



Photograph, left, dating to 1911 or 1912, shows some of the houses that were relocated from Atsena Otie after the 1896 hurricane to the northeast corner of 1st and E streets in Cedar Key. Photo courtesy of Beth Mizell

Kenneth E. Sassaman

THE FUTURE PAST OF ATSENA OTIE

Experiencing Past Hurricanes Virtually

Public concern over climate change has brought into sharp focus the fraught relationship we have with the future. How are we supposed to plan for climate yet to come when the rate and magnitude of change are so uncertain? If every future is truly different than any past, then Edmund Burke was right, and we have no reason to look back to see forward. On the other hand, if the future is the stuff from which the past is made, as George Carlin mused, the archives of history are rife with information about alternative futures, or what some theorists call “futures past.” The past, in this futurist sense, does more than simply benchmark how much things have changed; it also gives substance to our imagination about possible futures.

The uncertainty of future climate goes beyond theoretical discourse to affect public policy. Since its inception in 1988, the United Nation’s Intergovernmental Panel on Climate Change (IPCC) has been reluctant to issue projections for sea-level rise that take into account the collapse of the Greenland and West Antarctic ice sheets because it has no reliable data on the rate at which such events elapse. The omission of these events from sea-level rise projections is highly consequential: the projected net increase in sea level this century is less than one meter without ice sheet collapse, and roughly six meters with it. Under the latter scenario, the southern third of Florida and most of its coastlines throughout the rest of the state would be inundated.

Rather than bemoan the lack of data on the rate by which ice sheets collapse, some geologists have taken to the field to find evidence for the last time it happened. That was roughly 125,000 years ago, during the last Interglacial period. Florida was half the land mass it is today, as it will be again in the future. By investigating the rate at which this occurred before, geologists hope to reduce the uncertainty that bedevils sea-level rise projections today, like those of the IPCC. From the depositional records of the last Interglacial era, geologists are reconstructing a futures past for Florida that bears relevance to our own future.

You can never plan the future by the past

—Edmund Burke, Anglo-Irish statesman (1729-1797)

The future will soon be a thing of the past

—George Carlin, comedian (1937-2008)

As an archaeologist, I am interested in ancient human experiences with climate change, which, in Florida, began as soon as people arrived at the end of the last Ice Age. Florida then was twice the land mass it is today. Sea level was about 80 m lower than at present, and the northern Gulf coast of Florida—where my students and I work—was more than 200 km west of its current position. Retreat from a drowning coast must have been routine for people back then. Not so much in recent centuries, but if future projections for sea-level rise are correct, coastal retreat may again become necessary, and common.

I have long wondered how an archaeology of prior experience with sea-level rise might be useful for imagining our own future. Over the last decade, our team has developed good insight on how the ancestors of Native Americans dealt with rising sea, although the resolution of our data is regrettably too coarse to narrate those experiences in biographical terms. It took me a while to appreciate that such coarse-grained reconstructions—devoid of the sensory, bodily qualities that make experience so memorable—had little chance of resonating with modern people. Rather than reach so far back to imagine possible futures, I now wonder how an archaeology of the recent past can help to inform the inevitable need to retreat from locations of growing vulnerability to severe storms and the flooding of rising seas. So I now ask: when was the last time a settlement on the northern Gulf coast was abandoned and relocated in the wake of a climate event, such as a hurricane? In our study area, that would be the late 19th century and the island town of Atsena Otie, a possible future past of the modern town of Cedar Key.

Atsena Otie exists today as “ruins” with limited above-ground visibility. Its cemetery is known by most people as the only thing that remains on the long-abandoned island, which is to

say that it is the only obvious trace of a bygone era. But below the surface lie the archaeological remains of land use since the early 19th century. Among the remains awaiting discovery are those of a trading post dating to the First Seminole War (1818-20); a US Army hospital from the Second Seminole War (1840-42); a would-be resort and then chartered town of the 1850s; and cedar millworks and associated industry of ensuing decades, when upwards of fifty households occupied lots of a platted community.

Hurricanes were common over this span of time, as they continue to be, and some were so impactful as to be valorized in memory as the cause of structural change. A direct hit on September 29, 1896, is



A NASA map projection of the south Florida peninsula portends a possible future Florida if the Greenland and West Antarctic ice sheets collapse. Source: NASA/JPL-Caltech, Wikimedia Commons



Portion of the draft 1852 Gerdes map of the US Coast Survey, with a closer view of Otcena Otee (now Atsena Otie), formerly Depot Key, depicts the island ten years after a hurricane destroyed an Army hospital and forty-four years before another hurricane destroyed the Eberhard Faber cedar mill that was constructed on the northwest shoreline of the island in 1868. Image courtesy of the author

especially memorable. On that morning, ten-year-old Velma Crevasse and her family walked out of their two-story house on Atsena Otie after a harrowing night of 100-mile-per-hour winds and hard rain. She, her family, and their house survived the night only to be met with a ten-foot storm surge on the backside of the storm. Velma described running upslope to a third-story house and climbing to the top floor to watch the surge overtake their home. Many of the houses on the island, as well as the mill, were severely damaged or destroyed. Velma lived to tell the story later, but thirty-one individuals in the area died, as did another eighty-six on the storm's path along the Florida Railroad to Fernandina.

Imagining how the 1896 hurricane is manifested in social memory today is to ask about the relationship between experience and expectation. And it is here that I acknowledge the fragmentary and discontinuous nature of social memory: a bricolage of facts, hearsay, post-hoc rationalization, and fanciful thinking. Nothing unusual about any of this as history has more to do with what we make of the past than what actually happened. But can we—through archaeology and digital technologies to enhance reality—provide a new form of experience, new raw material for memory making that is geared more directly toward futures?



Workers and their children are shown outside the Eberhard Faber Cedar Mill on Atsena Otie in the year before the 1896 hurricane destroyed the mill. Ten-year-old Velma Crevasse is the second child from the right. Her vivid memories of the storm were published in the *Florida Times Union* in 1965, when she was 80. Like the mill, her family's home was largely destroyed. Shortly after, they relocated inland to town of Morriston. Image courtesy of the author

For that I recruited the help of two colleagues, Ed and Diana González-Tennant, leaders in the burgeoning field of “New Heritage,” basically the use of digital technologies, including virtual reality, to take heritage studies beyond the limits of its traditional methods. Ed and Diana have created digital resources for a variety of projects, but I was especially attracted to Ed’s work with the history of Rosewood. Drawing on diverse sources, Ed brought Rosewood to 3D digital life, and he continues to expand the platform to realign the virtual experience with an ever-growing body of information. What struck me as especially relevant to the Atsena Otie project was the gravity of a particular event in social memory. In the case of Rosewood, that defining event was the race riot of January 1923. From that point of entry, Ed is able to look both backward and forward to situate the event in the broader context of race relations in the US. His virtual reality platform allows for experimentation in time-bending, because it is not constrained by the linearity of typical historical narrative, or the synchronic moments of living history museums.

With an ultimate goal of creating a virtual reality platform for exploring the experience and expectation of climate events, the Atsena Otie project draws on archival, geospatial, archaeological, and oral historical data centered on the namesake island in the late 19th century. The geospatial and archaeological components of this project are necessary for sensory purposes—that is, to create bodily experiences

by placing persons in living spaces, temporalizing experience by moving through those spaces, and offering material touchstones to persons whose biographies we can follow backward and forward.

Covered in secondary forest, the surface of the main portion of the island, where the mills, homes, and cemetery were sited, offers few visible vestiges of the built environment. The 1896 storm destroyed some structures and badly damaged the mills, but others survived or were rebuilt and either relocated to Cedar Key later or eventually dismantled. No standing structures exist on the island today. Besides the cemetery, remnants of the Eberhard Faber cedar mill on the north shore and a cistern in the interior of the island are among the few obvious above-ground features.

To enhance our ability to locate subsurface remains of houses, millworks, and other structures—and thus produce virtual reconstructions with accurate spatial and temporal attributes—we recruited the help of colleagues with the University of Florida’s Spatial Ecology and Conservation Lab. Using drone-mounted LiDAR, Lab Codirector Eben Broadbent collected data points at a density far greater than is possible with plane-flown LiDAR. From an hour of drone time and a few more hours of postprocessing, the resultant map of Atsena Otie shows a variety of rectilinear features, many likely to correspond to the locations of structures. We have yet to conduct ground-truthing



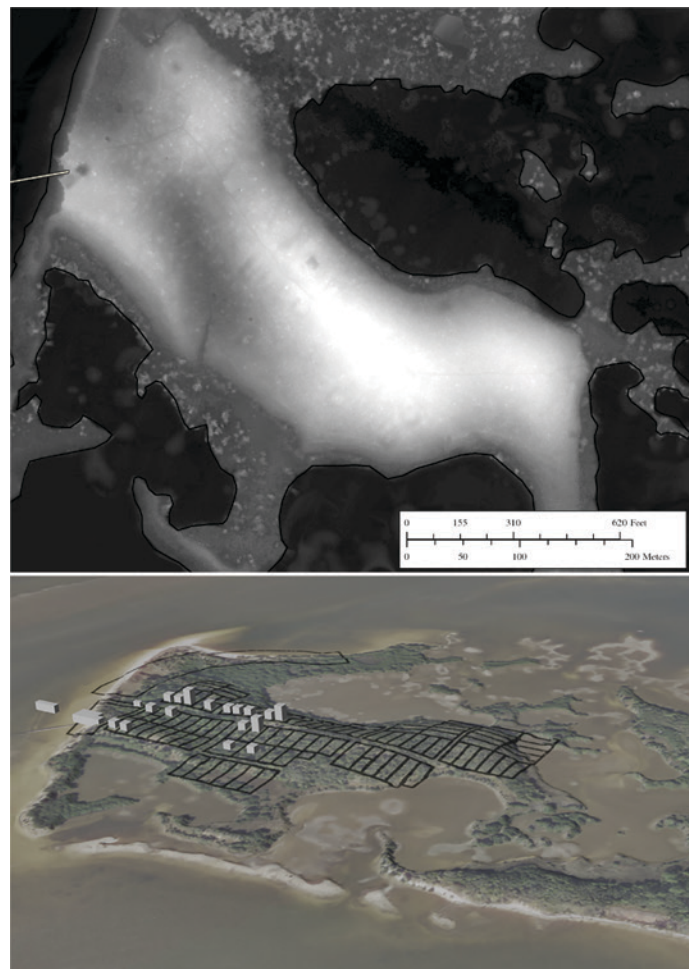
Screen shot of Virtual Rosewood (<http://www.virtualrosewood.com/raih/>) shows the Carter homestead and blacksmith shop. Informed by abundant historical and archaeological documentation, virtual worlds like this help bring the past to life. Image courtesy of Ed González-Tennant

of any of these surface features, but suspect that in many cases they will consist of now-denuded brick or tabby footers or perhaps driplines and circumferential pathways around houses. A 2002 survey of the island by archaeologists with Panamerican Associates lends credence to this expectation.

Historic plats in the Levy County archives enable us to divide the island into property parcels. Ed and Diana already have digitized and georeferenced several plats. Again, the late-19th century, and 1896 in particular, is the entry point for this project, but all other subdivisions are needed to sort out the components that may present themselves in archaeological context from earlier and later land use. At any given point in time, we hope to be able to connect each parcel to its owners and occupants.

Our intent in prioritizing some properties over others turns on the detail of biographic data we can gather from island residents and mill workers. Who, for example, not only dwelled on Atsena Otie in the late 19th century, but also descended from local forebears and left descendants with memories of them today? We know of some such persons and have begun to develop collaborations with them.

The results will be patchy, no doubt, with some parcels and owners remaining anonymous. Fortunately, from the standpoint of populating a virtual Atsena Otie with all its structures, an 1884 bird's eye view of the area provides a valuable touchstone. This is among the many perspective maps that were made in the late 19th and early 20th centuries from painstaking



Projection of drone-mounted LiDAR data (top) shows subtle traces of remnants of houses and other infrastructure on Atsena Otie today, and a preliminary 3D model of a historic property plat with some place-holders for buildings that will be enhanced in the future with architectural details. Both images courtesy of Edward González-Tennant

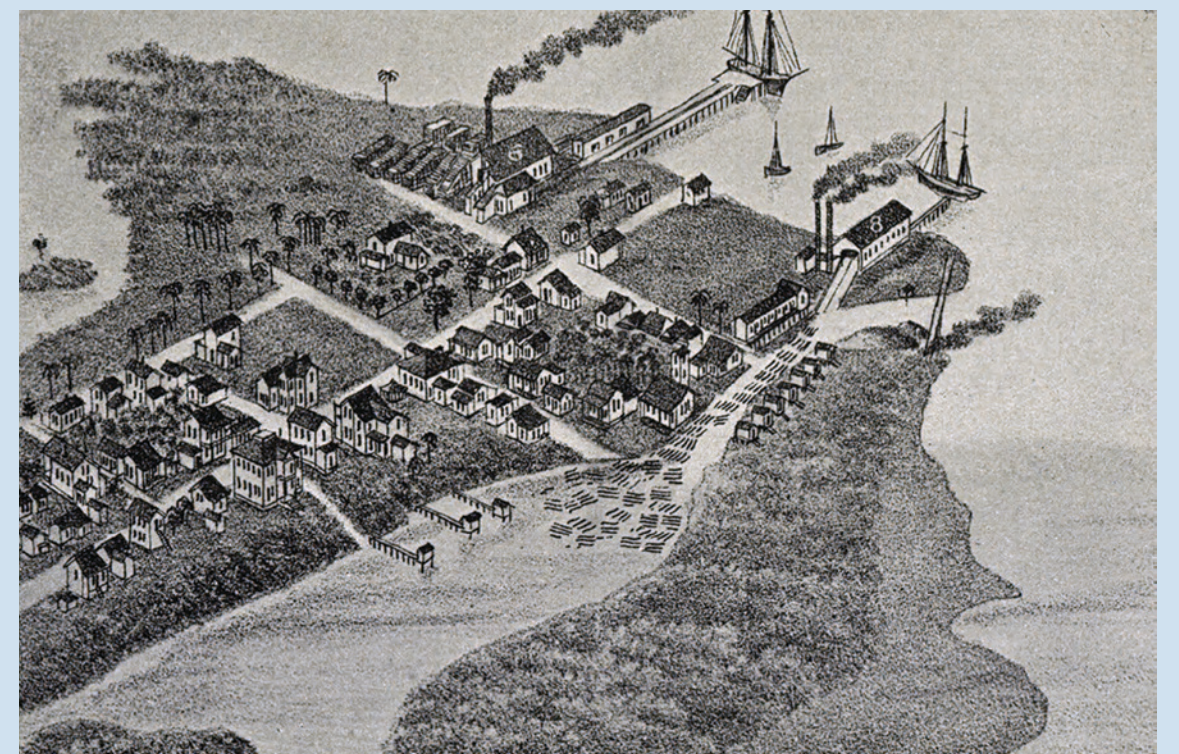
measurements of the built environment. Although lacking in architectural detail, the locations and basic shapes of buildings and other infrastructure are relatively accurate. Sanford Insurance maps offer additional information about the size and shape of buildings, but in this case only for the Faber mill.

We eventually need to target locations for subsurface testing to substantiate inferences about the locations and forms of structures. We also hope to recover objects that can be connected through virtual reality to actual personal experience. Subsurface testing will commence with targets provided by LiDAR that correspond to properties with ownership and occupancy that are reasonably well known to us, such as the Crevasse home. We also plan to open up some space around and beneath the ruins of the Faber mill.

Another priority is a digital reconstruction of the cemetery at the east end of the island. Among the persons buried there are individuals with living descendants in the area. Prior surveys have been conducted, and maintenance and visitation of the graves are ongoing. With the help of project collaborator Ginessa Mahar, archaeologists from the Florida Public Archaeology Network, and volunteers from Cedar Key, we spent two days last December cleaning and mapping the thirty-two graves whose markers are more or less intact. Taking scores of

photos of each grave from multiple angles will enable Ed and Diana to construct 3D models and place them in their respective locations for a complete digital reconstruction. This same method of photogrammetry is used to digitally repair broken headstones. Eventually we hope to be able to use the digital model as a portal into the lives of those buried in the cemetery and to link those persons to the places at which they lived and worked.

No matter how detailed and compelling a virtual Atsena Otie may be, it will not serve more than entertainment purposes if it is uninformed by narratives that reveal the entanglements of place, history, and event in sensory, human terms. Foremost among them are the entanglements of the cedar industry. We need to acquire and analyze records of cedar harvesting, starting with the land acquisitions of Eberhard Faber in the 1850s and working through four decades of reputed overexploitation. We have to square the reality of an ample cedar stock just prior to the 1896 hurricane with evidence that the industry was already on the skids. We have to identify the labor force working at the mills and the timber camps. What were the circumstances surrounding the shift from a predominately black labor force, including citizens of Rosewood, to an increasingly white population? We have to investigate the railroad, both as an enabler of growth in the cedar business and its Achilles heel



Portion of an 1884 lithograph of a bird's eye view of Atsena Otie shows the Eberhard Faber mill (building 6) with an abundant stock of cedar awaiting processing and transfer via boat to the railroad depot at Cedar Key. A second wood mill (building 8) and residential structures provide good detail on the size and placement of buildings on Atsena Otie twelve years before the fateful storm. Image courtesy of the author



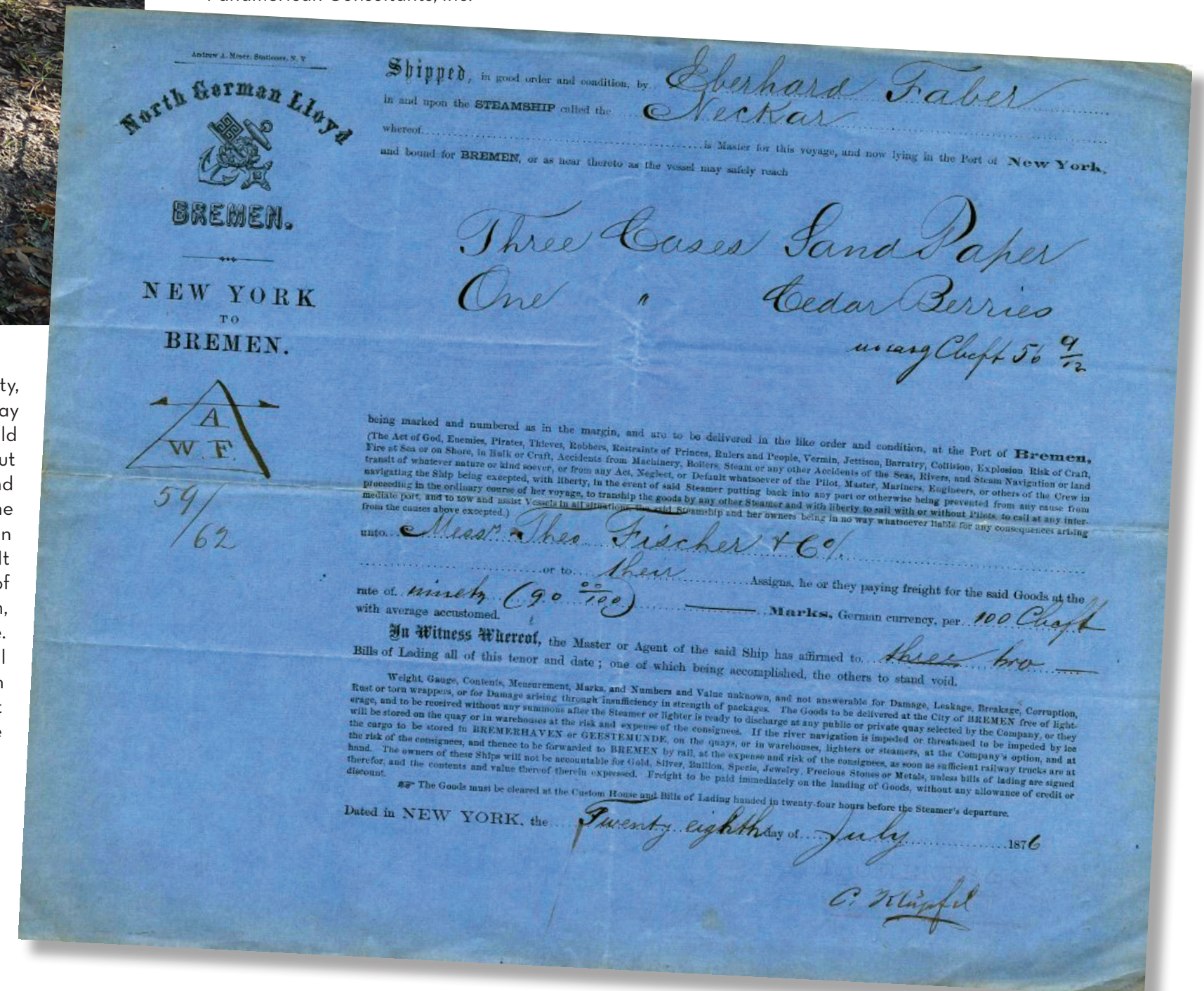
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LEFT: A view facing northeast shows the Atsena Otie cemetery in December 2019, when it was cleaned, mapped, and photographed to produce a 3D model that later will be incorporated into the virtual world. Image courtesy of the author

BELOW: A shipping bill dated July 28, 1876, was prepared for three cases of sandpaper and one case of cedar berries sent by Eberhard Faber from his pencil factory in New York to Bremen, Germany. Eberhard's brother Lothar evidently attempted but failed to grow Florida cedar in Bavaria as the US supply dwindled from overexploitation. Courtesy of the Faber-Castell Company, Stein, Germany



under both military and market impingements. We have to consider the role of a traveling John Muir, whose preservationist philosophy usually is attributed to his time in the Sierra Nevada, but likely took shape in Cedar Key as he surveyed a landscape of overharvesting.

Finally, if we ultimately hope to be able to provide insight on future coastal living in the Cedar Key area, we have to work on the links between experience and expectation in human terms. Taking the long view, it is not unreasonable to suggest that Cedar Key will have to be abandoned and relocated in the future. Will the memory of Atsena Otie have any role in this potential future? The friction of time on memory is effective at disconnecting experience from expectation. As we look backward and forward from our entry point of September 1896, we find that the experiences of other hurricanes that live as memory (in mostly literary form) are the 1842 storm that wiped out the US Army installation and the 1950 Labor Day storm that coincided with the waning years of a thriving fiber industry started in 1910. Over this stretch of more than a century, hurricanes have passed close to Cedar Key dozens of times, averaging one every

3.9 years since 1870. They varied in intensity, duration, and direction, but it is safe to say that those experiencing such conditions would judge impact not only from the storm itself, but also the challenges it posed to rebounding and moving forward. The big events that inflect the history of Cedar Key are spaced more than fifty years apart, more than two generations. It will be useful to imagine how the conversion of climate events to historical events takes form, and for what purposes these narratives serve. We are encouraged by the potential of virtual reality to explore these sorts of questions in ways that heighten public awareness about possible futures and hopeful ways to minimize its negative outcomes.

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