

RECENT RESEARCH HIGHLIGHTS

Inspiring Generations through Knowledge and Discovery

The work of Smithsonian scientists, curators, and historians is essential to the Institution's ability to meet the four grand challenges of the Smithsonian strategic plan: understanding and sustaining a biodiverse planet, unlocking the mysteries of the universe, valuing world cultures, and understanding the American experience. The following highlights are some of the many new discoveries, research programs, and initiatives under way at the Smithsonian.

Damage Control: Art and Destruction Since 1950 **Hirshhorn Museum and Sculpture Garden**

While destruction as a theme can be traced throughout art history, from the early atomic age it has become a pervasive and contextually rich element of contemporary visual culture. From pieces that offer overt displays of disasters either on a cataclysmic or everyday scale to more symbolic evocations, artists since the 1950s have used shock, humor, irony, and directness to confront and respond to the contemporary moment. In the first in-depth exploration of this important motif, Kerry Brougner, deputy director and chief curator of the Hirshhorn Museum and Sculpture Garden (HMSG), and Russell Ferguson, professor and chair of the Department of Art at UCLA, are researching and organizing a major new exhibition entitled *Damage Control: Art and Destruction since 1950*. Scheduled to open in April 2013 at the HMSG,

with other venues tentatively scheduled in Luxembourg and in Austria for 2014, the exhibition will feature more than 70 works by a host of international artists working in a range of media and dating from 1950 to the present.

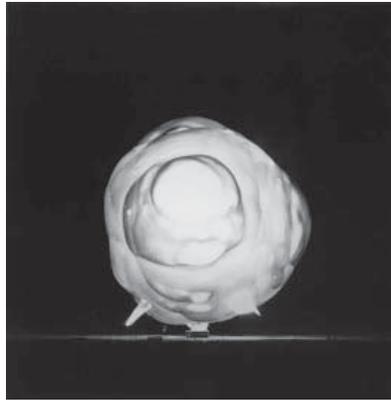
Weaving through the exhibition are three essential themes: destruction as spectacle and catharsis, as a form of rebellion and protest, and as an integral component of re-creation and restoration. As a whole, *Damage Control* reaches beyond art to offer a broader understanding of culture and society in an age of anxiety induced by the looming fear of total annihilation in the atomic age and the ongo-

ing threat of terrorism and other disasters, both real and imagined. As this topical and rich subject touches not only upon art but also on history, psychology, and contemporary culture, the project is envisioned both as an exhibition and as a series of integrated parts that will contribute to a greater understanding of the subject and inspire essential dialogue about the world today. In addition to the exhibition, the project will include a fully illustrated catalogue with essays by the exhibition curators as well as scholars from a variety of disciplines in order to investigate this complex subject from a range of perspectives. It also will include



Ed Ruscha, *The Los Angeles County Museum on Fire, 1965–68*, oil on canvas, Hirshhorn Museum and Sculpture Garden

a multi-day conference designed to explore the central premises of the exhibition. Through panel discussions, films, and performances, the conference will bring together international art and cultural historians, psychologists, philosophers, policymakers, and notable figures from the art and film worlds to exchange ideas about the ways that the juncture of art and destruction has encapsulated and reflected crucial historical moments and social responses to these events.



Harold Edgerton, *Atomic Bomb Explosion*, c. 1952, gelatin silver print, Massachusetts Institute of Technology Museum. © 2010 Massachusetts Institute of Technology

artistic dialogue. Their papers also expanded upon traditional art historical narratives of the U.S. and Latin America by including African American, Caribbean, and Latino artists. The museum's new curator for Latino art, E. Carmen Ramos, presented a talk entitled "Inside and Out: The Latino Presence in American Art."

Several papers also considered triangular exchanges with Europe and indigenous communities. At the conclusion of the conference, artist and critic Luis Camnitzer reminisced on the challenges faced by Latin American artists working in the U.S. who struggle with the opposing dangers of nostalgia and assimilation, the periphery and the mainstream.

Abstracts of the lectures, biographies of the speakers, and an archived webcast of the event can be found on the museum's website at americanart.si.edu/research/symposia/2011/. In addition, the summer 2012 issue of the museum's scholarly journal, *American Art*, will include commentaries on the topic of *encuentros* by several symposium speakers, along with an opening essay on the state of the field by Chon Noriega.

"Encuentros: Artistic Exchange between the U.S. and Latin America" was the third of five Terra Symposia on American Art in a Global Context, which are supported by a generous grant from the Terra Foundation for American Art. The next symposium is slated for the fall of 2013.

"Encuentros: Artistic Exchange between the U.S. and Latin America"

Smithsonian American Art Museum

The Smithsonian American Art Museum's fall 2011 symposium "Encuentros: Artistic Exchange between the U.S. and Latin America" drew an estimated 200 people to the museum on October 5 and 6. Scholars, staff, and the public heard 18 talks on artistic encounters between Latin America and the United States from the late 19th century to the present.

The conference was divided into five sessions focused on the following themes: New Approaches: Latin American Art and its Intersections; National Identities and International Relations; the Artist/Traveler; Contact Zones: Workshops and Art Schools; and Transnational Encounters in the American Metropolis. Participants included graduate students and senior scholars; key speakers included Deborah Cullen of el Museo del Barrio; Katherine Manthorne of the City University of New York Graduate Center; Edward Sullivan of the Institute of Fine Arts at New York University; Itala Schmelz of the Museo de Arte Carrillo Gil; Valerie Fraser of the University of Essex; and Chon Noriega of the UCLA Chicano Studies Research Center.

Papers presented at the "Encuentros" symposium demonstrated a range of methodologies and considered diverse geographies and artistic approaches. The majority of the talks took the form of case studies rather than broad overviews. Departing from a linear model of one-way influence, speakers instead examined two-way exchanges, artistic affinities, hemispheric travel, and the role of geopolitics in promoting and shaping

Recently Discovered Fish Represents a “Living Fossil”

National Museum of Natural History

As announced in the August 2011 online publication of the *Proceedings of the Royal Society B*, ichthyologist Dave Johnson of the National Museum of Natural History’s Department of Vertebrate Zoology contributed to the identification of a new species and “living fossil.”

In February 2009, research diver Jiro Sakaue of the Southern Marine Laboratory in Palau encountered an unusual eel-like fish in a dark reef cave in the Pacific Ocean Republic of Palau. Sakaue returned on several times to collect additional specimens and brought them to ichthyologist Hitoshi Ida of Kitasato University in Japan for identification. Ida consulted with other ichthyologists, including Johnson.

Despite being initially uncertain about the true connection of this fish to other fishes, the researchers and other colleagues used morphological and molecular evidence to determine the fish is a type of eel, but one with features not present in any other living eels. Through comparative analysis of the skeletal anatomy in living and fossil eels, Johnson found that the fish has a unique blend of features, sharing characteristics of both living eels and fossil eels of the Cretaceous period. Many of its primitive anatomical features are unknown in the other 19 families and over 800 species of living eels (*Anguilliformes*).

In addition to Johnson’s detailed anatomical studies,

colleague Masaki Miya and his team from the Chiba Natural History Museum and Institute in Japan conducted a DNA analysis of the fish. Comparisons to representatives of all living eel families and other bony fishes led to the conclusion that it represents one of the most basal, independent lineages of the true eels. Furthermore, the DNA analysis estimated that the unusual organism had diverged from all other known eels around 200 million years ago (early Mesozoic)—more than 100 million years prior to the date of the earliest known fossils.

All of these findings led Johnson and colleagues to determine that the fish represents a new species and an ancient lineage that warrants recognition as a “living fossil.” This conclusion is the basis for the new publication in the *Proceedings*, where the fish is described and named *Protanguilla palau*, and is placed in a new family, the Protanguillidae. The discovery has generated a level of excitement reminiscent of the discovery of another living fossil fish, the coelacanth, in the late 1930s. *Protanguilla palau* is currently known from only 10 specimens collected from a single cave in Palau and, given its apparently limited distribution, the fish also underscores how much there is to learn about the species inhabiting Earth and the critical importance of conservation efforts.



The discovery of *Protanguilla palau* represents a new species and an ancient lineage that warrants recognition as a “living fossil”

Central American Ceramics

National Museum of the American Indian and the Smithsonian Latino Center

Over the past two years, the National Museum of the American Indian (NMAI) and the Smithsonian Latino Center have collaborated to apply some of the best archaeological expertise to NMAI's extensive collection of Central American ceramics. Collected by George Gustav Heye and part of the museum's original collection, the ceramics came from several sources, most of whom were landowners and archaeology enthusiasts who resided in the emerging, post-colonial nations of Guatemala, El Salvador, Nicaragua, and Panama. Although the collection has long been ignored because of a perceived lack of research potential, archaeologists have recently found that the ceramics provide valuable new information about the indigenous populations of Central America and the history of archaeological research, as well as contribute to a better understanding of the region.

The project benefited

from the contributions of many outside experts. Over the past two years, Alexander Benitez, assistant professor of archaeology at George Mason University, coordinated reviews by many of the leading archaeologists who work in Central America, including Dr. Rosemary Joyce of the University of California, Berkeley; Francisco Corrales of the National Museum of Costa Rica; John Hoopes of the University of Kansas; Elin Danien of the University of Pennsylvania Museum of Archaeology and Anthropology; and Fabio Amado of the National Geographic Society. Their examinations added to the knowledge of the collection and contributed to the conceptualization of a future exhibition and public programming.

In early 2011, the archaeologists assembled for a day-long symposium to present and discuss their findings with a particular focus on how the study of older collections can benefit archaeological research and interpretation today. Meanwhile, planning continues for an exhibition, publication, web resources, public programming, and audience development. While directed to both general and informed audiences, the project also seeks to strengthen the engagement of Central American expatriate communities in the greater Washington, D.C., area in Smithsonian programming and initiatives.



Polychrome vessel, AD 300-500, Península de Azuero, Los Santos Province, Panama, National Museum of the American Indian

Snakehead Invasion Spreads to Rhode River

Smithsonian Environmental Research Center

Smithsonian biologists have discovered that an invasive fish has broken through barriers in the Potomac River.

In July 2011, a team of researchers from the marine invasions lab at the Smithsonian Environmental Research Center (SERC) set out on a routine seining survey in the Rhode River, a subestuary of the Chesapeake Bay. They returned with a troubling catch: a Northern Snakehead fish.

The Northern Snakehead (*Channa argus*) is a top-level predator with characteristic large teeth, an optimal streamlined body, relentless strength, and a unique cryptic coloration. It can consume fish and animals up to one-third of its body size. The fish also has the rare ability to breathe out of water for up to four days if kept moist, using air chambers above its gills that can act as a primitive lung. The Northern Snakehead has inspired mythical tales, but it cannot walk on land. At best, the fish can wriggle short distances, but only as juveniles. More disturbing to ecologists, however, is their ability to seriously disrupt the food chain wherever they establish themselves.

Native to China, the Northern Snakehead first appeared in 2002 in a Crofton, Maryland, pond about 20

miles east of Washington, D.C. Regulators moved quickly to eradicate them, but they were found two years later in the Potomac River. Since snakeheads thrive in freshwater (they typically cannot tolerate salinities higher than 50 percent that of seawater), scientists hoped they would be unable to expand beyond the Potomac. Ecologists suspect an influx of freshwater into the Chesapeake Bay could have charted a course for them to leave the Potomac and to invade other tributaries, such as the Rhode River.

Back at the lab, scientists were shoulder to shoulder in order to get a peek at this rare and important fish. Camera flashes and ethanol jars were all around as SERC teams documented and studied this organism. The fish was preserved for further analysis.



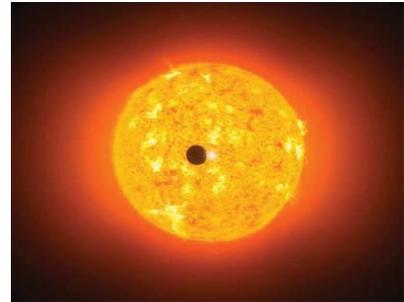
SERC Intern Alison Everett holds the invasive snakehead fish caught on a seining survey in the Rhode River, a subestuary of the Chesapeake Bay

Planets, Planets, Planets

Smithsonian Astrophysical Observatory

Exoplanets (planets around stars other than the Earth's sun) have kept the Smithsonian Astrophysical Observatory (SAO) in the headlines this quarter. Among the many discoveries includes the spotting of the first confirmed Earth-like exoplanet that has the right size and distance from its star to be classified as potentially habitable. Known as a "Tatooine," the name of a fictional planet in the *Star Wars* movie series, a planet has been found that circles a pair of stars, demonstrating that planetary systems are at least as imaginative as science fiction movies, with many of them unlike our own solar system. An analysis of the orbits of over 600 measured exoplanets reveals that orbits are much more eccentric than had been expected from the example of our solar system. As for exoplanet sizes, the present set of over 1,200 detections includes 68 confirmed Earth-sized candidates; another 288 that are between 1.25 and 2 Earth-radii in size; 662 candidates the size of Neptune (between 2 and 6 Earth-radii); 165 Jupiter-sized objects (between 6 and 15 Earth-radii); and 19 that are up to twice the size of Jupiter (22 Earth-radii).

SAO astronomers have been pioneers in the search for exoplanets for decades, and are leaders in the instrumentation, observation,



Kepler detects planets by precisely monitoring a star's brightness. If a planet crosses the star's face from Kepler's point of view, the starlight will dim slightly. Using this technique, Kepler has so far spotted more than 1,200 planetary candidates (Credit: NASA)

data analysis, and theoretical modeling of exoplanet orbits and planet characteristics. They are core team members of Kepler, the NASA satellite with a 1.4-meter diameter telescope launched last year, and which is responsible for the above discoveries. Kepler stares at about 150,000 stars in the sky, looking for brightness variations (as small as .001 percent) that signal the presence of a planet passing across the face of the star, dimming the light as seen from Earth (a transit). Once the telltale signatures are confirmed to be planets (and not other effects like sunspots), meticulous monitoring of repeated transits—their timing, dimming, and variations therein—allow astronomers to estimate the planets' orbital parameters, masses, and sizes, and even properties of their atmospheres.

Speaking Up!: Asian Indian Americans Shape the Nation

Smithsonian Asian Pacific American Program

The Smithsonian Asian Pacific American Program is preparing a major travelling exhibition on the early and later generations of immigrants from India. Scheduled to first open at the Smithsonian in 2013, *Speaking Up!: Asian Indian Americans Shape the Nation* will address the history, culture, struggles, and contributions of Indian Americans, as well as explore how this growing population has revealed its dynamic character and helped shape the American experience. Dr. Pawan Dhingra is the exhibition's curator and lead researcher.

The phrase *Speaking Up!* refers to the literal and figurative voices of Indian Americans. Although Indian American doctors and engineers are a familiar presence to most Americans, the community is also full of persons who

have excelled in such diverse arenas as spelling bees, hip-hop music, and literature, to name a few. For example, Indian Americans have won a remarkable nine of the past 13 Scripps National Spelling Bees, despite being less than 1 percent of the U.S. population. The exhibition will feature the first Spelling Bee trophy won by an Indian American (in 1985), medals awarded in Indian-only spelling bee competitions, study sheets by participants, broadcast video competitions and personal interviews, and personal items of spelling bee winners. It also will present the hip-hop and spoken word contributions of Indian Americans, part of a quickly growing phenomenon being exported to India in a reversal of the Indian diaspora.

While the presentation of

such diverse verbal expressions will demonstrate the contributions of Indian American youth to the American narrative and to world culture, much of the exhibition will highlight the historic challenges and achievements of Indian Americans in the workplace and in American culture. Examples of key exhibition objects will include the trunk of an Indian pioneer who arrived in the U.S. around 1915; items from the successful campaign of Representative Dalip Singh Saund, the first U.S. Congressman of Indian ancestry; examples of microchip inventions by Vinod Dham, the "father" of the Pentium chip; an Indian-owned hotel sign dating to the 1950s; the meter of a New York City taxicab driven by an Indian American; autographed cookbooks by celebrity chef Madhur Jaffrey; a signed jersey of NFL Super Bowl Champion Brandon Chillar, whose father is of Indian ancestry; the turban of the first hate crime fatality after the September 11, 2011, attacks; and various artifacts from Indian American cultural organizations. Such pieces, along with video clips and photographs, will tell of everyday and once-in-a-lifetime events in the lives of Indian Americans—stories that have become part of the American fabric, reflect contributions to world culture, and speak of the journey of becoming American.



Items from the successful campaign of Representative Dalip Singh Saund, the first U.S. Congressman of Indian descent

Lockwood de Forest, Frederic Church and the Passion for the Exotic

Cooper-Hewitt, National Design Museum

Cooper-Hewitt, National Design Museum is conducting new research on American painter and interior designer Lockwood de Forest (1850–1932) in connection with the renovation of de Forest’s unique interior in the Andrew Carnegie mansion, the museum’s home. The research will culminate in the exhibition *Lockwood de Forest, Frederic Church and the Passion for the Exotic*, which will be the first exhibition in the restored mansion. The museum obtained a \$300,000 grant from American Express to support this research project.

Lockwood de Forest was the protégé of the celebrated nineteenth-century landscape painter Frederic E. Church, who trained de Forest in landscape painting during the early 1870s and engendered a passion for exotic places and exotic decorative arts objects in de Forest. This interest led de Forest first to the Holy Land and Egypt and finally to India, where he set up an atelier in Ahmedabad to produce hand-carved Indian teak, which he imported to the United States to use in his interior decorating projects. While in Ahmedabad, de Forest was introduced to Muggunbhai Hutheesing and together they created workshops that produced carved teak panels and metalwork using native Hindu *mistri* craftsmen.

Research thus far has

been conducted at Olana, Church’s country home, which holds many examples of de Forest’s paintings and furniture. In the course of this research it was discovered that Church had planned to visit India in the late 1860s and



Cabinet designed by Lockwood de Forest in 1902 for the Carnegie mansion’s Teak Room

that, perhaps in anticipation of this trip, he had acquired a large number of yet-to-be studied photographs of India. Curators will visit de Forest descendants, including grandson Kellam de Forest. Frank Goss, a Santa Barbara paintings dealer who represents the Kellam de Forest collection, has promised to donate two of de Forest’s oil sketches of Egypt and India to Cooper-Hewitt, subject to curatorial and committee review.

Through research of the de Forest family papers and materials in the Archives of American Art, as well as through his publications, the

curators know where de Forest traveled and the architecture he especially noted. The Hutheesing family still owns the Ahmedabad workshops and have revived some of the early crafts techniques practiced by de Forest and Muggunbhai Hutheesing. The family also holds some archival photos, samples of wood and metalwork, and examples of other pieces produced during de Forest’s ownership. All are key to understanding the combination of traditional design sources and western taste that is reflected in the furniture, metalwork, and other forms of decoration de Forest designed and imported to the U.S. A curatorial visit to the Hutheesing family archives, collection, and studio will result in a better understanding of Lockwood de Forest’s use of Indian traditional design, new Indian design, and his own design in the products he created.

Previous scholarship on de Forest has concentrated on him as a designer in the aesthetic taste. After consultation with Debra Diamond of the Freer and Sackler Galleries, however, the curators concluded that examining the Ahmedabad works in relation to Indian design traditions will result in considerable new scholarship on de Forest and will deepen the understanding of the Lockwood de Forest Teak Room and the designer’s other works.

JEFFERSON AT THE SMITHSONIAN

In response to Smithsonian research and two exhibitions related to the life of founding father Thomas Jefferson, the Office of the Under Secretary for History, Art, and Culture has developed a collaborative and comprehensive “Jefferson at the Smithsonian” website. Located at www.gosmithsonian.com/jefferson, the site features Smithsonian research, collections, and exhibitions about Thomas Jefferson, including new Jefferson-related exhibitions prepared by the National Museum of American History (NMAH) and the National Museum of African American History and Culture (NMAAHC), (described in more detail below); two permanent exhibitions, The American Presidency: A Glorious Burden (NMAH) and America’s Presidents (National Portrait Gallery); and material related to Jefferson at the Smithsonian American Art Museum, the National Museum of Natural History, Smithsonian Institution Archives, and the National Museum of the American Indian. The site also promotes events planned for the NMAAHC exhibition and the Smithsonian Associates Program, such as discussions by curators and the portrayal of Thomas Jefferson by Bill Barker of Colonial Williamsburg, and a February 2012 webinar with Smithsonian scholars and other experts being developed to reach school children and teachers across the U.S. and beyond. With the support of Smithsonian Networks, a “Jefferson at the Smithsonian” brochure also will be available at Smithsonian information desks and welcome centers.

Jefferson’s Bible: The Life and Morals of Jesus of Nazareth

National Museum of American History

National Museum of American History political history curators Harry Rubenstein and Barbara Clark Smith are leading experts on the “Jefferson Bible,” a unique Smithsonian object created by Thomas Jefferson. Jefferson assembled the 84-page document using excerpts from Greek, Latin, French, and English versions of the Four Gospels of the New Testament. The goal of Jefferson, who intended the book to be his private document, was to present a chronological version of the

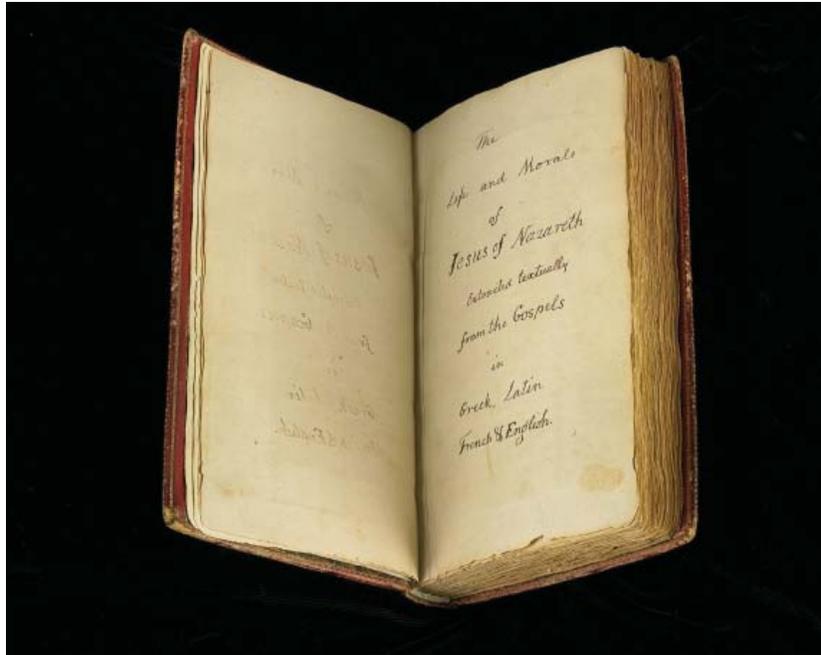
life of Jesus, distill his moral teachings, and exclude those aspects which, to Jefferson, appeared to be “contrary to reason.” Titled *The Life and Morals of Jesus of Nazareth* by Jefferson, the book was passed down through his family until purchased by the Smithsonian in 1895, when it became popularly known as the “Jefferson Bible.”

The book was meticulously conserved over the past year and is now the focus of a new exhibition in the Albert H. Small Documents Hall,

which opened in November 2011. Rubenstein and Smith worked closely with NMAH book conservator Janice Ellis and experts at the University of Virginia and Monticello to document the book’s history and to preserve this very personal Jefferson object. Displayed with the volume are the two English editions of the New Testament from which Jefferson clipped passages. Visitors can digitally explore each page of the “Jefferson Bible” at an interactive kiosk and view short videos about

its history and conservation. On sale in the museum bookstore are reproductions of the historic book. Published by Smithsonian Books, the books include essays by the exhibition curators. The exhibition also is enhanced by the website www.americanhistory.si.edu/JeffersonBible; a Smithsonian Channel documentary *Jefferson's Secret Bible* will premiere in February 2012.

(right) The meticulously conserved "Jefferson Bible" is on display at the National Museum of American History until May 28, 2012



Slavery at Jefferson's Monticello: Paradox of Liberty

National Museum of African American History and Culture

Scheduled to open on January 27, 2012, in the NMAAHC Gallery at NMAH, *Slavery at Jefferson's Monticello: Paradox of Liberty* reflects the collaborative efforts of NMAAHC with the Thomas Jefferson Foundation, which preserves and oversees the presidential home that is a National Historic Landmark, World Heritage site, and the best-documented, preserved, and studied plantation in the United States. Co-curated by NMAAHC's Rex Ellis and Monticello's Elizabeth Chew, the exhibition will present two decades of unprecedented and well-documented archaeological and historical research that illustrates—in a fuller, more humane, and personal way than heretofore possible—the lives of six slave

families who lived at the Monticello plantation.

With this exhibition, NMAAHC scholars will bring to Smithsonian audiences important new research that addresses the difficult issue of slavery in America and the paradox of Jefferson, a lifelong slaveholder whose livelihood was dependent upon the institution. This same man, however, authored the Declaration of Independence—the nation's call for freedom—and called slavery an "abominable crime."

A variety of museum objects, works of art, and documents, as well as artifacts found during archaeological excavations at Monticello, will allow visitors to see slaves as individuals with names, marriages, families, faith, values,

achievements, and aspirations for freedom, and, in the case of the Hemmings family, with relationships to the Jefferson family itself. The family stories will be brought to life via Monticello's "Getting Word" oral history project, which includes interviews of 170 descendants of slaves who lived on Jefferson's plantation. In addition to the NMAAHC exhibition, Monticello will open the exhibition *Mulberry Row and the Landscape of Slavery at Monticello* in February 2012. The exhibition will feature physical restorations and interpretive exhibits, augmented by computer animations, a website, and a smart phone app that will enable visitors to explore the past and better understand the lives of slaves.

Hitchhiking Snails Fly from Ocean to Ocean

Smithsonian Tropical Research Institute

Smithsonian scientists and colleagues report that snails successfully crossed Central America, long considered an impenetrable barrier to marine organisms, twice in the past million years—both times probably by flying across Mexico, stuck to the legs or riding on the bellies of shorebirds and introducing new genes that contribute to the marine biodiversity on each coast.

“Just as people use airplanes to fly overseas, marine snails may use birds to fly over land,” said Mark Torchin, staff scientist at the Smithsonian Tropical Research Institute (STRI). “It just happens much less frequently. There’s also a big difference between one or two individuals ending up in a new place, and a really successful invasion, in which several animals survive, reproduce, and establish new populations.”

The discovery of the hitchhiking snails, published in the *Proceedings of the Royal Society: B*, has broad implications. “Not only snails, but many intertidal organisms may be able to ‘fly’ with birds,” said the study’s first author, Osamu Miura, assistant professor at Japan’s Kochi University and former post-doctoral fellow at STRI.

Chance events that occur only once in a great while may be extremely important in the history of life. In 1940, George Gaylord Simpson,

who studied natural history as recorded in fossils, coined the term “sweepstakes dispersal” to describe the unlikely events in which animals cross over a barrier resulting in major consequences for the diversity of life on Earth. Simpson was thinking about land-based animals that might cross between continents or islands by floating on rafts of debris. Sometimes such events result in devastating biological invasions that introduced new diseases, wiped out resident species, or caused economic damage to crops.

The idea of land snails hitching rides on birds goes back to Charles Darwin, who speculated that migratory birds could transport snails to distant places. In fact, birds are thought to have carried

land snails 5,500 miles from Europe to Tristan de Cunha Island in the South Atlantic Ocean and back. But this is the first report of a marine snail “flying” from one ocean to another.

Scientists working at STRI have long been interested in how the rise of the Central American land bridge more than 3 million years ago drove speciation and increased biodiversity. It formed a barrier between marine species, some of which evolved in their new surroundings, becoming new “sister” species that could no longer mate with their former relatives.

Scientists studied the genetics of two sister species of Horn Snails, *Cerithideopsis californica* and *C. pliculosa*, collected at 29 different locations in mudflats and mangrove habitats from California to Panama on the Pacific and



Scientists discovered that hitchhiking snails crossed Central America, long considered impassable to marine organisms, twice in the past million years

from Texas to Panama on the Atlantic. The researchers discovered that, about 750,000 years ago, these snails invaded the Atlantic from the Pacific, and then, about 72,000 years ago, Atlantic populations returned to invade Pacific shores.

“Shorebirds mostly move back and forth across Central America via a couple of flyways,” said Torchin. “We think that the snails were able to cross the Isthmus of Tehuantepec in Mexico because it’s a major bird flyway and is a relatively flat and narrow stretch of land with ideal tidal flat habitat on either side.”

“There is a chance that the hitchhiking snails benefited native populations by bringing in new genes that helped them resist common parasites that castrate the snails and keep them from reproducing,” said Ryan Hechinger, associate research biologist at the University of California, Santa Barbara. “Now we are looking at the parasite genes to see if they jumped Central America too.”

Understanding that such hitchhiking occurs can help reveal where new species might have become established or where they might establish in the future,” said Eldredge Bermingham, STRI director and staff scientist. “I am here in Panama watching as snails fly over my head. Tongue in cheek, I fail to understand why others did not notice this before! I suspect our interpretation of this phylogeographic pattern would make George Gaylord Simpson



Detail of Henry O. Tanner's *Head of a Jew in Palestine* in normal and UV light. Conservators examined six paintings by Tanner using infrared, raking, and UV light, along with x-rays and technical analysis to determine the painter's materials and working methods

Materials and Techniques of Henry Ossawa Tanner Smithsonian American Art Museum

In 2009, conservation staff from the Smithsonian American Art Museum (SAAM) began a research project with representatives from the Pennsylvania Academy of the Fine Arts (PAFA) and the Smithsonian's Museum Conservation Institute (MCI) to investigate the materials and techniques of African American painter Henry Ossawa Tanner. SAAM's permanent collection holds the largest public repository of Tanner's work, 20 of which will be featured in PAFA's traveling exhibition *Henry Ossawa Tanner: Modern Spirit*, which will open on January 27, 2012. PAFA's recently released exhibition catalogue includes the collaborative essay "Pursuit of the Ideal Effect: The Materials and Techniques of Henry Ossawa Tanner" that resulted from this first-ever scientific appraisal of Tanner's work. The study also will be highlighted in the exhibition's didactic materials and audio tour, which will include selections from an interview with SAAM Conservator of Paintings Amber Kerr-Allison. In addition, SAAM is providing visitor programs (including a public lecture, a recorded webcast, and a gallery talk) related to the research project, as well as expanding the foundational research on Tanner's materials and techniques through an MCI fellowship awarded under the Grand Challenge: Understanding the American Experience.

Smithsonian Team Races to Save Endangered Panamanian Frogs from Deadly Fungus

Smithsonian Conservation Biology Institute

Smithsonian scientists have confirmed that chytridiomycosis, a rapidly spreading amphibian disease that attacks the skin cells of amphibians and is wiping out frog species worldwide, has reached a site near Panama's Darien region. This was the last area in the entire mountainous neotropics to be free of the disease. This is troubling news for the Panama Amphibian Rescue and Conservation Project, a consortium of nine U.S. and Panamanian institutions that aims to rescue 20 species of frogs in imminent danger of extinction.

Chytridiomycosis has been linked to dramatic population declines or even extinctions of amphibian species worldwide. Within five months of arriving at El Cope in western Panama, chytridiomycosis extirpated 50 percent of the frog species and 80 percent of individuals.

The Darien National Park is a World Heritage site and represents one of Central America's largest remaining wilderness areas. In 2007, Doug Woodhams, a research associate at the Smithsonian Tropical Research Institute, tested 49 frogs at a site bordering the Darien. At that time, none tested positive for the disease. In January 2010, however, Woodhams found that 2 percent of the 93 frogs he tested were infected. "Finding chytridiomycosis on frogs at a site bordering the



Captive assurance colonies have been established in Panama for two priority species, including the Pirre harlequin frog (*Atelopus glyphus*)

Darien happened much sooner than anyone predicted," Woodhams said. "The unrelenting and extremely fast-paced spread of this fungus is alarming."

"We would like to save all of the species in the Darien, but there isn't time to do that now," said Brian Gratwicke, biologist at the Smithsonian Conservation Biology Institute (SCBI) and international coordinator for the Panama Amphibian Rescue and Conservation Project. "Our project is one of a few to take an active stance against the probable extinction of these species. We have already succeeded in breeding three species in captivity. Time may be running out, but we are looking for more resources to take advantage of the time that remains."

The Panama Amphibian Rescue and Conservation Project has already established captive assurance colonies in Panama of two priority species endemic to the Darien—the Pirre harlequin frog (*Atelopus glyphus*) and the Toad Mountain harlequin frog (*A. certus*). In addition, the National Zoo maintains an active breeding program for the Panamanian golden frog, which is Panama's national animal. The Panamanian golden frog is critically endangered, according to the International Union for Conservation of Nature, and researchers have not seen them in the wild since 2008.

Nearly one-third of the world's amphibian species are at risk of extinction. While the global amphibian crisis is the result of habitat loss,

climate change, and pollution, chytridiomycosis is at least partly responsible for the disappearances of 94 of the 120 frog species thought to have gone extinct since 1980.

“These animals that we are breeding in captivity will buy us some time as we find a way to control this disease in the wild and mitigate the threat directly,” said Woodhams, who was the lead author of the whitepaper “Mitigating Amphibian Disease: strategies to maintain wild populations and control chytridiomycosis.” This paper, published in *Frontiers in Zoology*, systematically reviews disease-control tools from other fields and examines how they might be deployed to fight chytrid in the wild. One particularly exciting lead in the effort to find a cure is that anti-chytrid bacteria living on frog skin may have probiotics properties that protect their amphibian host from chytrid by secreting anti-fungal chemicals. Woodhams also recently discovered that some Panamanian species with anti-chytrid skin bacteria transmit beneficial skin chemicals and bacteria to their offspring.

“We are all working around the clock to find a cure,” Gratwicke said. “Woodhams’ discovery that defenses can indeed be transferred from parent to offspring gives us hope that if we are successful at developing a cure in the lab, we may find a way to use it to save wild amphibians.”

“Artists & Archives: A Pacific Standard Time Symposium”

Archives of American Art, in partnership with the Getty Research Institute

Although the longstanding and critically important role of Smithsonian research centers is to facilitate scholarly research, archives have become a source of inspiration and artistic medium for artists in recent years. In November 2011, the Archives of American Art, the world’s largest archives documenting the history of art in America, partnered with the Getty Research Institute to organize and host the symposium “Artists & Archives: A Pacific Standard Time Symposium.”

Accumulating and sorting—the same impulses that drive the creation of an archive—feed the process of making assemblages and collages. Conceptual and performance art continue to blur the line between art and documentation and, more recently, many artists draw on archival material to revisit and reenact earlier works. The symposium considered how archives not only trace the creative process but become part of that process, and even of the work itself.

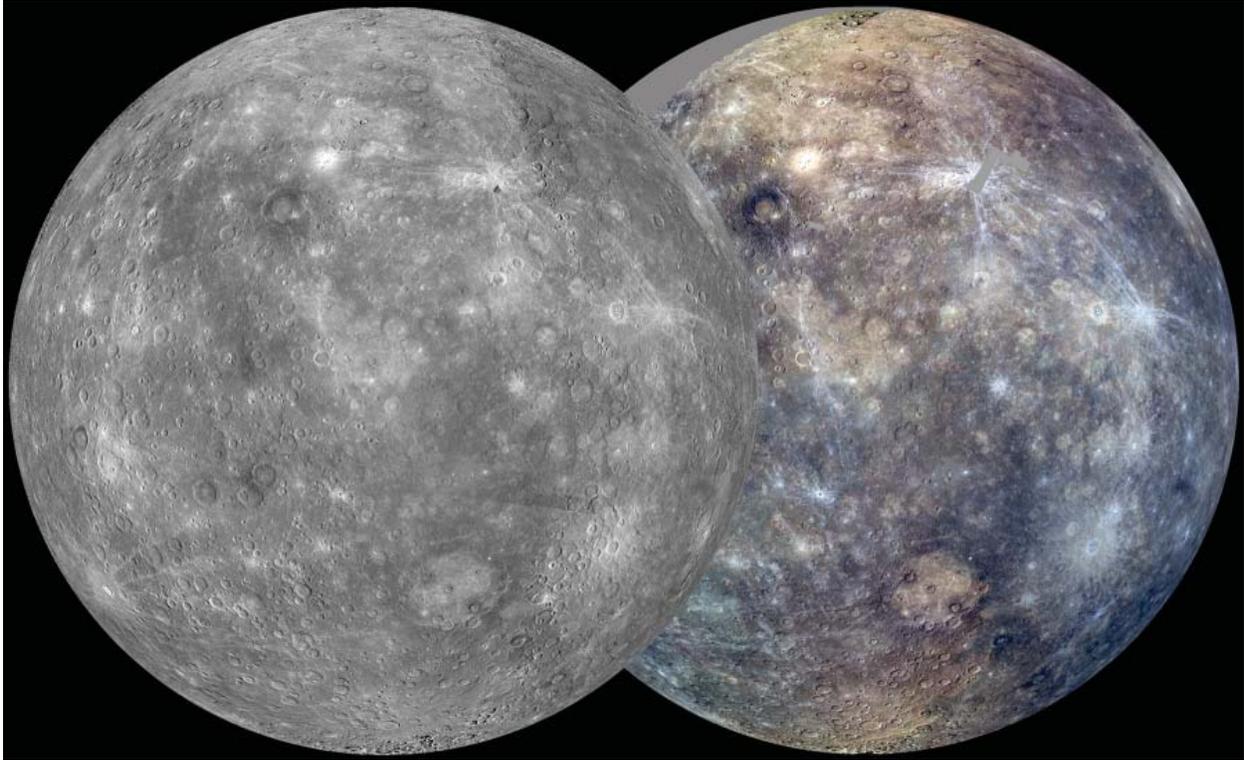
The event at the Getty Center in Los Angeles attracted over 150 participants.

Speakers included keynote speaker Sven Spieker, professor of Russian and comparative literature at the University of California, Santa Barbara, and author of *The Big Archive: Art From Bureaucracy*; artists George Herms, Suzanne Lacy, and Mario Garcia Torres, who use archival material and practices in their work; Julia Bryan-Wilson, associate professor of art history at the University of California, Berkeley, who moderated a lively panel; and Michael Lobel, associate professor of art history at the State University of New York, Purchase College, who provided closing remarks. Both Bryan-Wilson and Lobel have Smithsonian connections: Bryan-Wilson was a predoctoral research fellow at the Archives of American Art in 2003 and Lobel serves on the Archives’ National Advisory Committee.

The symposium was part of the programming for the Getty initiative “Pacific Standard Time: Art in L.A., 1945–1980,” a collaboration of more than 60 Southern Californian cultural institutions that examined the birth of the Los Angeles art scene and its development into a major new force in the art world.



Artist George Herms talked about source material for his work at the November 2011 “Artists & Archives” symposium



Global views of Mercury from orbit. MESSENGER has completed its first solar day (176 Earth days) in orbit around Mercury and obtained a global monochrome map at 250 m/pixel and an eight-color and a 1-km/pixel color map

First Results of Orbital Phase of MESSENGER Mission to Mercury

National Air and Space Center for Earth and Planetary Studies

The first results of the orbital phase of the MESSENGER mission to Mercury were published in *Science* in September 2011. The papers reported results based on imaging of the surface and geochemical and geophysical measurements of the planet. National

Air and Space Center for Earth and Planetary Studies (CEPS) scientist and division chair Tom Watters is a coauthor on one paper that describes vast volcanic plains in the northern high latitudes not fully seen in MESSENGER's three flybys of Mercury. NASA hosted a tele-

phone press conference about the publications and new orbital phase of the MESSENGER mission on September 29, 2011. The global imaging campaign, along with new geophysical and geochemical data, is revolutionizing the understanding of Mercury.