al. 1993:23). While the community retained its independent nature, Rosewood's economy began to decline during the 1910s as the neighboring community of Sumner began to eclipse it economically (Q. Jones 1997). This demise was precipitated by the construction of a large sawmill complex approximately 1 mi. west of the town.

Oral histories suggest that on New Year's Day in 1923, a white woman in Sumner fabricated a black assailant in order to hide her extramarital affair (M. Jones et al. 1993:25–27). While some current Levy County residents dispute this, it is clear that a white mob quickly formed and headed for Rosewood. They came upon the home of Sam Carter, a black, longtime resident of Rosewood and the town blacksmith. The mob interrogated Carter by hanging him by the neck from a tree. When he was unable to answer their questions satisfactorily, he was shot to death, with his bullet-riddled body left on the road to be discovered the next morning (Jones et al. 1993:30).

A little over two days later, whites living in Sumner heard rumors that the black assailant may have returned to Rosewood with longtime resident Sylvester Carrier (M. Jones et al. 1993:38). A mob formed and headed for the Carrier household, and before the night was through two whites lay dead on the family's doorstep, presumably shot by the residents in self-defense when the mob attempted to burn the family's home (M. Jones et al. 1993:40). Rumor and hatred spread quickly throughout rural Florida, eventually reaching the Ku Klux Klan in nearby Gainesville, Florida. Residents of Rosewood knew the response for killing whites would be swift and violent, regardless of whether or not they acted to defend themselves and their loved ones. Black men armed themselves, while women and children hid with John Wright, one of Rosewood's few white residents. By 6 January, three other blacks had been brutally murdered, and the white mob, now numbering in the hundreds, began the systematic burning of Rosewood. During this time, a train was brought through town at four in the morning to pick up women and children who had moved to hide in the swamps after John Wright could no longer guarantee their safety. The train took dozens of families

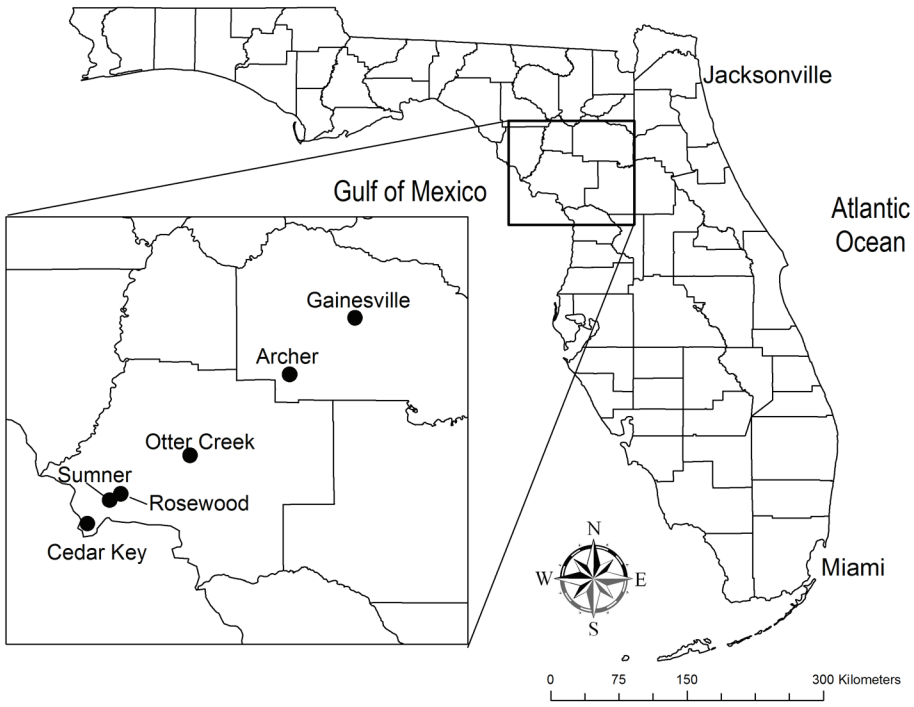

FIGURE 6. Location of Rosewood, Florida. (Map by E. Gonzalez-Tennant, 2014.)

to nearby towns, where their descendants live to this day (M. Jones et al. 1993:61). Meanwhile, the white mob continued its rampage, and, by Sunday 7 January 1923, the town of Rosewood was no more; its entire African American community violently displaced, never to return (M. Jones et al. 1993; D'Orso 1996; Colburn 1997; Dye 1997).

Reconstructing Rosewood, Florida

The process of creating a virtual reconstruction of Rosewood's destroyed landscape follows the same five steps as outlined in the previous example of Kingsley Plantation. The primary difference between the two projects is one of scale and available supporting evidence. The former site of Rosewood occupies approximately 2 sq. mi., all of which has been reconstructed as part of the Rosewood Heritage Project (<http://www.rosewood-heritage.net>). Traditional methods of documenting archaeological contexts remain difficult in Rosewood (Davidson and González-Tennant 2008). The current landowners are divided into three broad groups. The first is excited by the possibility that their property may include a piece of history, even a history as disturbing as Rosewood's destruction. The second group prefers not to be involved, at least at this time. The third and by far smallest group remains hostile to acknowledging or commemorating the events of 1923.

The second two groups are slowly changing their minds as a long-term approach to collaboration is soothing the concerns of many property owners (E. González-Tennant 2013:85–86). As such, researchers are increasingly invited to conduct traditional archaeological investigations at additional properties. In addition to access, we select properties to be explored based on the supporting evidence that is available to researchers. This includes property deeds and census records, mirroring a common focus on documentary records often at the heart of landscape analysis in historical archaeology (Rotman and Nassaney 1997). As such, the first step in reconstructing Rosewood's landscape involves the use of GIS to map the metes and bounds from hundreds of deeds for a period spanning more than fifty years (1870–1930). This complex process is necessary because Rosewood was never incorporated and remains rural. As such, no maps or city directories exist to document the town's layout or the spatial relationships of its occupants.

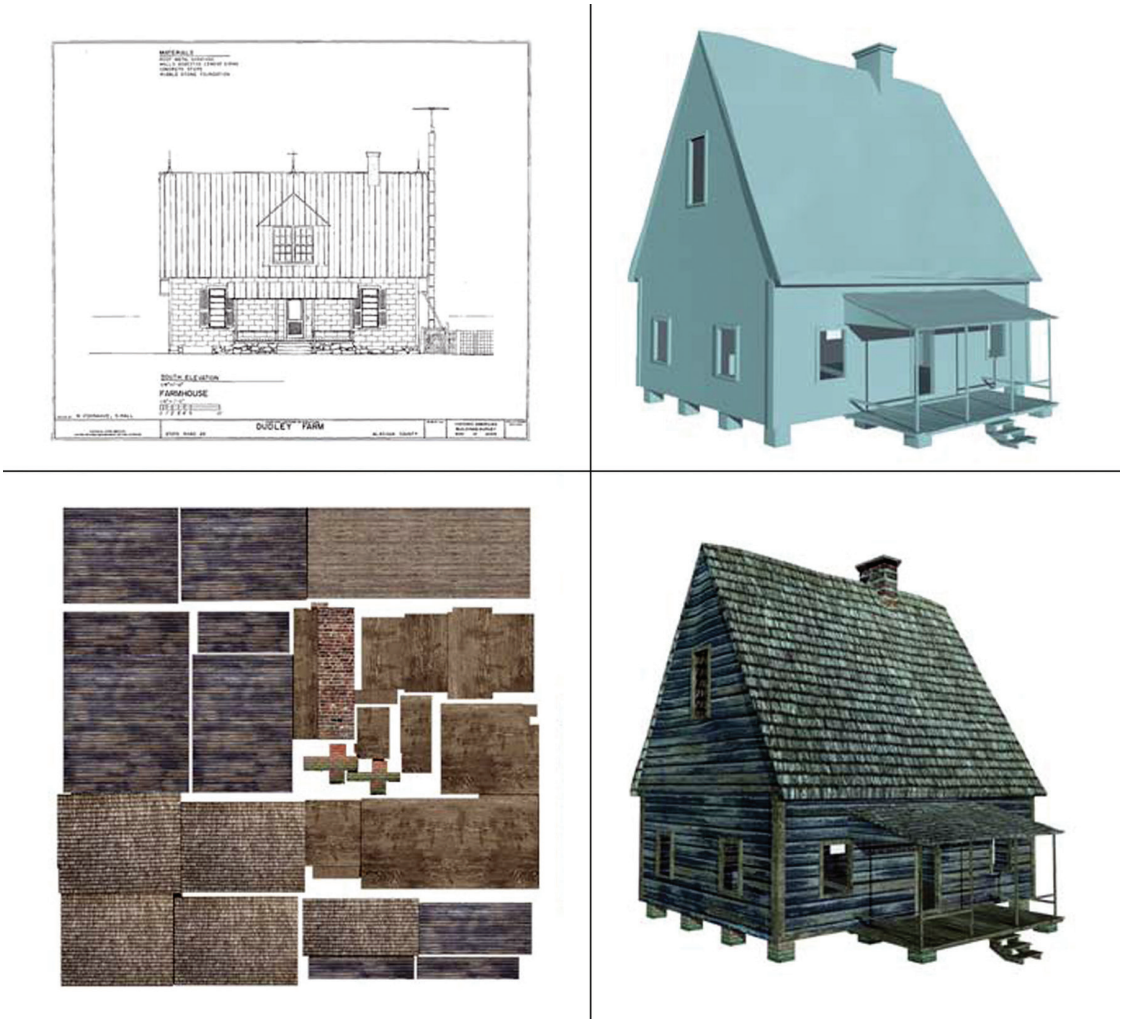

FIGURE 7. Steps in constructing Virtual Rosewood Assets. (Figure by E. Gonzalez-Tennant, 2014.)

The resulting historical properties GIS presents a spatial layout of Rosewood's community. This provides the supporting evidence necessary to block out the town's layout, which was initially undertaken with Google SketchUp. The decision to produce a photorealistic reconstruction of Rosewood eventually required the exploration of more sophisticated software (E. González-Tennant 2010). The reconstruction of individual structures was accomplished with Autodesk's 3DS Max software. The design of these structures was based on historical documentation of contemporary structures still standing in central Florida. The dominant design of structures in this region from the late 19th and early 20th centuries is often referred to as "cracker architecture." These wood-framed structures are placed atop supports constructed with brick or stone and mortar, a local architectural form adopted by settlers arriving from the Carolinas and Virginia during the postbellum period (Haase 1992; St. Claire 2006:115–119). As such, traditional archaeological evidence would be of limited use in reconstructing these structures.

Texturing the models was also more involved than it was for the Kingsley Plantation example. Realistic textures were created using photographs of structures in central Florida that are contemporaneous with those that existed in Rosewood. These images are then edited with Adobe Photoshop and applied to the surfaces of the 3-D models. The placement of textures is accomplished by assigning mapping coordinates to each surface of every model. Not to be confused with georefencing aerial photographs using GIS software,

FIGURE 8. Opening scene of Virtual Rosewood Reconstruction. (Figure by E. Gonzalez-Tennant, 2014.)

although the process is similar in concept, the techniques used for each are very different. This is a complex and time-intensive process, but results in more realistic models that better reflect the time period and construction materials. Figure 7 shows the first four steps of the reconstruction process. While the placement of the structures was determined through GIS mapping, the design of the structures included the HABS documentation of nearby buildings in central Florida. These measured drawings support the construction of spatially accurate models. The application of images to this model requires a texture map, such as the one visible in the lower left-hand corner of Figure 7, which is then applied to the 3-D model. A single model complete with texture is refered to as an asset by 3-D artists and animators. The reconstruction of Rosewood required the creation of more than 40 unique assets, including homes, stores, a train depot, churches, and other structures.

The final step of sharing the Rosewood reconstruction focuses on the use of game engines, programs that allow users to create and deliver video games rapidly. Game engines, such as Unity 3D (<http://www.unity3d.com>), can also be used to share interactive versions of heritage visualizations. These programs provide relatively intuitive workflows for transitioning from static file formats, such as 3DS Max, to immersive virtual worlds inviting users to explore reconstructed past landscapes. In regard to Rosewood, the delivery of a complete virtual world environment is part of a mixed-methods approach integrating game engines, online worlds (e.g., Second Life), and digital storytelling to address social-justice issues with new heritage (E. González-Tennant 2013). The current reconstructed version of Rosewood is estimated to have taken approximately 600 hours to complete and can be explored online at <http://www.rosewood-heritage.net/vwe> (Figure 8).

The reconstructions of Kingsley Plantation and Rosewood can address a range of issues increasingly central to historical archaeology. These include the translation of archaeological research into formats that are more accessible by the public. They also intersect topics related to new theories of place and identity in African-diaspora archaeology.

Discussion: Expanding the Role of New Heritage in Historical Archaeology

The use of digital technologies to reconstruct past landscapes remains focused primarily on monumental and prehistoric contexts. Notable exceptions to this trend include Virtual Williamsburg, available at <http://research.history.org/vw1776>, and the interpretation of the Battle of Prairie Grove

in Arkansas, viewable online at <http://pg.cast.uark.edu>. A handful of similar projects utilize these technologies to interpret African-diaspora experiences specifically. These include the reconstruction of a mid-20th-century African American neighborhood in West Oakland, California, that takes the form of a traditional video game available online at <http://www.7thstreet.org>. This online game allows visitors to interact with preprogrammed characters while exploring the site's unique history (Kalay and Grabowicz 2007). This type of work is part of a larger movement recognizing the influence video games have upon players and a conscious effort to harness this influence for positive social transformation (McGonigal 2011). A similar project explores "serious gaming" to reconstruct the urban environment associated with the 1976 displacement of a black community in Soweto, South Africa, available online at <http://www.soweto76archive.org>. This project continues to explore SketchUp, online video, and game engines to share this difficult heritage with new audiences (Nieves 2009).

These projects and our case studies explore the use of emerging technologies to document and interpret historical sites. New virtual platforms provide researchers with a wide range of methods engaging the public in new and creative ways. These are transdisciplinary approaches embracing technological experimentation. They also offer intriguing possibilities for phenomenological explorations of landscape, including Christopher Tilley's (1994) interest in viewing landscapes through the eyes of past residents. While Tilley's theoretical approach may not appeal to all, the experiential nature of new heritage offers tantalizing potentials for engaging more traditional scholarship examining landscape and African-diaspora archaeology.

A considerable amount of landscape work within historical archaeology focuses on settlement patterning (Clement 1997; Lewis 1999) and the social aspects of town planning or garden design (Leone 1984; Miller 1988; Kelso and Most 1990; Yamin and Metheny 1996; Leone and Hurry 1998; Leone et al. 2005). African-diaspora archaeology also engages with the social aspects of landscape (Delle 1998, 1999; Epperson 1999; Singleton 2001). More recently, Whitney Battle-Baptiste's (2011) work seeks to reorient African-diaspora archaeology from a specifically black-feminist perspective. This project challenges historical archaeologists to expand their understanding of place in a variety of contexts. Battle-Baptiste's (2011:85) conceptualization of a "functional plantation model" portrays the plantation as being composed of four interrelated realms. The first realm considers the plantation as a functional whole. Second, an interest in developing a more thorough understanding of the lived experience of enslaved Africans motivates her to examine a captive-African domestic sphere. This sphere recognizes the polyvalent nature of place and landscape. Third, the gendered nature of work and its spatial characteristics form the core of the labor sphere. The fourth realm refers to the wilderness that surrounds plantation contexts and often played host to a variety of activities, which further solidified African American identity and solidarity.

Immediate intersections can be seen between this aspect of Battle-Baptiste's work and the reconstruction of Kingsley Plantation. The use of Google Earth to share and visualize the spatial layout of the plantation renders the past landscape visible to nonspecialists. This is the methodological equivalent of bell hooks's sentiments relating to the value of theory as a liberating practice; namely, the understanding that "any theory that cannot be shared in everyday conversation cannot be used to educate the public" (hooks 1994:64). The virtual reconstruction allows us to move beyond static, geospatial-driven analyses (e.g., viewshed analysis) of the landscape that often suggest the expression of African-diaspora identity primarily took place out of sight. The virtual reconstruction allows visitors to move seamlessly between hidden and visible areas. Future work with Kingsley Plantation includes reconstructing a larger portion of the surrounding landscape, as well as the mill that has only recently been excavated. These additional contexts allow visitors to visualize the various realms that enslaved Africans inhabited on a daily basis. After all, African-diasporic identity did not cease to be constructed and experienced simply because they left their swept yard or walked out from behind a slave cabin; rather, they emerge as active participants in their landscapes, moving out of the figurative and literal shadow of a deterministic viewshed analysis.

Battle-Baptiste's analysis extends beyond these interrelated realms to explore the ways African American conceptualizations of space differ those of European Americans. She draws

on bell hooks's notion of "homeplace" to expand the archaeological exploration of what she terms "homespace" (Battle-Baptiste 2011:94–101). Her conceptualization of homespace refers partly to those areas where African Americans felt comfortable enough to create their identity and enjoy the company of others. These areas include the cabin, the yard, and parts of the surrounding wilderness. The reconstructed landscape of Rosewood presents an enormous homespace, 2 sq. mi., in which African Americans were allowed to determine the courses of their lives. This self-determination was rare in the postbellum and Jim Crow eras. The ultimate denial of this freedom—through the violent destruction of the town and traumatic displacement of its residents—is reinforced as visitors move through the virtual environment and experience exactly what was lost. Instead of an abstract notion of homes destroyed, lives lost, and a community displaced, the reconstruction renders this experience as an accessible (virtual) reality.

Alfredo González-Ruibal (2008) has called for this type of work to investigate sites destroyed and/or erased by supermodernity. One of his main themes examines possible alternatives for presenting the past. He discusses how traditional forms of academic narration in books, chapters, and journals remain the dominant form of scholarly dissemination and calls upon archaeologists to explore alternative forms of interpretation. This includes the use of technologies, like interactive computer mapping and new heritage. The use of new heritage to share scholarship of Rosewood's history is engendering new collaborations between archaeologists and the public. This includes landowners visiting the Rosewood Heritage Project's website, which includes a data warehouse containing full transcripts of oral histories and spreadsheets of census records available for use by other researchers and the public. One visitor who explored the site in 2010 invited Edward González-Tennant to assist in the exploration, documentation, and preservation of Rosewood's African American cemetery. This particular landowner had remained wary of working with academics after negative experiences with previous researchers. The ability to share research strategies and motivations via the Internet was cited by this individual as a motivation to reach out. The use of new heritage in this way supports the goals of an inclusive, community-based archaeology (Agbe-Davies 2010; Atalay 2012).

The reconstruction of archaeological contexts speaks to a number of current issues relating to place and identity. The ability to navigate reconstructed landscapes informs other research. The juxtaposition of a reconstructed Kingsley Plantation alongside tourist photographs in Google Earth allows a better understanding of how the public interacts with the site. The ability to move through a reconstructed Rosewood, informed by various lines of evidence, awakens everyone to the complex relationships among kinship, race, gender, and home ownership. Others work with indigenous communities and discover how virtual reconstructions of archaeological contexts allow researchers to explore, construct, and maintain cultural knowledge collaboratively (Dawson et al. 2011).

Historical archaeology is still discovering the range of possibilities available for the exploration of new heritage. The potential applications of these technologies and their full meanings will only begin to emerge as we historical archaeologists take a fresh look at the range of possibilities. This includes technical innovations regarding the collection and integration of various lines of evidence. For instance, the combination of historical deeds and census records to reconstruct Rosewood builds upon our discipline's recognized need to develop a unique approach toward documentary analysis (Deetz 1996:1). There may also be a need to reexamine field methods. Just as the integration of GIS into the archaeological toolkit encouraged a reexamination of the ways we gather data and document fieldwork, new heritage may challenge us to consider additional data-collection strategies in the future. Thus, new heritage remains a dynamic field inviting archaeologists to craft a variety of approaches addressing a range of contexts. This article points to a handful of the possibilities, while demonstrating how such approaches remain in dialogue with some of the core concerns of our discipline.

Conclusion

The central goal of this article is to introduce readers to the practice and theory of new heritage, particularly historical archaeologies of landscape. As historical archaeologists, we believe that our discipline is uniquely situated to make lasting contributions to the way new heritage is applied to the past. The multidisciplinary nature of new heritage neatly parallels our discipline, which has always

embraced a mix of datasets and approaches (e.g., material culture, documentary history, oral testimony). The inherent multidisciplinary nature of historical archaeology means that our work easily intersects new heritage in important and revealing ways. New heritage's focus on the interactive element of emerging technologies contributes to our discipline's growing concern with public collaboration. It also intersects new perspectives relating to the investigation of landscape, identity, and the African American past.

Ultimately, it matters little if historical archaeology adopts the term "new heritage" to describe the integration of digital and virtual technologies within its disciplinary toolkit. The preceding case studies highlight the importance of incorporating traditional historical archaeological data (e.g., excavations, building surveys, historical documents) as a part of this work. While relatively few historical archaeologists will be able, individually, to learn these techniques due to time constraints and steep learning curves, it is useful to understand the time commitment required for new-heritage projects. New heritage, as with GIS (Kvamme 1999), is more than a tool, and developing a deeper understanding of the practical and theoretical potentials will allow historical archaeologists to make better use of these emerging technologies as they become more commonplace in the coming years.

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Endnotes

[1]Second Life (SL) refers to an online world where users create the majority of content. SL is free to join and explore, but has a fee structure for purchasing virtual real estate. This virtual land allows users to construct various objects (e.g., homes) that exist even when the user is not logged in. For more information, please visit <http://www.secondlife.com>.

[2]SketchUp became popular in the 2000s after Google acquired it from @Last Software. Trimble (makers of total stations and GPS receivers) acquired the software in 2012 and continues to offer both a free and pay version.