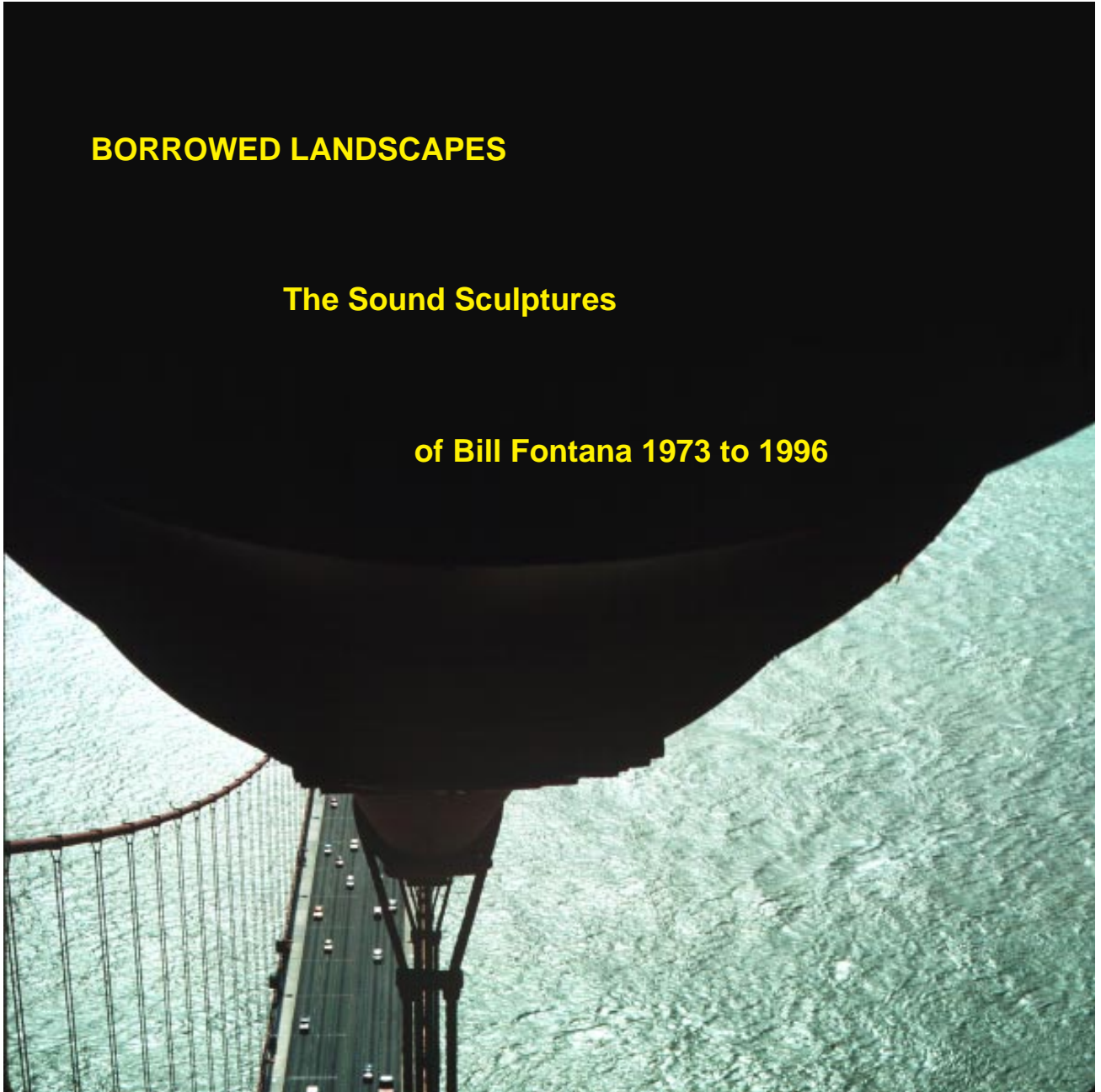


BORROWED LANDSCAPES

The Sound Sculptures

of Bill Fontana 1973 to 1996

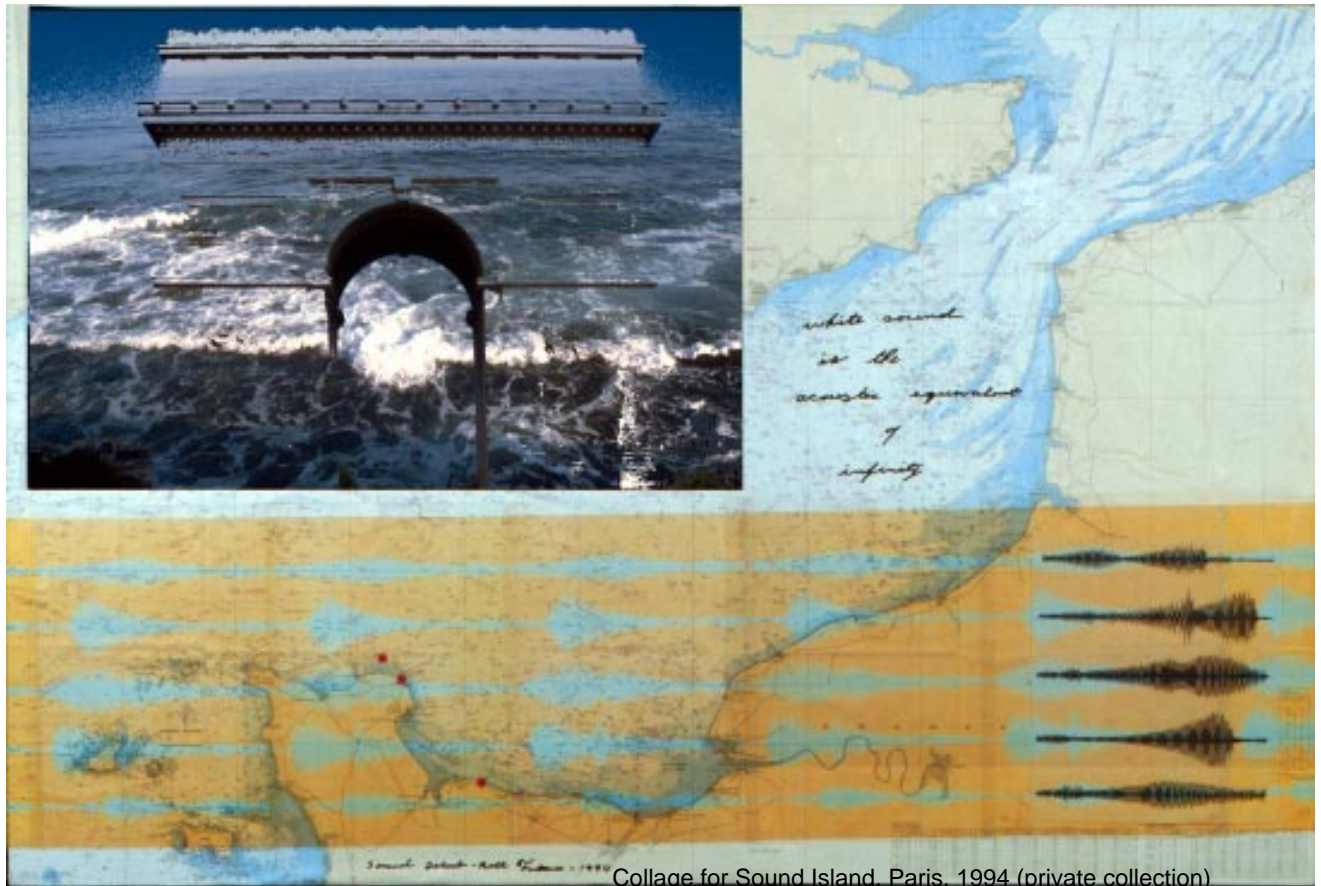


"The way music speaks. Do not forget that a poem, even though it is composed in the language of information, is not used in the language - game of giving information".

Ludwig Wittgenstein, Zettel # 160

" Fontana's sound environments renew our awareness of the places we inhabit and the powerful role sound plays in both our sense of self and memory. Fontana's work is predicated on a sophisticated investigation into how we perceive sounds in the world. He has created a series of compelling projects that subtly treat the interplay between the origins of sounds and the contexts in which we perceive them, causing the viewer to become conscious of himself and his senses as he hears and perceives anew the world he inhabits"

John Hanhardt, Guggenheim Museum



Collage for Sound Island, Paris, 1994 (private collection)

General Statement

Bill Fontana is an American artist internationally known for his experimental work in sound. He shares with the small group of artists who work in the medium an interest in transforming the aural environment. He is unique, however, in employing exclusively ambient, rather than electronic, sound. Fontana regards the physical environment as a living source of musical information, with aesthetic and evocative qualities that can conjure up visual imagery.

Since 1976, Fontana has created site-specific sound installations in major cities from San Francisco to Kyoto in which he relocates ambient sound, from one location, most often away from the city, to a central public, urban space. This has the effect of sharpening the perception of the aural landscape as what is heard is not actually visible. Fontana, however, exploits sound's capacity to elicit visual imagery through memory and knowledge, even as he creates a tension caused by the disjunction of what is heard and what is seen.

A good example of Fontana's procedure is Sound Island, a major work created for the city of Paris in 1994. Using a combination of microphones and underwater hydrophones, Fontana transmitted live the natural white noise of the sea off a rugged cliff on France's Normandy coast to hidden loudspeakers on the facade of the Arc de Triomphe. The sound of waves crashing against rocks and the cry of seagulls masked the loud traffic noise of the immense roadway around the monument and provided a new and unexpected sense of place, time, memory and dimension—made especially poignant as the installation occurred during the commemoration of the 50th anniversary of the D-Day landing at Normandy and the liberation of Paris.

Fontana has worked since the late sixties in developing his unique art form, and has realized more than 50 sound sculptures, 20 radio projects, sound installations for natural science museums and sound compositions for dance. Some of large-scale sound installations have included Oscillating Steel Grids for the 1983 centennial of the Brooklyn Bridge; Distant Trains, 1984, at the bombed-out site of the former, major train station in pre-war Berlin; Sound Sculptures Through the Golden Gate, 1987, a live duet between San Francisco's Golden Gate Bridge and the Farallon Islands National Wildlife Refuge for the San Francisco Museum of Modern Art. He is currently developing an international, multi-city sound event which will use as a source the rich variety of sounds of the old city of Jerusalem and is also working on several installations for the Cologne, Germany.

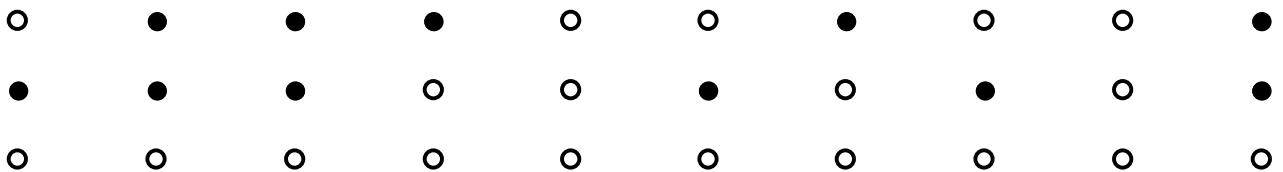
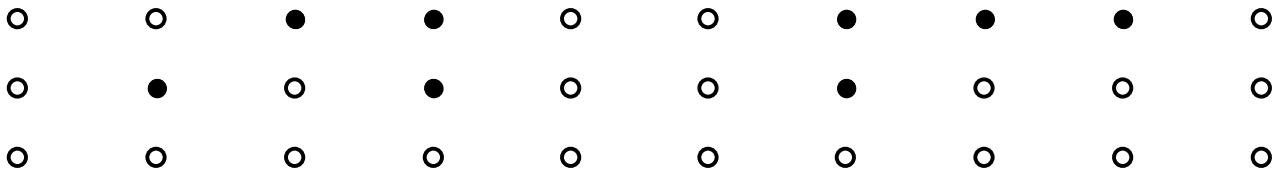
Fontana was trained in philosophy and music, but even as a young composer, he was less interested in creating traditional musical composition than in exploring musical form in everyday sound. In the late sixties, he gradually moved from musical composition to musical sculptures in which he developed further the concept of the natural environment as a musical information system.

He has received fellowships from the Solomon R. Guggenheim Foundation, the National Endowment for the Arts, the Berliner Künstler Programm of the DAAD and the Japan U.S. Friendship Commission. His work was represented in the 1988 Biennale of Sydney, Australia; Resource Art, Berlin, 1989; the 1991 Whitney Biennial and Artifices II, Sant Denis, France, 1992. Fontana currently makes his home in San Francisco.



Photo-montage for Time Fountain, Fudació Tapies, Barcelona, 1995

Clarinet 1



© Bill Fontana, 1974

Musical Sculptures

These early works, dating from the mid-sixties to mid-seventies, relate to the Fontana's musical training. They are based on his belief in the musical potential of the sonic environment. Fontana acknowledges the influence of Zen Buddhism and John Cage, who defined music as a state of mind, on his thinking of the time, as well as the influence of minimalist composers, such as Steve Reich, Philip Glass and Terry Riley.

As Fontana uses the term, a "sound or musical sculpture" is an environment of physical/spatial dimensions created by sounds. Unlike musical performance, Fontana's sound sculptures have no beginning, middle or end but, like physical objects, are continuums. Sound sculptures are perceived by the ear but can evoke visual imagery through mental processes. These works are demanding on the listener/viewer in that they require close concentration ("paying attention" in Cageian phraseology) and must be experienced slowly. They are equally demanding on the performers, not so much technically, as conceptually, since they defy the traditional rules and goals of musical composition.

One or more of the following pieces could be performed as part of the exhibition, either in a gallery or auditorium setting.

1. **Phantom Clarinets**, 1974. In this performance, two clarinetists simultaneously play, as quietly as possible, sustained tones from a microtonal scale distributed between the two identical instruments. The length of piece is indeterminate. The listener will perceive a subsonic sine wave, or vibration, which seems to float around the room, an illusion created by the beat frequencies resulting from the tonal combinations. These frequencies at times seem louder than the actual, subaudible sounds of the clarinets, creating an illusion to both the audience and the players, that the clarinets are not making a sound. Fontana terms the phenomenon a "psycho-acoustic sound process." (Instructions for performance are attached).

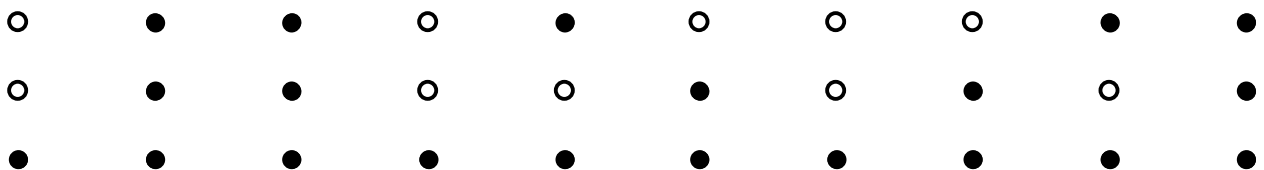
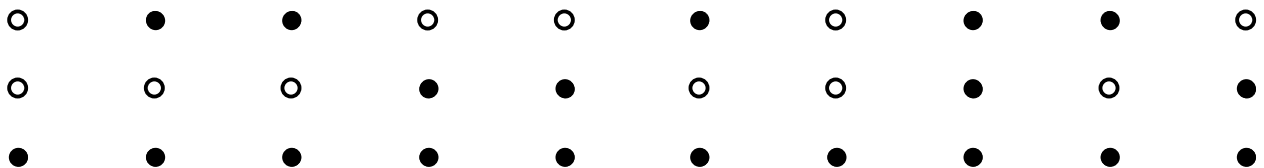
2. **Musical Sculpture for English Handbells**, 1974. In this work, performers, widely distributed in a space, perform on a set of English handbells. Each player has a different random number sequence that gives him durations of silence in between during which he rings his bell once until it becomes fully silent. This simple system produces complex and changing spatial patterns. The ending of the piece is ambiguous as larger bells always finish last. Thus, at the end, one bell may still be counting silences and occasionally ringing, and neither the other players, or the audience members, can determine if the piece is finished except by waiting and listening.

3. **Piano Sculpture**, 1978. In this work, the performers play a repetitive, 84-note, four-octave melody on four spatially distributed pianos. Fontana composed the notes entirely from the overtones of bells, reflecting his interest in change ringing. As the changing spatial patterns travel in the space and echo one another, they create an imaginary landscape. Piano Sculpture, like Musical Sculpture for English Handbells, uses musical language to mimic processes within the natural world.

4. **Pipe Phase**, 1978. Like Phantom Clarinets, this piece deals with physics of sound.. Its components include a player striking a 4.5 meter-long, suspended aluminum rod in a repetitive, rhythmic pulse, and four performers, holding a microphone in each hand, in continuous motion around the sound field of the vibrating rod. Each microphone “hears” or picks the different frequencies and harmonics in the room that are caused by the presence of the rod. The piece is, then, an exploration of space. Fontana created Pipe Phase during his residency at The Royal Melbourne Institute of Technology, Australia

5. **Musical Sculptures for Carillon**, 1988. These, Fontana’s last musical sculptures, lead directly into his later installations. Conceived and realized for the carillon the UC Berkeley campus, these works could be recreated on any campus with a carillon or at any site with proximity to a carillon. The musical patterns Fontana composed for the carillon are similar to those of Piano Sculpture.

Clarinet 2





Bell jar with microphone inside

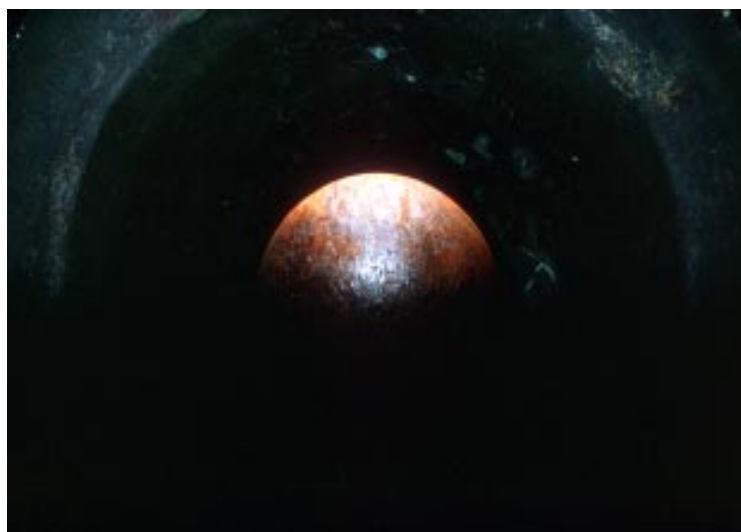
SOUND SCULPTURE WITH RESONATORS, New York, Toronto, Sydney and Melbourne, 1972 to 1978

This was an ongoing series of small installations made in alternative spaces and small galleries. It came out of a fascination with the idea that the world is musical at any given moment, if one has a musical point of view. Large resonant objects, such as bell jars and large wine-making bottles were particularly interesting in their ability to transform even traffic noise into very musical results by being natural acoustic filters and echo chambers. The installations involved placing resonant objects on the roof or some other outdoor part of a building and putting small microphones inside each object that would transmit the musical resonance to an indoor gallery space.

This interest in the resonance of objects has continued, most recent in several projects in Europe, such as Perpetual Motion, Saint Denis, France (see below). In the near future, a permanent work will be created for the new Diözesanmuseum Köln, in which ancient medieval bells from their collection will be permanently mounted on the roof of their new museum to become the ears of the building (with microphones permanently installed inside each bell to transmit to a gallery space inside).

PERPETUAL MOTION, Artifices 2 Exhibition, Department of Cultural Affairs, Saint Denis, 1992

This sound sculpture used the bells of the historic 12th century Basilica of Saint Denis as a subject. The bells have not been rung in more than 100 years, because one of the bell towers which originally housed these bells burnt down in a thunderstorm. The bells were moved to the remaining tower, but are not rung because the tower was not designed to withstand the stress of the bells ringing. However, these long, silent bells continually make a sound that no one has ever heard, the perpetual sound of the resonant frequencies of the bell excited by ambient sound pressure levels. Sensitive microphones were installed inside of the bells and transmitted the sounds to a sculptural installation of loudspeakers at the exhibition site



Inside of bell



KIRRIBILLI WHARF, Australian Broadcasting Corp., Sydney, 1976

Kirribilli Wharf, like many other phenomena in the environment, is a natural sound sculpture in a state of automatic self-performance. An 8 channel sound portrait was made of the complex sound world found within the large floating concrete and wooden wharf in Sydney Harbor. The most interesting sounds were the percussive compression waves spontaneously formed in the many small vertical blow holes made from steel pipes inserted at many points in the wharf. This work was first exhibited as an installation at the Sydney Opera House, later at the National Gallery of Victoria in Melbourne, and, ten years later, at the Whitney Museum in New York.

Ferry arriving at Kirribilli Wharf



Metal blow hole in Kirribilli Wharf

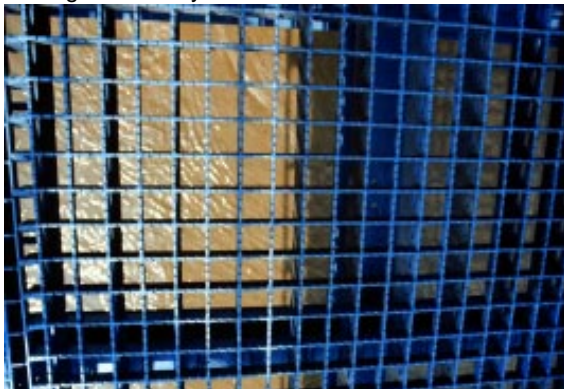


OSCILLATING STEEL GRIDS ALONG THE CINCINNATI-COVINGTON SUSPENSION BRIDGE,
Contemporary Arts Center, Cincinnati, 1980

This sound sculpture involved placing a sequence of 8 microphones below the steel grid roadway of the Cincinnati - Covington Suspension Bridge and transmitting the sound to a sequence of loudspeakers in the Federal Reserve Plaza, adjacent to the Contemporary Arts Center. This type of roadway produces musical, oscillating tones when traffic moves over the road surface. The faster the traffic was moving, the higher in pitch were the resulting tones.



Steel grid roadway



Federal Reserve Plaza





Fog horn on bridge

LANDSCAPE SCULPTURE WITH FOG HORNS, San Francisco, New Music America, 1981

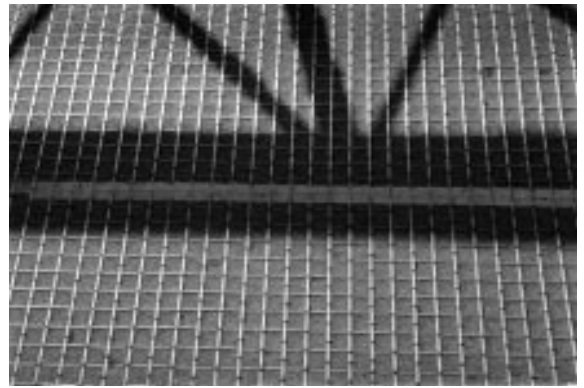
This was a live acoustic map of San Francisco Bay. Microphones were installed at 8 different positions around the bay in order to hear the multiple acoustic delays from the fog horns on the Golden Gate Bridge. Since the speed of sound is 1100 feet per second, this created a spontaneously contrapuntal texture. Sounds were broadcast to the facade of Pier 2, at Fort Mason Center along the San Francisco waterfront.

Pier 2, Fort Mason





Roadway above bridge facing Manhattan



Steel grid roadway



Location of microphones below roadway

OSCILLATING STEEL GRIDS ALONG THE BROOKLYN BRIDGE, World Trade Center and Brooklyn Museum, New York, 1983

This sound sculpture was created for the 100th anniversary of the Brooklyn Bridge. The steel grid roadway of the Bridge “sang” with oscillating tones whenever cars moved over its surface. A sequence of microphones was mounted below the roadway, simultaneously transmitting the singing sound to loudspeakers hidden high in the facade of the World Trade Center. The resulting oscillating drone hovered above the large plaza below.



Loudspeakers on World Trade Center



World Trade Center Plaza



ENTFERNTE ZÜGE (DISTANT TRAINS), Berliner Künstlerprogramm des DAAD, Berlin, 1984

This sound sculpture was installed in the large empty field of what had been one of the busiest train stations in Europe before the war, the Anhalter Bahnhof. Loudspeakers were buried in the field and played sounds of the Köln Hauptbahnhof, the busiest contemporary European train station. Live microphones were placed in 8 different locations in the Köln Hauptbahnhof, so that the acoustic space of this large station was reconstructed in Berlin.





SOUND SCULPTURES THROUGH THE GOLDEN GATE, San Francisco Museum of Modern Art, 1987

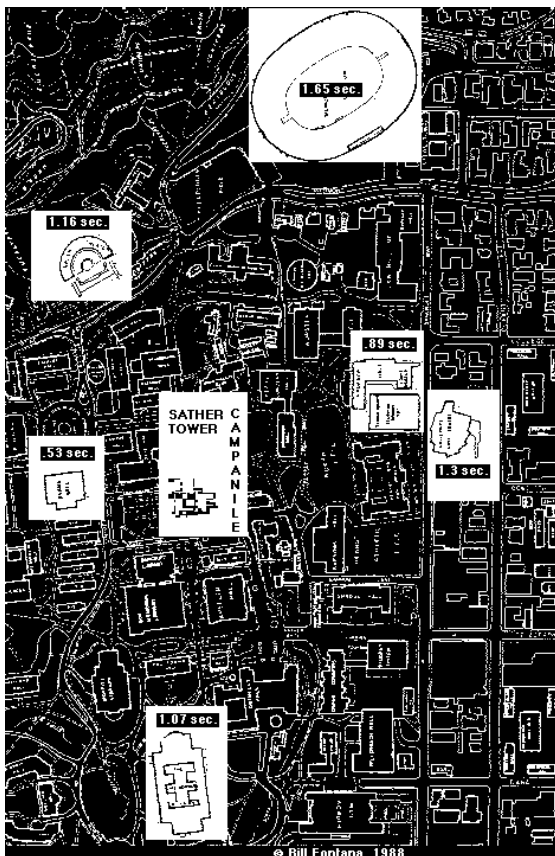
This sound sculpture was a live duet between the Golden Gate Bridge and the Farallon Islands National Wildlife Refuge. Microphones on the bridge and the island transmitted sounds to loudspeakers on the facade of the museum, which could be heard in the adjacent plaza.





LANDSCAPE SCULPTURE WITH CARILLON,
University Art Museum, Berkeley, 1988

This was a live cubist sound map of the bells of Sather Tower on the U.C. Berkeley campus. Microphones were installed at 8 different locations on the campus to explore how the sound of the bells would travel through the landscape. Simultaneous signals from the microphones were sent to the sculpture garden of the museum, which itself has good view of the bell tower. Part of this project involved composing two special compositions of minimal music for the carillon that were intended to explore the acoustics of the landscape. When these compositions were performed, the musician could listen to the live mix of the delays and multiple sound images of the carillon and interact with it as part of his performance.





LANDSCAPE SOUNDINGS, Vienna Festival, in cooperation with the Austrian State Radio Company and the Kunsthistorisches and Naturhistorisches Museums, 1990

This was a large-scale sculptural installation realized in the plaza situated between the Kunsthistorisches and Naturhistorisches museums in the center of Vienna (along the famous Ring Strasse). Live sounds from a distant, remaining remnant of the original Danube wetland that once filled the landscape of Vienna were broadcast to this grand urban plaza.





VERTICAL WATER, Whitney Museum of American Art, New York, 1991

This sound sculpture was realized as part of the 1991 Biennial Exhibition. It involved placing the sound of Niagara Falls, vertically, on the facade of the Whitney. It was installed so that the extreme low frequencies of the Falls came from low-frequency speakers placed in the sunken sculpture garden, while the higher frequencies were played from speakers under the concrete overhangs. One interesting effect of the natural white sound of the Falls was the masking of the traffic sound on Madison Avenue.



EARTH TONES 1, Oliver Ranch, Steven Oliver Collection, Sonoma County California, 1992

This sound sculpture is permanently installed at the Oliver Ranch in Northern California. Six large, low-frequency loudspeakers (Bose Acoustic Wave Canons) are buried around a lake in a natural landscape. Low frequency sounds from the Pacific Ocean are sent to the site, where the Wave Canons couple the low sea sound to the earth, causing the whole landscape to become activated with sound. A computer is used to slowly move the sounds so that they are always changing their position in the landscape.



Loudspeaker assembly being buried

One of the six buried loudspeaker positions





Water-wheel at Nijo castle, microphone location



Chion-in temple bell, microphone location

ACOUSTICAL VIEWS OF KYOTO, Kyoto College of Art, 1990, and Kyoto National Museum of Modern Art, 1993.

In 1990, this sound sculpture was installed on the terraced hilltop campus of the Kyoto College of Art, and, in 1993, in Okazaki park on the facades of the Kyoto National Museum of Modern Art and the Municipal Museum. Both locations had panoramic views of Kyoto. The idea of hearing as far as you could see was realized by placing microphones in the surrounding landscape that broadcast sounds, corresponding to the distant views, back to loudspeakers at the sites. This acoustical viewing of a landscape relates to the traditional Zen garden concept of “borrowed landscape.”

View from Kyoto National Museum of Modern Art in Okazaki Park





Sound Island. Arc de Triomphe, Paris, 1994.

In this installation, created for the city of Paris and Ministry of Culture, the natural white noise of the sea off a rugged cliff on France's Normandy coast was transmitted live, via underwater hydrophones and microphones, to hidden loudspeakers on the facade of the Arc de Triomphe. The sound of waves crashing against rocks masked the loud traffic noise of the immense roadway around the monument and provided a new and unexpected sense of place, time, memory and dimension—made especially poignant as the installation occurred during the commemoration of the 50th anniversary of the D-Day landing at Normandy and the liberation of Paris.



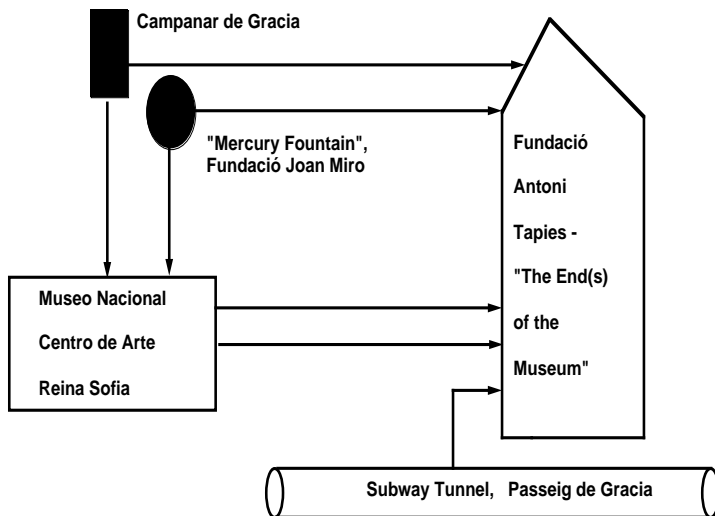


Digital Photo-montage of Time Fountain, Fudació Antoni Tapies,

Time Fountain, Fundació Antoni Tapies, Barcelona, 1995

This work was designed for the central atrium, where In the highest level, two delicate repetitive sounds were placed - the clockwork mechanism of the Campanar de Gracia and the "Mercury Fountain" of Alexander Calder. The clockwork mechanism consists of brass gears moving and stopping, with an alternating time structure of sound and silence behind which the ambient murmur of the town square of Gracia was heard,. This delicate sound was punctuated every 15 minutes by the bells that mark the passage of time. The "Mercury Fountain" of Alexander Calder (located at the Fundació Joan Miro) is sealed in a glass chamber that no one can enter. However, this sculpture does produce interesting sounds of the flowing and falling mercury, which is also a secret sound.

These two sounds floated above the architectural space of the atrium . At the same moment they were also heard in Madrid, in a resonant staircase of the Reina Sophia. The resonant acoustics of this large space expanded the two sound sources in time by making them echo. This echo was brought back to the Fundació Tàpies, where they were played from loudspeakers mounted one level below the apex, in the corners of the balcony (that is directly below the apex). People standing by the railing of the balcony, with their ears clearly between the two levels, heard the spatial differentiation of the time expansion. On ground level, directly in the center of the atrium, a wooden bench containing a low frequency loudspeaker played the sub sonic shadows of passing subway trains coming from a microphone placed in a nearby subway tunnel.



Staircase at Reina Sofia, Madrid

FUTURE PROJECTS

The final component of the exhibition would include descriptive material regarding one or more of the following projects, which Fontana hopes to realize in the future. The material would include text, maps, drawings and audio.

Acoustic Transparencies, A Live Sound Portrait of Jerusalem

Fontana's investigation into the meaning of sounds continues with this acoustic portrait of the ancient city of Jerusalem. Fontana will relocate sounds from 16 to 24 sites in and around the one-kilometer-square, densely populated site of the Old City, to several European museums and public spaces simultaneously via a satellite network.

Fontana has applied the live acoustic mapping techniques used in projects from Kyoto, Cologne, Paris, New York and San Francisco. Within the walls of the Old City of Jerusalem, however, exists one of the world's most intense multicultural and multireligions urban spaces which will produce an extraordinary acoustic experience. Furthermore, as the city is a pedestrian zone, traffic noise won't interfere with the cacophony of languages—Hebrew, Arabic, Russian, English and more—heard at such religious sites as the Dome of the Rock, the Al Aqsa Mosque and St. James Cathedral. As in other works, the sound map will be cubist, i.e., one will hear the sounds travelling through space, going from one site to the next, echoing, repeating and mixing with other sounds.



This project will be realized simultaneously in Berlin, Amsterdam and Warsaw in September of 1997.

Falling Voices, Les Halles, Paris



Les Halles Centrales, ca. 1920

This would be an acoustic memory space like Distant Trains, Berlin, and Landscape Soundings, Vienna. Fontana would return the lively sounds of Paris' former heart, its open-air, central market, to its former location, now a multilevel shopping mall. Fontana would accomplish this nostalgic transformation by transmitting live the sounds of markets throughout France to the park atop the underground Forum Les Halles shopping mall, as well as to two historical buildings that existed at the time of Les Halles Centrales—the Bourse de Commerce (interior and facade) and the Saint Eustache church, and to the facades of several buildings on the surrounding streets.

The presence of the sound sculpture would be spatially dynamic and subtle. Its discontinuous time structure would spatially distribute many sound channels of live market sounds to over 100 loudspeaker positions. The result would be a spatially shifting acoustic phantom that would always be in the process of appearing and disappearing.

The city of Paris commissioned Fontana to create a formal design for the project, commissioned by the city of Paris, was shown at Espace Electra, Paris, in 1993.

Waterfronts, a proposal for the Public Art Fund, Inc., New York

Sounds from approximately forty waterfront sites surrounding New York would be imported to the public plazas of Lincoln Center. The sounds—bell, gong and whistle buoys; water lapping against the piers, ships' engines; seabirds; the musical creaking and groaning of scuttled ships; and the Fulton Fish Market at 5:00 a.m.—would be transmitted live via microphones, hydrophones and wireless transmitters.

Listeners in the plazas at Lincoln Center would be enveloped by the shifting sonic rhythms of the city's waterfront. Some of the sounds would be recognizable, others not; however, the sounds would be orchestrated into a sound environment that revealed the inherent musicality of the city's waterfront.

Some of the issues raised by the piece include: How is it that a city surrounded by water denies the presence of water? Why did New York City turn its back on a natural resource that is universally embraced elsewhere in the world? Why doesn't acoustical design have a more important role in urban planning?



BILL FONTANA

- Born in Cleveland, Ohio on April 25, 1947
 - New School College of New School for Social Research, New York, 1968 to 1970), B.A. 1970
 - Cleveland Institute of Music, 1967,
 - John Carroll University, Cleveland, 1965 to 1968
- Lives in Berkeley, California
-

SOUND SCULPTURES

Temporary Installations

- TIME FOUNTAIN, Fundació Antoni Tapies, Barcelona, & Reina Sofia, Madrid, 1995
- FLOATING CASTLE, Château de Blérancourt, musée national de la coopération franco - américain, 1994
- SIMULTANEOUS RESONANCES, Kunsthalle Tirol, Hall, Austria, 1994
- SOUND ISLAND, public art project Arc de Triomphe, Paris, summer 1994 - sponsored by the French Ministry of Culture - Délégation Arts Plastique, Cultural Affairs Dept of the City of Paris, AT&T and EDF Foundation
- SATELLITE SOUNDBRIDGE KÖLN - KYOTO, Westdeutscher Rundfunk Köln Goethe Institut Kyoto, Japan Foundation, Museum Ludwig, , simultaneously in Kyoto and Köln, June 1993
- ACOUSTIC ARC: ST. PETERSBURG - HAMBURG - MARSEILLE , Mediale, Hamburg, 1993
- PERPETUAL MOTION, Artifices II, Saint Denis from November 1992 to January 1993
- VERTICAL WATER, Whitney Museum of American Art, New York, 1991
- RIVER SOUNDINGS, Deutsches Postmuseum, Frankfurt, 1990
- ACOUSTICAL VIEWS OF KYOTO, Kyoto International Contemporary Music Forum, Kyoto, 1990
 - LANDSCAPE SOUNDINGS, Vienna Festival in cooperation with the Austrian Radio, Vienna, 1990
- ACOUSTICAL VIEWS OF THE SAN FRANCISCO FERRY TOWER, San Francisco Museum of Modern Art, 1990
- PARALLEL SOUNDINGS, Kunst in öffentlichen Raum, Kulturbehörde Stadt Hamburg, 1989
- SONIC PROJECTIONS FROM SCHLOSSBERG GRAZ, Steirischer Herbst Festival, Graz, Austria, 1988
- ACOUSTICAL VIEWS, Sydney Biennale/Australian Broadcasting Corp./Art Gallery of NSW, Sydney, 1988
- LANDSCAPE SCULPTURE WITH CARILLON, University Art Museum, Berkeley, 1988
- SOUND SCULPTURES THROUGH THE GOLDEN GATE, San Francisco Museum of Modern Art, 1987
- SATELLITE SOUND BRIDGE KÖLN/SAN FRANCISCO, West German Radio/ American Public Radio/Museum Ludwig/San Francisco Museum of Modern Art, 1987
- ECHO TUNINGS AT MT. ASO, Mt. Aso National Park, Kumamoto, Japan, 1987
- ACOUSTICAL JOURNEY, Wacoal Art Center: Spiral Garden, Tokyo, 1986
- KIRRIBILLI WHARF, Whitney Museum of American Art, New York, 1986
- PHANTOM BANDSHELL, Otis Parsons/New Music America '85, Los Angeles, 1985
- ENTFERNE ZÜGE (DISTANT TRAINS), Int'l. Bauausstellung Berlin/Berliner Künstlerprogramm des DAAD, West Berlin, 1984
- OSCILLATING STEEL GRIDS ALONG THE BROOKLYN BRIDGE, World Trade Center and Brooklyn Museum, New York, 1983
- SOUND SCULPTURE WITH A SEQUENCE OF LEVEL CROSSINGS, 12th International Sculpture Conference, Oakland, 1982
- LANDSCAPE SCULPTURE WITH FOG HORNS, New Music America, San Francisco, 1981
- OSCILLATING STEEL GRIDS ALONG THE CINCINNATI-COVINGTON SUSPENSION BRIDGE, Contemporary Arts Center, Cincinnati, 1980
- SOUND RECYCLING SCULPTURE, Akademie der Künste, West Berlin, 1980 and Musée d'Art Moderne de la Ville de Paris, 1980
- FLIGHT PATHS OUT TO SEA, Newport Harbor Art Museum, 1980
- SPACE BETWEEN SOUNDS, San Francisco Museum of Modern Art, 1978
- PRINCE ALFRED BRIDGE, National Gallery of Victoria, Melbourne, 1978
- KIRRIBILLI WHARF, Australian Broadcasting Corp and Sydney Opera House., Sydney, 1976
- SOUND SCULPTURE WITH RESONATORS, Experimental Intermedia Foundation, New York, 1975 and ICA, Sydney, 1975

Permanent Installations

- WAVE TRAINS, permanent installation for a new subway station in Cologne, Germany, 1996
- SPIRALING SOUND AXIS,, permanent installation at North Carolina state Revenue Building, Raleigh, funded by the North Carolina Artwork for State Buildings program, 1993
- EARTH TONES , permanent installation on the Oliver Ranch, Steven Oliver Collection, Sonoma County California, 1992

Fellowships

- Artists Fellowship, California Arts Council, 1992
- Visual Artists Fellowship in Sculpture, NEA, 1990-91
- Berliner Künstlerprogramm des DAAD, 1988
- Guggenheim Fellowship for Sound Sculpture, 1986-87
- Creative Artist Fellowship for Japan, NEA and Japan - U.S. Friendship Commission, 1985-86
- Berliner Künstlerprogramm des DAAD, 1983-84

Selected Bibliography

essays by artist

- TIME FOUNTAIN, catalogue for END(S) OF THE MUSEUM, Fundação Antoni Tàpies, Barcelona, 1995
- THE ENVIRONMENT AS A MUSICAL RESOURCE, essay in exhibition catalogue for LANDSCAPE SOUNDINGS, Vienna Festival, Vienna, 1990
- TRANSPARENTE KLÄNGE, Kunstforum 103, Köln, 1989
- SATELLITE SOUNDBRIDGE COLOGNE-SAN FRANCISCO, essay in exhibition catalogue, Museum Ludwig, Cologne, 1987
- THE RELOCATION OF AMBIENT SOUND, Leonardo Volume 20 # 2, 1987, Pergamon Press, Oxford, 1987
- THOUGHTS ON SOUND, exhibition catalogue for SOUND, Los Angeles Institute of Contemporary Art, 1979

individual catalogues about artist

- LANDSCAPE SOUNDINGS, Vienna Festival, Vienna, 1990 - essays by John Hanhardt, Heidi Grundmann, and Werner Fenz
- SATELLITE SOUNDBRIDGE COLOGNE-SAN FRANCISCO, essay in exhibition catalogue, Museum Ludwig, Cologne, 1987 - essays by Klaus Schöning, Gerhard Kolberg

Group Exhibitions

- MONUMENT ET MODERNITÉ, Espace Electra, Paris, 1996
- END(S) OF THE MUSEUM, Fundació Antoni Tàpies, Barcelona, Spain, 1995
- ZEITGLEICH, Kunsthalle Tirol, 1994
- Paris ville lumière, projets d' artistes pour l'espace public Parisien, Espace Electra, Paris 1993-1994
- MEDIALE, Hamburg, 1993
- ARTIFICES II, Saint Denis from November 1992 to January 1993
- 1991 BIENIAL EXHIBITION, Whitney Museum of American Art, New York, 1991
- DAS VERSCHWINDEN DER FERNE, Deutsches Postmuseum, Frankfurt, 1990
- PULSE 2, University Art Museum, U.C. Santa Barbara, 1990
- BAY AREA MEDIA, San Francisco Museum of Modern Art, 1990
- ARS ELECTRONICA, Linz, 1989
- RESOURCE ART, Akademie der Künste, Berlin, 1989
- COUNTERVISIONS; PIONEERS IN BAY AREA ART, Art Department Gallery, San Francisco State University, 1988
- THE BIENNALE OF SYDNEY, Art Gallery of NSW, 1988
- ALLES UND NOCH VIEL MEHR/DAS POETISCH ABC, Kunst Museum Bern, 1985
- SECTION SON, 13TH BIENNALE de PARIS, 1985
- IDEE/PROZESS/ERGEBNIS, International Bauausstellung Berlin, 1984
- GREAT EAST RIVER BRIDGE, Brooklyn Museum, 1983
- FUR AUGEN UND OHREN, Berlin, Akademie der Kunst 1980
- SOUND, Los Angeles Institute of Contemporary Art, 1979

Newspaper and Periodical Articles (U.S.)

- New York Times by John Rockwell 6/18/94
- Int. Herald Tribune by Mary Blume 7/9/94
- Washington Post by Sharon Waxman 6/19/94
- Los Angeles Times by Suzanne Muchnic 4/29/87
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