



# *Zugunruhe*

The term *Zugunruhe* was coined in the 1950s by ornithologist Gustav Kramer and refers to the phenomenon of nighttime restlessness and agitation displayed by birds at the onset of migration.

DAVID WINTON BELL GALLERY, BROWN UNIVERSITY

# Zugunruhe

An installation by Rachel Berwick

Curated by Jo-Ann Conklin

David Winton Bell Gallery, Brown University

Published on the occasion of the exhibition  
*Zugunruhe: an installation by Rachel Berwick*  
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cover and frontispiece *Zugunruhe*, 2009  
 Cast copal (amber), wood, two-way architectural mirror, moss, metal,  
 polyester resin; Blown and mirrorized glass, moving brass rod, text  
 Dimensions variable





fig 1

# *Introduction*

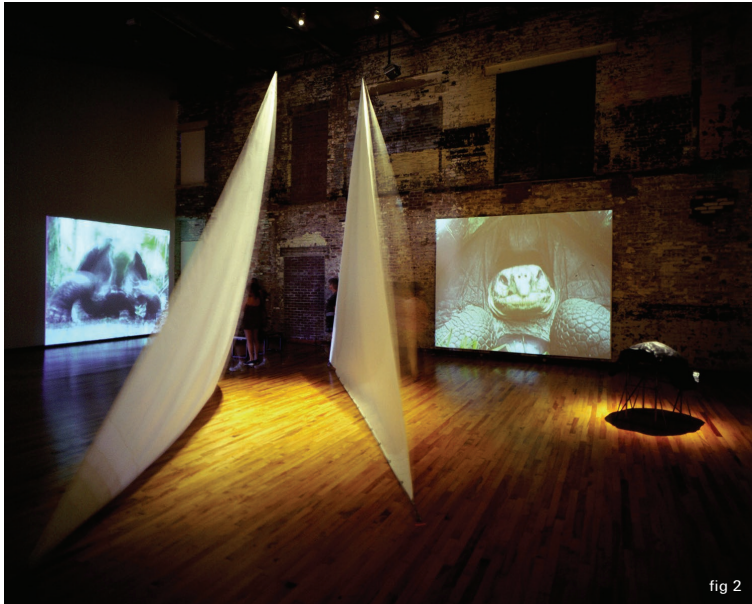


fig 2



fig 3

In ten installations created over the past twenty years, Rachel Berwick has examined species that are extinct (the Tasmanian tiger and passenger pigeon), nearly extinct (Lonesome George, the last surviving member of his subspecies of Galapagos tortoise), and “reborn” (the Coelacanth, a 400-million year old species of fish that was thought extinct and then re-discovered living at depths of approximately 1000 feet and classified as a “living fossil”). Her installations are characterized by intelligence and a cool elegance, and by her visually arresting and metaphorically apt choice of materials: she often casts her subjects in copal—an immature form of amber, the stuff of fossils—and employs mirrors to cast reflections that commingle the viewer (human) with the subject (animal), reinforcing her message of our commonality.

This catalogue is produced in conjunction with the exhibition of Berwick’s new work, entitled *Zugunruhe*, at the David Winton Bell Gallery. It documents, as well, selections of her past work that are related to *Zugunruhe* by subject, materials, and message: the investigation of loss and the desire to recover the lost.

*Zugunruhe* is Rachel Berwick’s second memorial to the passenger pigeon. Once numbering in the millions, this species that inspired awe in nineteenth-century naturalists has been extinct in the wild since the early 1900s and in captivity since the passing of Martha at the Cincinnati Zoological Garden on September 1, 1914. Berwick spent more than two years in research for *Zugunruhe*, studying writings of and about seventeenth- to nineteenth-century naturalists and explorers. She sought stories that, in her words, “illuminate the intersection between man and nature; specifically stories that surprise us into considering or imagining our place in the world; our coming into being and, now at a time of an awareness of global climate change, our possible extinction.” Two compelling stories inform *Zugunruhe*: the first is the story of the rapid, documented demise of the passenger pigeon; the second concerns the wonders of bird migration. The ability of birds to navigate thousands of miles between nesting areas



and wintering grounds has fascinated scientists for centuries. While recent studies support the hypothesis that migratory birds use the earth's magnetic field to navigate, the precise details of how they do so are still unknown.

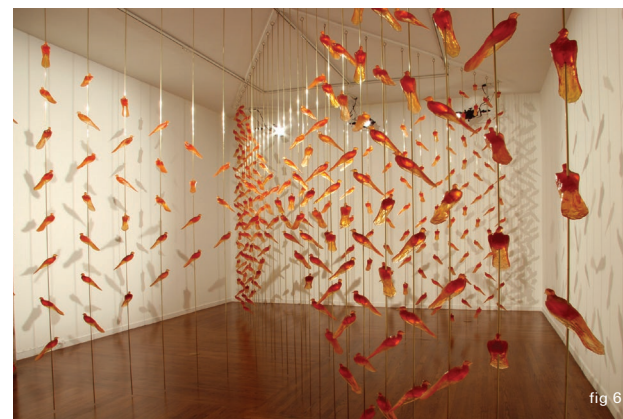
*Zugunruhe* consists of two components: a tree laden with amber passenger pigeons and encased in a polygon of mirrored, smoky glass; and a glass globe containing a dial that moves in simulation of migration and points to written reports of passenger pigeon sightings that are printed on adjacent walls. The former speaks to loss, while the latter addresses the mysteries of migration. The installation elicits a cascade of responses that ranges from awe at its physical beauty, to fascination at the descriptions of migratory flocks that passed overhead for three continuous days, and finally, to sorrow at the recognition of our loss.

The David Winton Bell Gallery will present a lecture series reflecting the varied interests and influences at play in *Zugunruhe*. I would like to thank the scholars who have generously agreed to present papers. Speaker and topics are: Paula Findlen, Ubaldo Pierotti Professor in Italian History, Stanford University, on *Athanasius Kircher's Marvelous Machines*; Ralph Rugoff, Director, Hayward Gallery, London, on *The Trouble with Nature*; Peter P. Marra, Smithsonian Migratory Bird Center, National Zoological Park, Washington DC, on *Understanding the Migratory Connectivity of Birds*; Nancy Jacobs, Associate Professor of History, Brown University on *Africa, Europe, and the Birds between Them*; and David Wilson, Founding Director, The Museum of Jurassic Technology, Los Angeles, on *Nikolai Fedorov, Konstantin Tsiolkovsky, and the Roots of the Russian Space Program*. The lecture series is funded in part by grants from the Creative Arts Council and the Marshall Woods Lectureship, Brown University.

Many individuals played a part in the creation of *Zugunruhe* and its display. My sincere thanks to Denise Markonish for her insightful catalogue essay, to Jenny Chan for the handsome catalogue design and to Malcolm Gear Designers for their striking design of the invitation and signage. At the gallery, I am thankful everyday for the commitment and hard work of Terry Abbott, Cameron Shaw, and our installation crew including Paul Baxendale, Lauren Fisher, Natalia Kent, Arley Marks, and Chris Mulligan.

It has been a pleasure to work with Rachel. Her energy and good cheer have enlightened my days, as her message has broadened my world view. It is an honor to present her work at the David Winton Bell Gallery.

**ACKNOWLEDGEMENTS FROM THE ARTIST** I am grateful to a number of organizations and individuals who helped me to realize this project over the last few years. First and foremost, the Smithsonian Artists Research Fellowship, which made it possible for me to immerse myself in research within the vast collections of the Smithsonian Institute. There are so many extremely capable and generous individuals who gave me their time and assistance during my work at the Smithsonian that I cannot name them all. However, I would like to mention Jane Milosch, Veronica Conkling, and Joanna Marsh for their guidance and encouragement; Ed Bronikowski for his enthusiastic support and generosity; Leslie Overstreet, James Dean, and Peter Marra for their expertise; Mary Deinlein for introducing me to the concept of *zugunruhe*; and so many others at the Smithsonian Migratory Bird Center and The National Zoological Park who gave their time and support. I am grateful to Jo-Ann Conklin for giving me the opportunity to develop and exhibit *Zugunruhe* at the Bell Gallery. Her trust and encouragement during the process were much appreciated. This is made even more evident by her development of the *Zugunruhe* Lecture Series that highlights some of the information that inspired my project and process. I would also like to thank Margaret Lewis who has been a constant source of encouragement and support for my studio practice during my tenure at RISD. George Esposito and David Johnson have, once again, helped me (against their better judgment) to realize a technically ambitious project. Chris Taylor and Chris (Lucky) Leone were instrumental in making my "glass globe" piece work just as it should. Thanks to Niels Cosman, Evan Chamberlain, Stefani Pender, Matthew Perez, Sean Salstrom, Brett Swenson, and Jonathan Wang for their careful and capable help. Finally, my heartfelt thanks to Warren Johnsen for his endless patience and support, both technical and emotional; and to Kai, who tells me that everything I make is beautiful.



DENISE MARKONISH

# *A Stupendous Mirror of Departed Empires*<sup>1</sup>

What a serendipitous occasion to find myself standing in Rachel Berwick's studio on September 1, 2009. For it was on that very day ninety-five years ago that Martha, the last passenger pigeon, drew her final breath. This was a sad end to an awe inspiring and horrific story of scientific intrigue, human greed and environmental devastation. It is no wonder then that Berwick's studio is strewn with amber casts of this most famous bird, frozen in time and captured in memory.

The story of the passenger pigeon is essentially one of wonder but also of warning. Firsthand accounts of passenger pigeon sightings are filled with amazement. For example, in the early 1800s Alexander Wilson stated, "I was sud-

1 This quote by P.T. Barnum was said in relation to his 1889 circus. In the quote, Barnum was specifically referring to more ethnographic exhibits at the circus, but here it seems a fitting tribute to Rachel Berwick's reflection on the extinction of the passenger pigeon. See Bluford Adams, *E. Pluribus Barnum: The Great Showman and the Making of US Popular Culture* (Minneapolis: University of Minnesota Press, 1997), 188 for more on the Barnum quote.

2 Thirteenth-century theologian Albertus Magnus wrote this in his *Commentary on the Metamorphosis of Aristotle*, quoted from Celeste Olalquiaga, *The Artificial Kingdom: On the Kitsch Experience* (Minneapolis: University of Minnesota Press, 2002), 210.

3 Alexander Wilson, *American Ornithology*, with a continuation by Charles Lucian Bonaparte, illustr. Notes by William Jardine, vol. 2 (London: Whittaker, Treacher, and Arnot, 1832), 201–4.

4 John James Audubon, *Birds of America*, Volume V. For the online version of the 1840 "First Octavo Edition" visit [http://www.audubon.org/bird/BoA/BOA\\_index.html](http://www.audubon.org/bird/BoA/BOA_index.html). For a full account of the passenger pigeon go to "Extinct Birds."

denly struck with astonishment at a loud rushing roar, succeeded by instant darkness...I took [it] for a tornado, about to overwhelm the house and everything around in destruction."<sup>3</sup> Later, in 1813, John James Audubon similarly recalled: "The noise which they made, though yet distant, reminded me of a hard gale at sea, passing through the rigging of a close-reefed vessel. As the birds arrived and passed over me, I felt a current of air that surprised me... The Pigeons, arriving by thousands, alighted everywhere, one above another, until solid masses were formed on the branches all round... It was a scene of uproar and confusion."<sup>4</sup> Two of America's most respected ornithologists of the nineteenth century seemed downright dumbstruck at the sight of these birds, whose numbers were estimated in the millions per flock. These are not your usual accounts of pleasant, tweeting birds sitting in a nearby tree; they are visions not unlike descriptions of natural disasters. Given this overabundance it is even more astonishing that these birds no longer exist.

The extinction of the passenger pigeon was one of the greatest and quickest in the history of North America. Swarms of birds would move from one area



fig 7

"...wonder is something like fear in its effect on the heart. This effect of wonder, then, this constriction and systole of the heart, springs from an unfulfilled but felt desire to know the cause of that which appears portentous and unusual."<sup>2</sup> — ALBERTUS MAGNUS

to the next, seeking out old growth oak and beech forests. The sight of the birds, as noted above, was magnificent, but it was also plague-like and destructive. Due to their sheer numbers, when the birds descended they would darken the sky, tree branches would snap under their weight, and one hardly need mention or imagine the hailstorm of bird droppings they would leave in their wake: a real life Alfred Hitchcock moment. So what happened to the passenger pigeon? Plainly stated, we, the human race happened to them, as their numbers dwindled both as a result of deforestation and hunting. At each spectacular arrival of passenger pigeon flocks, hunters would gather and begin to take the birds down, shooting them, netting them or just using sticks to knock them out of trees. Billions of these birds existed in the 1870s, only dozens by the 1890s, and by 1900 they were extinct in the wild (Martha, who lived at the Cincinnati Zoo, would hang on for another fourteen years).<sup>5</sup> This extinction is perhaps the first in history to teach us about the fragility of the environment, the first where we could see disappearance as the result of our own hands, whether it be for food, sport, fashion or pest control. For many years, people speculated about what happened to the passenger pigeon, not willing to accept culpability, and instead theorized that the birds were hiding elsewhere. However, the inevitable was made all too clear when in 1947 the Wisconsin Society for Ornithology erected a monument to the passenger pigeon in Wyalusing State Park. The dedication of this monument was written by Aldo Leopold, one of the first conservationists, and included the following elegiac statement: “Trees still live who, in their youth, were shaken by a living wind. But a decade hence only the oldest oaks will remember, and at long last only the hills will know.”<sup>6</sup> Here Leopold hints at the wonder of these birds but more palpably he mourns their loss.

Aside from teaching us about our own destructive capabilities or awakening our sense of wonder, one could postulate that—due to their vast numbers and movement from one area to the next—the passenger pigeon was one of the first visible examples of species migration. At the time, the science of migration was in its infancy and would not be fully explored for another few decades. There has always been a sense of mystery around migration; early on it was believed that birds perhaps went underground or hibernated, for it seemed improbable that they would fly across the globe in search of warmer climes. Even today scientists have not yet determined how and to where some species of birds migrate. The first breakthrough in migratory science came in 1949 when German ornithologist Gustav Kramer built a series of orientation cages—cylindrical structures with glass bottoms for observation. The purpose of these cages was to test how birds move and why. Was it the orientation of the stars, the sun, magnetic forces, etc.? In some studies birds were put into cages surrounded by mirrors to shift the location of the sun, in others magnetic fields were placed around the cages, and later, in the 1960s, scientist Stephen Emlen would take these cages into planetariums to shift the location of the stars to determine how

<sup>5</sup> Jennifer Price, *Flight Maps: Adventures with Nature in Modern America* (New York: Basic Books, 1999), 3.

<sup>6</sup> Aldo Leopold, *A Sand County Almanac* (Oxford: Oxford University Press, 1949), 116.



fig 8

certain birds oriented themselves. The “why” that compels the act of migration is particularly interesting to Berwick, and it is from this “why” that she chose the title for her work: *Zugunruhe*. This term, coined by Kramer, describes the restlessness in birds; the compulsion to move or to migrate.

For Berwick there is a kind of poetry in *zugunruhe*, in the fact that it is a mysterious force that is felt but not seen. This becomes all the more palpable when viewing her work. Upon entering the gallery, viewers are confronted with a large ten-foot diameter, nine-foot high heptagonal structure made of smoky two-way glass. It appears almost like a monumental version of an orientation cage, a new device for another form of observation, as much about humans as birds. Inside is complete stillness, as a number of passenger pigeons cast in amber sit amongst the branches of an old tree. Here *zugunruhe* is arrested. There is no movement, only the memory of movement, and compulsion is therefore replaced with thwarted desire. Berwick’s *Zugunruhe* is a monument to the lost migration of these now extinct birds, as much as it is a monument to science, optics and spectacle.

This convergence of science, optics and spectacle evident in Berwick’s work comes from the sense of nature as entertainment or constructed experience, an evolution which can be traced from the pre-Renaissance to the Victorian age (and even continuing today in our zoos and museums). For Berwick, another inspiration for *Zugunruhe* comes from Athanasius Kircher, the seventeenth-century German Jesuit scholar known as “the master of a hundred arts.” Indeed, Kircher was an intense polymath, studying geology, hieroglyphics and most intensely, magnetism. Kircher believed that magnetism was the defining force of all nature. To support this he created devices in which he would embed magnets in small figures and then suspend them in water-filled globes to test the forces





fig 9



of the external world on these magnets. These are like proto-orientation cages, for migration as a result of magnetism was a subject that Kircher also took interest in. Kircher's environments in globes or mirror boxes (small landscapes constructed of wax and placed in mirrored display cases) were scientific but they were also concerned with the theatricality of display and the construction of nature, much like the eighteenth-century curiosity cabinets that held natural history collections (of both actual and created specimens) that were popular in Renaissance homes and early museums.

Kircher merged the investigations of science and display, a practice that would continue in the nineteenth century, evolving from the curiosity cabinet and expanded in scale and scope with the Crystal Palace. The Crystal Palace, built in 1851 for the Great Exhibition or first World's Fair in London, was said to be "a giant structure of iron and glass dedicated to a new way of looking..."<sup>7</sup> Inside the Crystal Palace one could find international exhibitions about industry and culture alongside fine fashions, furnishing, and natural and artificial wonders as far as the eye could see. Included in the Great Exhibition were magnificent hummingbird trees created by British ornithologist John Gould. These small glass-enclosed display cases held branches inside of them that were populated by hundreds of taxidermy hummingbirds of different species. In these cases, Gould constructed a specific kind of nature experience through theatrical display, an idea that also emerges in Berwick's constructed forest of

**above right** "A Magnetic Oracle" from Athanasius Kircher's *Magnes*, pl. 327 (Cologne, 1643). Courtesy Beinecke Rare Book and Manuscript Library, Yale University.

An example of Kircher's instruments displaying the power of magnetism that inspired Berwick's installation. Each of the glass globes contains a magnetized dial. The dials within the globes move in unison much like the phenomenon of migration. Furthermore, magnetism is used by some species of birds to navigate during migration.

**opposite** "Hummingbird Tree" from The Natural History Museum, London. A display from the 1800s containing hundreds of taxidermied hummingbirds on a sculpted tree. © The Natural History Museum, London.

amber passenger pigeons. Both however hint at the impossibility or fantasy involved in how we view nature in these "created" situations: in Gould's case, the number and species variety of hummingbirds would never be seen together and in Berwick's installation, the impossible vision is even more palpable due to the extinction of the birds on view. What replaces nature in the hummingbird trees and in *Zugunruhe* is instead stillness and the awareness of perception.

In addition to showcasing these "natural" wonders, the Great Exhibition demonstrated all that was amazing about and could be constructed as a result of modernity, starting with the building itself. In 1845 taxes on the importation of glass from France were lifted, enabling the Crystal Palace to exist and exposing the world to the kind of voyeuristic experience of looking that glass can offer. It is no accident that Gould's hummingbird trees have become so engaged with ideas of perception, for glass offered the opportunity to reevaluate just how things get looked at. Berwick beautifully exploits these qualities of glass in *Zugunruhe*. Her use of smoky two-way mirrors, presents viewers with a choice of observation points as they walk around the sculpture, leading to the recognition of their own reflection as well as those of fellow onlookers. The tree and birds inside Berwick's "mirror box" are lit from within, so the reflection of the viewer sits on the surface of the glass, ghostly hinting at the culpability of mankind in these birds' disappearance but linking as well to the looking and awe evident in early passenger pigeon sightings as much as in the Crystal Palace or even the contemporary museum. Nature here has become a phenomenological experience; it is a new kind of theater. By using two-way glass Berwick reaffirms the fact that her reality is a construction, for as viewers look through the piece the single tree and amber birds are mirrored kaleidoscopically to create a seemingly endless forest befitting of one of Kircher's mirror boxes. By merging the orientation cage with the mirror box and the hummingbird tree, Berwick creates a willing suspension of disbelief. We, as viewers, are transported by our own phenomenological experience, and in this realm, abundance has been returned to the passenger pigeon.

"And it can be said in particular of Wonder that it is useful in making us learn and retain in our memory things we have previously been ignorant of, for we wonder only at what appears rare and extraordinary to us."<sup>8</sup> This story of passenger pigeons, migration, mirror boxes, and crystal palaces is certainly rare



and extraordinary and through Berwick's conflation of these histories she brings the wonder of it all back for our eyes to behold. Rachel Berwick's *Zugunruhe* is, as PT Barnum wrote in 1886, "A stupendous mirror of departed empires."

7 Olalquiaga, 31.

8 Rene Descartes, *The Passions of the Soul*, S. Voss, trans. (Indianapolis: Hackett Publishing Company, 1989) Article 75 "Wherein Wonder in particular is serviceable," 59. *The Passion of the Soul* was originally published in 1649.





*Zugunruhe* (detail), 2009

Centered within the first space of Berwick's installation is a glass globe containing a tapered brass dial. The dial moves slowly, pausing intermittently as it follows an imaginary migratory route of a passenger pigeon in real time. In actuality the dial is pointing to texts superimposed on the walls of the gallery. The texts recall vivid eyewitness accounts of historic sightings of passenger pigeon migrations.

"...about one o'clock, the pigeons, which I had observed flying the greater part of the morning northerly, began to return in such immense numbers as I never before had witnessed... I was astonished at their appearance. They went flying with great steadiness and rapidity at a height beyond gunshot in several shots away, and so close together that could that have reached them one discharge could not have failed of bringing down several individuals. From right to left, far as the eye could reach, the breadth of this vast procession extended, seeming everywhere equally crowded... I sat for more than an hour, but, instead of a diminution of this prodigious procession, it seemed rather to increase both in numbers and rapidity. About four o'clock... the living torrent above my head seemed as numerous and as extensive as ever. Long after this I observed them in large bodies that continued to pass... all moving in the same southward direction, till after six in the evening."

Alexander Wilson 1768-1819



"In the autumn of 1853... I observed the pigeons flying from southeast to southwest, in greater numbers than I thought I had ever seen them before... I strolled on, and still met more the further I proceeded. The air was literally filled with pigeons; the light of noonday was obscured as by an eclipse; the dung fell in spots, not unlike melting flakes of snow; and the continued beat of wings had a tendency to lull my senses to repose."

John James Audubon 1785-1839

"While standing wondering at the extraordinary scene around us, a noise was heard rising above that of the incessant fluttering which I can only liken to that of the trampling of thousands of horses on a beaten road. This noise at first sounded distant, but it increased rapidly in proximity and power, until it came rolling in upon us, among the tree-tops, like a crash of thunder. The air was suddenly darkened, and the place where we stood as somber as a dusky twilight. At the same instant, all the pigeons near us, that had been on their nests, appeared to fall out of them, and the space immediately above our heads was at once filled with birds... In a word, we seemed to be in a world of pigeons."

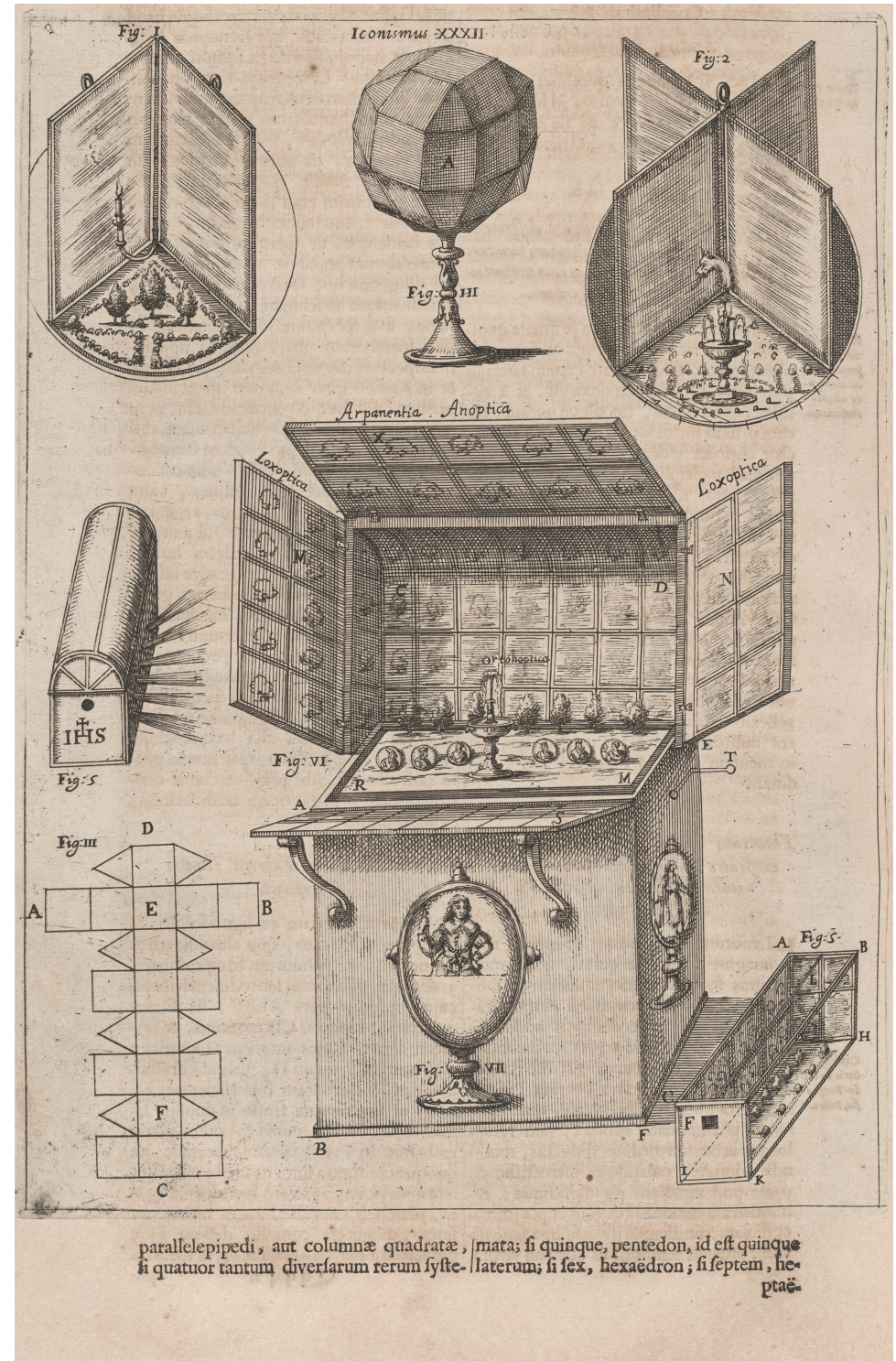
James Fenimore Cooper (1789-1859)



**above** Orientation cage experiment conducted by ornithologist Rachel Muheim in 2008. Orientation cages are used to isolate and study the ways in which birds use maps of the stars, magnetic fields, and the placement of the sun to navigate during migration. Each cylindrical cage contains a funnel-shaped bottom and a device incorporating an ink pad or carbon paper that records a bird's pattern of movement as it attempts to migrate in a particular direction. Ornithologists change the magnetic fields or manipulate optics (using mirrors, translucency) as a means of altering each bird's perception of the sun and/or stars and its orientation.

**opposite** "Theatrum catoptricum" from Athanasius Kircher's, *Ars Magnum Lucis et Umbrae...* (Amsterdam, 1671) Courtesy Beinecke Rare Book and Manuscript Library, Yale University.

Kircher lined a wooden chest with mirrors to create the phenomenon of infinite reflection within the chest, thereby confusing the viewer's sense of orientation. Kircher placed a variety of different elements within his mirror chests including wax models of bushes and trees. These would multiply in reflection creating the illusion of a landscape contained within the chest.



parallelepiedi, aut columnæ quadratæ, /mata; si quinque, pentodon, id est quinque  
si quatuor tantum diversarum rerum syste- /laterum; si sex, hexaëdron; si septem, he-  
ptaë-

## SELECTED WORKS 1992–2009

### *Zugunruhe* 2009

Cast copal (amber), wood, two-way architectural mirror, moss, metal, polyester resin; Blown and mirrorized glass, moving brass rod, text  
Dimensions variable  
cover and figs. 1, 7, 8, 9, 10

### *Lonesome George* 2005

Cast "volcanic" black glass, fans, video projections, fabric sails  
20' H X 45' W X 45' D  
figs. 2 and 3

### *A Vanishing: Martha* 2003–2005

Cast copal (amber), brass, lights, shadow  
13' H X 30' W X 30' D  
fig. 6

### *Living Fossil: Latimeria Chalumnae* 2001

Cast copal (amber), mirrored glass, glass, steel  
60" H X 48" W X 18" D  
fig. 5

### *Hovering Close to Zero* 2000–2006

Steel, cast crystal, resin, graphite  
Dimensions variable  
figs. 11 and 12

### *may-por-e'* 1997–present (ongoing project)

Two live parrots, polypropylene, plants, water fountain, sound, lights, shadows  
10' H X 10' diameter  
fig. 14

### *Two Fold Silence* 1995–1997

Refrigeration tubing, compressor, frost, steel, cast rubber Coelacanths, video projection, charting devices  
Dimensions variable  
fig. 4

### *Calibration* 1994–1996

Cast copal (amber) rock forms with negative death mask impressions, lights, steel cable, copper caliper hooks, digital clock  
Dimensions variable  
fig. 15–17

### *The Amber Room* 1993

Cast copal tiles, steel, light  
12' H X 10' W X 11' D  
fig. 18

### *Willing Suspension of Disbelief* 1992

Moths, steel, cable, fan, lights, shadows  
10' diameter  
fig. 13

## BIOGRAPHY

Rachel Berwick's work has been shown internationally, including exhibitions at prestigious venues such as the Serpentine Gallery, London; the 26th Bienal de São Paulo, Brazil in 2004; the 7th International Istanbul Biennial, in 2001; and the Musée d'Art Moderne de la Ville de Paris. In the United States she has exhibited at Mass MoCA; Real Art Ways, Hartford, CT; CCAC Wattis Institute for Contemporary Arts; and at the Aldrich Museum, Ridgefield, CT, among others.

She is in addition the recipient of numerous grants, including fellowships from the Anonymous Was A Woman Foundation and the Ingram Merrill Foundation. A Smithsonian Artist Research Fellowship provided research time and materials for *Zugunruhe*.

Berwick received her M.F.A. from Yale University School of Art and B.F.A. from Rhode Island School of Design. She has taught at RISD since 1999 and chaired the Glass Department since 2005. Berwick is represented by Sikkema Jenkins & Co., NY.



fig 11

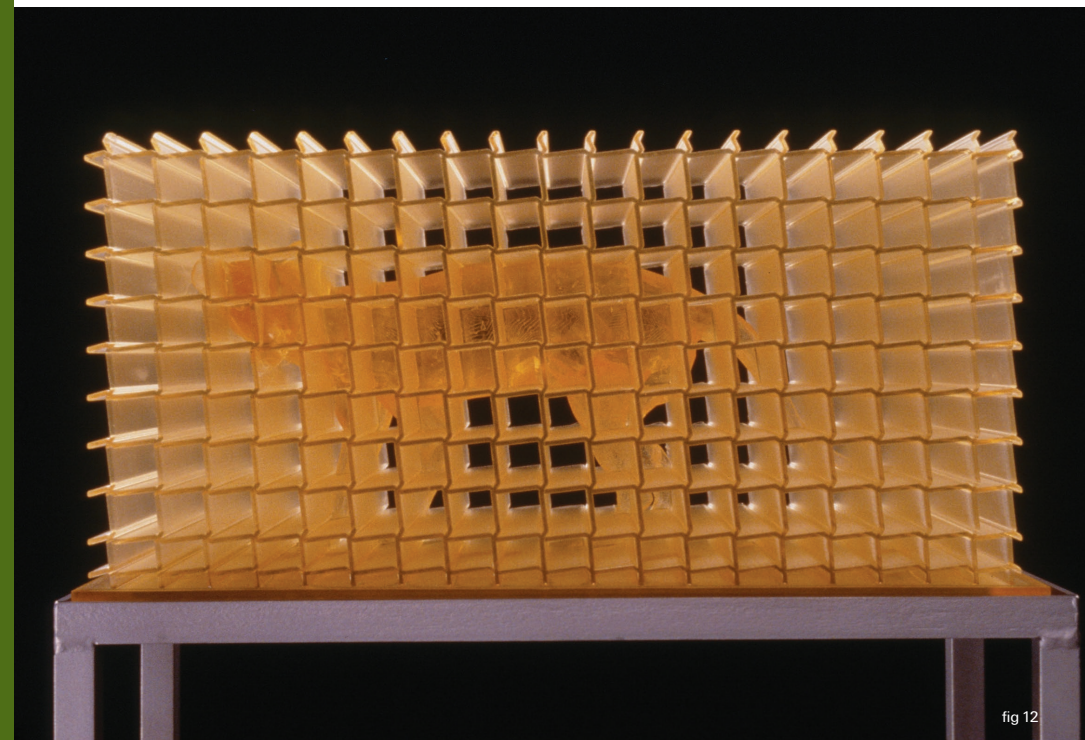


fig 12



fig 13



fig 14





Fabrication of *Zugunruhe*. Studio assistants moving the panels of two-way architectural mirror into the artist's studio for assembly.

**overleaf** "Zoological Geography" from Alexander Keith Johnston's *The Physical Atlas of Natural Phenomena*, pl. 29 (Edinburgh, 1856).

SCANSORES

- 1 *Phrylosoma hand-leyi* (Hand-ley, England)
- 2 *Bucco alcyon* (Great Albatross)
- 3 *Ficus princeps* (Woodpecker)
- 4 *Halcyon leucosticta* (Hawker)
- 5 *Alcedo fulviventris* (Blue Jay)
- 6 *Caprimulgus vociferans* (Night Hawk)



OSCINES

- 1 *Ophelus polygalctus* (M. Sava Bird)
- 2 *Ceryle cristata* (Blue Jay)
- 3 *Struthio vulgaris* (Turkey)
- 4 *Sitta carolinensis* (White-breasted Nuthatch)
- 5 *Thamnophilus virginicus* (Scribe)
- 6 *Ornithus Baltimore* (Baltimore Oriole)
- 7 *Sturna vulgaris* (Starling)
- 8 *Alauda albicollis* (Sparrow)
- 9 *Spizella monticola* (Chickadee)



GALLINACEAE

- 1 *Phoeniceus cristatus* (Ostrich)
- 2 *Oxya togianensis* (Wingless Quail)
- 3 *Melospiza gallinacea* (Wild Turkey)
- 4 *Egypcius imperatorius* (Emu)
- 5 *Struthio camelus* (Giant Ostrich)
- 6 *Struthio asiaticus* (Indian Ostrich)



GRALLATORES

- 1 *Mareca americana* (Coot)
- 2 *Alca borealis* (Puffin)
- 3 *Limosa melanotos* (Scaup)
- 4 *Ballus virginianus* (Willet)
- 5 *Tringa semipalmata* (Willet)
- 6 *Scolopax gallinago* (Scaup)

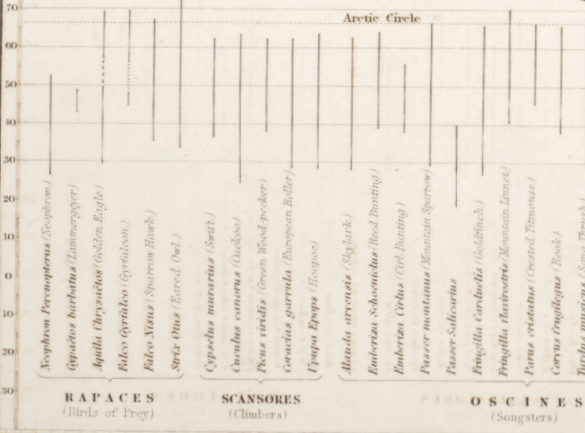


XATATORES

- 1 *Anser canadensis* (Canada Goose)
- 2 *Limosa albicollis* (Scaup)
- 3 *Aptenodytes forsteri* (Emu)
- 4 *Thalassidroma Wilsoni* (Wilson's Petrel)
- 5 *Fulica mara* (Coot)
- 6 *Fulica americana* (Coot)



TABLEAU SHOWING THE GEOGRAPHICAL DISTRIBUTION IN —



RAPACES (Birds of Prey)

SCANSORES (Chimbers)

OSCINES (Songsters)