

Bill Fontana Speeds of Time

A real-time sculptural audio map of the sound of Big Ben

5th September – 3rd October 2008

Tate Britain
Millbank Entrance
London SW1P 4RG

This new version of *Speeds of Time* will be a real-time sculptural sound map of the bells of Big Ben. A network of microphones starting from the bell tower itself and spreading out to surrounding rooftops and terraces, around Parliament Square and beyond, will simultaneously trace the contours of the temporal deformation of the bells. The speed of sound is 1116.4 feet per second. When you take into consideration the distances of all the microphone locations and divide those distances by the speed of sound the result is a sequence of natural acoustic delays creating a multi-dimensional sound image of Big Ben that is actually a live sound map of this part of London.

This will be a totally new version realised for the Millbank entrance at Tate Britain, and will also be a radio sound sculpture for the BBC that is streamed live on their website for the entire month of September, and also occasionally broadcast on BBC Radio 4.

Everyone knows the familiar sound of the Westminster Chimes, a symbol of time itself, and one of the most famous sounds in the world. This is an iconic concept of

the sound, based upon the idea of a single acoustic perspective. The sonic reality of the bells are its sound field permeating the acoustic fabric of Central London. When this sculptural spreading of its sounding is measured and multiplied by the concept of simultaneity, the bells of Big Ben become transformed into a multiple sound image, cascading and echoing with itself. Besides mapping the sound field of these bells, it will map other sounds in a multiple-perspective manner within the sonic quadrant defined by the microphone locations. Urban sounds that are moving through this area of London such as aircraft and sirens will be processed by this sound sculpture in such a way that their changing Doppler Shifts make them unexpectedly musical. There will also be an ongoing duet between the much older Horse Guards Clock at Whitehall and Big Ben that are slightly offset from each other in time, with the former hearing the low pitched time delayed tones of Big Ben and background sounds footsteps on gravel and the changing of the guard.

Bill Fontana

x Horse Guards Clock and Parade [1.75 sec. delay]

x Treasury Building, Mic. II [0.74 sec. delay]

x Treasury Building, Mic. I [0.53 sec. delay]

+ Clock Tower, Palace of Westminster

x Westminster Abbey, Mic. I [1-1.05 sec. delay]

x Westminster Abbey, Mic. II [0.64 sec. delay]

x Arts Council of England [1.4 sec. delay]

BBC Millbank [relay and mixing point for radio sound]

Lambeth Palace [2.1 sec. delay] x

Sound sculpture location

x Tate Britain, Millbank Entrance

Bill Fontana Speeds of Time

Bill Fontana's work with live sound transmission and audio recording of the natural environment culminates in *Speeds of Time*, a new work of aural and conceptual complexity based on the clockwork mechanism and serial tones of London's Big Ben. This installation is the most poignant among a group of site specific sound sculptures that combine the artist's attraction to the sound generating capacity of objects and mechanical devices and his long held interest in the substance of time as measured by the speed of sound.

The movement of sound from its source to another location in Fontana's work began with his observation nearly forty years ago that oversized, resonant objects such as bell jars and brewery bottles could relay a sound frequency through the echo and acoustical properties in their shape and material. In a series of *Sound Sculptures with Resonators* Fontana found a resonant shape could transform noise from an ambient sound into a musical phrase. He considered the sound-reflecting quality of their form 'an ear to the world.'

This experimental series of sound installations drew the viewer's attention away from the visual contemplation of the material art object to an appreciation of the time-based, immaterial aspects of audio recording and composition. A live microphone placed in the cavity of Fontana's resonant object transferred its sound vibration from the roof of a building to an arrangement of loudspeakers positioned by the artist in a remote exhibition space below. The relocation of an ambient sound source to the context of the art gallery conducted through an electronic recording and amplification system significantly altered the meaning of its sound. The *Sound Sculptures with Resonators* series set the course for further investigations into the relocation of sound and the natural environment as a source of aural information.

Speeds of Time is an eight-channel, twelve-hour cycle of sound events composed from recordings of hammer strikes against Big Ben and the mechanical calibrations of its clockwork gears. Fontana was drawn to the legendary accuracy of the manually wound time-keeping mechanism, in operation since 1859, and found its operation exquisite. He positioned two acoustical microphones in the bell chamber and placed a sound sensor against the mechanism housed in the tower. The work is thereby constructed from the audio recording of the finely calibrated functions in the operation of the clockwork, and a wide range of frequencies and tonalities of the chime. The accelerometer, an instrument typically used for monitoring vibration and analysing the structural continuity of welded steel buildings and bridges, is applied in conjunction with omnidirectional microphones that render the hourly and quarter-hour peal of the bells and capture the acoustical reverberations in the city beyond.

The simultaneous sound events characteristic of Fontana's work are structured by his prefigured installation of microphones and sensors in many locations at the same time. His technique takes streams of discarnate information and reconstructs them in a new form of embodiment. *Speeds of Time* is distinct among Fontana's work in its representation of simultaneity: Sounds generated by the three live microphone connections in the tower are augmented in his final composition with acoustical reflections, echo, and bell strikes collected during the work's initial installation in the colonnade of the Palace of Westminster. His fabricated structure adds layers of sound delay and repetition to the iconic chime of Big Ben achieving a greater density of environmental sound against the rotations of the audible clockwork mechanism. The rhythmic pattern and repetitive cycle of the clockwork indicates the passage of time while the bell and its echo stress the physicality of lived experience in the substance of time – a substance that accumulates as it simultaneously disappears.

Fontana's accomplished techniques in field recording and audio relocation were developed in a series of sound sculptures dating from the 1970s and the 1980s. *Kirribilli Wharf* and *Sound Sculpture with a Series of Level Crossings* stand out as precursors to the spatial duality and contrapuntal sonic structure evident in *Speeds of Time*. Each emphasises the artist's innovations in sound mapping strategies, his fascination with distance drawn near, and the simultaneity of sonic events as a means to represent the contemporary landscape.

Waves and the undulation of seawater against a wooden and concrete pier in Sydney, Australia were the sound source material for *Kirribilli Wharf*, a natural sound sculpture recorded in 1976. Generated by the rhythmic sequence of water hitting flat, open ends of steel pipes driven through the wharf, the work evokes the wild currents and tides of Sydney Harbor. The landscape is evoked in its musical form not by visual interpretations but through the sound sequences defining a time and place.

First premiered in 1983 at a sculpture conference in California, *Sound Sculpture with a Series of Level Crossings* advanced Fontana's research into the power of man-made objects to generate sounds within the auditory field of natural environments. The first of Fontana's sculptures to be acquired by an American museum (The San Francisco Museum of Modern Art in 1997), the project demonstrates the artist's ambition in creating sound composition through the collection and restructuring of sonic events. Microphones placed in eight different areas of the train yards on the eastern shoreline of the San Francisco Bay were connected to

Fontana's studio via live telephone lines installed on existing utility poles in the railroad yard enabling the recording of the approach, crossover, and retreat of locomotive engines and freight trains across a vast area.

Fontana's prefigured framework of sound data collection points accentuates the listeners' perception of distance and dimension and the elasticity of time. The eight-channel field recording of train locomotion, whistle sequence, and the automated warning system of synchronised street-level crossings combine to create a spatiality that is entirely aural in aspect. Composed stereophonically, the sound mix relocated induces a dynamic auditory representation of time and space in the gallery as conveyed through the noise of the train yard.

Modern composer and philosopher John Cage identified noise as extra-musical. He saw it, along with silence, as the basis for emerging theories and practices of sound art. Fontana's reclassification of urban noise such as train whistles and machine vibration into a set of harmonic tonalities and frequencies addresses the perception of space and speed of time in thoughtfully considered plans which reflect the complexity of lived moments through the psycho-acoustic properties of the human ear.

The concept of noise, generally understood as a loud, unpleasant assault on hearing and the senses, was associated with the operation of combustion engines, industrial machines, and military weapons in the nineteenth century. In his 1913 Futurist manifesto, *The Art of Noise (L'Arte dei rumori)* composer Luigi Russolo, conceived of noise as a musical form made up of vernacular sounds in an infinite variety of clamorous audible tones for which repetition was essential. The Noise manifesto outlined a set of elements for a Futurist musical score: the mutter of motors, throbbing valves, thudding pistons, slamming doors: Russolo's music of explosive range, process, and change evidenced his attention to place and time and acknowledged the experience of the listener in the work's meaning.

Today our vernacular aural environment is produced by machines that mediate most personal forms of communication, and shape our social and business transactions. If we think of the pervasive sound environment of polyphonic ringtones in mobile phones, the intonation of buzzers and bells, the insistent bleat of bank machines, the cacophonous vibration of power tools and car engines, we can appreciate how the aural environment today, while different from the explosive sounds of Russolo's era, influences our sense of time, attention, and temperament through disjunctive sound and signals.

While the current notion of noise implies a disturbance that reduces the clarity of a recorded signal or electronic information, the distraction perpetuated by random iterations of noisy sound fragments in social space punctuate what Fontana would call the 'acoustically viewed environment'.

Fontana realised a series of monumentally-scaled sound relocation projects over a period of twenty years collectively titled *Acoustical Views*. This series of sound sculptures commissioned for Venice, Kyoto, Paris and other locations over the past few years, stresses the range of sound vibration in natural environments as related to the intensity of light, and observes the perception and conundrum of time through the mapping of sound. As a series of installations *Acoustical Views* also charts the evolution of technical instruments in digital and analogue sound recording in their development and articulation. One of the *Acoustical Views*, entitled *Sound Sculpture through the Golden Gate*, conducted the simultaneous mix of natural sounds with engineered sounds and urban noise through the placement of recording instruments twenty-eight miles off the coast of San Francisco on the Farallon Islands, as well as several locations along the span of the Golden Gate Bridge. Fontana's sound mapping of the ocean environment connected a hydrophone – a marine microphone used to convert underwater sound waves to electrical energy – and a set of outdoor microphones at each site to live telephone lines installed at various points at the two locations. The audible surge of tides against land, calls of sea mammals and birds, mixed with the mechanical creaks and pops of expansion joints, cable and wind, fog horns, and the roar of bridge traffic linking the two environments were then aurally relocated seven miles inland via telephone lines to loud speakers to a public square in the San Francisco Civic Center.

Fontana explains that his instrumentation of architectural forms and field recordings musically deconstructs our normal sense of telling time. The enlivening of sound-generating qualities of solid forms and materials through technical means is particularly significant at a time when people prefer not to listen due to the audible interference and distraction technology produces. John Cage stated that all technology must move in its evolution toward the way things were before man changed them. *Speeds of Time* concentrates our attention on the recording of time by mechanical means in the past coupled with the aural expression of materiality and transparency of the moment.

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1. Palace of Westminster, seen from Albert Embankment
2. View from bell tower of Westminster Abbey
3. View from the roof of Henry VII Chapel, Westminster Abbey
4. View from the roof of the Treasury Building
5. Clock Tower, Horse Guards Parade
6. View from Tower of Westminster

Bill Fontana

Bill Fontana (born USA 1947) is an American composer and artist who developed an international reputation for his pioneering experiments in sound. Since the early 1970s Fontana has used sound as a sculptural medium to interact with and transform our perceptions of visual and architectural spaces. He has realised sound sculptures and radio projects for museums and broadcast organizations around the world. His work has been exhibited at the Whitney Museum of American Art, the San Francisco Museum of Modern Art, the Museum Ludwig, Cologne, the Post Museum in Frankfurt, the Art History and Natural History Museums in Vienna, Tate Modern, London, the 48th Venice Biennale, the National Gallery of Victoria in Melbourne, the Art Gallery of NSW in Sydney and the new Kolumba Museum in Cologne. He has created major radio sound art projects for the European Broadcast Union, the Australian Broadcasting Corporation, National Public Radio, West German Radio (WDR), Swedish Radio, Radio France and the Austrian State Radio. Fontana has worked extensively in the UK, including Tate Modern's Turbine Hall (*Harmonic Bridge*, 2006), the National Maritime Museum (*Wave Phases at Chesil Beach*, 1999), and *Primal Soundings*, a permanent installation which was unveiled at Leeds City Art Gallery in 2004.

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