Over the Water: Douglas Hollis
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This catalog was published to accompany *Over the Water: Douglas Hollis*, a permanent installation on view at the Exploratorium between Piers 15 and 17.

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CONTENTS

6  OVER THE WATER
   DOUGLAS HOLLIS: ARCHIMEDES
   Marina McDougall & Rob Semper

9  ACKNOWLEDGMENTS
   Marina McDougall

13  REFLECTIONS ON THE PARABOLIC REFLECTOR
    Marina McDougall

24  ARCHIMEDES
    Douglas Hollis

32  A BIRD SINGS
    Jeff Kelley

46  DOUGLAS HOLLIS IN CONVERSATION WITH PETER RICHARDS

62  Douglas Hollis Biography

64  Project Team
The fourth project in our Over the Water series of site-specific public art represents a return to an Exploratorium classic. Douglas Hollis’s Archimedes is a reimagined, thirtieth-anniversary edition of the beloved exhibit Listening Vessels. Hollis originally created Listening Vessels for the Berkeley Art Museum MATRIX program of contemporary art in spring 1987. Soon after, he generously gifted the work to the Exploratorium, and it has been enchanting visitors ever since.

The Exploratorium has a unique history of interdisciplinary, research-based experimentation in the realm of public art, and it all began with Hollis, who was first engaged in the mid-1970s as an artist-in-residence. His initial artistic inquiry resulted in the creation of Aeolian Harp (1976) for our public entrance at the Exploratorium’s original location at San Francisco’s Palace of Fine Arts. The work was redesigned, and re-sited, in 2013 for our current location at Pier 15 along the Embarcadero, making Archimedes the second major artwork by Hollis in our current space.

Hollis is an artist who is dedicated to enhancing the quality of public space, and he has almost exclusively created public artworks over the course of his long and prolific career. At the core of his investigation is the creation of “inhabitable instruments” that attune
the participant observer to natural phenomena through architectures that heighten perception of the immediate environment.

Art critic Jeff Kelley has written about Hollis’s work for several decades. For this volume Kelley contemplates the nature of art and place in a thoughtful new introduction to his 1985 interview with Hollis for *Places* journal (pages 32–45). Elsewhere he has described how Hollis’s experiential works heighten our awareness, and awaken us to our surroundings:

His places require something of him and of us, the sensing bodies, the sensitive instruments, who cross into their fields. His places are not entertainment centers. They ask of us active perception, that we wait perhaps for the wind, that we listen, that we attune ourselves to its resonance, that we adjust our perceptual thresholds upward.¹

A Hollis artwork thus places viewers and their perceptions at the center of a heightened sensory experience. In being both
participatory and based in natural phenomena, this work resonates deeply with the ethos and philosophy of the Exploratorium, founded in 1969 as “a community museum dedicated to awareness.” In her essay (pages 12–23) Marina McDougall, director of the Exploratorium Center for Art & Inquiry, explores the phenomenon that lies at the heart of Hollis’s *Archimedes*—the special reflecting property of the parabola. McDougall traces the key cultural and scientific histories that Hollis’s piece builds upon, and shows how this seemingly magical phenomenon animates other popular Exploratorium exhibits.

A conversation between Hollis and Peter Richards, who developed the Exploratorium arts program and is a public artist himself (pages 46–61), suggests how Hollis’s exchange with the Exploratorium, and particularly with founder Frank Oppenheimer, in the development of the *Aeolian Harp* was formative in furthering Hollis’s approach to art as a process of investigation and research. In turn, Hollis’s collaborative spirit, his interest in site and in making phenomena self-evident to the participant, deeply influenced the Exploratorium’s arts methodology.

Perhaps now more than ever, publics are eager to tune in to their surroundings, and actively participate in the civic spaces that we hold in common. Hollis’s work meets a vital need for social engagement and playful participation.

When *Archimedes*, fresh from the foundry, was delivered to our Plaza, visitors began sitting in the sculptural chairs and delighting in the experience before the work could even be anchored. We know that *Archimedes* will bring much joy and wonder to many people in the years ahead. We are grateful to Douglas Hollis for working with us to reintroduce this newly designed, weather-ready version of a beloved classic to San Francisco.

ACKNOWLEDGMENTS
Marina McDougall

This fourth edition of the Over the Water catalog series is dedicated to the memory of Leigh Markopoulos. A brilliant curator, writer, and educator, Markopoulos was an advisor to the Center for Art & Inquiry and helped us launch this publication series. Serving in the role of managing editor, Markopoulos thoughtfully and energetically focused our efforts to document and reflect upon the work of the incredible artists whom we’ve been lucky to engage. Given all that she animated in San Francisco and beyond, she leaves a great void. We profoundly miss Markopoulos’s intellectual depth and curiosity as a scholar and writer, as well as her generosity and integrity as a friend and collaborator. We know she would have been pleased that we have carried forth the work she so loved and valued.

Douglas Hollis’s contributions to the Exploratorium over the course of the last forty-five years have been profound. In addition to the delightful projects he has brought to our visiting public, in the late 1980s and early 1990s he served on the Exploratorium Artist-in-Residence Advisory Committee, as well as the Board of Trustees. As a staff member wrote in a letter to Hollis in 1982, “You are one of the people who has built the Exploratorium.” We are grateful to Hollis for the elegant Archimedes, as well as his ongoing influence on our institutional culture.
We also extend a warm thanks to Peter Richards, who worked closely with Exploratorium founder Frank Oppenheimer to initiate the arts programs in the early 1970s. Together they had the wisdom to first engage Hollis’s talents. We appreciate Richards’s willingness to join Hollis in conversation to share stories from this lively history for this publication.

We are thrilled and honored that the keen and observant writer Jeff Kelley has contributed a lyrical and insightful piece providing art historical context that deepens our appreciation of Hollis’s unique work.

Judy Bloch took up the work editing the catalog midway through the project. Given her impressive experience overseeing the publication programs at major Bay Area art institutions, particularly her long tenure at the Berkeley Art Museum and Pacific Film Archive, we have felt extremely fortunate to be in such capable hands.

John Borruso is the talented graphic designer whose strong aesthetic stamp has shaped the Over the Water catalog series. We have benefited from his fine attention to detail and ever sage advice. It is always a great pleasure to work with him.
We’d also like to thank Apsara DiQuinzio at the Berkeley Art Museum and Pacific Film Archive for opening the MATRIX archives to us, and for her kind help procuring key images.

The Over the Water program is stewarded by the Center for Art & Inquiry. We feel extraordinarily lucky to draw upon a wide range of talents from across the Exploratorium towards the realization of new artworks. We are grateful to the many contributors listed on page 64 of this publication. Here we’d like to mention the vital efforts of a few individuals who comprised the core project team.

Over the last several years design engineer Ken Cashion has worked closely with the Center for Art & Inquiry. With his arts background he has been a wonderful collaborator, advisor, and shop liaison. Master engineer Dave Fleming has worked with Hollis on many projects and is a considerable behind-the-scenes problem-solver. Hollis and the whole team have thoroughly enjoyed the opportunity to work with him, and appreciate his hard work on Archimedes. Volunteer Herb Masters lent extraordinary support to the project, and his steadfast presence at the Exploratorium is invaluable. The team at Artworks Foundry in Berkeley, including Piero Mussi, Tom Schrey, and Filipi Marcondes, are true craftsmen and were willing collaborators in realizing Hollis’s vision for a bronze edition of Listening Vessels.

Kirstin Bach, program manager of the Center for Art & Inquiry, valiantly spearheaded the Archimedes project. At the outset, when the path was not clear, she led the team in finding a way forward. Her dedication, perseverance, and foresight seem to make everything possible.

Douglas Hollis’s Over the Water project has been supported by a generous gift from Frances Hellman and Warren Breslau. Soon after the Exploratorium moved to the new location at Piers 15 and 17, Hellman and Breslau recognized the great potential for large-scale public artworks that inspire curiosity about physical phenomena. They are wonderful friends and supporters of the Exploratorium, and we could not be more grateful for their generosity, active presence, and enthusiastic participation.

Finally, we pay tribute to the late science educator Paul Doherty. Doherty puzzled with us over the potential fire hazards of Archimedes at the outset of the project. A defining spirit of the Exploratorium, his beaming joy and radiant curiosity will continue to live on in all of us.
In a handwritten note dated April 4, 1986, written to Constance Lewallen, curator of the MATRIX program of contemporary art at the Berkeley Art Museum, Douglas Hollis describes his initial thoughts toward a new work: “As you know, I have for some time now been developing the Sound Garden idea, trying to expand the physical vocabulary with which I address specific places. What I’d like to do for this project is to build some new ‘passive’ sound structures. I think of them as passive because, instead of producing sound, these structures collect and focus sound in space.”

Along with the note, Hollis sketches two chair-like structures embedded within two boxes. The interior of each cube is hollowed out with a parabolic curve. He explains his intrigue with the “architectural (space-shaping) qualities of sound as wave phenomena,” and imagines that “two or more reflectors sharing a common focal point” might “create some beautiful reverberations and echoes.”

What Hollis envisioned eventually manifested as the iconic sculpture Listening Vessels. In public settings, this work is wonderfully social. People are intuitively drawn to sit within the conspicuous
Archimedes diagram showing focal point of parabolic dish

dishes, then delight in the uncanny sensory experience that Listening Vessels offers. Even the faintest whisper uttered by a partner seated in the opposite vessel ninety feet away can be intimately heard. When a dish is experienced solo, ambient sounds become intensified.

A special property of the parabola’s shape—the way incoming light or sound bounces off the curve and gets concentrated at a focal point—lies at the heart of Hollis’s magic. Each parabolic dish collects incoming sounds and focuses them at the person seated within. Hollis insightfully joined two parabolic reflectors in dialogue and designed the seating so that the participants’ ears are positioned at the focal point.

With its remarkable underlying sonic properties, the piece attunes us to the material presence of sound, allowing us to marvel at how it can bounce, reflect, and be focused. It is a perfect work for the Exploratorium’s playful environment dedicated to curiosity and wonder.

Hollis constructed the original Listening Vessels by hand out of wood, metal, and plaster. In later editions, for public environments
around the country, he has explored altering the design and materials. For the Houston Discovery Green (2008), he created a version out of Alabama limestone. For the Tilikum Crossing (a light-rail passenger train, bicycle, and pedestrian bridge over the Willamette River in Portland, Oregon) Hollis used one-inch stainless steel penny tiles to line the interior of *Sonic Dish* (2015), a twenty-four-by-twelve-foot parabolic reflector sited underneath the bridge. For the temporary project on Market Street in San Francisco (part of the city’s Living Innovation Zone experiments), the Exploratorium formed a pair out of cast concrete (2015).

*Archimedes*, Hollis’s most recent version, simplifies the design of *Listening Vessels* into two thin discs cast in bronze. Hollis worked with an Exploratorium team on the engineering of the work, and a foundry in Berkeley to fabricate it. They used one of the original *Listening Vessels* to create the mold for the new work as part of a lost-wax casting technique.

*Archimedes* deviates significantly from previous versions of *Listening Vessels* in that its shiny metal reflectors could theoretically...
be used to focus light as well as sound. It was this light-reflecting potential—which introduces the possible danger of fire—that inspired Hollis to title the work in homage to Archimedes (287–212 BC), the great scientist of classical antiquity, whose association with the parabolic reflector remains both baffling and elusive to this day.

Archimedes is venerated for his abstract thinking in the field of mathematics (in his treatise *Sand Reckoner*, for instance, he contemplates how many grains of sand would fit inside the universe) and for his practical inventions as a physicist and engineer. His rare genius allowed him to fluidly connect mathematical principles with laws of physics, and to create new technologies based on these insights.

Archimedes wrote extensively on the complex characteristics of curves, rigorously proving a number of theorems related to geometry. He wrote of circles and spheres, planes and spirals, conoids and spheroids. He is celebrated for proving that the volume and surface area of a sphere are two-thirds that of a cylinder (and is even reputed to have had a tombstone sculpted from these two forms).

His treatise *The Quadrature of the Parabola* presents twenty-four propositions related to the parabola—most notably, it concludes with a proof that the area of a parabolic segment is four-thirds that of an inscribed triangle. While we know that Archimedes was thinking about other unique aspects of parabolas, there is no historical evidence that he methodically studied their reflective properties. The
Greek mathematician Diocles (c. 240–c. 180 BC) is credited as the first person to prove the focal property of the parabola.

Most of Archimedes's practical inventions were developed in service of his home, the Greek city-state of Syracuse on the southeastern coast of Sicily. Here, he refined devices including the block-and-tackle pulley system employed by sailors to lift heavy cargo. He is also credited with fine-tuning the design and accuracy of the catapult as well as the lever. Crucially, this creative genius was tasked with overseeing the city's tactical defenses during the three-year Siege of Syracuse (c. 214–212 BC) by the Romans.

Beyond all others, one legendary invention from this time—known as Archimedes Heat Ray (or Death Ray)—is pertinent to Hollis's project. In an effort to fend off the invading Roman ships, Archimedes reputedly devised a weapon capable of setting ships ablaze. The Heat Ray is described as a bronze parabolic reflector surrounded by an array of smaller mirrors that could be angled and adjusted with hinges and metal plates to focus sunlight on enemy vessels.
The Heat Ray’s functionality, as well as its connection to Archimedes, has been vigorously debated since the Renaissance. The French philosopher, mathematician, and scientist René Descartes was skeptical. Yet, the German Jesuit scholar and polymath Athanasius Kircher thought that the Heat Ray was possible, even if limited to close range.

Over the centuries, numerous experiments using materials that would have been available in Archimedes’s day have been conducted to test the feasibility of such a device during battle. Starting in 1747 the French naturalist, mathematician, cosmologist, and encyclopedist Georges-Louis Leclerc, Comte de Buffon, orchestrated a series of experiments, and managed to burn a stack of wooden planks covered with tar positioned two hundred feet away. This was followed in 1807 by the scholar François Peyrard, who knew Archimedes’s work intimately, having translated his writings into French. He organized a series of Heat Ray investigations that also achieved combustion.

In 1973 a Greek scientist, Ioannis Sakkas, lined up sixty sailors, each holding a long mirror tipped to catch and direct the sun’s rays towards a wooden ship moored 160 feet away. The ship caught fire immediately. Subsequent experiments by Massachusetts Institute of Technology engineering students in 2005, and the popular television show *Mythbusters* in 2004, 2006, and 2010, met with varying results.
Since wood needs to reach an autoignition temperature of around 570°F in order to catch fire, a number of factors related to the conditions of battle (a clear sky, the time of day, the distance of the boats to the shore and their movement) would need to align in order for the Archimedes Heat Ray to have been effective. Given these variables, the use of more conventional weaponry (such as catapulting flaming arrows) would have been an easier way to set a ship on fire a short distance away from the cliffs of Syracuse.

While it seems that the Heat Ray device proves to be feasible, its use during the Siege of Syracuse is most likely legend. As Hollis summarizes, “just because you can do something, it doesn’t mean that you would”—or did.

Concerned that the interior of the newly designed bronze dishes could focus the sun’s rays and ignite a fire on the San Francisco Embarcadero, Hollis consulted Exploratorium science educator Paul Doherty and engineer Dave Fleming. Basing their calculations on the wavelength of both light and sound, they recommended that Hollis texture the concave interior of the dishes with tiny facets—between the size of a marble and a grain of sand—to diffuse the infrared light. Potential conflagrations in the Exploratorium Public Plaza (not to mention any docked ships in San Francisco Bay) would thus be avoided.

Mathematicians have developed different ways of describing the parabola. Perhaps the easiest way of understanding its geometry is that the parabola (like the circle, ellipse, and hyperbola) is a

![Diagrams of geometric shapes: circle, ellipse, parabola, hyperbola]
member of a family of conic sections. When we imagine a plane intersecting the volume of a cone, we can visualize these various geometric shapes.

One of the parabola’s remarkable properties is how it reflects. As Exploratorium science communicator Paul Dancstep explains, “the parabola is the perfect geometric converter.” Its precise geometric form takes sound waves traveling in parallel and turns them into sound waves converging on a single point.

The Exploratorium has a number of popular exhibits related to parabolic reflectors. *Giant Mirror* is a twelve-foot spherical mirror, originally built by the National Aeronautics and Space Administration (NASA) for use in a flight simulator. *Touch the Spring* is a small version of *Giant Mirror* that gives the uncanny illusion of objects being closer than they appear. *Hot Spot* is a five-foot parabolic mirrored dish that eerily reflects light, sound, and infrared radiation from a space heater. *Conversation Piece* is a six-foot-diameter inflatable sphere filled with carbon dioxide gas that functions as a...
lens (parabolas have a lot in common with lenses). Sounds made on one side of this enormous balloon move over its surface and become concentrated on the other side.

Occasionally, parabolic reflectors are inadvertently designed into architectural spaces, making for rare acoustic experiences. The National Statuary Hall in Washington, DC, and an underground passageway outside the Oyster Bar in New York’s Grand Central Terminal have become favorite destinations for urban dwellers seeking hidden marvels. There you can find people whispering into walls to experience their voices amplified by the magical acoustics of the vaulted ceilings above.

Many practical inventions are based on the parabola’s and sphere’s reflective properties. One of the most intriguing is acoustic mirrors. Roughly between the two World Wars, a number of large concrete sound mirrors were sited along the southeast and northeast coasts of the United Kingdom. Military air defense forces used the dishes, ranging in shape and size, as part of an experiment in the early-warning detection of enemy aircraft. A microphone mounted at the focal point of the acoustic mirrors picked up the engine sounds of advancing enemy aircraft from as far as fifteen miles away. Since aircraft at the time were relatively
slow, the network of mirrors assisted the British in hearing and plotting the position of planes and zeppelins before they came into sight. A number of acoustic mirrors still stand today. The most impressive are at Denge, on the Dungeness Peninsula near Kent, and at Hythe in Kent. The only sound mirror known outside of Great Britain is located at Bahar ic-Caghaq in Malta. Local Maltese describe it as “the ear” (il-Widna). The invention of the first practical radar system in 1935 rendered the acoustic mirror program obsolete.

Hollis has in fact conceptualized a diplomatic rather than wartime role for Listening Vessels. A 1990 drawing for a work entitled Diomedes sites two parabolic dishes across the International Date Line between the Russian and US borders in the Aleutian Islands. The current political moment makes Hollis’s idea as relevant as ever. Perhaps one day the work will be realized.

In the meantime, Archimedes is bridging conversations between members of the public on the San Francisco Embarcadero, and everyone is smiling.
Marina McDougall is the founding director of the Center for Art & Inquiry, a research and development laboratory for the arts within the larger learning laboratory of the Exploratorium. As a curator McDougall specializes in interdisciplinary approaches in public educational environments. She has worked closely with artists including Mark Dion and Fujiko Nakaya, and the artist-founded institutions The Center for Land Use Interpretation and the Museum of Jurassic Technology, where she currently serves on the board of trustees. McDougall was the first curator of art and design at the CCA Wattis Institute for Contemporary Arts, and she aided in the formation of the Studio for Urban Projects. She has taught as an adjunct professor in both the MFA and Curatorial Practice programs at CCA. McDougall recently moved to Philadelphia, where she is pursuing a long-term project, The Garden of Forking Paths. She serves on the board of the Seed Fund.

REFERENCES:


ARCHIMEDES

MATERIAL: CAST BRONZE
2 UNITS IN ALL

HOLLIS, 2016
Archimedes was created through a lost-wax bronze casting process at Mussi Artworks Foundry, Berkeley.
Archimedes installation, Exploratorium, Pier 15, 2017
Coming of age as an artist around 1973, Douglas Hollis was initially unsure if what he did was art. Like many in his generation, his work fell roughly into the category of sculpture, but it looked like a lot of other things as well, including wind vanes, radar towers, tide pools, arbors, furniture, a dowser, a bridge, a walkway, and slipped easily into the categories of architecture, landscape architecture, engineering, civic planning, and the like. It looked more like work than like art. When he was installing his works in public, involving tools, trucks, and hard hats, passersby knew that he was working. It didn’t matter what he was making as long as it seemed like work. But what if they had known he was working at art?

A characteristic of postwar American art is that it has often looked less like art than like life. Not the monumental abstraction of modern painting, of course, but, from roughly 1950 to 1980, the aleatory music of John Cage, the streetwise lifeliness of Happenings, the
waxy painted flags of Jasper Johns, the photo-silkscreen (proto-digital) picture planes of Robert Rauschenberg, the urban everydayness of Pop, the industrial materials (both high and low) of Minimalist sculpture, the earth-moving scale of Earthworks, the real time of video art, the political activism of feminist performance, the appropriated images of the Pictures Generation, and the civic scale archi-texture of public art. Even the expansive plasticity of Jackson Pollock looks today like an aging membrane of space-age space.

Often, when we first encounter art, we don’t know what we’re looking at, and so other, more familiar things leap to mind. But art comes to look like itself in time. For Hollis, who describes his works as a kind of sonic architecture, kites were an initial inspiration; in the early 1970s he presented a performance at night on a beach in which several luminous, inventively shaped kites wafted above the audience. What he noticed were the sounds made by the wind...
blowing across the kite lines. “The effect,” he says, “was of space defined by sound.” This insight gave way to a career-long investigation into “using sound to define place, and to make places that stimulated multisensory participation.” Hollis is part of a generation that reacted against the epic mythologies of Abstract Expressionism and the ultra-urbanity of Pop by tuning in to the wavelengths and sightlines of phenomena as experienced from the first-person point of view. Artists like James Turrell, Robert Irwin, and Maria Nordman were drawn to light. Others, like Bill Fontana, Terry Fox, and Max Neuhaus, were drawn to sound. Still others—Robert Smithson, Nancy Holt, Michael Heizer, Walter De Maria—were drawn to the earth itself, to the land, to dirt. One can say much the same about space, scale, and materiality—that artists were drawn to them. It’s as if, collectively, they deconstructed the very idea of an art object in terms of its constituent parts, which, it turns out, also constitute the mechanisms of human consciousness, the means by which we experience the world and our places within it. We see, we listen, we touch and bump into things. The perception of phenomena became instrumental to one’s meaningful experience of art, and the site of that experience—a park, a public commons, a memorial ground, an abandoned house—fixed one’s perceptions in place. From the mid-1960s on, the gallery space, so filled with the rarefied history of modern art, began giving way to the built and natural environments beyond its walls, and artists from many backgrounds—not all of them art—decamped to the many and varied terrains of America.

One used bulldozers to carve a trench across a desert canyon. One pushed an earthen jetty into a salt lake. One shaped a volcano rim into a cosmic observatory. Another installed a one-kilometer-by-one-mile grid of steel lightning rods in the New Mexico desert. One created public gathering places for democratic reflection. Another returned a strip of land in New York City to its precolonial botanical condition. Nearby, another planted and harvested wheat in a downtown landfill.

Along the spectrum of artistic interventions in the world of sensory phenomena, Hollis occupies a poetic flank, sliding away from the black, smoky rattle of bulldozers toward the singsong lamentations of Aeolian harps and the soft, quiet moaning of wind organs. His sculptures have mostly been instruments attuned to the frequencies we usually can’t hear until we come into some kind of alignment with them that we can’t see. A wind vane, which is also an Aeolian
Wind Organ,
Lawrence Hall of Science, University of California, Berkeley, 1981
harp, is spun by the wind and changes tune accordingly. We hear its metallic yawn, we see it turn like a sail in the breeze. It makes the air currents visible and audible, and a fleet of these singing wind vanes rambling along the shoreline of an inland bay (such as at the National Oceanic and Atmospheric Administration, or NOAA, headquarters near Seattle) looks as much like a weather station as an artwork, and, in a sense, that’s the point. They are a weather station, but one that hails the currents of a specific site, translating them into phenomena—into sight and sound—that register in the senses of we who pass through it. By tuning in to the harps’ whines and the organs’ moans, we are momentarily merged with the site, and this merger, which is interpretive and subjective, is what fills out the coordinates of a site with the psychological and social dimensions of a place. Thus, Hollis always works at the edge of the site/place dynamic, and because he is an artist, his best works become places for people who experience an in-your-bones transition from the technics of site to the poesies of place.

Some years ago, reporting on a conference in Santa Fe called The Place of Place, I offered this analysis:

> Places are not sociological models. They are experiences of time in space, or, more exactly, of memory in location. The deepest form of local memory is the body, a medium in which remembering takes place. Its social extensions—other bodies, the house, the neighborhood, hallowed ground—are also frameworks for remembering. Which is to say, places are memorial experiences passing through particular locations. They are not abstractions, but a sympathetic resonance of time and space catalyzed in and around the body. As we pass through place, we seek a resonant frequency by which our precise psychic coordinates can be divined in relation to the rougher approximations of infinite space and endless time. Artists who work in places are more like dowsers than social designers. The vocabulary they speak is less that of space than of the body in time.

This twenty-year-old paragraph, which still feels relevant today (despite the digital flattening of the world since it was first written), would have been impossible for me without Hollis’s soundings in
mind and memory. His are evocative, phenomenological frames—clouds or zones might be more accurate today—in which to sense the place within the site. Ever pregnant with the potential of human experience, a place is never flat, nor merely surface. A critical mass of shared experience lends a place its social and historical dimensions. An individual experience of art in place—or art as place—bids awareness of the ever-present poetics of everyday life. It also recalls the philosopher John Dewey’s idea of “art as experience,” the title of his 1934 treatise on art in the modern age. Arguing that experience—not in general, but in particular—could have aesthetic qualities, thereby setting the stage for postwar action painting and the happenings, performances, and process art that followed into the 1970s, Dewey’s thinking makes it possible for us to find ourselves in the middle of art, just as we do an experience. The coordinates of an art of place are those of human awareness as stimulated by the particular conditions of particular places, and the instruments artists install there, like dowsers, to call them up. Great works of place-sited art indicate those conditions—wave patterns, forgotten history, the power of wind and water, a subterranean interior, the beeline of eye contact across space, the hollow feel of names cut in granite—by gathering them up as the meaningful contents of one’s experience of the present moment in a particular place. Although familiar, the conditions of a place in time are unpredictable and unrepeateable.

*Apparitions*,
Joslyn Art Museum,
Omaha, Nebraska,
1978
In the end, it’s the individual experience of place that accounts for its aesthetic dimension. One doesn’t have to know it’s art to feel its grace. Wind vanes, Aeolian harps, wind organs, parabolic dishes, land that shapes the wind, riffs that agitate the water, water that drips in a column, chairs whose high-backed harps hail the wind and channel its vibrations along the sitter’s spine: these instruments both stimulate and are stimulated by the human body and its senses. Drawn from natural conditions, they are the phenomena of human experience. And this suggests an old idea about art that always feels new: that it may be as close to a divine spark for the imagination as we are likely to encounter in life.

Before art looks like anything else, of course, it looks like work. Several decades ago, Hollis observed to me that while he didn’t know if people understood his work as art, he was certain they understood his art as work. His newest work, Archimedes, an outdoor set of bronze parabolic dishes that face each other and amplify the voices of people speaking between them (like tin cans on a string), is an elegant reinvention of a work the Exploratorium has offered.
the public for decades, *Listening Vessels*. A literal impression of the curved surfaces of the older work, *Archimedes*—an homage to the ancient Greek who mused on the parabola—frees those curves from the monolithic mass so reminiscent of 1970s Minimalism, allowing them to stand now as formed surfaces in space. This elegant reinvention of a previous work underscores the career-long continuity of Hollis’s art. The interview excerpted below, conducted between Hollis and me thirty years ago for the journal *Places*, remains foresighted enough in the context of this catalogue to still represent the core of Hollis’s concerns as an artist who investigates phenomena in public.

The best public art is fugitive, its nature being simultaneously art and something else—science, landscape, the weather, a memorial grove—often flickering back and forth from one to the other. Eventually, that flicker settles into the synthesis of a third condition, something we can’t envision until it becomes a matter of faith through repeated experience. In the hustle of daily life, a bird sings and the audience becomes aware of itself. An audience for
twenty-first-century public art will not be captured by conventional come-ons in the public square. Instead, its members will be invited to apply aesthetic attention to phenomena that are likely already around them, nearby, within range, just beneath the threshold of everyday awareness, until art disappears back into life and takes us with it.

Oakland, California
June 2017

Conversation with Doug Hollis
Jeff Kelley
Places 2, no. 3, 1985

JK: You’ve spoken of your work as an architecture of sound. Can you describe the components of that architecture?

DH: I work with natural phenomena. I use acoustic sound as opposed to electronic sound. There’s a strong distinction in my mind about that; acoustic sound has more architectural or ambient quality than electronically generated sound. It’s not judgmental to say that; it’s just that electronic sound seems to have a different spatial quality—one that does not evoke the kind of place or enclosure made up of itself that acoustic sound does. The sound that is produced, as well as the thing that produces the sound, which in my work has tended to be the wind, provides a volumetric and temporal aspect to my pieces. The sound then gives a sense of enclosure without there physically being an enclosed space; it’s an implied volume.

JK: Is it an implied volume, or is it in fact a sensed volume?

DH: It’s not implied, you’re right. I mean it’s there, but it’s ethereal in the sense that it doesn’t have four walls and a ceiling, so it isn’t an acoustical space, like an abbey or a cathedral, or a kind of architecture devoted to what sound sounds like in it. What I’ve been trying to do is use sound to define experiential space within a broader environmental context in a way that amplifies perception. Sound has a terrific influence on our perception, but we aren’t necessarily conscious of its effects upon us. It actually physically vibrates upon your body. I find that I’m extremely aware of my sonic environment, and that I navigate in space accordingly. I tend
to stay away from high-density sound. It’s not merely an avoidance behavior but a functioning navigational device.

JK: What do your sculptures look like?

DH: Well, I don’t refer to them as sculptures but as sound structures. I’ve always tried to imply a sense of music in them, to make them function as visual supports for the kind of sound that they produce. The wind organs are made from various kinds of pipe, quite often aluminum pipe in diameters of about three inches. They’re tuned in specific ways. I also work with various kinds of stringing material, including monofilament, racquet line, cable, designed to function as Aeolian instruments. Aeolian instruments have to do with resonance phenomena or the ways things vibrate when driven by a particular vehicle.

JK: And that vehicle is mostly the wind?

DH: Yes. And the various materials become the component parts with which I structure a piece; I think of them as a vocabulary. I’ve always tried to distill those components down to the simplest forms possible so that they’re not objectified in and of themselves but work as mediators, or as instruments. They tend to take on a configuration that suggests, or echoes in some way, the place where they are. In my Lawrence Hall [of Science] piece, for example, there’s a topographic array of thirty-six pipes that’s organized on a kind of warped grid that seems to echo the contour of the site. The way the hillside rolls is then amplified by the fact that the pipes at the top of the hill are taller than the ones at the bottom. You get a secondary contour.

JK: So the network of pipes is one kind of physical structure, and the sound it creates is another kind of physical structure?

DH: There are two kinds of structures. I think of the pipes as fairly passive components. The sound that’s produced, the recognition of atmospheric motion, is a much more dynamic physical structure. I try to make the visual structures harmonious in some way; I like the idea of them looking musical—not looking like musical instruments but having an inherent visual harmony that speaks to the idea of architecture. The Greeks referred to architecture as “frozen music,” and I often refer to my work as “thawed architecture.” But it’s hard to talk about what these things look like. I could say, well, the wind organs look like a field with pipes sticking up from it, which is true, but it really has much
more to do with what it feels like when you’re within that field. So what the elements do is describe a field. They’re less like the space of a cathedral and more like the order in a grove of trees. Whereas a windy hillside is an undifferentiated situation, the presence of these sound-producing instruments creates a specific sense of volume, a kind of domelike sonic ceiling, so that you feel like you’re within the sound.

JK: Do you think your works occupy public spaces, or do they define private spaces that are accessible to the public?

DH: “Private” is a funny word. I prefer the word “personal” because I think that my pieces are not public in the sense of spectacle, but they become oases in a certain sense, stopping places. Whether those are private places, I’m not quite sure.

JK: You’ve talked about integrating, and then about disintegrating, the viewer-listener into your pieces. What do you mean?

DH: The idea of the viewer, or listener, is an objectification that I’ve been trying to work against for a long time. I refer to people...
who come to one of my works as participants. I try to dissolve the boundaries of “me over here” and “it over there” by making people a functional part of what is happening. My ten-day Omaha project, for example, was a conically shaped 100-string wind harp with a pole in the center, like a tepee. People would walk into it, center themselves, and almost always reach out their hand and touch the pole; it was like they were shaking hands with it. And they became sonic components within the piece because when they touched it, they would hear the structure’s vibrations in their bones.

JK: Your pieces deal with space, but it seems to me that they extract sound from space in order to create a sense of place.

DH: Someone asked me once if my pieces existed when the wind wasn’t blowing because when the wind isn’t blowing, there is no sound. And I said yes because there’s a kind of anticipation built into the structures. I feel my work is as much about suggesting that people listen as it is about making sound. So if they’re about sound, they’re also about silence.

JK: And so, with your work, we have a kind of object that isn’t an art object in a traditional sense; that is, it isn’t an object that refers to itself or through itself to something else, or that surrounds itself, in the case of sculptural objects, with a kind of metaphorical space. Rather, we have an object that is more along the line of an instrument which measures some phenomena that wouldn’t otherwise be perceived as such.

DH: What I do is represent things; I think of myself as more a representational artist than an abstractionist.

JK: But don’t you isolate and abstract certain latent phenomena in a given site vis-à-vis your instruments?

DH: I think of that more as activating potential phenomena, of creating potential for the phenomenon to manifest itself. Is that saying the same thing?

JK: I wonder if it isn’t. Perhaps representation and abstraction are versions of each other.

DH: My notion of abstraction is to take “out of.”

JK: Which is, in a sense, what you do. Your pieces take out of a homogeneous environment certain features by representing them, by catalyzing them.
DH: Well, what I feel I do is create structures that use a particular sensory level to make people more aware of the homogeneity of a place. In some ways, I think of my pieces as excuses for conversations on the site about the site. They’re not preoccupied with themselves but act as sensory extensions that make the ongoing phenomena more perceptible. They’re real analogues, not metaphors. They do what they are talking about. Does that make any sense?

JK: They are what they do?

DH: They are what they do.

JK: So what makes your work art?

DH: That depends on what you think art is. It’s always a hard question, and I’m not sure I care whether my work is called art or music or science. But I do know it’s an investigation of my perceptions, and maybe that’s a pretty good definition of art.

Jeff Kelley has been a practicing art critic since 1977. While teaching at the University of California, Berkeley, he edited Allan Kaprow’s Essays on the Blurring of Art and Life (1993), and authored Childsplay: The Art of Allan Kaprow (2004), both for University of California Press. As consulting curator of contemporary art at the Asian Art Museum of San Francisco from 1998 to 2008, Kelley organized exhibitions by Chinese artists Sui Jianguo (The Sleep of Reason, 2005), Liu Xiaodong (The Three Gorges Project, 2006), and Zhan Wang (On Gold Mountain, 2008). In addition, he curated the critically acclaimed exhibition Half-Life of a Dream: Chinese Contemporary Art from the Logan Collection for the San Francisco Museum of Modern Art (2008). Since then, Kelley has written about Ai Weiwei several times for Artforum and contributed an essay to the catalogue for Ai’s exhibition at the German Pavilion of the 2013 Venice Biennale. Kelley is married to artist Hung Liu.
Peter Richards worked with Exploratorium founder Frank Oppenheimer to establish the arts program beginning in 1974. Richards commissioned Douglas Hollis to develop Aeolian Harp on the Exploratorium’s roof, and was the director of the arts program when Hollis gifted Listening Vessels to the Exploratorium in 1987. On September 20, 2016, Hollis and Richards sat down for a conversation about their work together at the Exploratorium with Marina McDougall listening.

Peter Richards: I believe the first time I met you was when you brought your camera obscura van to the Exploratorium and took Frank Oppenheimer and me for a ride across the Golden Gate Bridge. I had already heard about your kite-flying project.

Douglas Hollis: Well, I had started building large kites, because I was really interested in them, and I was taking them down to the Berkeley dump (today known as the Albany Bulb) next to the Marina. I realized that the lines I was flying my kites on made this really interesting sound, and that different lines made different
sounds. So, I started to investigate that phenomenon in a series of performances called *Sky Soundings*. I used light sticks as luminaries and then acoustically amplified the different lines to create a soundscape.  

This was the first time I realized that sound had an architectural quality, that it was possible to create theaters of sound with extremely minimal means. The other important aspect of this piece was its inherent element of celebration, the way in which people were drawn together. In the first performance I attempted, about 120 people met on a rather dark night at the edge of San Francisco Bay, and there was no wind; ergo the kites did not fly. And yet people had a terrific sense of reverence for the occasion, and they settled into little two- and three-person conversations in the dark. It was really the quality of those conversations that first suggested to me the notion of sound architecture. When the kites finally did fly, an even larger sense of sonic architecture suggested itself.
PR: What year was this?

DH: This would have been late 1973 into 1974. At the time, I drove this big panel van that didn’t have any windows in the back. And I’d already gotten interested in camera obscuras. I thought, well, what if I put a wall behind the driver’s seat in my van, put a hole in that, paint the back end of the inside white, and drive people around in it? I called it “cinema obscura.”

PR: I remember that being in the van was a very strange experience. We were sitting on the floor with our backs against the partition between the camera space and the driving seat. We were riding backwards, and the image we were seeing was upside down.

DH: And coming at you.

PR: And coming at us, instead of receding. Everything was wrong.

DH: Complete inversion.
PR: Yes. I got a little queasy, but we did have this terrific ride going across the Golden Gate Bridge. It was a beautiful day. That was the start of the conversation between you and me.

PR: There’s been a debate about whether you were our first official artist-in-residence, which I know is not true.

DH: No, it’s not true, though I was one of the first.

PR: After the ride, Frank and I asked you to think about doing a project at the Palace of Fine Arts, where the Exploratorium was then housed. Your first project was *Aeolian Harp*, and that was around 1974 or 1975?

DH: I think it was finished in 1975, but it took me over a year and a half to put it together. The harp idea was obviously initiated by the kite work. People at the Center for Contemporary Music at Mills College told me about the Aeolian harps, which I had never heard of before.

And I thought, wow, it would be really great to have a live soundtrack for a live-image cinema obscura performance. I tried to build one for my truck that would use the roof of the truck as a soundboard, but I never really succeeded.

PR: But you managed to build a small, window-size harp.

DH: Yes.

PR: It had a really lovely sound. Much more delicate than the one that we have here.

DH: Yes, more ethereal and more melodic. I was fascinated by the context of the weeping maidens in the Palace of Fine Arts’s colonnade, so it just seemed like the right thing to explore. It would be site-specific, and we were on the cusp of starting that kind of public art investigation.

PR: It was certainly pre “public art” as we know it, but at the Exploratorium we were always thinking in terms of supporting art for the public. The works had to be accessible, often were interactive, and frequently they were site-specific, where the building itself became a part of the piece. It was exciting to be a part of all that. We were plowing new ground at the Exploratorium, and there were many
parallel conversations about art in public places all over the country. A number of younger artists were getting support for works that complemented or worked with a public space rather than just occupying it.

*Aeolian Harp* was somewhat phenomenological, too, so it had a kind of dynamism and was a logical fit with the Exploratorium. It illuminated a way of combining artistic endeavor with the pedagogical underpinnings of the Museum.

**DH:** Right.

**PR:** This was a signature moment for us because your piece was such a logical fit for the Exploratorium: it gave us a tool for justifying a particular proposed project over another. We had been struggling
with establishing criteria for selecting artists and their concepts for support since the beginning of the program. We needed clear reasons for doing these projects beyond the fact that they were cool. Tying them in to the Exploratorium curriculum, and in particular to natural phenomena, gave us a key rationale for the program. Aeolian Harp, being about resonance, music, and ambiance, was a natural fit and a model for future projects.

DH: Yes, and once I’d worked on the harp, and felt integrated into the culture here, I felt I was always welcome to come into the shop and work on things. I next made Vortex in 1987, I think. But even when I was doing other projects, like the Wind Organ for the Lawrence Hall of Science, I made them at the Exploratorium.

PR: We were trying to create a place for artists to work. One of the things that we used to say, and artist-in-residence Jim Pomeroy may have said it first, was that the sign of a really successful residency is that the artist never leaves.

We were building a community. It always seemed like there were three or four artists working on projects—people like Ward Fleming, Ed Tannenbaum, Paul DeMarinis, Dianne Stockler . . .
One thing, before we go beyond the harp, is a story that I’ve
told many times: We asked Doug to build a harp. He came up with
a little prototype first. A few weeks later he came back with this
beautiful wooden harp that was probably six feet long. It looked
a bit like a coffin.

DH: Yes.

PR: But beautifully made, and it had strings on it, sort of like a gui-
tar. It was a giant guitar. We put it up on the roof where the wind
blows steadily, and it didn’t make a peep. It just didn’t work, which
was really disappointing to you, I know, because you had worked so
hard on it. Frank said, well, if you’re going to build something like
this, you’ve got to know something about resonance. You’ve got to
get down to what it’s really all about. And he helped you set up a
bench lab.

DH: That’s right.

PR: He worked with you to figure out how to couple resonating
strings to membranes, and to explore various kinds of strings and
wind directions and speed. It was great how much Frank got into it,
and I think you learned how to investigate from that experience.

DH: Very much so. That was a terrific part of it.

PR: And the next prototype worked. But it was Frank’s interest and
willingness to take some time to work with you that really made a
huge difference to the project.

DH: A different version was developed for the new Exploratorium
location at the Piers. The harp itself is essentially the same, but it
needed a new base and additional structure to be attached to the
bridge and be more accessible than it had been. So, it’s slightly
different in form but very similar in terms of function, except that
it works better. The big dilemma that I had, once we figured out
how to make a harp that would work, was how to get the sound
down to a low enough area that people could actually hear it,
because it was just too far up in the air to ever be loud enough to
actually hear. Trying to figure out that transmission system was
the kicker for me, really. Once we figured that out, then we could
move ahead.
PR: The vertical strings that are activated by the wind vibrate back and forth. The breakthrough was to attach another string to one of the vertical ones at one end and to a membrane down near the ground, which made the membrane function just like a tin can telephone or an ooga car horn.

DH: It’s like a compressional wave in the water actually.

PR: And it worked.

DH: It did. Proto-scientists, or natural philosophers, were fascinated by these things. They were like the muse, right? This thing that sang by itself. There’s a great book called *The Age of Wonder*, which has a whole chapter on Aeolian harps. And there are earlier references—even the Bible mentions David’s harp singing by itself sitting in the window, which could be an Aeolian harp. I actually always thought that the sirens in *The Odyssey* were the ships’ rigging singing in the wind. But it wasn’t until maybe the fifteenth century or a little bit
later that somebody actually started to investigate them. And then in the 1700s and 1800s they were really popular.

So, yeah, I started researching. Although I’m not sure I developed an investigative process. I kind of had a goal, but I wasn’t that great at figuring out the steps I needed to take to get there. I was just grasping at straws for a long time. But I did draw upon the Exploratorium’s know-how. I learned to come here for project support. And when I built my little Vortex model, I brought it over, thinking it would be a really cool exhibit, and said we should make one of these. That seemed a very natural step to me at the time.

**PR:** In the 1980s you joined our Arts Advisory Committee, which was used to vet any artists we were interested in working with. This was a vestige of the first NEA grant that we received, which required us to put together a team of artistic experts to review what we were doing and to advise us. A few years later you were invited onto the Exploratorium Board of Trustees, and you served for six years or so.

**DH:** Something like that. It was post Frank and frustrating as hell.

**PR:** Things got really hard.

**DH:** But I loved working with you on the advisory group. I thought that was a really valuable thing to do.

**PR:** And you still created artworks for us.

**DH:** Well, in 1986 I was asked to do an exhibition for the MATRIX series at the Berkeley Art Museum by Connie Lewallen, who was the MATRIX curator at that time.

I was exploring sonic furniture of various kinds at the time—I had just finished the *Sound Garden* in 1983, for which I had built some furniture. And I built some high-backed wind harp chairs during that period.

I also had an interest in parabolic shapes. I think the Exploratorium had a pair at the time—they were the traditional, look at the dish and speak through the ring version.

**PR:** Yes. Senior Scientist Thomas Humphrey set those up. You would face the dish instead of facing outward. But your idea, which was much more social, was that the two people using the dishes should face each other as if they were having a real conversation.
DH: That was my contribution to the listening vessel culture. The first pair I made was commissioned by the Berkeley Art Museum and sited in the sculpture garden for three or four months at least.

PR: You made those in your shop in San Francisco?

DH: Yes. I actually think I talked to Exploratorium engineer Dave Fleming and likely Tom to make sure I had the math right. I plotted the curve, and I made a template and then set up an armature with reinforcing. And then I started to lay it up in Hydrocal, which is a high-density plaster. We made a profile and had it mounted on a central shaft, so that I could rotate it around, while I was laying the plaster, in order to create the curve. And then I built a box to put the dish in and fabricated the seat piece to go into that. And that was it.

PR: In the context of the Berkeley Art Museum’s Brutalist building, it worked quite well.

DH: They seemed like they belonged there, disguised as minimal sculpture. But people who encountered them and had the courage to sit on the art made the discovery that they did something! And that the viewer becomes a participant. Two people, sitting sixty-five feet apart, can have a whispering conversation with each other. When the MATRIX exhibition was over, I offered the Vessels to the Exploratorium.

PR: And they have been popular for years.

DH: They kind of moved around over time—got closer and farther apart and painted—

PR: —were misaligned—

DH: —and repainted. They’ve hung in there, considering.

PR: They have. It’s amazing.

DH: I mean, they’re thirty years old. And so, here we are now working on a new pair for the outside. I decided to call this pair Archimedes, as an homage to the Greek mathematician associated with the parabolic curve. I wanted to make this pair in cast bronze so it would weather well in the marine environment. By making the vessels as free-standing elements, without the cubic enclosure of the originals, we also get a convex mirror on the backsides.
PR: Vortex has also been with us for some time.

DH: Vortex was an outgrowth of my work with wind turbulence—I began to look at similar effects in moving water. It was something I was playing around with in my studio after reading *Sensitive Chaos: The Creation of Flowing Forms in Water and Air* by Theodor Schwenk.

PR: That book was influential for a lot of artists, including me.

DH: Vortexes are usually seen from above, like watching water go down a drain. But there was a photograph of a vortex seen sideways in that book. I thought, wow, that’s really cool. I built a small model in my studio and what I saw was very interesting—complex and elegant. I brought it over to the Exploratorium shop, as I said, and
plugged it in and everybody went, “Ooh, ah.” I think I have some documentation of that demonstration.

We decided to build the larger one now on exhibit. It was to be the first of many works I’ve done with water. We got the biggest acrylic tube we could find, which was two feet in diameter and six feet long. And we just went from there. I guess the biggest anxiety was trying to fit in all the plumbing underneath. I remember we had to seal the tube into the base pan. And we needed to seal it from the inside, because otherwise it wasn’t going to seal very well. So we strapped it up and put it on the overhead crane, lifted it and then lowered it over me. I had a caulking gun and was like an artist in a jar for about ten minutes putting that silicone in there. That was foul.

We still had some blowouts. I think at the opening some of the piping blew out on us.

PR: Did it really?

DH: I remember exhibit developer Richard Gagnon, on his back underneath trying to figure out how to stick it back together. There was water all over the floor.

PR: That’s right. I remember Richard and Joe Ansel, also an exhibit builder, lying underneath the piece, in a very tight space—they were both kind of cranky, understandably. It was pretty amusing to watch.

It’s interesting to think about how the artists working at the Exploratorium were influencing each other and the Museum staff and the kinds of conversations that were going on.

DH: It was a great time. There was a real sense of community, I think, among artists. And I’m sure there are artists now who have a sense of community. I don’t feel it so much anymore, but it’s because I’ve become a recluse. Back then the big attraction for me was there was just so much experimentation going on, from New Langton Arts and Project One to the Center for Contemporary Music at Mills College.

PR: Langton Arts very much supported ephemeral projects that didn’t have any market value, really. But it was definitely strong and influential work and so we had a close relationship with those folks.

DH: Jim Pomeroy was really the glue between so many of those points of intersection.
PR: He was our colleague at the San Francisco Art Institute, where he taught. And then there was Jock Reynolds at San Francisco State University. Jim Pomeroy established that connection too, I think. They were collaborators for a long time. We had outposts all over the Bay Area.

DH: It was a really exciting time in the Bay Area because it wasn’t about galleries and collectors and museums. That was all sort of foreign. Galleries were a second thought at best. They became much more important, I’d say, in the late eighties and nineties as more artists started to refocus on having shows and dealing with all that art-biz. As a result of the environment that existed here and this kind of experimental, noncommercial art that was going on, I think I certainly developed a particular kind of attitude.

The art that I continued to make after the Exploratorium—the temporary projects on site, then things like the Wind Organ for the
Lawrence Hall of Science and Artpark in New York—these projects spearheaded a movement toward public art for me in a big way.

And I never looked back. It worked for me. I like working in public spaces.

PR: There’s one other thing that probably had a huge impact on the community of artists and scientists here: our shop was open twenty-four hours a day. More stuff got built at midnight than ever got built during the day. The shop was the creative center of the Museum and, for many artists, a community center.

DH: For me it was.

PR: There were projects, some of them film projects, that took place outside the shop, but most of activity was in there.

DH: It affected the whole culture of the Exploratorium.

PR: The cross-pollination, the adjacencies and affinities, remain key.

DH: I think it’s very good when people are allowed just to hang out. You watch kids who are always hanging around when people work, they’re learning. And it’s brilliant to have just one shop. I mean, that was a real stroke of genius—I think it’s really imperative to the culture that people can walk into the Exploratorium and see there is research and experimentation going on, and there are new exhibits being made.

I have loved working on the Archimedes project, with colleagues new and old. It feels like a great cycle of four decades has brought me back to the place where so many things began, and brings me a renewed enthusiasm for new beginnings to explore.

Peter Richards was director of arts programs at the Exploratorium from the mid-1970s until 1998 when he moved to Charlotte, North Carolina, to serve as artistic director of the McColl Center for Art + Innovation. He returned to the Exploratorium in 2001 and became senior artist emeritus in 2010. He has a parallel career as a public artist with installations in both the US and Europe. His most recognized work is the Wave Organ, sponsored by the Exploratorium and located in San Francisco’s Marina district. He is a research fellow at the Mediterranean Center for Advanced Research in Marseille and the STUDIO for Creative Inquiry at College of Fine Arts, Carnegie Mellon University.
Douglas Hollis was born in 1948 in Ann Arbor, Michigan, where he received his BFA from the University of Michigan in 1970. He has lived in the Bay Area since 1973.

Hollis’s early interest in Native American culture and experiences traveling in Oklahoma to live with indigenous families strongly influenced his sensibilities, in his words, “to see oneself as part of nature, not outside or above it.” An interest in natural phenomena led Hollis to become a public artist in the most generous sense of the word: working with the elements—usually wind and water—to investigate their effect on sound and landscape, and through that, on us. He is best known for his wind harps and organs, which take many forms, from the *Wind Organ* (1981) on view behind UC Berkeley’s Lawrence Hall of Science, to *A Sound Garden* (1983), a “grove” of wind-activated organ pipes located at the NOAA campus on a hill overlooking Seattle’s Lake Washington, to Lake Placid’s *Field of Vision* (1981), which amplified a “dance” between landscape and wind flow in different seasons. *Weather Pavilion* (1994), on Manhattan’s Roosevelt Island, included weather-reading instruments, compass, and wind-zither. Hollis has worked collaboratively with architects, landscape architects, and engineers, as well as other artists. Additional sites for his permanent works include the
New Denver Airport and the Port of Los Angeles, and temporary works include commissions for the Walker Art Center in Minneapolis, the de Young Museum in San Francisco, and the San Francisco Art Institute. Pathways and seating areas often complete the effect that Hollis seeks for his art, as he puts it, “making places which have an oasis-like quality where people can pause to catch their spiritual breath in the midst of their everyday lives.”

Hollis was one of the Exploratorium’s earliest artists-in-residence. It was working alongside the Museum’s founder, the noted physicist and educator Frank Oppenheimer, in the 1970s that Hollis developed his artistic research approach, and a fascination with sound sculpture and landscape that has persisted throughout his career. Among the works he created over the years for Exploratorium visitors are *Aeolian Harp* (1976, remade in 2013 for the Exploratorium’s new home at Piers 15 and 17), a 27-foot-tall harp played by the wind; and *Vortex* (1979), a whirlpool in a cylinder controlled by the visitor’s whim. *Archimedes*, newly cast at Artworks Foundry in Berkeley, draws on this history in reimagining the beloved and iconic exhibit on our Museum floor *Listening Vessels*, gifted to the Exploratorium by Hollis and commissioned by the Berkeley Art Museum where it premiered in 1987.
EXPLORATORIUM OVER THE WATER PROJECT TEAM

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Dave Fleming  Chief Engineer, Exhibits and Media Studio
Donna Linden  Editorial/Graphics Production Manager
Herb Masters  Volunteer
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Shani Krevsky  Project Director, Exploratorium Campus
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Blair Winn  Director of Institutional Advancement
Susie Wright  Executive Assistant, Exhibits & Media Studio and Global Studios
Laura Zander  Chief Operating Officer
ABOUT THE EXPLORATORIUM

The Exploratorium is an interactive museum dedicated to science, art, and human perception. A global leader in informal learning, it has developed creative exhibits, teaching tools, programs, and experiences that ignite curiosity since 1969. In 2013, the museum moved from its original home at the Palace of Fine Arts to a LEED Platinum–certified new building at Pier 15, along San Francisco’s revitalized Embarcadero. In addition to the 600-plus exhibits that inhabit its six galleries, the Exploratorium transcends its own walls via its teacher professional development programs; its relationships with the National Oceanographic and Atmospheric Administration, NASA, and other governmental, educational, and corporate partners; and its collaborations with science centers around the globe.

CENTER FOR ART AND INQUIRY

The Center for Art & Inquiry (CAI) serves as an R&D center for the arts within the larger learning laboratory of the Exploratorium. CAI leads the Exploratorium’s arts strategy and direction, expanding the museum’s focus on art as a medium for exploration, inquiry, and discovery. Working with program directors from across the museum as well as a council of national advisors, CAI oversees the museum’s long-running Artist-in-Residence Program, hosts research fellows, and initiates special projects to advance work at the intersection of art and interdisciplinary learning.
The Greeks referred to architecture as "frozen music," and I often refer to my work as "thawed architecture."

I'm not sure I care whether my work is called art or music or science. But I do know it's an investigation of my perceptions, and maybe that's a pretty good definition of art.

—Douglas Hollis