MAX NEUHAUS: SOUND VECTORS

by

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THESIS

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SUMMARY

This project grew out of a graduate art history seminar "Sound and Vision" taught by Prof. Hannah Higgins and its optional extension that culminated in the well-received exhibition *Between Sound and Vision* at Gallery 400, UIC (February-March 2001) where I participated as one of the co-curators. In the process, research led me to the intriguing art of Max Neuhaus who pioneered the exploration of sound and the experience of listening in the field of plastic art and in public spaces.

The steps I took attempt to place Neuhaus's work within several contexts in which his sound works developed. The historical context involves a discussion of his shift from a virtuoso solo percussionist to an artist, which coincided with broader transformations occurring in the arts in the postwar period, especially in New York during the 1960's where he lived at the time. Another objective was to incorporate theoretical discourse to approach the little explored area of sound in the arts. The concept of intermedia is the central thread here as it relates to art that operates between accepted art categories and that moves beyond the vision-dominated paradigm. The idea of intermedia helps to expose the aesthetic, operative, tactic, and social implications of works that function between prescribed genres.

Because of Neuhaus's musical background, a historical overview of how everyday sounds and noise had become incorporated in the tradition of Western art music was requisite. This musical overview extends to considerations about sound and modes of listening through which I try to elucidate issues that relate specifically to the artist's own concerns with aurality. The notions of space and place and experiences of listening are further considered from a phenomenological standpoint that corresponds to experience with Neuhaus's work. The spatial experience of sound is juxtaposed briefly with issues investigated in modern sculpture and its lineage (e.g., installation art) and the subsequently enlarged idea of sculptural space as "social" – as opposed to a merely three-dimensionally defined entity. Finally, the idea of haptic space brings the discussion of sound in the sphere of plastic art full circle because it suggests modes of spatial perception and experience that are non-optical, such as hearing. The underlying theme of my thesis is therefore the alternative, viable, and complementary potential that listening and aurality bring to the vision-centered hegemony, and that Max Neuhaus engenders in his practice.

Figure 1: GIBB Campus, Lorrainestrasse 5, Bern

INTRODUCTION

Bern: around midday in January. Sunshine is easing through the last wisps of fog into the cool, damp air as I seek a footbridge with suspended sound. Thinking about that, I am very aware of the way sounds bounce and echo in the streets of an unfamiliar city – speech… footsteps… traffic…, each has its own resonance. These aural textures indelibly shape my first impressions, adding to the strangeness and the beauty, the subtle disorientation, and the specificity of the place.

I walk through the old part of the city, pass an art museum, and cross a large bridge that spans the river Aare, before I recognize the convex, sloped footbridge that I have been seeking. The footbridge spans a small cul-de-sac between the old and new buildings of a technical high school and is flanked by a park and a residential area. I think of a sailboat when I see the pair of tall white beams and suspension cables supporting the bridge, reminiscent of masts and sails. Although I am approaching with more anticipation than a regular passerby, I do not quite know what to expect. But the instant I step on the bridge I move into an envelope of sound. Another step brings another sound, this one lower than the first. Both feel tangibly spatial, a distributive, embracing sonic activity all around me, expanding in an arc that feels at least as high as the tips of white beams. The aural-spatial stir is not caused by high volume. It springs rather from an unusual mixture of subtle aural shifts and unequivocal presences, combined with a sensation of the unexpected and the inexplicable that does not wear off upon repeated crossings. In fact, every time I walked this footbridge I found myself engaged differently by the depth and the multiplicity of the sounds.

Each pass across the footbridge is a series of quite magical undulations, grounded by a shimmering sound current underfoot. This pleasant and strangely familiar texture, akin to a rapidly shimmering metallic sound continuum, is nevertheless continuously exceeded by the two-part soundscape heard upon each step, where each body of timbre forms its own, almost imperceptible, fluctuating sound line. What is this? From where? Questions like these collide unanswered and the crossing remains aurally absorbing in a variety of ways. Everyday sounds intrude, sometimes overpowering the sonorities of the bridge. They come from the nearby streets; from a similarly distant group of talking students; intermittently from a bulldozer engaged in new construction just past the school's new buildings; from passing trains beyond the deep, steep canyon where the Aare river meanders quietly; from frequently passing airplanes and from the still more frequent bicyclists whirring by. But the moment I step off the bridge, the intricacies of clearly audible sonorities vanish instantaneously and the resulting vacuum is quickly filled in with an increased sensitivity to what is left over: the daily sounds of the place.

The *Suspended Sound Line* (1999; Fig. 1, Fig. 6), as the sound portion of the footbridge is titled, is a recent work by Max Neuhaus, an artist who has spent the last four decades exploring sound and the listening potential outside the parameters of music or language. The invisible electronic sound sources were installed during the bridge's construction, and Neuhaus used them to create sonorities with his ears tuned to existing local sounds, a process in which his intuitive skills intimately merge with accumulated practice.

Neuhaus's understanding and approach to sound was in fact shaped through years of musical training and performance. He decided to become a top-notch percussionist at fourteen, and in 1957 he moved from his native Texas to New York City, where he attended the Manhattan School of Music.[1] A year later, Neuhaus became interested in "contemporary percussion music and performer determined compositions"[2] that had emerged within the Western art music tradition.[3] It was here that he met John Cage for example, who, like other composers then writing pieces for percussion, would come to the

school to have his work performed. Neuhaus's determination to pursue a career as a solo percussionist was formally initiated with a 1962 master's recital for which he performed *Zyklus* by Karlheinz Stockhausen, a German composer already well known in the avant-garde circles. A couple of years later, Neuhaus performed the same difficult piece at the Carnegie Recital Hall. The event established his growing renown not least within the New York City art scene, which was then a closely-knit community. To some degree, this inspired as well as enabled him to later pursue several ideas that involved using sound in unconventional ways and that swept outside the domain of music and veered towards the sphere of art.

On other occasions at the Carnegie Recital Hall and elsewhere, Neuhaus performed variations of Cage's *Fontana Mix* which, in Cagean fashion, is not a predetermined work but "a method for making a score that you can apply to anything."[4] Neuhaus constructed his own score for controlling the volume of four channels of amplification and set them up with contact microphones placed on or near his percussion instruments. The result was a very gradual, yet dramatic, acoustic feedback that was shocking and, according to Neuhaus, beautiful, with "huge roaring sounds where the whole room was in motion."[5] These feedback pieces were a legacy of discussions going back to the 1950's when composers like Earle Brown, Morton Feldman, and Cage devised methods to diminish the division between composer and performer, which in turn opened the work to a multiplicity of interpretations and realizations. But *Fontana Max-Feed*, as Neuhaus entitled his realizations, was also a performance where he felt that his skills as a virtuoso percussionist were no longer vital. He instead decided to produce some 500 battery-charged *Max-Feed* boxes (1966; Fig. 2) equipped with soldered electronic components and small speakers that functioned as scores and instruments.[6] Anyone could use these boxes to perform a feedback piece simply by using a radio. The lettering on the lid instructed the user to remove the inner from the outer box, place them in front of a radio or a tuner, then drape the blue and white wires over the radio turned on, and with the inner box also on, "find the place on the radio dial where it picks up the max feed sounds." The feedback sounds could be further readjusted with tuning screws on the inner box. This project became one of several realized that year through which Neuhaus began blending his musicianship with audience participation and a broader art context (Fig. 3, Fig. 4).[7]

Neuhaus soon found that his long hours of daily practice obstructed a more serious commitment to similar explorations involving the experience of listening and sound. Moreover, these unconventional ideas did not find sufficient room within the formally structured music world. When Columbia Records asked him to produce a record in 1968, Neuhaus took the opportunity to make an LP that summed up

his career as a solo percussionist and then put his 2000 pounds of percussion equipment in storage. The need to come up with a greater variety of percussion sounds had already pushed him in the direction of electronics and consequently he resolved to head for Bell Labs in New Jersey (1968-69) where a tradition of composers/musicians in residence had already been established.

Neuhaus explained this shift as a direct consequence of the successes he had while still in his twenties, which gave him a broad perspective and inspired visions that he was not afraid to try out. Instead of a preconceived decision or a pivotal moment, he described this transitioning period as an explosion of ideas that would take him in many different directions over time.[8] These directions shared a common thread of moving beyond the vastly expanded range of musical materiality or musical listening to provide an awakened sense of aural perception in which a listener's involvement and experience remain key to its meaning. This perception is the result of a particular manipulation of sound material, resolutely grounded in the present while intentionally divorced from musical connotations. In the early 1970's, Neuhaus coined the term *sound installation* in order to make this important distinction clear.

Intermedia

Overlapping media categories are necessary for approaching this kind of sonic art. The term intermedia most clearly functions to explore this overlapping, since it pertains to the process of merging disparate media and creates a space for discussing art that functions in fluid areas unbounded by the specificity of each genre. A surge of artistic energy emerged in the postwar period that questioned and challenged the pristine domains of modernist media categories and genres, fine art institutions, and above all, the onedirectional exchange with the spectator typical of Western art and performance. By the late 1960's, the art world generally, and New York specifically, was crossing boundaries between disciplines. The scene was open to cross-pollination that inspired abundant overlaps between traditionally separated artistic fields such as plastic arts, music, poetry, and theater. In *Metamorphosis of the Arts*, an avid chronicler of the period, Richard Kostelanetz, differentiates a number of art currents in this ongoing hybridization: mixed-means events, interstitial art, environments, and machine art are some exemplary directions discussed in chapters separate from those on sculpture, painting, and music. The most forward-looking examples chosen for the latter traditional categories are likewise imbued with a spirit that exemplifies the stretching, pulling, overlapping, and radical transformation of means and materials. However, despite Kostelantz' apt descriptions, the new genre names were short lived, even if

the practices have been ongoing. This terminological indeterminacy attests to the paradox of defining procedures intended to overturn the fixity of artistic terminology itself.

The impetus that propelled many artists toward experimentation and expansiveness grew largely out of a desire to bridge the chasm between art and audience in Western art and performance. The compartmentalization of traditional art seemed to correspond to, mimic, and nurture a social order founded on hierarchical differentiation with established roles and positions. By contrast, the more egalitarian mindset of these intermedia artists aimed to erase or confuse such boundaries. A need to find a ground where the aesthetic experience and meaning of art became a self-consciously shared endeavor, instead of a quiet contemplation or mere object acquisition, motivated the postwar avant-garde to come up with new participatory processes and methods that engaged the audience concretely. One succinct explication on this drive to diverge from recognized art categories came from Fluxus cofounder Dick Higgins in the form of the short 1965 essay "Intermedia." In a 1981 postscript, Higgins explained that his intention was "to offer a means of ingress into works which already existed," and that he selected the word *intermedia* from the 1812 writings of Samuel Taylor Coleridge who similarly used the term to describe already existing activities.[9] Intermedia therefore eludes stylistic and periodic categorization. Rather, the concept is advantageous precisely as a versatile point of entry that enables orientation by way of asking, "what that I know does this new work lie between?"[10] As such, it dispenses with confusions that arise from holding on to clear-cut categories when these fall short, and dispels the unfamiliar by offering a way to understand, for instance, how something as invisible as sound can be considered in the field of plastic arts.

"The concept itself is better understood by what it is not, rather than what it is," continues Higgins, pointing out an inverse relationship to mixed media, which normally refers to a juxtaposition of different materials or a layering of clearly distinguishable artistic media to achieve a total work (like opera).[11] Put differently, the processes involved in mixed media art can be thought of as additive, whereas intermedia is essentially subtractive.[12] This implies eliminating the extraneous to the point where the chosen media meet in inextricable unity, and where taking any component away prevents a comprehension of the work as a whole. This creates a new point of view – a condition that was for Higgins and others a way of surpassing the "seventeenth-century ideals of social order" out of which pure media had grown.[13] In the 18th century, for example, several influential expositions appeared about the proper role of art in society (e.g., Edmund Burke in Great Britain) and about the befitting distinctions that delineated the spheres of individual arts, most famously described by Gotthold Ephraim Lessing in *Laocoön: An Essay on the Limits*

of Painting and Poetry (1766). Lessing's critical book ranks him "as the first modern aesthetician" because he defined the distinctions between art and poetry with unprecedented depth and clarity (although with a clear bias toward poetry), essentially inventing the modern concept of the artistic medium which formed the basis for the modernist premise of the autonomy of individual arts.[14] These ideas are diametrically opposed in the *Intermedia Chart* (Fig. 5), which Higgins created in 1995, and which illustrates intersecting relationships among various art forms that may share a medium or a process, their boundaries circumscribed in flexible, multiplying balloons that move forward or recede as circumstances dictate.

Another important idea inherent in the concept of intermedia is that it excites different senses at once, thereby allowing a wider point of entry into a work, as well as eliciting greater creative input from its spectators. A strong current embracing the significance of sensorial perception pervaded the aesthetics of the sixties and early seventies. This current constituted a call for direct experience that was meant to undermine the rationalistic tendencies governing Western thought and to include the spectator. In performance art, the (sensible) human body was often the primary vehicle through which aesthetic content was expressed. Environments, and even paintings, strove to involve the audiences by physically immersing them in a work and so literally extended the actual shaping of the work to the visitor's activity. In *Music, the Arts, and Ideas* Leonard B. Meyer discusses parallel trends in experimental practices within Western art music. Addressing the rationale behind unmediated experience more broadly, he says:

> It is to the naïve and primitive enjoyment of sensations and things for their own sakes that these artists seek to return. We must, they urge, rediscover the reality and excitement of a sound as such, a color as such, and existence itself as such. But our habits of perception and apprehension – the accumulation of traditional preconceptions which we bring to aesthetic experience – prevent us from seeing and hearing what is really *there* to be perceived.[15]

While these terms may seem "naïve" and "primitive," the emphasis on direct perception thrusts against the cultural bias that these artists attempted to counter, often with great sophistication. In the history of Western thought, sense perception has long been considered derivative, an acquisition of knowledge that is subordinate in the formation of our understanding of the world and ourselves. Among the 20th century thinkers, those espousing a phenomenological approach in particular challenged this view and opened up the discourse to, among other things, listening and sound.[16] Neuhaus's work sets in motion precisely the interstice where intermedia, sensorial perception, and phenomenology converge.

When I had finally left the *Suspended Sound Line* behind, the sonorities stayed in my ears for quite some time. That experience was extraordinary, because it added an unaccustomed depth to the usual aural perception in which sound blended directly with all other sensorial intake (unlike wearing a walkman, for instance, which drowns out other inputs). A sense of connection with the surroundings remained, because the character of the sound persisted indefinitely, having been crystallized in moments of sonic coinciding, recognition, and overlap. After I had visited three other sound works and had acquired a certain feel for Neuhaus's sonorities, these aftereffects accompanied me elsewhere. I had "sound encounters" when I was convinced for a moment that I was in the presence of another hidden sound piece, followed by a realization that the pleasant reminder was not literally true, yet was essentially correct. This, then, is the magic of Neuhaus.

Despite Neuhaus's affiliation with the postwar art music avant-garde, his subsequent intermedia position does not rest comfortably "between music and plastic art." Still, I decided to begin by touching on certain developments that figure in the 20th century experimental music practice and theory. To some extent this direction follows logically from Neuhaus's career. It traces a historic understanding of his musical background and clarifies how the ideals that germinated in that context relate to and transgress it. In this sense, Neuhaus's work involves considering how the field of music spills over to other arts and vice versa.

Another reason to follow this lead was the fact that Western art music had become completely open to all sound, including the inaudible. Therefore, the debates triggering, accompanying, and contesting this radically inclusive position (reached at mid-century) might yield new ways for approaching sonic materiality beyond music. And while renewed attention has been given to questions about sound (as such), listening, and aurality, comprehensive writing covering these themes remains scarce and limited in scope in that it relates to the world of sound by ultimately absorbing it into the sphere of music or language. Only recently, for instance, a book by Douglas Kahn cracked open many "hitherto muffled regions" to reveal a groundbreaking and imaginative history of sound in the arts that extends well beyond customary correspondences with music.[17] This condition then becomes another challenge that points to a much broader cultural vacuum regarding aural experience and auditive practices. The historiographic omission explains the limited use of *musical* history and theory adapted to this argument. Rather, what follows is concerned specifically with the phenomenological implications of the introduction of noise and everyday sounds into music, spatially conceived ambient music, and the changed role of the audience proffered by these experimental tactics. The phenomenological contour is

interspersed with and followed by other explorations prompted by a rethinking of musical meaning, the meaning of sounds, and the various modes of listening stimulated by experience with Neuhaus's works.

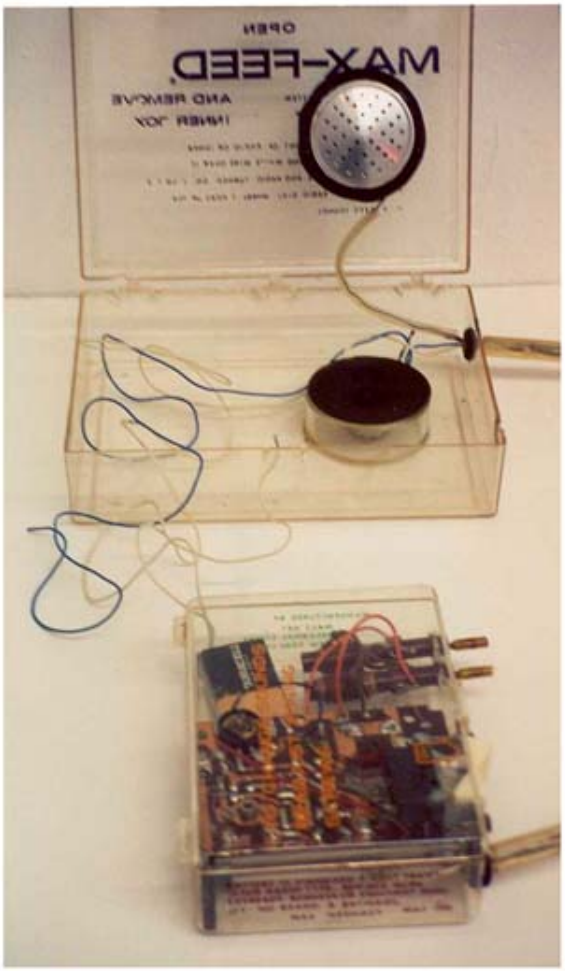


Figure 2: *Max-Feed*, 1966

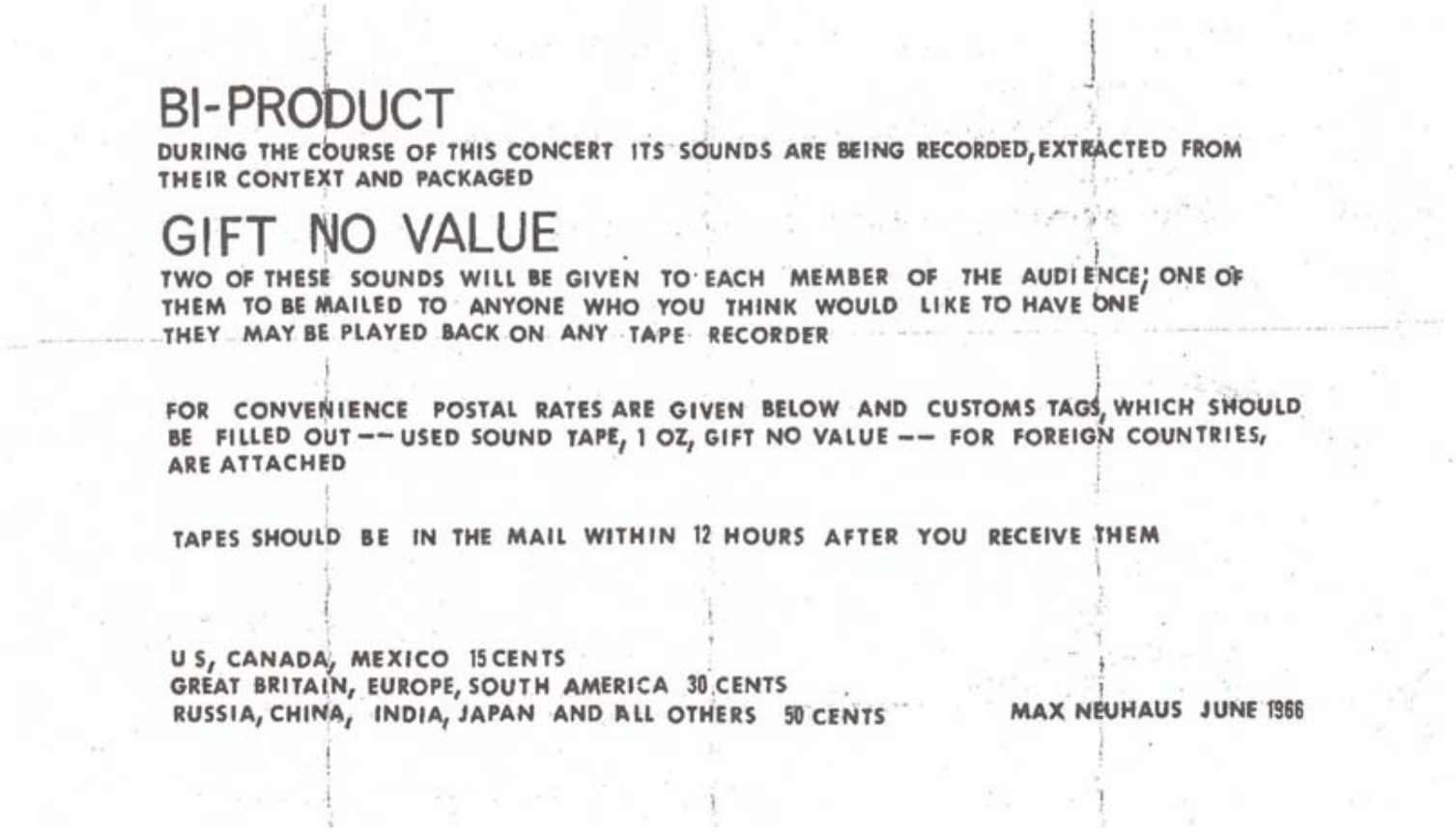


Figure 3: *Bi-Product*, 1966

The work was realized outdoors on the multileveled rooftops of four adjoining buildings in lower Manhattan. Sound sources, dispersed over the roofs, produced sonorities which intermixed to form a continuous aural topography across this urban terrain.

The sounds were generated from sunlight passing through the blades of rotating fans. Sound intensity was governed by light intensity; the tone color of each sonority was governed by the angle between sun and fan blade.

Thus, the sounds, beginning gradually at sunrise, shifted level with the appearance of cloud or shade, and slowly changed timbre with the movement of the sun across the sky... disappearing again at sunset... forming an aural landscape which reflected the passage of a day.

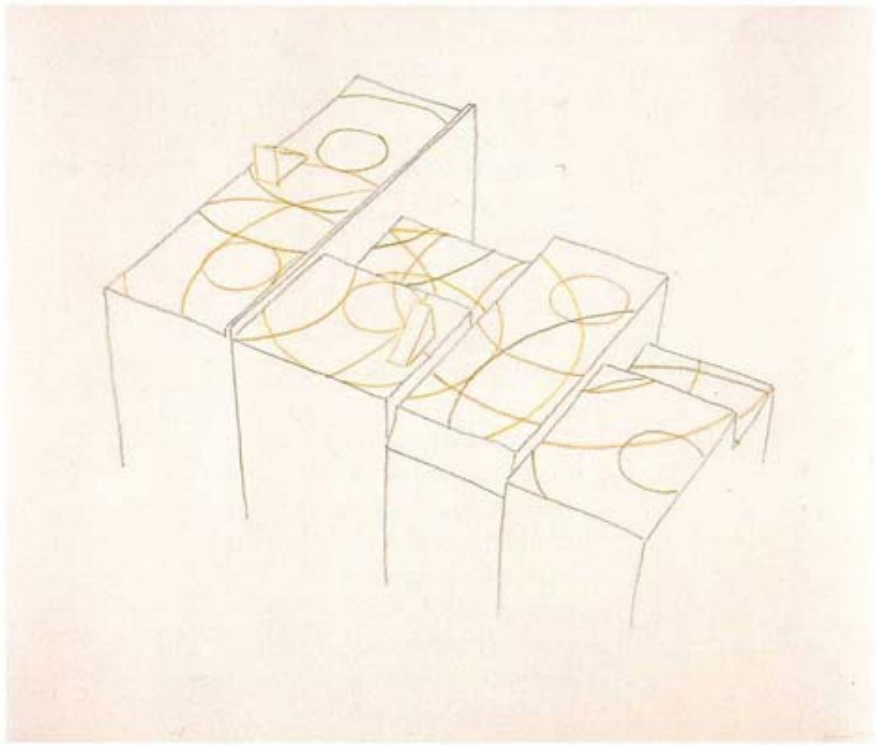


Figure 4: *Fan Music*, colored pencil on paper, 1993
66.5 x 79 cm; 66.5 x 52 cm

Sound work:
Location: Rooftops of 137-141 Bowery, New York City
Extant: August 9-11, 1968

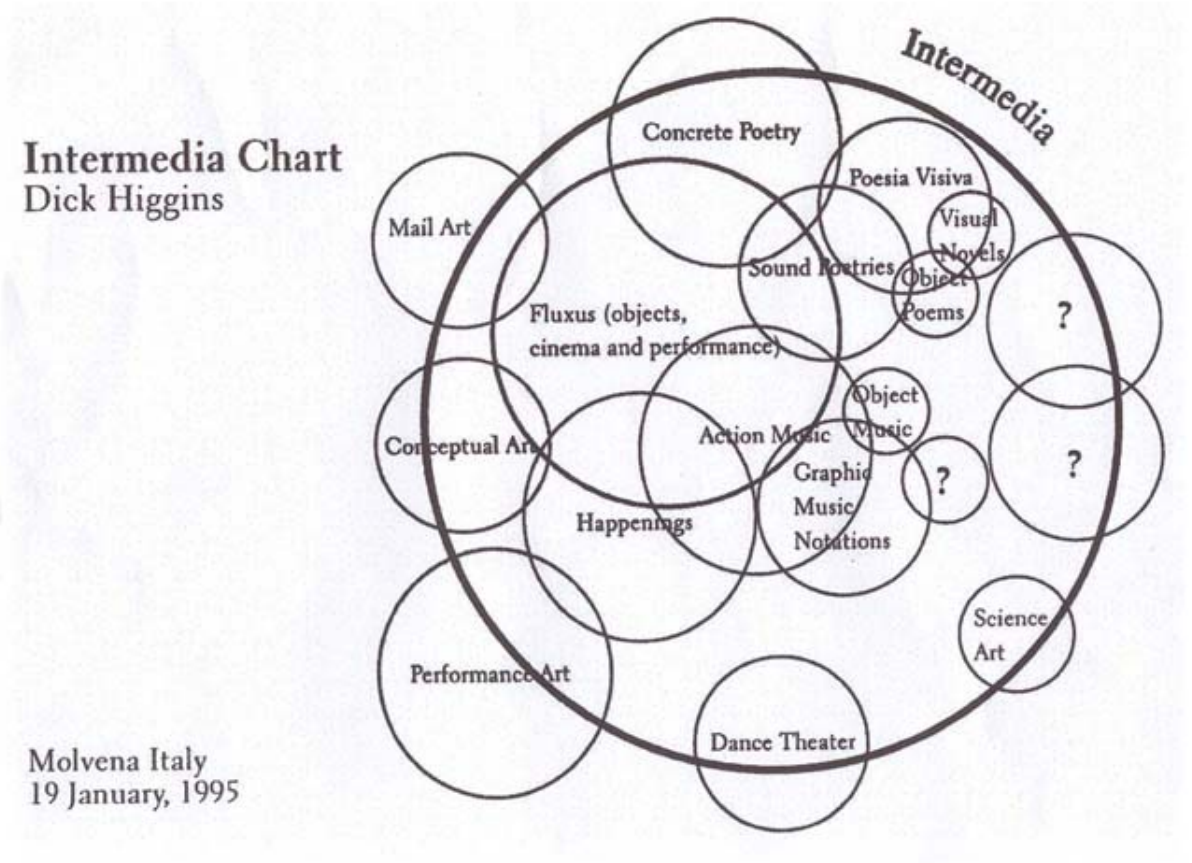
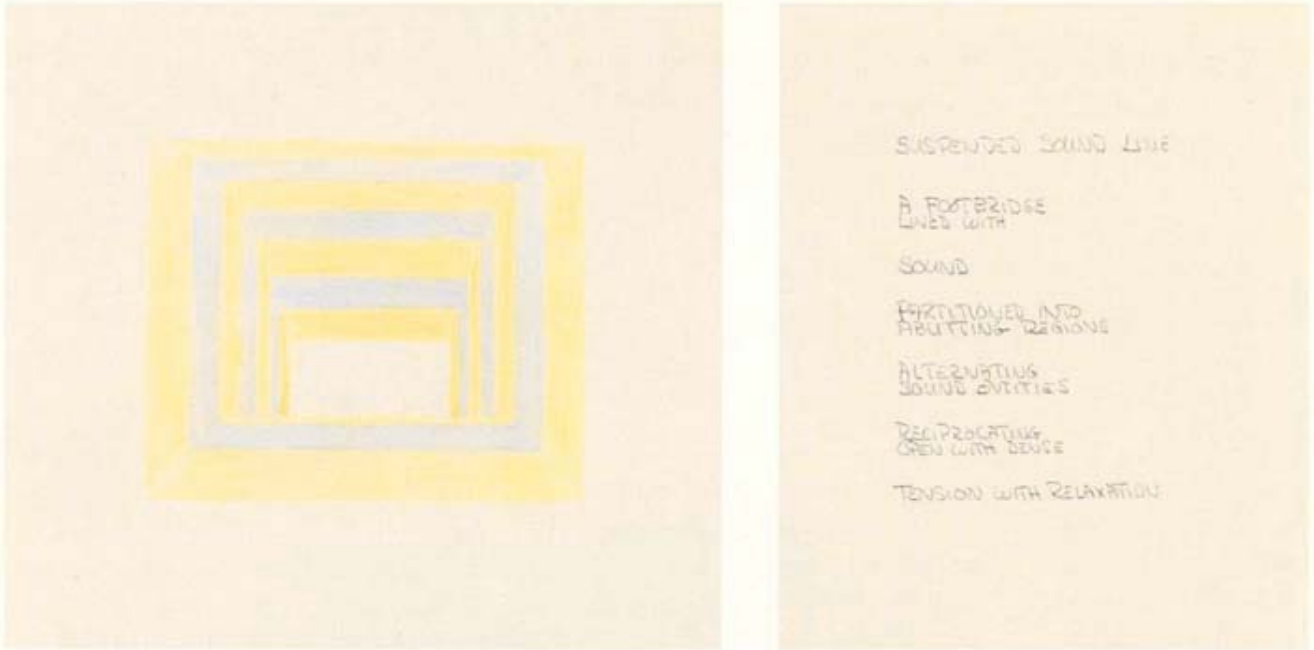


Figure 5: Dick Higgins: *Intermedia Chart*, 1995



Suspended Sound Line. 1999, Colored pencil on paper, Farbstift auf Papier, 64 x 70 cm; 64 x 52 cm

eine fussgängerbrücke / ausgekleidet mit / klang / aufgeteilt in / aneinanderstossende zonen
alternierende / klang einheiten / offenheit mit dichte / erwidernd / spannung mit entspannung

Figure 6: *Suspended Sound Line, 1999*

Notes

[1] Neuhaus was born in 1939 in Beaumont, Texas. In 1942, his family moved from Port Arthur, Texas, to New York State; he returned to Houston, Texas, only for the last two years of high school, between 1955-57. *Max Neuhaus, Sound Installation* (Basel: Kunsthalle Basel, 1983), 34.

[2] Ibid.

[3] There seems to be no general consensus on a term that would encompass music based in Western classical tradition and training but which is no longer 'classical.' The break that began in the late 19th century and developed in many directions since, has been referred to variously as Avant-garde music, Experimental Music, Serious music, Contemporary or Modern music etc. I adopted *Western art music* as used by Douglas Kahn because the term retains the roots of this tradition while conferring stylistic openness.

[4] Max Neuhaus, conversation with the author, tape recording, Capri, 21-22 January 2001.

[5] Ibid.

[6] This is a good example of a radically expanded notion of the traditional score, or notation. In this case, the score is an instrument with preset parameters that shape an otherwise indeterminate musical realization.

[7] Among these were two happening-like events, *Bi-Product* (original spelling; Fig. 3) and *American Can*. The instructions for the latter called for a large number of canned products (manufactured or distributed by the American Can company) to cover a ground conducive to sound as the participating crowd bounced, slid, and moved the cans to generate sounds.

[8] Neuhaus, conversation with the author, 21-22 January 2001.

[9] Dick Higgins, *Horizons: The Poetics and Theory of the Intermedia* (Carbondale: Southern Illinois University Press, 1984), 23.

[10] Ibid., 28.

[11] Ibid., 22.

[12] Thanks to Hannah Higgins for this clarification.

[13] Higgins, *Horizons*, 20.

[14] Edward Allen McCormick, "Translator's Introduction," and Michael Fried, "Foreword," in Gotthold Ephraim Lessing, *Laocoön: An Essay on the Limits of Painting and Poetry* (Baltimore: The Johns Hopkins University Press, 1984).

[15] Leonard B. Meyer, *Music, the Arts, and Ideas: Patterns and Predictions in Twentieth-Century Culture* (Chicago: The University of Chicago Press, 1967; reprint with a new postlude, 1994), 74.

[16] Martin Heidegger, *Being and Time*,

[17] Douglas Kahn, *Noise Water Meat: A History of Sound in the Arts* (Cambridge, Massachusetts: The MIT Press, 1999), 2.

An invention of our fast disappearing century, audio art is founded in the idea that sound (as opposed to pitch relationships and a harmonic system) can be the organising principle of musical activity. As a young student, Claude Debussy anticipated this new zone of expression by playing pianistic impressions of Parisian street noise. Six years later, the attractions of pure sound were magnified for him when he heard Javanese gamelan performed at the Paris colonial Exposition of 1889. "Remember the music of Java," he wrote to his friend Pierre Louÿs, "which contained every nuance, even the ones we no longer have names for."
David Toop[1]

To make extramusical material musical, the sounds of the world were processed in numerous ways. First, the sounds of the world were to be themselves categorized, explicitly or implicitly, into referential sounds and areferential noises, such that a noise could be incorporated into the areferential operations of music. Thus, there was an operative exchange between the distinctions of sound and musical sound from the perspective of music and sound and noises within the sphere of extramusicality, whereby the sound *of the former was recuperated through the* noises *of the latter, with a remainder of sound usually dismissed as* imitative. *Second, these privileged* noises *of the sphere of extramusicality would align themselves with already existing musical attributes and elements, such as dissonance, timbre, and percussion. Third, these noisy correspondences within music were emphasized as themselves bearing traces of the world of true extramusicality; this was the basis of what I call the practice of* resident noises. *Fourth, sounds were technologically selected or manipulated to render them suitable as musical material, as in phonographic practices such as* musique concrète, *and finally, sounds were processed through the operations of aurality, a feature of John Cage's dictum to hear* sounds in themselves. *The underlying presumption of all these was that the nature of music was sonic, thereby the importation of worldly sounds into music meant diminishing or eradicating sounds that were too significant. Most important, this process displaced significance to music itself, such that the most common way to make noise significant was to make it music, but by doing so the significance of sounds was rendered insignificant.*
Douglas Kahn[2]

In the 20th century, a number of European and American composers expanded musical materiality by appropriating sounds from previously excluded sonic territories of the mundane world, from Non-Western musics and instruments, or by inventing new compositional approaches, graphic notations, and performative strategies. Debussy's loosening of formal regularity through harmonic ambiguity and shifting rhythms, an emphasis on instrumentation, a preclusion of narrative structures, and a subsequently weakened sense of ongoing (linear) time are commonly referred to as the harbingers of much that was to follow in 20th century music.[3] At the turn of the century, the American pioneer Charles Ives independently prefigured dissonance that qualifies Arnold Schönberg's atonal compositions.[4] Ives' visionary and long unacknowledged musical output is interwoven with inserts from popular music, such as American hymns, folk tunes, and brass bands, all incorporated into complexly textured orchestral works. The fact that his work is one of the earliest examples of bringing everyday sonic experience to stage prompted the musical critic Alan Rich to think of certain Ives' pieces as the antecedents of ambient music. For example, Ives spatially divided the orchestra so as to obtain a more omnidirectional experience of music. Performance of *The Unanswered Question* (1906) involves musicians

on stage, off stage, and moving around, and in his *Central Park in the Dark* (1906) "the listener seems to stand at the edge of the park while bands play off in the distance, and the orchestra depicts the distant sounds of automobile horns and shouting newsboys."[5]

The inclusion of new sounds and noise, or *extramusical sounds*, was a common thread that reverberated through the early 20th century developments in music as well as plastic arts. Somewhere between the two came what is perhaps the most literal espousal of acoustic noise for the purpose of new aesthetic possibilities by way of Futurist painter Luigi Russolo. His 1913 manifesto "The Art of Noise" draws parallels between modern industrial noises and the emergence of an increasingly dissonant sound in music: "In the pounding atmosphere of great cities as well as in the formerly silent countryside, machines create today such a large number of varied noises that pure sound, with its littleness and its monotony, now fails to arouse any emotion."[6] Music that was compatible with contemporary sensibilities was hence evolving toward noise-sound out of empirical necessity. In order to realize the potential of Musical Noise, Russolo sketched out an operative outline that proposes directions for thinking about, hearing, and orchestrating noise. He proceeded to invent *intonarumori*, the noise instruments that were – in the concert performed by the mechanical orchestra he conducted later that year – individually characterized as buzzer, burster, thunderer, whistler, rustler, gurgler, shatterer, shriller, and snorter.[7] Russolo's excitement about noise anticipated later avant-garde ideals concerning aurality, just as his *intonarumori* exemplified intermedia activities:

> Noise accompanies every manifestation of our life. Noise is familiar to us. Noise has the power to bring us back to life. On the other hand, sound, foreign to life, always a musical, outside thing, an occasional element, has come to strike our ears no more than an overly familiar face does our eye. Noise, gushing confusely [*sic*] and irregularly out of life, is never totally revealed to us and it keeps in store innumerable surprises for our benefit. We feel certain that in selecting and coordinating all noises we will enrich men with voluptuousness they did not suspect...[8]

Sound entered the art world in numerous ways, heard or unheard, noisily or in silence, ranging from rowdy staged performances by Dadaists in Zurich and Berlin that elaborated techniques of sound poetry and noisy music-making to the first abstract and Cubist painters who found kinship in music that inspired formal possibilities freed from representation and stillness of the Renaissance perspective. The avant-garde inclusion of actual or implied sound opened up a realm where the synaesthetic experience of the world was heightened as well as viewer inclusive. Suzanne Delehanty described the temporal element introduced through sound as a new beginning that significantly altered the way artists related to the world and the spectator:

> Sound, music, noise, and even silence were temporal and, therefore, allowed the first Modernists to present the twentieth century's concept of time and space as a vital continuum in which the artist and the viewer and the subject and object of art were merged.… The work of art, once silent, permanent, and timeless, became a hybrid object that began to resonate in a third realm beyond the worlds of illusion and reality. Sound announced that human experience, ever changing in time and space – the substance of life itself – had become both the subject and object of art.[9]

In part influenced by Russolo's ideas was Pierre Schaeffer, another non-trained musician who left a palpable mark in the nascent sphere of electronic music. In 1948, Schaeffer's research into noises led him to the genesis of *musique concrète*, which was predicated on the idea of processing sounds that were recorded "concretely" on tape, as opposed to composing in the domain of abstract musical sound. Carlos Palombini sums the difference of approach:

> Being mentally conceived, notated in symbols, and performed by instrumentalists, traditional music moved from musical abstraction to sonic concretion. Discovering sound-producing bodies and manners of putting them into vibration, recording the sounds obtained, manipulating such recordings, listening to them and trying out structurations, musique concrète would move from the sonic concretum to musical abstraction.[10]

Like Russolo, Schaeffer also disproved of imitative sounds that remained readily recognizable. Douglas Kahn observes a pattern in avant-garde experimentation toward an implicit accordance to processing extramusical sound into music. In that manner, he argues that sounds and noises were divested of significance – be it political, poetical, or ecological, the expressive modalities of the social in sound.[11] The poetic potential, at least, came through more readily in the body of Schaeffer's writings describing and elaborating precepts of *musique concrète* than it did in the reception of his concrete experiments. His first book, *Traité des objects musiceaux, essai interdisciplines*, was published in 1966 and addressed four functions of listening, explicated below by Palombini (with a dash of Heideggerian flex), along with one type of listening strategy – reduced listening – that Schaeffer found valuable. Because reduced listening concentrated on the characteristics of the sound itself, "independent from its cause and its meaning," it solicited overcoming ordinary listening habits through which we tend to understand acoustic stimuli:

> *Ouïr* (to hear) is to posit iconic (i.e. similarity based) relations between representation and object (or signifier and signified): on the verge of semiosis, creaks lay dormant in the background noise. *Écouter* (to listen) is to posit indexical (i.e. causal) relations between representation and object: creaks stand for ungreased hinges. *Comprendre* (to comprehend) is to establish symbolic (i.e. consensual) relations between representamen [*sic*] and object: creaks stand for tempered pitches agreeable to a metrics of successive divisional operations. And because hearing, listening, understanding, and comprehending all are lexicalized acceptations [*sic*] of *entendre* – by semantic derivation from the etymological sense, 'to turn one's attention' --- the French language allows Schaeffer to construe *entendre* as to hear, listen, understand, and comprehend in

> mindfulness of one's attention. Thus sounds open themselves up to iconism, indexicality, and symbolism with intent. Reduced listening follows thence as a bracketing of symbolic and indexical relationships…whereby the *sonic object* unveils itself as an aggregate of *shape* and *matter* qualities. As *ouïr* ebbs *entendre* flows, as *entendre* ebbs *ouïr* flows, and as such movements alternate, *sonic things* disclose themselves as *sonic objects* whose intrinsic qualities bespeak details of the sound-producing event and novel abstractive possibilities.[12]

During the 1950's and 1960's, these novel abstractive possibilities gained popularity principally among multimedia, film, and dance artists. One early multimedia event was the Philips Pavilion, presented at the 1958 Brussels World's Fair, which was interesting both because it demonstrated a new relationship between music and space and because it was a rare example of music created for a specific architectural setting, itself inspired by music (Fig. 7). Composer Iannis Xenakis, who was then working at Le Corbusier's studio, designed the pavilion.[13] He described how he arrived at its dynamic forms (they recall Naum Gabo's and Nicolas Pevsner's mathematically inspired sculptures) through his parallel pursuits in music: "…as in the music, here too I was interested in the question of whether it is possible to get from one point to another without breaking continuity. In *Metastasis* [composed in 1954] this problem led to glissandos, while in the pavilion it resulted in the hyperbolic parabola shapes."[14] Edgar Varèse, distinguished for the first composition written entirely for percussion instruments (*Ionisation*, 1931), in turn contributed what is one of the earlier entirely electronic pieces of music. Composed for the pavilion at Le Corbusier's request, *Poème électronique* is an eight-minute tape "collage of studio recordings, altered piano sounds and bells, and filtered recordings of choral music."[15] The piece added another layer to the spatial experience of the structure primarily through the placement of 400 loudspeakers (according to most accounts) installed in the main interior space, broadcasting "the sound in sweeping arcs throughout the pavilion."[16]

Sound and Ambience

The Philips Pavilion was taken down after the Fair, but *Poème électronique* still exists as a taped recording. Disembodied in that way, it represents a period when ideas about temporal and spatial relationships in music were changing through accommodation of new technologies. Sounds of the world were now easily manipulated and recorded, which shifted the thinking about temporal arrangement since the prerecorded sound material could be played anywhere at any time. Moreover, it became feasible to produce and hear an unprecedented world of sounds – the aural palette had become virtually

limitless. For the avant-garde composers and artists around mid-century, these developing technologies generated fresh inroads for creation of music, from purely electronic, electroacoustic (which "uses electronics to amplify or alter natural or ambient sounds"[17]), to taped composition. The fact that sounds could be stored and retrieved at any point and time was "the most revolutionary aesthetic feature, and challenge, of electronic music," Thomas Holmes wrote in 1985, adding, "Our understanding of this power is still immature. We have barely begun to realize the potential of using these space-time aspects of music."[18] Much earlier, noted composer of electronic music Morton Subotnick expressed a similar visionary enthusiasm using a three-dimensional analogy. In the liner notes accompanying the release of his 1966 *Silver Apples of the Moon*, he described the versatility of the new Buchla synthesizer in relation to compositional process:

> It is possible to produce a specific predetermined sound event…and it is also possible to produce sound events that are predetermined only in generalities…this means that one can "tell" the machine what kind of event you want without deciding on the specific details of the event…This gives the flexibility to score sections of the piece in the traditional sense…and to mold other sections (from graphic and verbal notes) like a piece of sculpture.[19]

The implied physicality of sound material, together with loudness and amplification, in turn influenced concepts about musical surroundability and audience immersion. Ambient music, which proliferated during the early 1960's, was not only an exploration of listening to sounds, but *inside* sounds.[20] Artists combined electronic capacities with the acoustic characteristics of a specific performance location, where a sound was sustained, phased, and repeated for long periods of time. Taking advantage of the site's reflective and spatial properties and their ability to unravel a range of psychoacoustical phenomena, the listening experience became an immersion in a total aural environment where the subtle nuances and permutations of prolonged sounds interacting with the site revealed that "*a sound* is in fact *many sounds*, arising from both acoustical and psychoacoustical vicissitudes, creating their own variations and modulations in time, evolving their own organization often richer than any given musical structures through which they might be directed."[21]

Composer LaMonte Young, considered the key influential figure in the development of minimalism in music, moved from serialist studies to explorations with sustained drones. Apart from his instrumental and vocal works and performances, Young has collaborated with visual artist Marian Zazeela to create continuous sound and light environments. Lasting anywhere from a week to several years, they have been making these since 1966, the most recent being a record eight-year *Dream House* presentation (1993-2001, MELA Foundation, New York). The electronically generated continuous

frequencies combine with lighting designs employing color and suspended mobiles casting shadows to create subtle meditative environments where the perceptual interplay between the intangible and the tangible is heightened over time. Zazeela's symmetrically displayed hanging sculptures and the lighting visually complement the sound compositions that produce a "drone-state-of-mind." Young's descriptive shorthand constitutes the deeper substantiality of the overall effect:

> These frequency environments set up a drone state of periodic composite waveforms in the nervous system, establishing periodic patterns. These patterns are the internal representations of the external air molecule patterns, which vibrate the eardrums and send pulses throughout the nervous system. Once this so-called drone-state-of-mind is established, the mind should be able to embark on very special explorations and in new directions, because it will always have a fixed point of reference to come back to, to relate to; it could perhaps go further into more complex types of refined relationships than it can in the ordinary state.[22]

Sound of Silence

The most revolutionary turning-point, which challenged the notion of aurality and had important consequences for the avant-garde practice and expansion of music into the realm of art (including developments in ambient music), came by way of the influential American composer John Cage. In Kahn's words, Cage played a pivotal role in tilting the balance of Western art from visuality to aurality. Kahn applies the terms *all sound, always sound* (the impossibility of experiencing complete silence), and *panaurality* (everything potentially sounds, even on molecular level) to describe the general progression by which the sound materiality in music and other arts expanded. More specifically, he sees this pattern in Cage's personal development and philosophy. Cage's famous call *to hear the sounds in themselves* grew out of the avant-garde embrace of everyday sounds. His own complex participation en route to eventual liberation of all sound for the purpose of musical listening brought the avant-garde expansion to its logical conclusion. Central to this process was Cage's incorporation of silence. Initially, he broke the simple opposition of sound/silence via duration, a quality they both shared and which placed them in a complementary, rather than exclusionary, relationship. Silence was no longer a mere absence of sound but rather became a structural element of equal merit. Around mid-century, several ideas led Cage to create the ultimate *silent piece*, *4'33"* (1952). As Kahn points out, Cage's prior experiments and the embrace of technology into his overall philosophy by which small and inaudible sounds were finally heard thanks to amplification, marked a shift from a site of *utterance* to *audition*, with a corollary that the act of listening became more important than previous familiarity with musical tradition until finally it was the only requirement on the part of listeners. In this regard, *4'33"* presents a situation where the site

of audition is not only paramount, but also entirely dependent on relegating the silencing, conventionally expected from the audience, to the performer.

> *4'33"*, by tacitly instructing the performer to remain quiet in *all* respects, muted the site of centralized and privileged utterance, disrupted the unspoken audience code to remain unspoken, transposed the performance onto the audience members both in their utterances and in the acts of shifting perception toward other sounds, and legitimized bad behavior that in any number of other settings (including many musical ones) would have been perfectly acceptable.… Extending the musical silencing, then, set into motion the process by which the realm of musical sounds would itself be extended.[23]

Framed only by the requisite temporal parameter of music, the implication of this silent act was that *musical listening* can apply to any situation at any given moment. The complete deletion of the borderline between sound and musical sound, though, was not sustainable if one was to continue with the practice of music. On the other hand, the reversal of roles between performer and audience as exemplified by *4'33"* points to other significant methods through which Cage and others unleashed the creative directions within music. One relates to *aleatory* and *chance* procedures that sprung out of serialism (see note 5). In aleatory music, the serially predetermined aspects are loosened up by variable elements determined by the performer. The number (at least one) and the administering of indeterminate elements varied – sometimes the score included general instructions that could be realized in countless unrepeatable ways. Composers Earle Brown, Morton Feldman, Christian Wolff, and the pianist David Tudor were the 1950's and 1960's New York based pioneers of aleatory procedures. Cage, among them, pushed the concept farthest in the direction of chance. In the 1930's, he began to substitute subjective compositional choice for chance operations, of which "some derived from the *I-Ching*, others from the observation of imperfections in the paper upon which I happen to be writing."[24] Out of these processes evolved his revolutionary idea of *indeterminacy*, where composition "is indeterminate with respect to its performance."[25] This enactment liberated the more adventurous musicians immensely because they were free (as well as given credence by way of transferred authority) to explore unique and, by extension, contemporaneous interpretations of such compositions.

Indeed, musical notation presents an important insight into musical practice. As Feldman once said: "The degree to which a music's notation is responsible for much of the composition itself is one of history's best-kept secrets."[26] Feldman was one of many forward-looking composers who were experimenting with unorthodox notational methods. These notations, known as graphic scores, opened room for sounds excluded from conventional systems, and modified the one-way relationship between composer and performer (Fig. 8, Fig. 9). Once the notational systems opened up to alternative graphic,

symbol, and verbal inscriptions, the process of their decoding naturally diversified and diverged from the common reading of musical scores. Many composers utilized graphic scores to intentionally encourage indeterminate, or performer-determined, interpretation. A score's interpretation may be restrained by a certain set of rules or visual leads, which shape the intent of a musical piece rather than its realization. *Notations* (1969), co-edited by Cage and Fluxus artist Alison Knowles, is a watershed anthology of graphic and other avant-garde scores collected from over 150 composers and artists. The unequaled compilation portrays the rich variety through which music and sound material can be approached, including examples that involve performance art and happenings. Aside from documenting a myriad of scores that embrace an open-ended structure, the book presents several decidedly visual pieces. These highlight alternative ear-eye possibilities that arise once the linear notational conventions are removed.

Musical Meaning: Syntax vs. Sound

In a recently published book, Lawrence Kramer discussed musical meaning by conflating a triad – language, visuality, and music. Referring to Gilles Deleuze and W.J.T. Mitchell, who variously state that "the general Western system of meaning operates on the basis of an opposition between…the verbal and pictorial description of reality," Kramer observed that music has never had a place in this picture despite the fact that it plays a remarkable part in relation to both.[27] Instead of keeping music apart as a semantically incompatible entity, which had been historically reinforced since mid-eighteenth century, he proposed a new opposition between *imagetext* (adopting Mitchell's term) – as a whole, and music – its potent Other. In this correlation, Kramer saw an opening for a relevant and more powerful antithesis, since in "the essentially mixed character of the imagetext…the otherness internal to it is relatively limited."[28] However, this new opposition is likewise breachable, in fact, it is more often a partnership between music and the imagetext, as everyday experiences of their fluid interchange constantly prove and make ordinary. According to Kramer, this is especially applicable to mixed media work.

The underlying argument in Kramer's exposition is the misguided notion of music as devoid of meaning, that is, of communicative ability on a par with text or image where signification obtains an automatic status, is a priority. Rather than semantically meaningless and abstract, musical meaning is always contextual as well as embedded in a *semantic loop* which it forms with imagetext: "The semantic

loop is the formal means by which music asserts its unrivaled capacity for mixture and through which it appears as an active, almost drive-like tendency to mix with and inform that which initially excludes it."[29] For instance, music can disclose new aspects of the environment in which it is played or it can endow incidental events or scenery with additional commentary. Another way to understand the loop is through semiotics. Kramer takes Jacques Derrida's stress on the communicative power of a sign even in absence of a referent, signifier, and signified, to propose that music can partly restore that absence as presence in works where imagetext mixes with music: "In particular, since music is constitutively referred to states of feeling, which is to say, of subjectivity, what music in this circumstance embodies is the lived presence that is excluded from the sign."[30]

The third way to approach the semantic looping is by way of sounds, more specifically the continuous, usually background, presence of ambient sounds (or the *sonorous envelope*) that support our perception and logos:

> …the most salient feature of the sonorous envelope is that it is filled with nonsignifying matter but nonetheless exists in a dynamic relationship to signification. The locus of this relationship is a body of sound that…shuttles between the borderless mass of noises and articulate utterance. This mediatory sound embraces everything that, whether literally or figuratively, makes up the sphere of musicality, from natural or instrumental sounds taken for music to the flow of intonation that runs through speech to ritualized vocalization and songfulness. To the extent that such musicality is heard as expressive or constructed, it bears on signification; to the extent that it is received as material, visceral, or merely sensory, it bears on the nonsignifying realm uniting the body to the world. These "bearings" are rarely experienced as alternatives; their mutual implication is almost unbreakable. Shuttling between "logos" and "noise," musicality thus embodies the general flow of communicative energy into which nonsignifying sound is funneled and from which language and imagery, description and depiction, are precipitated. In the semantic looping of mixed media this intermediacy comes to life, becoming a felt process with a specific charge of pleasure and knowledge: the rustle of the sonorous envelope becomes palpable at the same time as the articulation or delineation of meaning within its folds. Whenever we respond to experience with music or musicality we invoke this effect, and in so doing supply both music and musical mixed media with their prototypical mode of being.[31]

Kramer's description of the mediatory role of the sonorous envelope and the recognition, not unlike Kahn's, that the sound's nonsignifying role (albeit wrapped in the context of musicality) is significant as that fluid realm through which meaning becomes a continuous process forging always new relationships to the world and the present moment, offers another point of departure from which to approach the vital relationship between aurality and visuality. In philosophical discourse, this position was initiated by Martin Heidegger, who in the process of undermining the ground structure and practice of Western metaphysics, became the first 20th century philosopher to posit listening and hearing as alternatives to a vision-centered experience of the world. Heidegger placed his ontological inquiry in the everyday context where hearing is understood as the constitutive ground that situates one's self in the world, as

well as enables one's self to realize the very potential for being through an attitude of openness toward others and the world in general. In his early writing, the link between attentive listening and discourse, in which this particular question is situated, articulated a focus on a specific dimension of our auditory capacity. Heidegger maintained the notion that the sounds we hear are always already sounds *of* something, in other words, they always mean something.

The potential of sound to trigger emotions, to just happen, or to be a part of something not tied to a signifying, referential process, is the point where, according to Michael Eldred, avant-garde composers depart from Heidegger's attachment of sound strictly to the origins of language:

> Heidegger's intention was, rightly, to prevent the physicalistic reduction of sound to composite waves of certain frequencies that vibrate in air, but the implications are more far-reaching. The sound of music for Heidegger can only be music in a world that has already been opened up and established by poetic language. Cage et al do without this crutch. For them, sounds come and go without having to refer to anything but themselves. They do not need to be rooted or located in a text or in an overarching musical system.[32]

In other words, syntax is purposely rejected from composition and this has definite repercussions on the listener's expectations. Roland Barthes speaks of "the shimmering of signifiers" which describes a type of listening or seeing characteristic of our times (although mainly confined to, or perhaps explored in, the field of art).[33] No longer a question of signification where meaning is deciphered and seized, the shimmering is rather a restless process of *signifying*, a continuous column of signs not intended to converge in predetermined relationships. With the decoding process disabled, as when one listens to pieces by Cage, where sounds are listened to *each one after another*, Barthes proposes that "listening is externalized, it compels the subject to renounce his "inwardness"",[34] the inwardness being culturally learned and internalized forms of decoding and perception.[35] The idea parallels the open interpretative process that graphic scores offer the performer. On the other hand, Leonard B. Meyer contextualizes the intentional disavowal of meaningful – that is, goal-oriented – progression implicit in much avant-garde music within the postwar call to direct and unmediated experience through one's senses:

> Why must one avoid the structured syntax of pattern and form? Cannot sounds be heard as sounds, or colors be seen as colors, and still be, so to speak, embedded in an order which relates the sounds or colors to each other? Perhaps. But it seems clear that the more one perceives the relationships among things, the less one tends to be aware of their existence as things in themselves – as pure sensation.[36]

Meyer believed that egalitarianism, an offshoot of Romanticism, had come to increasingly influence contemporary Western credo, with important ramifications for the arts. One aesthetic premise of

egalitarianism is that the experiencing of art should not depend on "privileged learning." The dispersal of syntactic structures in music and the notion that sensation affects the individual's "natural and innate" knowledge directly are therefore compatible tendencies. He observed a movement toward what he defined as statistical structures or the secondary parameters of music, "for example, timbre and tempo, dynamics and register, beat and contour," which "depend less on privileged learning than do syntactic ones."[37]

Listening to sounds that are no longer syntactically composed, however, often demands a more disciplined aural focus because the *shimmering of signifiers* offers no relief through culturally acquired melodic clues or expectations. Already in the late 1950's, Meyer took an unusual approach to musical meaning by way of information theory. Musical meaning emerges, he said, when our expectations are surprised in some way – only when the listener's habitual response is stimulated by an improbable (unexpected) development, does new meaning arise. Information, too, depends on probability such that the higher the randomness of choices, the greater the degree of information. In that way, meaning and information are related through probability to uncertainty.[38] This reasoning helped elucidate why our (aural) minds have difficulty sustaining the kind of attention required for music with a high degree of nonredundant signals and a consequently information-heavy structure that characterized the more contrived pieces of modern Western art music, especially total serialism. The perceptual challenge of this music, unrelieved by some measure of welcome redundancy that would allow the listener a moment of recapitulation or a slip of attention without losing the flow of sound events, has proven too great to warrant broad popularity. In a 1994 Postlude, Meyer expanded these thoughts by incorporating the ubiquitous phenomenon of recorded music, which easily permits greater access and familiarity with nonredundant music, but that nevertheless failed to arouse more popular interest. On the contrary, the predominant exposure to "canned music" via stereo equipment, television, and the like has steered us toward *intermittent listening*, that is, while listening to (any kind of) music we are usually doing something else. Ideally compatible with intermittent listening, argues Meyer, would seem to be music with a sufficient degree of (internal) redundancy, such as minimalism – which has accordingly gained more popularity (and certainly exerted influence) among the contemporary music genres.

In a more recent essay, Chris Melchior took another approach to information and meaning by way of fractal theory that lends itself particularly well to contemporary forms of ambient music, which "does not necessarily contain any notes, regular rhythms, linear structures, conventional scales, or other discreetly defined things..."[39] Fractal qualities are opposite of linear as is the structure of ambient music.

For instance, notes are linear parameters that can be measured and determined, whereas sounds generally have a fractional dimension: "A sound may not necessarily be a note, for example the sound of a waterfall does not have the properties [of] a note – it doesn't have a defined pitch, length, or starting time."[40] As Melchior pointed out, notes are symbols of sounds and as such contain less information and detail than actual sounds. And because sounds as fractal entities (unlike notes, or annotated sounds) are perceived more by our right brain hemisphere that deals with holistic and intuitive concepts, the perceptual experience of fractal-based music is more direct.

Finally, if we disregard important differences, chance-derived, serially arranged, and other experimental forms of 20th century music share a more or less complete renunciation of narrative development. Instead of progression, we deal with succession. Meyer ascribed this antiteleological tendency to a mistrust of cause and effect that pertains to a complex set of circumstances in modern history. This broad premise seems to overlap with the concurrent expansion and elevation of *musical listening* whereby *all* sounds of the world are absorbed into music, to the point where they become significant only as music. From the standpoint of the sound's potential, Kahn's critical synopsis of Cage's musical silencing is useful here as a pointer to several discernable issues with which the generation of artists following Cage would have to grapple and find ways to deliver sound in newly significant ways:

> The emancipatory drive coupled with the musical silencing of the social would eventually lead to his [Cage's] hopes for a new aurality out of the practical world of sound and into the realm of myth, out of the quotidian experience of hearing and into a world of the impossible inaudible.[41]

Neuhaus's Sound Character

By abandoning the domain of music in which sounds came to be valid *in themselves*, Neuhaus has often found himself clarifying how his sound works differ from music – which points as much to the enigmatic nature of his sounds as to the hazy boundaries of experimental music. The key dissimilarity he notes first is that music unfolds *in time*, while his sonorities are continuous and instead create a sense *of place* – a point that will be revisited later. A characterization of the sole medium in his work, the sound itself, remains challenging because its makeup is so essentially interwoven with the entirety of the work. Neuhaus proposes alternative occasions where his sounds' perceptually-tempered and obliquely referential quality aspires to imbed them in the everyday world but circumvents definable language. Sound character, known in music as timbre or sound color, is Neuhaus's specific interest, partially an extension of his experience as a percussionist.[42] However, his exploration of sound character does not

conform to either literal or coded sounds, the two areas through which we normally filter our hearing experiences. Most of the sounds we hear are literal, like a phone ringing, birds chirping, or footsteps, while both music and language are coded and so acquired forms of communication. Between these two areas, says Neuhaus, lies a vast area of other sound possibilities that "our ear minds are capable of perceiving."[43] It is a difficult terrain to talk about precisely because it is not coded – Kramer's description of the sonorous envelope is tackling this very issue.

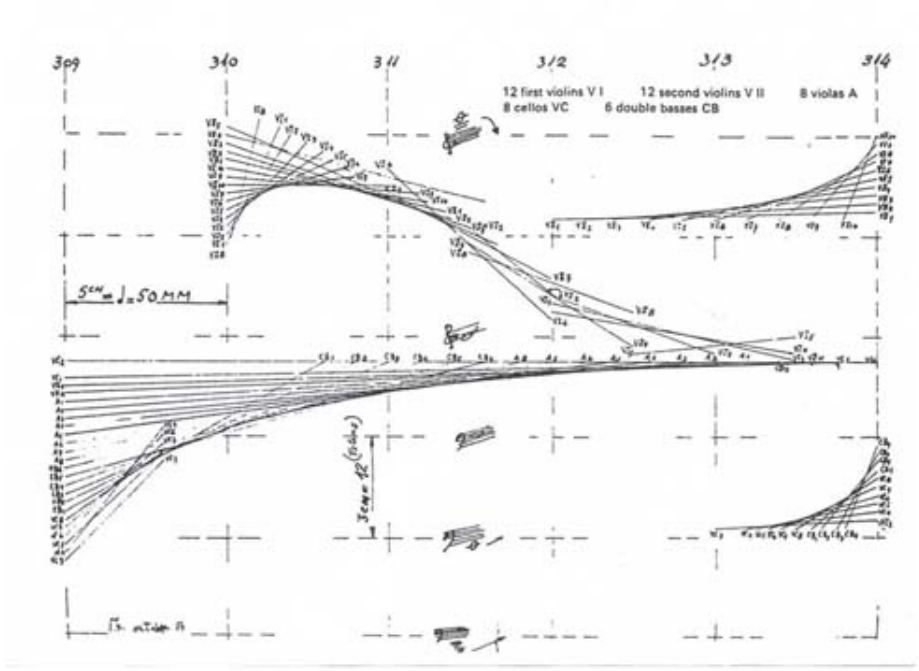
Neuhaus has been able to come up with two examples so far that articulate the materialization and significance of sound character. One is the advent of orchestration in music where differences in timbre delivered through instruments are decisive for the realization of a piece: "You don't have the same work if you play just the melody and harmony of an orchestrated work on the piano. In music, though, it is only part of the meaning – we can still recognize the piece without the orchestra if we play it on the piano."[44] This becomes impossible in the case of certain modernist works, such as *Ionisation* by Varèse, where the realization and the meaning are entirely contingent on the orchestration of a rich variety of percussive timbre.

The other example Neuhaus gives is human speech, which similarly communicates in more ways than simply linguistic:

> We all have a sense of sound character. We are born with it perhaps, or learn it at very early age. It is inherent in our language, though unconscious; we use it as another layer of meaning on top of verbal language – it tells the listener how to interpret the verbal meaning. We do it without thinking by shaping the contours of tone and emphasis in our speech and also by adjusting the sound of different parts of words. Our response to these nuances is highly refined: through minute differences in sound character we are often able to pinpoint the birthplace of a speaker.
>
> One could describe sound character as having a number of continuums of meaning lying between distant points, say, harsh and smooth or rich and thin or warm and cold, superimposed upon each other. In the area between these points, within the nature of the sound itself, lies an immense zone of meaning. Its expressions are transcultural: they are neither literal nor codified.
> …..
>
> I have been interested in going further, distilling this essence, this inborn language, letting it be the sole carrier of the meaning in a sound work. That's what I do when I construct a work's sound.[45]

From these words it becomes apparent that Neuhaus is interested in tapping into an aurality at once cryptic yet familiar, largely unconscious but comprehensible, transient yet continuous. His primary concern as an artist is therefore creating situations that enable a plunge into listening that is potentially as wholesome as Schaeffer's *entendre*. However, Neuhaus often introduces a sonorous component that surprises several senses, a shimmering of uncertain signifiers that play off the ear-eye interaction.

Therein arises a kind of mediatory occasion that has been described by Kramer if taken out of the context of musicality – as a sonorous envelope that bears on the signifying and nonsignifying realms of aurality at once. "The quotidian experience of hearing" in Neuhaus's works is the foundation that he complicates with a minimalist, fractal refinement in order to elicit another layer of the everyday self meaningfully uniting with the world.



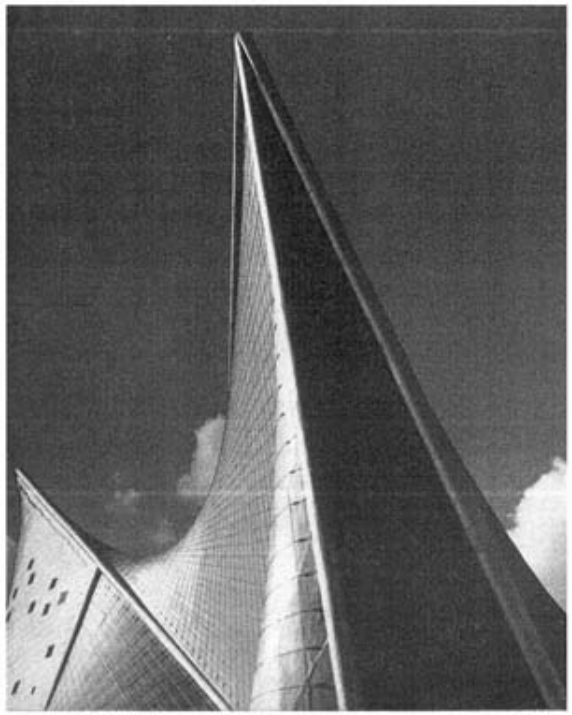


Figure 7: Iannis Xenakis: *Metastasis*, 1954

Philips Pavilion, Brussels World's Fair, 1958

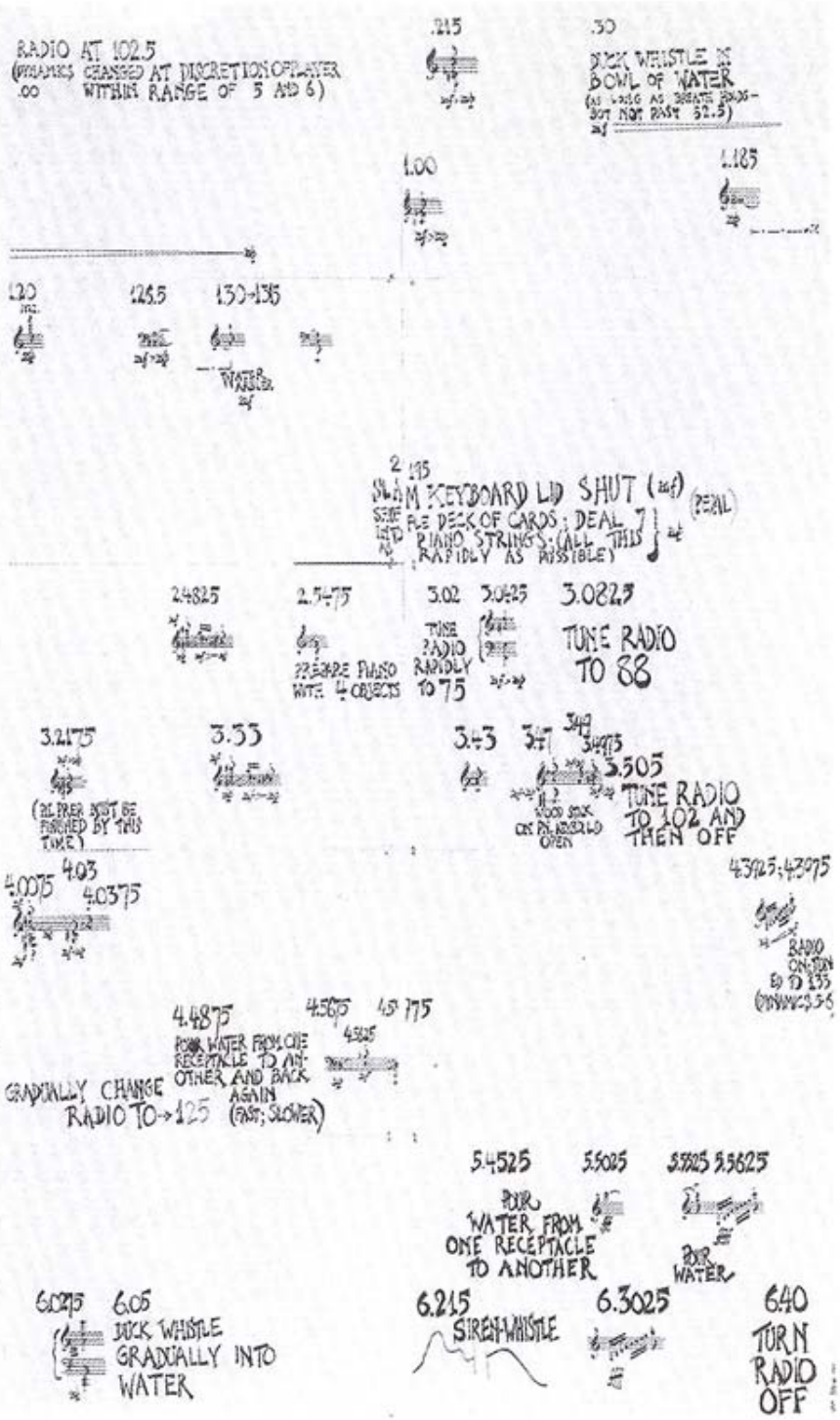


Figure 8: John Cage: *Water Music*, 1960

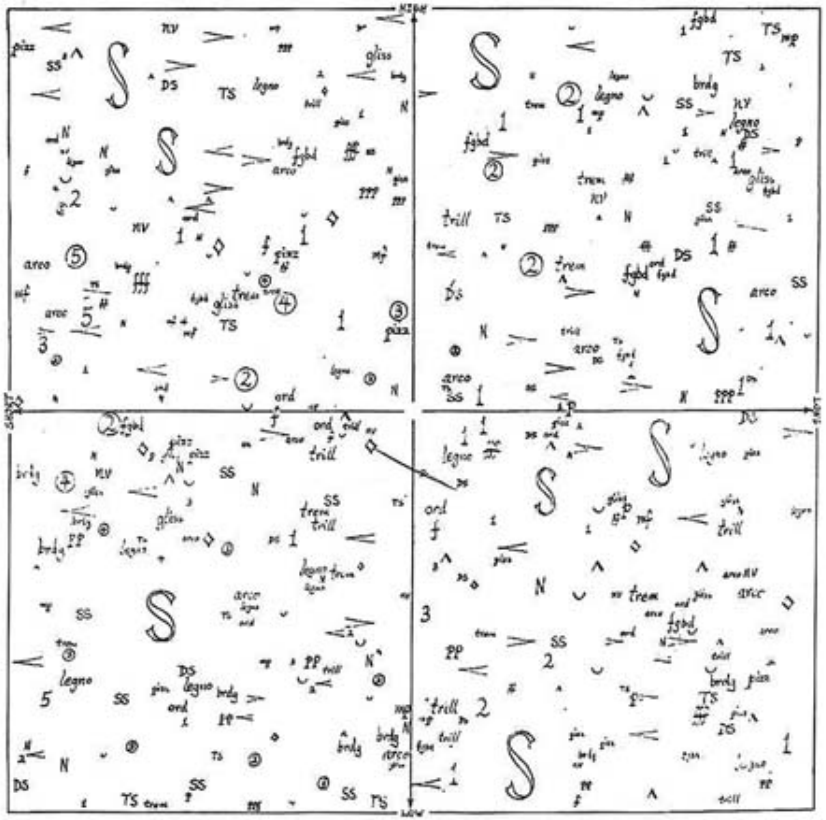


Figure 9: James Tenney: *String Complement*, 1964
Graphic score with instructions

STRING COMPLEMENT

James Tenney
February, 1964

To be used by any number of strings in performance with Ergodos I or II (magnetic tape), or any similarly ergodic* sound process.

The vertical and horizontal dimensions of the part represent pitch and duration - two primary dimensions of a musical "space" common to both the instruments and the tape (or other sound-source).

Each player responds to the sounds on the tape by producing sounds in opposition to these, by first locating a point in the space that is symmetrically disposed to the point that would represent the average pitch and duration of the tape-sounds, and then constituting a sound or clang (a small group of sounds) according to the verbal and other indications found in the region of the point located.

Thus, if the sounds on the tape are high and long (in the upper right quadrant), the instrumental sounds should be low and short (in the lower left quadrant), etc. (If the sounds on the tape are intermediate in pitch and/or duration, the instrumental sounds should be, on the average, intermediate also.)

In addition to the standard dynamic and other indications (ppp-fff, arco, pizz., etc.), the following symbols and abbreviations are used:

fgbd = at the fingerboard

brdg = at the bridge

ord = normal string position

◇ = harmonic

^ = sharp attack

∪ = soft attack

nv = no vibrato

SS = single stop

DS = double stop

TS = triple stop (arpeggiated when necessary, e.g., for long sounds, where only two tones could be sustained)

legno = either "col legno battuto" or "col legno tratto"

trem = tremolo (trills and glissandi may encompass any two pitches in the register selected)

1,2,3,etc. = clangs (groups) of one, two, three (etc.) sounds, separately articulated

②,③,etc. = clangs of two, three (etc.) sounds, played "legato" (note: in these groupings, double stops and triple stops are both considered just one sound)

N = noise, or sound of indeterminate pitch and/or timbre, produced by means of the instrument itself (no auxiliary sound sources)

S = silence

These playing indications are distributed uniformly and at random throughout the space of the part, and are notated in various sizes. Conflicting indications in a given region may sometimes introduce an ambiguity that should be resolved by the player on the basis of their relative size, distance from the central point, etc. Often, it will be possible to realize several disparate indications by combining them in some way, simultaneously or in sequence.

*Note: a process is said to be "ergodic" when any reasonably long segment of it exhibits the same statistical properties as any other segment, though they may differ in detail.

Notes

[1] David Toop, "…To Break the Silence of the City…" [database on-line] (Detachable Music, July 1998); available from http://www.netcore.ca/~obscure/artist/dm_essay_01.html; Internet.

[3] Kahn, *Noise Water Meat*, 69-70.

[3] Paul Griffiths, *Modern Music: A Concise History* (New York: Thames and Hudson, 1978, originally published as *A Concise History of Avant-Garde Music*; revised edition, 1994), 7-12.

[4] In the early 1920's, Schönberg – known for his earlier explorations in dissonance – developed a twelve-tone method. The technique employs a mathematical approach to the twelve pitch values comprising the chromatic scale which are arranged in a row, with no single pitch repeating. The original tone row is then varied systematically by inversion, retrograde, or retrograde inversion through which the pitch order is predetermined. The democratic tone sequencing encourages a perception that a work has no tonal center. By contrast, Charles Ives' dissonance is one of daring melodic juxtapositions and a disharmonic use of tone clusters, rather than individual tones. Composers inspired by Schönberg later elaborated a technique known as (total) serialism in which the principle of predefined row series is applied to additional musical parameters, like rhythm and dynamics.

[5] Alan Rich, *American Pioneers: Ives to Cage and Beyond* (London: Phaidon Press Limited, 1995), 46.

[6] Luigi Russolo, *The Art of Noise* [*sic*], trans. Robert Filliou (New York: A Great Bear Pamphlet, Something Else Press, 1967), 5.

[7] Russolo, "First Concert of Futurist Noise Instruments," in *The Art of Noise*, 15.

[8] Russolo, *The Art of Noise*, 10.

[9] Suzanne Delehanty, "Soundings," in *Soundings* [database on-line] (Neuberger Museum, State University of New York at Purchase, 1981); Delehanty's essay available from UbuWeb, http://www.ubu.com/papers/delehanty.html; Internet. The emphasis on the process, be it of the art piece or its experience, has significantly changed the art world's landscape to which infusions of aspects of aurality have contributed its part. In fact, the examples of artists employing sound by now (especially at some point in their career if not chiefly) are so numerous and diverse, they demand a treatise that goes well beyond the scope of this project. Delehanty's essay is a great, brief introduction to the multifaceted history of sound in the plastic arts. A more straightforward resource with visual references and a primary focus on Modernist painting is Karin v. Maur's *The Sound of Painting: Music in Modern Art* (New York: Prestel Verlag, 1999). Kahn's *Noise Water Meat* offers a much more complex reading of the relationship between art, music, and sound, with groundbreaking forays into areas that have never before been considered in relationship to sound (e.g., Surrealist painting).

[10] Carlos Palombini, "Musique Concrète Revisited," *Electronic Musicological Review*, UFPr Arts Department, Vol. 4 (Universidade Federal do Paraná, Centro de Computação Eletrônica, Brasil, June 1999) [journal on-line]; available from http://www.humanas.ufpr.br/rem/REMv4/vol4/arti-palombini.htm; Internet. Originally written in English for inclusion in Larry Sitsky, ed., *Music of the Twentieth-Century Avant-Garde: A Biocritical Sourcebook* (Westport, CT: Greenwood Publishing Group, forthcoming, January 2003). Schaeffer's production of *musique concrète* evolved from techniques like variation of recording speeds, manipulation of the pickup, looping, loudness modulation, and playing disks backwards, while the sound material consisted of sounds found in the environment like locomotive stokers, as well as voice recordings, library samples, orchestra and piano performances, Balinese music, etc. In 1951 the French Radio presented Schaeffer, the engineer Jacques Poullin, and the composer-percussionist Pierre Henry, who then formed the Groupe de Recherches de Musique Concrète, with the first electroacoustic music studio ever. The most significant addition to the equipment was a tape recorder that allowed for the influential *musique concrète* procedures like tape cutting and splicing at different angles and places.

[11] Kahn, *Noise Water Meat*, 4.

[12] Palombini, "Musique Concrète Revisited."

[13] Le Corbusier was unwilling to credit Xenakis for the design of the Philips Pavilion until, in Xenakis's words, "Finally he wrote an article in *Le poème électronique* declaring that the Philips pavilion was my design." Bálint András Varga, *Conversations with Iannis Xenakis* (London: Faber and Faber Limited, 1996), 24.

[14] Ibid., 24.

[15] Rich, *American Pioneers*, 164.

[16] Thomas B. Holmes, *Electronic and Experimental Music* (New York: Charles Scribner's Sons, 1985), 123.

[17] Ibid., 6.

[18] Ibid., 118.

[19] Kyle Gann, *American Music in the Twentieth Century* (New York: Schrimer Books, 1997), 263.

[20] Kahn, *Noise Water Meat*, 226.

[21] Ibid., 232.

[22] LaMonte Young, "Composition #7 (July 1960)" (MELA at Diapason Gallery, New York City, June 20th 2001, for the occasion of performance of Young's *Composition 1960 #7* by a Theater of Eternal Music String Ensemble) [database on-line]; available from http://www.diapasongallery.com/archive/01_06_20.html; Internet.

[23] Kahn, *Noise Water Meat*, 166.

[24] John Cage, " Experimental Music: Doctrine" in *Silence* (Hanover, NH: Wesleyan University Press, 1961; reprint 1973), 17.

[25] Cage, "Composition as Process: II. Indeterminacy" in *Silence*, 35-40.

[26] Gann, *American Music*, 144.

[27] Lawrence Kramer, *Musical Meaning: Toward a Critical History* (Berkeley: University of California Press, 2002), 146.

[28] Ibid.

[29] Ibid., 153.

[30] Ibid., 155.

[31] Ibid., 158.

[32] Michael Eldred, *Heidegger's Hölderlin and John Cage* [database on-line] (*artefact – A Site of Philosophy*, caretaken by Michael Eldred, Cologne, Germany; also published in Italian as *Heidegger, Hölderlin e John Cage*, trans. Agostino di Scipio, Rome: Semar Publishers, 2000); available from http://www.webcom.com/artefact/heicagen.html; Internet.

[33] Roland Barthes, "Listening" (in collaboration with Roland Havas, 1976) in *The Responsibility of Forms: Critical Essays on Music, Art, and Representation*, trans. Richard Howard (Berkeley: University of California Press, 1991), 259.

[34] Ibid.

[35] Questioning the difference of musical structuring between the East and the West as one of (single) sound versus relationships between sounds (syntax) respectively, Alex J. Lubet says: "Ultimately, the premise that Asian musics are based on single sounds can be challenged on a very fundamental level. While there is no doubt that the phenomenon of sound exists, it is questionable whether isolated, single sounds are any more real than the dimensionless "points" of geometry, useful thought constructs but nothing more. Sound, at least as humans perceive it, may be by its nature dynamic. At least four of the most important characteristics through which we identify the timbre of a musical instrument or, presumably, any recognizable sound – attack, transients, mechanical noises, vibrato, and amplitude modulation – are features that change throughout the life of a so-called single sound. Since they are factors the ear uses in identifying familiar sonic structures, they are predictable and thus perhaps even syntactical. In that sense, even Cage's music of unrelated, purposeless sounds relies on a sort of sonic grammar, even if it is natural and inevitable." Alex J. Lubet, "Indeterminate Origins" in Heintze, James R. and Michael Saffle, eds., *Perspectives on American Music since 1950* (New York: Garland Publishing, Inc., 1999), 119.

[36] Meyer, *Music, the Arts, and Ideas*, 74.

[37] Ibid., 346.

[38] Ibid., 11.

[39] Chris Melchior. "Ambient Music, Beginnings and Implications" [database on-line] (Hyperreal Music Archive, Epsilon: An Ambient Music Information Archive, n.d.); available from http://music.hyperreal.org/epsilon/info/melchior.html; Internet.

[40] Ibid.

[41] Kahn, *Noise Water Meat*, 160.

[42] Thomas B. Holmes defines timbre as follows: "The nature or quality of a sound, sometimes known as tone color, is its timbre. All sound waves are complex and contain more than just one simple frequency or fundamental tone. These additional wave structures are called such things as partials, harmonics, and transients. If one pitch, or fundamental, predominates, then the sound can be related to a note on the musical scale. When there is more competition for dominance or there are very complex sets of overtones present, a sound may take on highly dense and unusual characteristics. Timbre is what distinguishes the sound of different musical instruments playing the same note. It is a function that can be controlled or shaped by the electonic-music composer." Holmes, *Electronic and Experimental Music*, 11.

[43] Neuhaus, "Sound as a Medium" in *Three to One* (Brussels: La Léttre Volée, 1997).

[44] Ibid.

[45] Ibid.

NEUHAUS CROSSING OVER

The installations differ in two principal ways. One is that they're not a succession of aural events in time. This seems to be one of our basic definitions of music – a series of sound events that follow one another in time, a time continuum. My sound installations are continuums in space. The other difference is that the sound is not the work. The sound is the material I make a work out of…the material I use to transform the space into a place.
Max Neuhaus[1]

The opening of Western art music to all sound produced new listening situations and encouraged new modes of listening by emphasizing diverse sound possibilities in terms of its organization, acoustic quality, or performance framework and method. The more experimental forms, especially, depended on inclusive listener participation for the experience and the meaning of the work. The absorption of everyday sonic phenomena, spatial immersion of ambient and electronic music, intermedia performances involving (musical) sound, and the activated involvement of the audience all conduced toward visions for a new aurality, a new way of hearing the world. It is in this context above all that Max Neuhaus's alternative and pioneering explorations with sound were conceived.

Listen Walks

Neuhaus contested the normative boundaries between composer, performer, and audience in multiple ways beginning in 1966 as he shifted from virtuoso solo percussionist to an artist dealing with the materiality of sound and the public at large. The transfer was fundamentally a move from a performer-determined composition to a listener-determined sound work. Preceding actual sound works that year, however, was his first *Listen* walk that bid mindful listening to the surrounding environment (Fig. 10). The event is important both because it points to the artist's fascination with spatially perceived sound and because it discloses his own move beyond Cage's *4'33"*. While Neuhaus embraced Cage's bringing everyday sounds into the concert hall "as giving aesthetic credence to these sounds – something I was all for," he disliked the formality and exclusiveness surrounding concert performances that seemed to render the revolutionary proposition of the silent piece less effective in practice.[2] "Most members of the audience seemed more impressed with the scandal than the sounds, and few were able to carry the experience over to a new perspective on the sounds of their daily lives." He continues: "Why

limit listening to the concert hall? Instead of bringing these sounds into the hall, why not simply take the audience outside – a demonstration in situ?"[3]

Listen walk was illustrative of this vital transition because it concluded with a musical performance after the artist had led a group of friends on a silent walk. The invited participants gathered at a street corner in Manhattan where Neuhaus rubberstamped each one with the word LISTEN, and proceeded

> …walking with them down the 14th Street towards the East River. At that point the street bisects a power plant and, as I had noticed previously, one hears some spectacularly massive rumbling. We continued, crossing the highway and walking along the sound of its tire wash, down river for a few blocks, recrossing over a pedestrian bridge, passing through the Puerto Rican street life of the lower east side to my studio, where I performed some percussion pieces for them.[4]

What the walk provoked, in fact, was another key idea that Neuhaus has continued to exploit over the years: the interrelationship between visual and aural perceptions. This was an exercise in maintaining an intent focus on the aural aspect of the environment that is normally retained in the background of what is for most people a much more consciously experienced visual scanning of the changing landscape. A walk also, that recalls Michel de Certeau's essay "Walking in the City" in which walking is reconsidered as the kind of traversal that escapes the legible, functionally administered, labeled, structurally organized, mapped and planned city – to unfold unique readings particular to the walker's own everyday itineraries through which the official (vision-centered) ordering is continually appropriated to create private "legends" or meanings.[5] A similar parallel can be found in Guy Debord's critique of the visual spectacle and the correlated situationists' concepts of *psychogeography* and *drift* understood as a constructive activity through which alternative city geographies are detected.[6] Finally, Neuhaus's closing performance should be understood in the light of a particular listening phenomenon, for how we hear something at a given moment is always modified by the recently heard sounds retained in our inner ears.

Subsequent *Listen* walks were Neuhaus's subversive but equally serious reply to "institutional beasts" as he likes to call organizations burdened by bureaucratic principles. In this case, he was receiving invitations from various universities to give lecture demonstrations about playing percussion. To the expectant audience's surprise, he would instead ask them to meet him outside, perform his rubberstamping ritual, and lead them to and through nearby found environments that harbored interesting soundscapes, including power plants and subways. "The rubber stamp was the lecture and the walk the demonstration," he says, adding that his intense concentration on listening seemed contagious and that many participants "had found a new way to listen for themselves" by the time they

returned.[7] However, the notion of environmentally disclosed aurality, not to mention music, was at the time still too radical for most academic institutions. In 1976, the faculty at a university in Iowa was so outraged by Neuhaus's lecture demonstration that they placed his name on a blacklist, which put an end to similar invitations.

Networks and Voice

In 1966, Neuhaus was invited for an interview at the WBAI radio station in New York. Once again not particularly interested in talking, he seized the opportunity to come up with a fresh idea for a live sound broadcast called *Public Supply*. Difficult as it is to imagine today, radio stations at the time existed without call-in telephones. There is always an anecdote associated with Neuhaus's groundbreaking projects; here, for example, the station's radio engineer refused to help him for fear that if people were on air live they would use swearwords and the station would then lose its license. Nevertheless, Neuhaus convinced the radio people to let him carry off his experiment. Left to his own ingenuity, he first went to a telephone company, where he borrowed ten telephones under the pretext that they were needed for a fundraising project. One hour before the project went on air, he and a friend constructed a primitive answering machine using levers linked to a switch that enabled Neuhaus to lift and hang up the receivers. They attached small plastic cups with microphones on the earpieces, which were connected to an amplifier and a speaker. The "show" went on air as planned, with people calling in to contribute any sound they wished. Neuhaus's role was to moderate the "wonderful chaos," to counterbalance the extremes, incorporating the feedback noises produced by the radios callers were asked to leave on, and to shape interesting sound combinations thereof. Neuhaus remembers how one person was reading a poem for about twenty minutes and he kept the reader-caller in the background, suspended over other random sounds coming through. It was not until after the process that he fully realized the potential of the idea: "I had made a virtual space which anyone of the ten million people living there could enter into by dialing a telephone number."[8]

The three *Public Supply* broadcasts that followed (Toronto in 1968, New York in 1970, and Chicago in 1973) were technologically savvier. With tools like a photocell finger mixer (Neuhaus's invention) and tone generators, Neuhaus's role as a moderator diminished. The incoming voices and sound signals instead activated programmed devices that reformed them based on, for example, their pitch to produce a variety of tone clusters transmitted in conjunction with the sounds people were making. The idea

culminated in a National Public Radio broadcast *Radio Net* (January 1, 1977) which was a complex looping feat involving almost two hundred stations with five call-in cities, all converging in Washington DC. Over the phone, Neuhaus installed self-mixers that he had already mailed to the engineers in each city, and adjusted the existing giant radio loops, which connected all the stations, to achieve repeated circulations of the incoming sounds. In order to get a fair amount of high-pitched material, the callers were asked to whistle and many did so. The sounds were again transformed in the generators and traveled around, fading away progressively with each completed loop. 10,000 calls were received in the course of two hours, during which Neuhaus was in constant communication with the engineers in order to keep the generated live, five-pronged output under control.

Because these broadcasts were live interactive processes, Neuhaus never intended for them to be recorded. That would make them into musical events, whereas his idea "always was that these be entities."[9] Conversely, Neuhaus has come to think of them as sound dialogues, tapping into a lost history of sound activities among ancient people, "a form of music-making which remains now only in societies untouched by modern civilization." He continues:

> Rather than something to be listened to, music in these cultures is an activity open to the public at large – a dialogue with sound rather than a performance. I believe this to be the original impulse for music in mankind.[10]

Neuhaus envisioned this project on a global, multilingual scale, available twenty-four hours a day. However, he "ran against the limits of analog circuitry in 1977" and it has only recently become possible to conceive of such an entity using the Internet. Not surprisingly, he has a proposal out for an Internet forum titled *Auracle* that will consist of a downloadable and continually evolving instrument–score (software synthesizer). Instead of manually, it will be played with one's voice, chosen because it is an innate instrument, a highly sophisticated muscular system that lay people can control best, in Neuhaus's words, without musical training, skill, or dexterity. Because *Auracle* will thereby exclude musical quotes or samples, he explains, it will let people invent new musical possibilities. The other crucial component is its real time element. The plan is to have a choice of joining or forming one's own group with whoever happens to be on the same web page at the time. Because each participant will have the same software synthesizer already downloaded in their computers, the sound signals will travel instantaneously – everybody will be playing interactively in real time, on the same instrument, and directly with their voices.[11]

We will have to wait for the realization of this project before an understanding of how the instrument-score will function in mediating the nuances of transcultural vocal input. Based on Neuhaus's intent to distill the primal elements of (in this case) vocal sound that precede yet inform spoken language, the transformation of participating voices will likely come closer to Barthes' notion of *the grain of the voice*, that is, "when the voice is in a double posture, a double production: of language and of music."[12] Barthes' essay on the subject dealt specifically with song, where the grain of the voice refers to diction and bodily gesture. Interestingly though, his elaboration of the concept at some point echoed Neuhaus's own description of sound character materialized through human speech: "The "grain" of the voice is not – or not only – its timbre; the *signifying* it affords cannot be better defined than by the friction between music and something else, which is the language (and not the message at all)."[13] The grain's frictional position complements Neuhaus's "another layer of meaning on top of verbal language." Bringing this in-between area to the fore in a form of a sound dialogue, as he did in *Radio Net*, is a stimulating opportunity to practice hearing it as well as communicating with it more consciously.

Drive-in Music

Also in 1966, Neuhaus conceived the idea for his first sound installation *Drive-in Music* (1967/68) that was later realized at the Albright-Knox Art Gallery in Buffalo, NY.[14] Still thinking in terms of extending musical possibilities, the piece was built to put the listener in an active role of playing an invisible score that emerged when the listener drove through a sound topography. Seven radio transmitters were placed on both sides of the road, beginning at the gallery's entrance and continuing for about half a mile. Each emitted a unique sound frequency whose spatial dimensions were adjusted with antennas to form intervals of sonic overlap. The occupants of the automobile could hear the sounds only over car radios tuned to the appropriate AM frequency. The dynamics of the sound topography varied with driving speed and direction, which made it changeable as well as practically unrepeatable. It varied with weather conditions, too. Neuhaus placed the sound installation in the driver's hands (ears), like a steering wheel, where the shifting location was suddenly enhanced to become one's very own musical performance.

Sensation

When discussing the use of water in 20th century experimental music, Kahn observes that "The material flows and turbulence of water and fluidity in general would…be called on during the 1950s to drain subjectivity from performers and other creators."[15] This *modus operandi* continues to resonate with Neuhaus's series of *Water Whistle* projects conducted in seventeen swimming pools across the country from 1971-74. They were, in one sense, a way of draining the creator's subjectivity whose own body was fully drenched for hours on end. But they were also a playful reaction (and successfully so) against the formality of contemporary music audiences that Neuhaus found tediously pretentious. The idea, however, developed fully after he had left the Bell Labs and lived on a boat for almost a year. He had been thinking about ways of creating sound under water for some time, though when he sought advice from engineers and acousticians, they would respond with the same irrelevant statement regarding sound conductivity: "water is not more compressible." (This is one of those anecdotes that make Neuhaus laugh buoyantly.) Moored at 79th Street in New York one day, Neuhaus got his safety police whistle from the boat, stuck it on the end of a hose that he noticed on the dock, turned the water on, submerged the whistle in the Hudson River, and heard the answer he needed.

Geared with long hoses, small metal whistles, connectors, pipes and wrenches, Neuhaus began building underwater sound topographies that were partly determined by the shape and the size of a given swimming pool. By adjusting the pressure of water released through the hoses to activate the whistles, he was able to control the sounds that were audible only underwater. While he spent most of the time – often up to twelve hours – swimming below water (safely heated to body temperature) to exact the tuning, listeners could enter the aural experience by submerging their ears under the pool's surface to enjoy what were variously described as piping, soothing, pacifying, softly-shrieking, and subtly-changing clusters of sounds (Fig. 11).[16]

One of the reasons these works lasted all day or all night was to take them out of time as far as feasible so that they would not be perceived as events, but more like opportunities for another kind of listening. However, Neuhaus's hope that people would come and leave after having "chanced upon" a temporary pool of sound underestimated the festive spirit of the 1970's art crowds, who instead hung around until the "event" was over. This made it more difficult to disassociate these works from the idea of a radical music concert, but then again, they were transitional as well as intermedial, and the actual aural experience was hardly affected by whether one thought of it as music or something else. This is to

say, theoretically these projects were squarely antagonistic to the idea of a concert performance while Neuhaus's renown was at the time still that of an experimental musician. His mediatory presence – though less visible – was also required, which again precluded the idea of a self-sufficient sound entity. On the other hand, the listening experience diverged from pure musical listening – not so much because of its temporal span (LaMonte Young held performances that lasted several days, for example) or because the sounds were extramusical and simply followed one after another (those boundaries had already been dissolved) but because it literally involved all the senses. As such, the submerged listening emphasized a kind of holistic aural experience in which the aural mind is inseparable from the entire body *sensorium*.

The disclaimer that thinking of a work as music or something else is more or less inconsequential to its experience cannot be made about subsequent *sound installations*, which prompted Neuhaus to coin the very term and so demarcate the new ground he was treading. Over time, he would stop using the word installation for similar reasons and resort to *sound work*; sound installations (and more recently, sound art) have since come to connote all kinds of art utilizing sound in a decidedly different manner, while the term *sound work* (like Vectors, see below) allowed Neuhaus to encompass the diverse range of his activities.

Times Square

In a 1990 conversation with Ulrich Loock, Neuhaus described his transition to art specifically in terms of the relationship with the general public:

> The first works of mine were about dealing with a public at large – a wish to remove myself from the confined public of contemporary music. It came from a deep belief that I could deal in a complex way with people in their everyday lives. Not making a simple piece for a simple public but making something very special, accessible to anyone ready to pay attention.[17]

Probably Neuhaus's most legendary permanent installation, *Times Square* (1977-92; reinstated in 2002; Fig. 13), is a great example of that vision. It took him four years from the time he designated the site to install the work. Among other bureaucratic ordeals, he was driven to establish his own company, HEAR Inc., which enabled him to navigate the official waters with required credentials. Once the work was completed and running, Neuhaus had to battle again not to have a nameplate installed, since the anonymity of the work was integral to its concept. The installation can be imagined like an invisible block of sound spreading over a subway ventilation grille located on a sidewalk island in the midst of

the world-famed square. A giant loudspeaker, installed in the chamber underneath, was originally emitting an electronically programmed sonority tuned to activate the resonances of the chamber. Given the noisy surroundings, a conscious perception of the work is highly indeterminate and depends largely on the pedestrians' readiness to feel that they might be hearing or sensing something unusual: "In the same way that perhaps they might find a window or a building that, at a certain time of day, happens to reflect light in a special way. Something inadvertent which they take as their own."[18] In this way Neuhaus fulfilled a very special premise of his: by making the sound into a permanently available entity, yet one that is not in any way imposing, he lets the listeners discover the unmarked sonority on their own and put it in their own time.

Ironically, assuring that *Times Square* remained permanent became problematic not because of some technological shortcoming – the equipment was in perfect condition after having functioned for fifteen years – but because of an ongoing war between the city's electrical company and the department dealing with traffic signals. Neuhaus was caught in the middle from the beginning because the piece was powered from one of the streetlights. This in turn caused problems whenever an outage occurred because the sound work needed to be switched back on. With no outside cooperation this tedious task was difficult to maintain, not least because Neuhaus lived in Europe for regular half-year intervals where he received commissions for his work.[19] More importantly, the insistence that all his sound works remain turned on twenty-four hours a day is essential. The work exists only when in operation; to be an entity, made of such immaterial and invisible substance, its continuous performance is an indisputable precondition for Neuhaus.

Because of the repeated maintenance problems, Neuhaus finally decided to put *Times Square* on strike. Although he laughs at the inconsequential disturbance of that act in the grand scheme of things, he was recently asked to reconsider his rebellious decree. Neuhaus agreed to reinstall the work if funding to rebuild the same sound texture was secured. His plan was to replace the original sound, produced through electronic synthesis technique, with an identical conversion into a previously unavailable digital format that would enable off-site maintenance. As it turned out, the funds were successfully solicited "from corporations in the immediate neighborhood" and *Times Square* was re-inaugurated in May 2002.[20] The work is, moreover, currently Neuhaus's only permanent installation in the United States. He donated *Times Square* to the Dia Center for the Arts, which will supervise its maintenance. The beautifully unobtrusive work, in complete contradiction to the Times Square

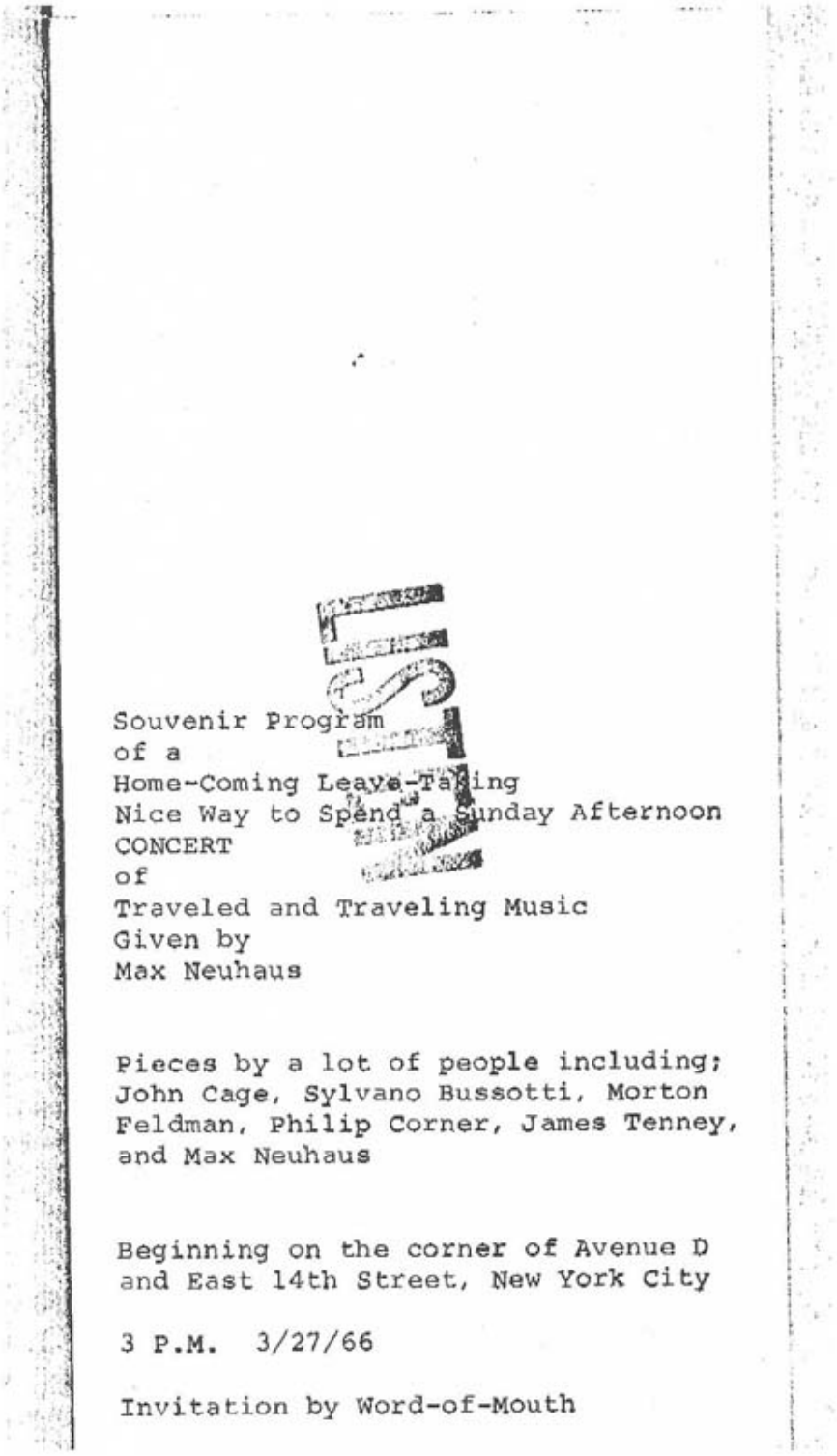
commotion and visual overload, now once again has its permanent residence, and always-new listeners who may enter, for a moment, an island of tranquil difference.

Vectors

Several subtitles in this section derive from Neuhaus's endeavor to create a systematic but open-ended sense of the course his work has taken. By the year 2000, the directions coalesced into a circular diagram presented for the exhibition "Images from Eight Vectors: 1953-2000" at the Christine Burgin gallery in New York (Fig. 14; Appendix B). The vectors (with the exception of one pair) form diametrical dyads that share a set of features and simultaneously differ in the way these have been brought about. For instance, Walks, which comprise mainly *Listen* series, complement Passage works like *Drive-In Music* and *Suspended Sound Line*, because they require movement through a soundscape. However, the soundscape is constituted quite differently in each case – as a found environment in Walks and as a constructed sound work in Passages, whose static structure is activated by the listener moving through them. The vectors themselves set up movements that disclose a diachronic, expansionist trail, like Networks (*Public Supply I-IV*, *Radio Net*, and *Auracle* proposal). Because Networks "propose the self-evolution of new musics,"[21] in Neuhaus's words, referring to the original impetus for music-making as "a dialogue with sound rather than a performance," the Performance vector stretches in the opposite direction and encompasses his percussionist career, starting with the decisive moment when he, at age fourteen, "decided to be the best drummer in the world."

How far the individual vectors have stretched has depended on the degree of resistance encountered, explains Neuhaus. Thus Place works (e.g., *Times Square* and others discussed in the next section) multiplied and diversified over time because they seemed closest to the well-established category of sculpture. Though the resistance has often been institutional or financial, it was sometimes a matter of a chasm between an idea and the historically available means. Many times Neuhaus overcame the technological deficiencies by inventing tools and equipment for his projects. The Invention vector hence includes such pragmatic, behind-the-scenes projects, as well as a design for the sounds of emergency vehicle sirens on which he had worked for over a decade. That single utilitarian project was never realized – the artist described the complex episode in "Sirens" article, attached in Appendix C.

The vector diagram distilled Neuhaus's sound activities by displacing the often confusing dichotomy of music – not-music. Freed from that opposition, the work emerges clearly as a series of interlocked movements that carry specific core ideas or processes. The idea of sound topography, for instance, changes dramatically from one vector to another – found sound topography, fluid underwater sound topography, static sound source becoming a moving sound topography, the geographically vast and interactive radio sound topography, etc. The open-ended directionality of vectors yields a narrative coherency to Neuhaus's explorations of aurality that ultimately derives from the consistency of his desire to propel listeners and incite sensitive listening.



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Invitation by Word-of-Mouth

Figure 10: *Listen*, 1966

Figure 11: *Water Whistle*

Pairs of clicks
in overlapping
zones.

Gradually shifting
from sharp to hollow,
becoming faster
and slower.

Conforming to shifts
in weather,

Positioned in pathways
between entrances
and exits,

Encountered daily,

Unmarked,

Discovered
or not
by the passerby.

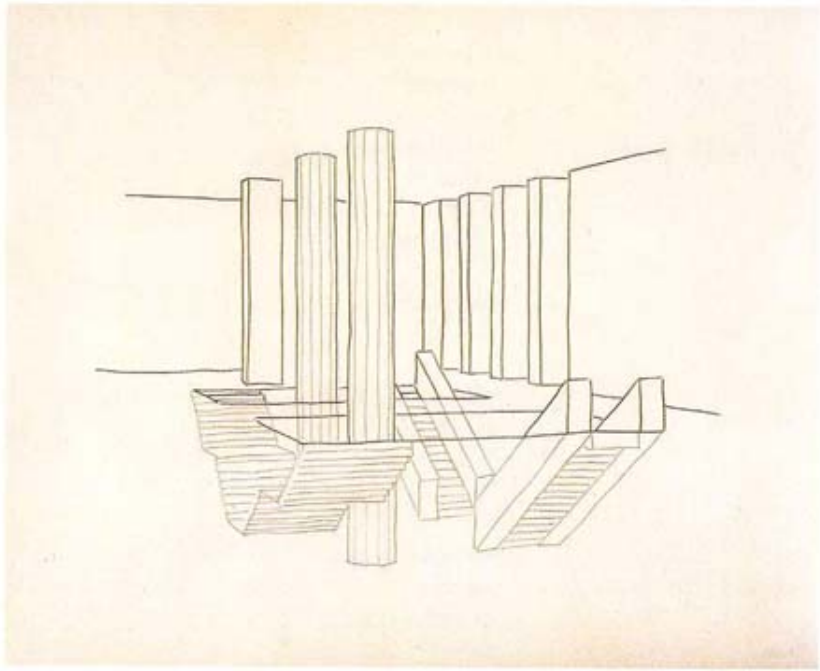


Figure 12: *Walkthrough*, pencil on paper, 1993
60 x 75 cm; 60 x 34 cm

Sound work:
Location: Jay Street Station, Metropolitan Transit Authority Building, New York
Proposed: 1971
Extant: 1973 - 77

The work is located on a pedestrian island, a triangle formed by the intersection of Broadway and Seventh Avenue, between Forty-sixth and Forty-fifth Streets in New York City's Times Square.

The aural and visual environment is rich and complex. It includes large billboards, moving neon signs, office buildings, hotels, theaters, porno centers and electronic game emporiums. Its population is equally diverse including tourists, theatergoers, commuters, pimps, shoppers, hucksters and office workers. Most people are in motion, passing through the square. As it is a junction of several pathways across the square, the island is sometimes crossed by a thousand or more people in an hour.

The work is an invisible, unmarked block of sound on the north end of the island. Its sonority, a rich harmonic sound texture resembling the after ring of large bells, is an impossibility within its context. Many who pass through it, however, can dismiss it as an unusual machinery sound from below ground.

For those who find and accept the sound's impossibility, though, the island becomes a different place, separate, but including its surroundings. These people, having no way of knowing that it has been deliberately made, usually claim the work as a place of their own discovering.

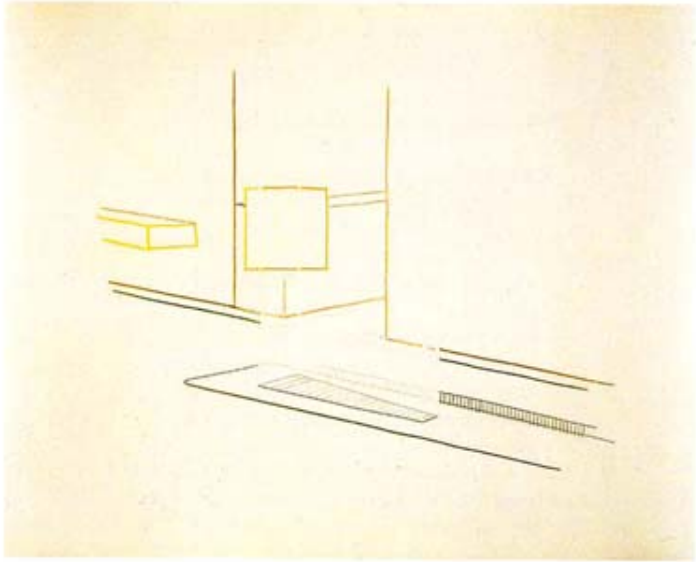


Figure 13: *Times Square*, colored pencil on paper, 1992
74.5 x 96 cm; 74.5 x 79 cm

Sound work:
Location: Pedestrian Island between 46th and 45th Streets, New York
Proposed: 1973
Extant: 1977 - 92
Reinstatement: 2002 - present

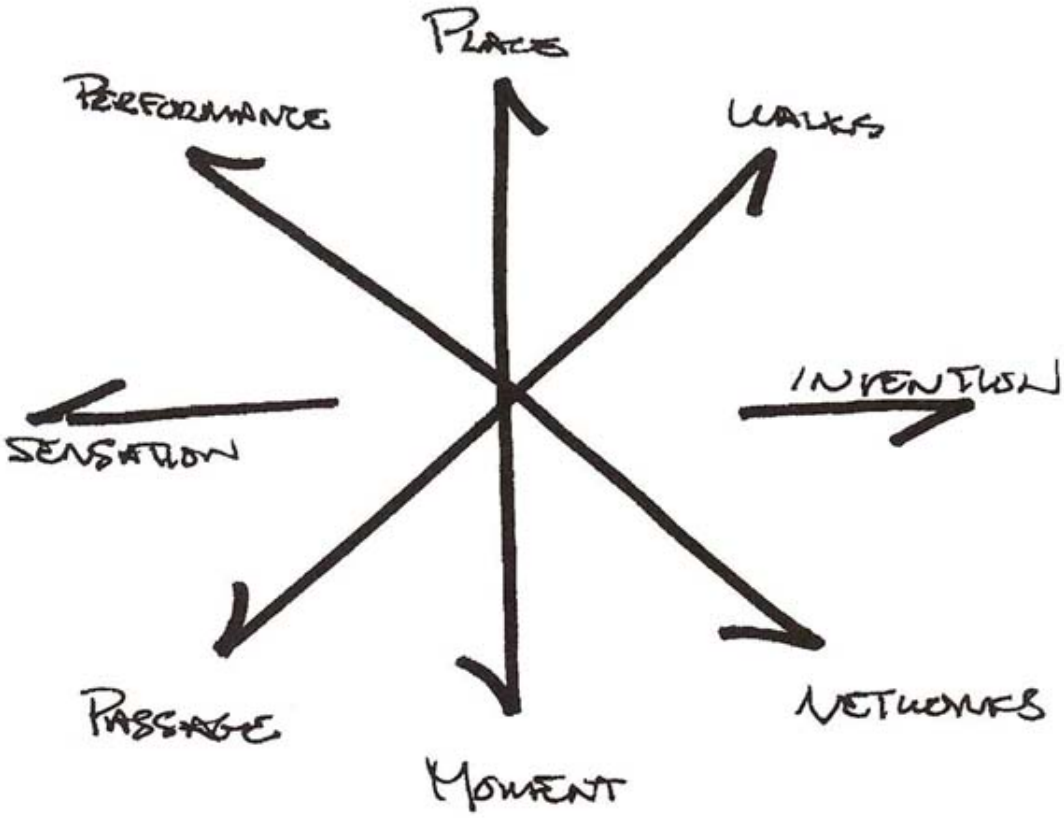


Figure 14: Eight Vectors, 2000

Notes

[1] Conversation with Ulrich Loock in *Max Neuhaus, Elusive Sources and 'Like' Spaces* (Turin: Giorgio Persano, 1990), 15.

[2] Neuhaus, "Listen" in *Elusive Sources and 'Like' Spaces*, 20.

[3] Ibid.

[4] Ibid.

[5] Michel de Certeau, "Walking in the City" in *The Cultural Studies Reader*, Simon During, ed. (New York: Routledge, 1993; reprint 1999), 126-33. See also Michel de Certeau, *The Practice of Everyday Life*, trans. Steven Rendall (Berkeley: University of California Press, 1988).

[6] See Guy Debord, *The Society of the Spectacle*, tran. Donald Nicholson-Smith (New York: Zone Books, 1994; reprint 1998) and Simon Sadler, *The Situationist City* (Cambridge, MA: The MIT Press, 1998; reprint 1999).

[7] Neuhaus, "Listen" in *Elusive Sources and 'Like' Spaces*, 20-21.

[8] Neuhaus, "The Broadcast Works: Public Supply" (lecture given at *ZEITGLEICH Sound Symposium*, Hall in Tirol, 1995; available in print) [database on-line]; available from http://thing.at/orfkunstradio/ZEITGLEICH; Internet.

[9] Neuhaus, conversation with the author, 21-22 January 2001.

[10] Neuhaus, from wall text in the exhibition "Images from Eight Vectors: 1953-2000" at Christine Burgin gallery, New York (September 30 – October 28, 2000).

[11] For more information on *Auracle* and other projects listen to a conversation with Neuhaus on Live Constructions Archive [database on-line]; available from http://www.columbia.edu/cu/wkcr/archives/newmusic/p2.html; Internet.

[12] Roland Barthes, "The Grain of the Voice" in *The Responsibility of Forms: Critical Essays on Music, Art, and Representation* (Berkeley: University of California Press, 1985), 269.

[13] Ibid., 273.

[14] Another version of *Drive-In Music* was installed in 1975 at Lewiston State Arts Park, New York.

[15] Kahn, *Noise Water Meat*, 250.

[16] *Water Whistle*s were followed by *Underwater Music I-IV*, three of them in Europe, where loudspeakers substituted whistles.

[17] Conversation with Ulrich Loock, *Elusive Sources and 'Like' Spaces*, 59.

[18] Conversation with Ulrich Loock, *Elusive Sources and 'Like' Spaces*, 58.

[19] One of the projects that first encouraged Neuhaus to live in Paris remained unrealized. In 1973, the same year he spotted the *Times Square* location, Neuhaus envisioned another installation with the same amount of eager intensity. He proposed a large-scale sound work to be installed in a long Paris Metro tunnel at the Montparnasse-Bienvenue interchange. Ten years later he succeeded in winning over the Metro administration only to receive a rebuff from the Ministry of Culture. For more details see Neuhaus's article "The Institutional Beast" in *Max Neuhaus: Inscription, Sound Works, volume I*, Gregory des Jardins, ed. (Ostfildern-Stuttgart: Cantz, 1994), 80-84.

[20] John Rockwell, "That Rumbling Underfoot? It's Not a Subway, It's Art," *New York Times*, 22 May 2002, sec. Arts.

[21] Neuhaus, wall text in "Images from Eight Vectors: 1953-2000."

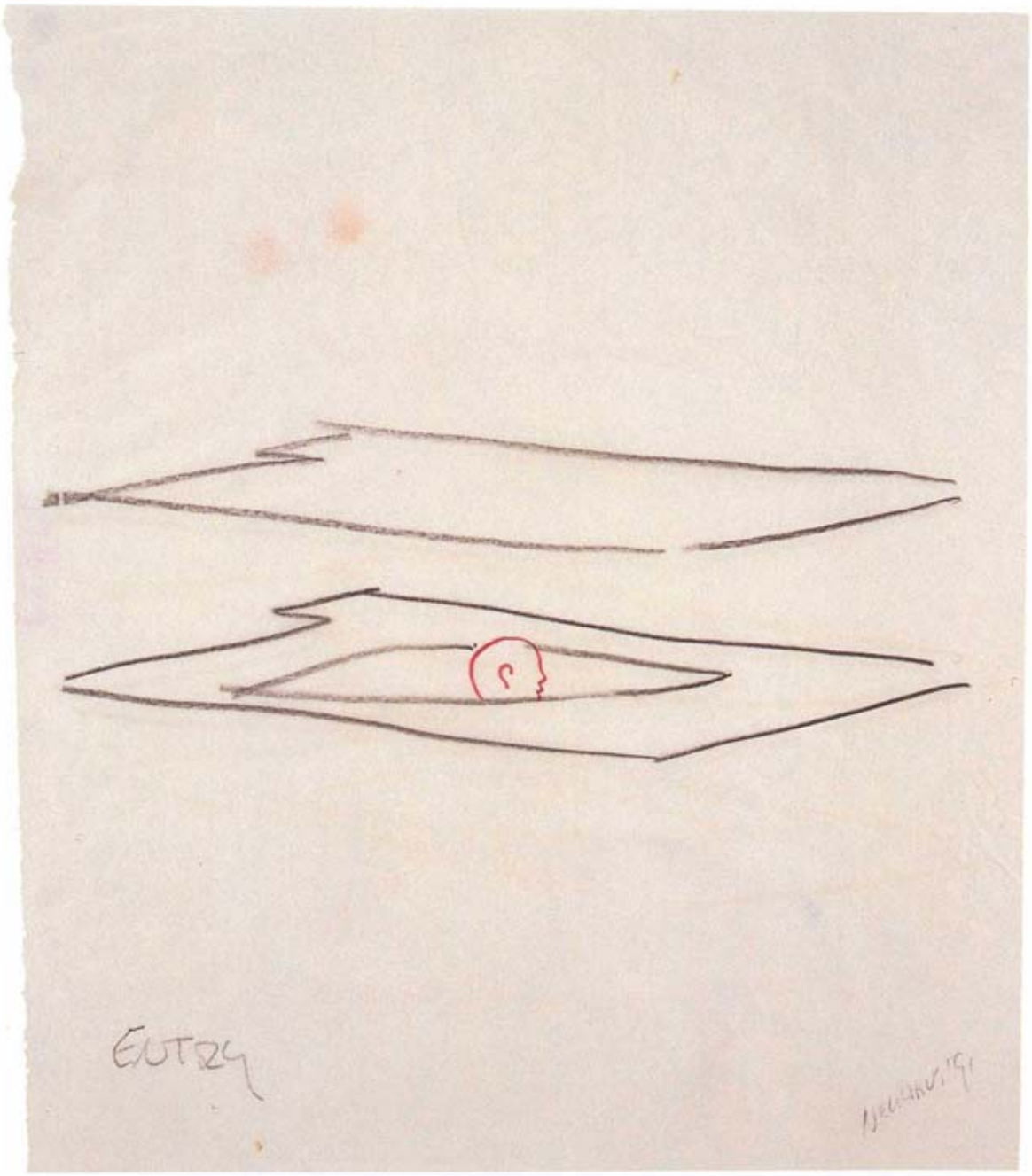


Figure 15: *Entry, Three to One*, colored pencil on paper, 1991
30 x 26 cm

CONSIDERED PHENOMENOLOGICALLY

These terms 'place' and 'moment' which I use and within which I work have evolved into general forms – two complementary areas within which I group individual works. The thing that makes moment pieces different from place pieces is that the moment pieces are in all places, but only occur for a moment in all those places; while the place pieces are only in one place, but are continuums which are always there.

….

Each one generates in the perceiver the opposite of what it is: the moment pieces generate an instant of being in one's own place; place pieces generate a period of being in one's own time. They are two opposites; each one is what the other is not.

Max Neuhaus[1]

In phenomenology the question of Being is addressed descriptively. In the writings of German phenomenologist Martin Heidegger and French phenomenologist Maurice Merleau-Ponty, phenomenology becomes an account describing our experience of Being in the world through which forces of perception, sensation, intention, motivation, cognizance, etc. are discerned. In this section, two topics that recur in Max Neuhaus's work are considered from a phenomenological perspective: sound and listening on one hand, and space and place on the other. This theoretical orientation coincides with the ways Neuhaus brings his work to life. It also indicates how we might imagine, experience, or think about them. Above all, the phenomenological backdrop accentuates the nuances that Neuhaus employs to invert our expectations.

"*Sound reveals time*," wrote Don Ihde in a book that explored listening from a strictly phenomenological standpoint.[2] Ihde's experimental investigation proceeded from the grounds charted first by Edmund Husserl and later redrawn by Heidegger. The introductory set of complementary differences between visual and aural perceptions developed into the twofold dimensionality of *auditory field* as experienced in the simultaneous "surroundability" of sounds on one hand, and their often precise "directionality" on the other. We are, said Ihde, at once immersed in an encompassing sound world that is omnidirectional and penetrating, and are usually able to locate the sound source or sense the direction from or to which a sound is traveling. These characteristics of auditory field-shape expose an essential liveliness of auditory experience, "the *timefulness* of sound," whereby sounds move, well up, and fade out.

Through the temporal dynamics of the auditory field, one can delimit its *horizon*. For Ihde, the horizonal aspect of audition – at once defining the possible range of a listening experience and the elusiveness of its boundaries – was thus revealed most clearly in time: "As I listen to music on the radio,

the notes "well up" out of the "nothingness" of the future and "trail off" into the horizonally equal "nothingness" of the past, and the sense of the horizonal "absence" is the experienced temporality of sound."[3] The *no longer* and the *not yet* audible continuity of all sonic experience constitutes a temporal presencing of ontological import that Ihde summed up through his interpretation of Heidegger's late writing:

> In the lecture, "Time and Being," Heidegger speaks of an *Event* as a *giving*. Being, which is that which comes-into-presence, that which is (already) gathered, is the given. But at the horizon one may note the giving, the *e-venting*, the point at which "there is given" into what is present. Nowhere is this more descriptive than in the experience of listening. The sounds "are given," they come unbidden into presence, and humankind, in listening, is let in on this e-venting. Listening "lets be," lets come into presence the unbidden giving of sound. In listening humankind belongs within the event. And as a presence, the sound is that which *endures*, which is *brought to* pass, the sound *whiles away* in the temporal presencing which is essential to it.[4]

Place: Plausibility & Liftoff

Sound reveals place could be Neuhaus's reply to Ihde's phenomenological analysis of sound and listening. When Neuhaus talks about building his sound works, he says that they arise from the given social, physical, and acoustical contexts. The site he selects determines certain physical conditions, including architectural or natural, and the social aspect enters predominantly through the purpose the chosen location serves, its everyday aural character, its history, and the type of audience one might expect there. Creating a work within a cultural setting, like a museum or a gallery, can be tricky insofar as the creator is dealing with an expectant audience, one that expects to see some visual sign. In such places, Neuhaus has often selected unlikely and transitory (exhibiting) locales like stairwells or gardens, where the visitor's attention relaxes and, for the same reason, might become alert to an unexpected sensation.

On the other hand, a public work awaits more unpredictable listeners who are likely unfamiliar with contemporary art and sound practices, but who must be reached in similarly inconspicuous ways. One method that makes the works both discreet and accessible is the degree of acoustic *plausibility*, that is, the degree to which the sounds are part of their acoustic environment. Neuhaus always builds his sounds by ear, and much of the creative process entails walking around, listening, observing, and then creating, testing, and adjusting a sound until it feels just right to him. Drawing from the existing acoustic makeup, he constructs the electronic sounds or sound strings that relate to the place through their timbre character in rapport with a precise installment to assure the desired effect. Their construction is site-specifically informed and integrative, while simultaneously and depending on the context, either

plausible or not so. For instance, *Times Square* requires a sufficient degree of implausibility because of the overall din. A rationalizing of the unseen and thereby inexplicable sound source would cause one to dismiss it as a machine sound of sorts, explains Neuhaus, so the sound has to differ effectively to make such reasoning implausible.

The juncture between the eye and the ear plays a definitive role in Neuhaus's work as it provides a key access to overturning expectations. He has often used a particular story in his guest lectures because it represents the moment when Cage experienced that silence is not silent. This happened during Cage's visit of an anechoic chamber where he heard two continuous sounds: one low and one high – his blood circulating and his nervous system at work, respectively. Neuhaus adds to this a telling detail from his own anechoic experiences. Walking into this peculiar chamber, scientifically engineered to absorb all sound, is fine at first but after a few minutes,

> …most people get really uncomfortable and it's because the ear is going nuts!… The light just went off for the ear: iii!–oou?–iiier?!? The eye is saying: Stay calm, don't you see what's going on here?? The ear is saying, What, see *what*?! I can't *see* anything! Nothing's happening…[5]

The normal interdependency between the two senses is amplified through this silencing of all sound reflection, but the voices inside the "listener's" head are in conflict and instructive of how visuality co-opts language. Yet the very constant ear-eye dialogue is the reason, says Neuhaus, that his sound works function. Because we are largely unconscious of how much the Western eye needs to confirm what the ear hears, Neuhaus is able to play with the kind of disorientation that ensues when we encounter a difference of the aurally colored place with no visual link to fall back on. Neuhaus has adopted another fitting term for this event: *liftoff*.

His Place, Passage, and Moment works in particular situate a listener between (im)plausibility and liftoff, between the seemingly static permanence of sound and a thrust, or between the shifting directions from which sound appears and an activated sense of place's spatiality. Neuhaus has consistently invented new ways to evoke such interim experiences even when presented with the neutrality of art spaces. For example, in 1983 he created two sound works that utilized the galleries' existing ambient sound textures. In Musée d'art moderne de la Ville de Paris, one would walk into an empty room with a running air-conditioning system. Nothing was there to settle the visitor's perplexity caused by unfulfilled visual expectations, except that Neuhaus modified the system's humming by adding another layer of sound pulses, which resembled "a low steady wind." Although the sound was implausible in the context, the contradiction was not consciously noticeable. The result was a congruent intensification

of visual and aural perceptions "that were channeled into each other simultaneously and on the same level," as the eyes wandered in search for a clue, balancing a perception of details like the glass covered roof and overall stillness with a subtly amplified awareness of the ongoing sound.[6] For Neuhaus the contradiction between the two sound textures shaped a sense of place within the space, making it experientially tangible.[7]

In Kunsthalle Basel, on the other hand, he used a more plausible sound, this time derived from the popping of a steam heating system except that his sonic addition occurred in denser intervals:

> The perception of this anomaly provides an "entrance" into the work. At the point where a listener notices it, his or her aural focus begins to adjust. The quiet nature of these sounds and their changing points of origin around the space, draws aural attention to a point where the sounds from the street enter the room, and the sound of someone walking on the floor becomes a major sound event in the work.[8]

Another body of work for gallery spaces deals more explicitly with the sense of aural-spatial orientation. In *Two 'Identical' Rooms* (Hamburg, 1989) Neuhaus transformed two symmetrical exhibition wings into contrasting places by creating two opposite sound textures. Once perceived, the visitor would feel the difference in aural immersion that gave each visually equivalent space a distinct spatial character. In contrast, *Two Sides of the 'Same' Room* (Dallas, 1990; Fig.16) established two places inside one room. Here, the difference in sounds was hard to identify, however, "each side evoked a very different frame of mind."[9] A permanent work *Three 'Similar' Rooms* at Galleria Giorgio Persano (Turin, 1990 – present; Fig. 17) involves perfectly audible sounds that permeate each room and whose variation one encounters very fluidly when passing through doorways. The three sonorities are in fact made of two sounds combined in the middle room but it is impossible to separate the two from the mixture, which becomes its own entity. Again, walking across the creaky parquet floor seems to accentuate the physical likeness and continuity between the rooms but gets undermined with each transition into a differently colored aural place.

These works involve comparison and movement through fixed sound topographies. Two versions of *Infinite Lines From Elusive Sources* (Paris, 1988-90; Fig. 18; Milan, 1990-93) presented situations where the visitor was placed in a position of seeking the source of dynamic and shifting sound topographies. In the first version, the clicking sound switched location as one approached it, and in the second, the sound appeared and disappeared indeterminately as one moved around. Instead of an enveloping sonority stabilizing the place, the elusive sound "removes you the most from the place. The walls are merely the points where you can't move any further. This work takes you out of the space more than any other

form."[10] As Ulrich Loock observed, "what is elusive is not really the sound source but the shape of the sound space."[11] With the possibility for orientation challenged, the gallery space itself became destabilized.

In the history of Western thought, the conception of space explored by Neuhaus emerged relatively recently. That is to say, space that is activated and established experientially. In his book *The Fate of Place: A Philosophical History*, Edward S. Casey traced the changing roles of place and space from the earliest mythicoreligious accounts of the creation of the world from chaos or void through subsequent intellectual histories up to the end of the 20th century. Throughout this constantly shifting discourse, the conceptions of space and place proposed differing, antagonistic, as well as overlapping and interdependent interpretations of the world perceived as either encompassing, delimited, filled, place-bound or infinitely limitless and expansive.[12] Gradually, however, the model of space that grew out of the ancient Greek preoccupation with void versus matter took on the qualities of the former insofar as space was conceived as pure dimensionality and devoid of physical bodies. Voidlike and vacuous, Space enabled infinite movement and extension while sensible things were simultaneously dissociated from it. In other words, Place, as a locus of particular identity and a vital manner of "implacement" no longer figured importantly in this picture of spatiality. Instead, Place was at first reduced to locations determined by measure and distance, until it became a mere position calculated on the XYZ axes that described the three dimensions of a continuously homogenous Space.

According to Casey, this process of abstraction, and the subsequent absence of discourse on the significance of place, was and still is closely intertwined with a tendency in the West toward universalism. The search for essences, for the underlying absolute that could be applied *everywhere* presupposes a subjugation of particularities that describe *somewhere*. Western theology and the spread of Christianity underscored and coincided with these universalistic aspirations that seem to be fatefully reflected in the gradual ascendancy of a homogeneous and absolute space in the intellectual history. When the theological worldview reached its apex in the 14th century, it inevitably inspired and affected the emerging developments in natural philosophy, or what would later become known as physics. The culminating example of that mutually supportive relationship is the aegis of the Newtonian absolute and infinite space in the 17th century where the infinity of space and the eternity of time are predicated on God's ubiquitous presence in all places at all times. This is the moment in Western history when place is absolutely dissolved in Space and remains, at its most potent, merely a modification of space, that is, a site, which lacks those qualities that define, as well as situate in, a place: directionality, contiguity, color,

texture, sound, intersection, etc. The mathematization of space on one hand, and the conception of a homogenous, expansive universe on the other, mirror other social and political spatializing pursuits still present today: the metric calculability enabled the rise of cartography that informed the Age of Exploration, but also exploitation and displacement; and more recently the umbrella term globalization relates directly to the homogenizing and potentially indifferent legacy of universalism.

Because the exploration of space in art has become progressively more contingent on and expressive of specific sensible, social, and cultural phenomena, and because the perception of a given place is, after all, a common aspect of daily activities, the reemergence of place in theoretical discussion appears at once commonplace and ordinary. Yet the process through which the place was discursively reclaimed points out a pattern that manifests preconditions for Neuhaus's work. In Casey's treatise the hegemony of space is interrupted by several thinkers who, either in anticipation or advocacy of phenomenological inquiry, shifted place back from obscurity by focusing attention on the living body. The first crucial transition came with Emmanuel Kant who recognized that place is something "actually experienced in qualitative terms" and therefore requires a corporeal basis.[13] It is not the ability for mental representation but the body, by way of establishing concrete *directionality*, that is needed to close the gap between sensible things and the places they inhabit. Kant demonstrated the body's intermediary role by elaborating on the observation already made by Aristotle who noted that right versus left, far from being a priori directional qualities, depend on bodily position. For Kant the empowering role of the body is to additionally *situate* things in regions, which comprise space. Without a reference to the body, sensible things merely occupy a position relative to one another and therefore remain "unoriented entities." The three dimensions of space therefore derive from the body's directionality, while regions, places, and things require our corporeal intervention to become oriented.[14] In the aforementioned elusive gallery works in particular Neuhaus took advantage of this fundamental propensity. In spaces conveniently empty of things for visual reference, the ears became the prime orienting instrument that was being played with to expose that role, which is ordinarily taken for granted.

Active participation through which the body brings together the here and there is picked up by Alfred North Whitehead, who argued against abstracted concepts like *location* and *site* as elements entirely foreign to our immediate experience of nature in their dismissal of sensory qualities. "In becoming a mere series of sites for matter in motion, nature becomes placeless as well as qualityless; and *it is both precisely insofar as it is also bodiless*," surmised Casey.[15] More accurately instead, body and place are decisively intertwined in that the perceiver's body can *unify* the multifaceted world only from a

certain place. On the other hand, Husserl's spatiotemporal model distinguished between the *physical* and the *lived* body where the latter is experienced as an "absolute here." The lived body resists simple localization *in* space because it moves *through* space. The kinesthetic situation interjects an essential dynamic to the unifying role of perception conveyed by Whitehead: "the way I feel my own body being/moving in a place will have a great deal to do with the way I experience that place itself."[16] Walking, for Husserl, came to effectively exemplify the manner in which the lived, moving body and place are linked together. In order to engage in walking, "I must first of all unify *myself* before I unify my environs."[17] The body is therefore experienced as a coherent totality and in walking the kinesthetic perception of changing appearances is constantly allied with bodily sensations felt within. Moreover, the source of orientation is always the absolute here of my lived body. With this radial model Husserl managed to bring together both the stillness and the movement that enable a composition of the here and there, the dynamics involved in constituting stable things and stable places. Once more the body-place relationship is reciprocal: we *find* places in a pre-existing place-world which the physical body requires, as well as activate and enliven, that is, *establish* them. Neuhaus invariably taps into these innate tendencies through which the listener collaborates in making the piece, in establishing his or her own place in relationship to the sounds perceived and the immediate surroundings. Stillness and movement present the dynamics that is explored in various combinations through both sound (continuous/shifting) and the listener (standing/walking). In the process, new connections between visual and aural intake are subtly forged.

Neuhaus has created several non-urban outdoor works where again a sufficient reference to existing natural sounds was cached within the structure of his electronic sonorities. One example was the untitled contribution for 1977 Documenta VI in Kassel, situated in a clearing around a tree (Fig. 19). Hidden in the tree were eight highly directional speakers emitting clicking sounds that seemed to spring from the grass by way of sound reflection. The clicks were reminiscent of "the sounds of stepping on a twig, or a drop of water falling from a leaf."[18] They might have gone unnoticed as part of the naturally occurring acoustic phenomena, but their persistent bouncing from one location to another provided an adequate threshold to trigger attentiveness. "The clicks were separated by a second or two of silence, and also had physical space between them. This pointed out, emphasized, directed attention around the clearing in a way that created the sense of this place."[19]

The following year, Neuhaus used a very different approach to invoke place through sound. For this occasion at the sculpture garden of the New York Museum of Modern Art, he installed a large subsonic

loudspeaker in a grill-covered chamber beneath the pavement (Fig. 20). The subsonic sonority remained inaudible but its frequency affected the sounds heard in the garden. There were particular areas where the effect was stronger, so that a visitor would start noticing aural "landmarks" while moving about. Carter Ratcliff described the experience:

> After a while, certain pitches associated themselves with certain points – the ear found aural equivalents for the landmarks (works of sculpture, trees and shrubs, a fountain) by which the eye had already charted the garden. So one's visible map was augmented and in subtle ways changed by this new one, which was audible…, yet a map of the work's sound patterns never comes into focus. Ear and eye interact as one moves through the installation, achieving something very like an equality. That's why it is impossible to translate the aural aspects of these works into terms exclusively visual. They cannot be mapped…[20]

These words apply equally to drawings that Neuhaus started making in the eighties and to which he began adding text to form diptychs a decade later. Some working drawings were made in the process of thinking about and making a piece. The finished drawings with text, however, were often created weeks or months after completion and present the artist's own synopsis, a hind view made possible once the experience of the work was duly assimilated. Neither drawings nor texts inscribed on translucent paper provide a full explanation or an accurate blueprint of the sound works.[21] Rather, they offer an alternative access, invaluable in particular as the only remnant sources of documentation aside from the writings by inspired witnesses and Neuhaus himself. Their open-ended quality not only fits the nature of the works, but inevitably arose out of the difference the visual and written media impart. This incompatibility assured Neuhaus that the sound works would not get compromised if he made the drawings. Instead, he says, "it was an incredible position to be in" because both drawing and language are "highly developed means of communication" that allowed him to efficiently communicate something that is created in another medium – a medium that cannot be adequately re-presented in image or word, but could at least be relayed by these powerful communication tools.[22]

Image-text drawings are therefore another intermedia occasion, which in this case guides toward and is paradoxically sustained by that which escapes it. As such, drawings and texts become more than simple acts of documentation; they operate in another dimension that explicitly relates to the original sound works, yet sets them apart enough that they become entities in their own right. They can perhaps be considered as (sound) scores, through which the viewer's imaginative input delivers a conceptual understanding of what a sound in a given place might bring.

In this respect, David Michael Levin's reading of Heidegger offers a more viable direction for discussing sound in the field of visual arts. Starting with the premise that modernity was founded on

and promoted a vision-oriented paradigm, which has had significant consequences in all spheres of Western thought, culture, and social relations, Levin discerned an underlying criticism in Heidegger's philosophical discourse aimed at destabilizing the ocularcentric dichotomy steeped in subject–object relationships. For instance, Heidegger pointed out that our everyday concerns with things for the most part revolve around their presence and use value. Things that present themselves to vision consequently "become an object to be beheld…or to be acted upon."[23] Levin explained that Heidegger traced our habitual visual experience – limited to these immediate concerns, everyday commerce, surface perception, and a corresponding tendency "to fixate whatever our eyes behold"[24] – to metaphysical discourse, in essence contributing to the transformation of the original understanding of *truth as unconcealment* to *truth as correctness*. The *presence of being* that is disclosed to us through vision, "the power that emerges" into unconcealment, was in the process reduced to the *presence of an object*. This relation engenders a very instrumental exchange that obscures other forms of interaction and receptivity. By embracing listening as an alternative and parallel existential model, Heidegger in fact offered a counterbalance to the existing hegemony of vision that has shaped a kind of grasping, predatory spirit in our culture. "Heidegger's critique is not, therefore, an attack on vision as such. On the contrary, it is intended to facilitate the recognition and development of the great potential inherent in vision."[25] Levin observed an opportunity for creating an entirely different and necessary new paradigm that would encourage a development of the *character of our seeing*. The model of listening opens up to this challenge precisely because it operates through receptivity and partaking, the existential modalities forgotten or displaced through our accustomed visual attitudes.

The natures of our seeing and listening are fundamentally connected because senses in general "communicate through their significant core" as Merleau-Ponty said. Although each sense is specialized to obtain sensations from an autonomous field unknown to the other senses, the sensations affect and convene in the same, singular body. In fact, an attempt to focus on a particular sensation is impossible to sustain because our natural perception subsists in a perpetual interplay of all senses. This interplay is how Merleau-Ponty defined synaesthetic experience. A synaesthesia is something we experience at any given moment, but are unaware of because we have learned to "scientifically" segregate the senses and so conceive our bodily structure in separate terms, according to what we see, hear, and feel. In actuality, the senses communicate and "translate to each other without any need of an interpreter, and are mutually comprehensible without the intervention of any idea."[26] The synthesis of perception is also a reconstitution of past into a new present, a renewal and ratification of what Merleau-Ponty called our

"prehistory" that sensations tap into and bring back. This process occurs because perception, and consequently sensation, occurs in an atmosphere of generality:

> …sensation necessarily appears to itself in a setting of generality, its origin is anterior to myself, it arises from *sensibility* which has preceded it and which will outlive it…. By means of sensation I am able to grasp, on the fringe of my own personal life and acts, a life of given consciousness from which these latter emerge, the life of my eyes, hands and ears, which are so many natural selves. Each time I experience a sensation, I feel that it concerns not my own being,…, but another self which has already sided with the world, which is already open to certain of its aspects and synchronized with them.[27]

Sensation is hence directed beyond itself, toward a familiar significance that the sensible hints at and which entices the body to participate in forging a relationship with the broader existence. The communion with the sensible is accordingly an intentional if intuitive pursuit, a give and take that does not disclose knowledge in itself but antecedes it when followed up or drawn upon; sensation is the "possible stuff of knowledge."

Merleau-Ponty brought the description of the sensation's functioning to a spatially unified agreement. While each specialized sense opens and provides access to a particular aspect of space, all senses must at the same time "open on the same space" if the communication with other forms of being and the world itself is to have meaning for us: "the unity of space can be discovered only in the interplay of the sensory realms" and the sensorial experience becomes "a particular manner of being in space and, in a sense, of making space."[28] This has implications for place as well, which Merleau-Ponty considered an ambiguous phenomenon because its boundaries are indeterminate. As Casey observed, the indeterminate place that is not given to definite representations, situates a special aspect of active indwelling:

> This means in turn that place has a *virtual* dimension overlooked in previous accounts. A place I inhabit by my body is not merely some spot of space to which I bring myself as to a fixed locus – a locus that merely awaits my arrival. Husserl's emphasis on a constant *Ortssytem* is here challenged by an appeal to the idea of place as an ambiguous scene of things-to-be-done rather than of items-already-established. A place is somewhere I *might* come to; and when I do come to it, it is not just a matter of fitting into it. I come into a place as providing an indefinite horizon of my *possible* action.[29]

Moment

An integrative manner of being in one's own place is accentuated in a particularly elegant group of sound works that fall under the Moment vector. Moment pieces have a predecessor in a *Silent Alarm Clock*, which Neuhaus invented early on in his artistic career. The clock functioned on the principle of

sound removal. The alarm started quietly with a high-pitched tone adjusted to the listener's upper limit of hearing so that instead of waking the listener up, it would register subconsciously. The tone slowly increased in volume until it abruptly ceased, at which point the sudden silence would cause the sleeper to awaken. The work led to *Time Piece 'Archetype'* installed at the 1983 Whitney Biennial. In the sunken sculpture garden in front of the museum, the predominant sounds heard come from Madison Avenue. Neuhaus devised a system through which he piped those sounds into the garden, slightly colored and with a miniscule delay, so that the real time acoustic events were doubled and a bit shifted. The added relay began inaudibly and increased very gradually over twenty minutes until it matched the volume intensity of actual street sounds. At that moment, the relay suddenly stopped and a new cycle ensued. Writes Ratcliff:

> With half one's aural environment deleted – that is, with Neuhaus's electronic reflection removed and only the avenue's primary buzz remaining – the site seems astonishingly clear. Din no longer sounds like mere din, but a rich aural texture instead. And with this clarity comes a calm. Even if, and Neuhaus often finds this is the case, the hearer hasn't been conscious of the *Time Piece*'s building sonorities, their sudden cessation catches the attention. In such instances, inaudibility follows inaudibility, for absence of sound comes after sounds produced but unheard. In any case, the end of the cycle creates a pool of tranquility, an earlier version of which we've encountered in the Times Square installation.[30]

The next occasion for distilling a moment came at Kunsthalle Bern, where *Time Piece* (1989-93) covered a relatively large area around the museum. Here, a sonority was projected from four loudspeakers and repeated its cycle in half-hour intervals. It again started inaudibly, then increased for several minutes, and ceased clocklike on the hour and half hour. Loock, then the Kunsthalle's director, described Neuhaus's sound as a texture that "resembles the noise of aeroplanes as well as the after ring of bells, without, however, really imitating these noises" and with a third component that "is a hidden melodic line, a vibration to be sensed rather than to be heard in the aural complex."[31] Loock also illuminated the phenomenally discerned ambiguity that a continuous, electronically generated sound with no readily definable source produces:

> The sound introduced by Max Neuhaus appears among the identifiable everyday sounds as the sound of sounds. It is like an aural fluid in which all other sounds are immersed, and which absorbs, so to speak, all the weaker sounds which usually converge to form a background noise. The everyday sounds are normally ignored, perceived only occasionally. The continuous sound which pervades them in fact exposes them as distinct aural units of the audible foreground. Conversely, however, the starting, stopping and changing individual sounds of the foreground disturb and impair the continuous one, acting like punctuations of its continuum.[32]

This kind of background and foreground sonic exchange is of course prominent in most works by Neuhaus. It creates that inextricable link with daily hubbub that ensures that sound works remain essentially intertwined or in communion with their surrounding context. Moment pieces take this connection to yet another level with something Neuhaus calls an *aural afterimage*. His favorite example of the phenomenon is a coffee-grinding machine in a café:

> When the machine is first turned on in a noisy café most people don't consciously notice it; talking just seems to become a little more difficult. This is amazing in itself, because the sound itself is quite loud. But it is also an expected event in the café and the mind simply adjusts for it and goes on with what it was doing.
>
> However, when coffee grinding is finished and the sound suddenly stops, something quite surprising occurs. The space is suddenly enveloped in an aural vacuum and what seems like a moment of complete silence occupies the café.
>
> The silent moment is not really silent, though; the normal sounds of the café go on. But for a few seconds after the sound has gone, what one could call an aural afterimage is superimposed on the sounds of the environment – a spontaneous aural memory or reconstruction perhaps, subtle and transparent, engendered by the sound's disappearance.[33]

Neuhaus goes on to explain that the nature of the afterimage depends on the character of the sound that produced it. In that way, he can shape the character of the afterimage to something quite different from the relief experienced when the harsh sound of coffee grinding stops. Referring in part to *Time Piece* in Bern and projecting his vision to some future realization, he described the bonding potential of such moments:

> When set up on a [*sic*] hourly or daily basis, these periodic public silences become integrated into the life of their communities. The afterimage, shared by all who notice it, becomes a unifier, spiritually tying together a community's diverse places and activities momentarily throughout the day.[34]

The words evoke a historic precedent in the form of church bells, from which Neuhaus borrows a certain metaphoric element. However, he stresses that the original idea was free of such references, as we have seen with the *Silent Alarm Clock*, and was formulated on the simple challenge: "What about making a work by taking something away?"[35] Another challenge arrived with writing proposals for his *Time Piece*s, when he learned how terrified the city officials were with the notion of creating a sound piece that covers a larger area of the city. He did some research on the history of sound signals in order to diminish people's fears – "history as a means of seduction," he laughs. In any case, he found that historically, church bells were more than merely time signals; often the range across which the bell was heard determined the size of a community. It was both a unifying and a sheltering presence, marking and signaling special events, and each bell's unique timbre was a familiar occurrence interwoven into

everyday affairs. Neuhaus's Moment idea shares parallel possibilities only with entirely secular intentions and a dramatic reversal of sound into silent moments. Such moments, then, are not only perceptual liftoffs, but also a brief connecting experience shared among fellow strangers.

So far, Neuhaus has not succeeded in installing a permanent Moment work, although he has made several proposals for pieces in different cities. One exciting proposal involves a large-scale work in New York City, which would cover an area of about a mile in diameter, with the Cathedral of St. John the Divine at its core.

Moment and Place works elude the idea of space that can be clearly defined, abstracted, and mapped. They prompt instead a particular awareness of the immediate surroundings through which the passersby or the visitors situate themselves, establish as well as produce the place and their place within it as actively listening subjects. The aural receptivity that Levin mentioned in discussing Heidegger becomes a way of engaging with the place around us that is reinstated more fluidly, consciously, and that also reveals socially relevant contingencies of the audible dimension. For instance, Moment pieces clearly undermine the Cartesian coordination of space, which is on one level confirmed by the refusal or at least reluctance on the part of authorities to permit their realization. On the other hand, the interactive approach to place aligns aspects in Neuhaus's work with modern sculptural concerns which are no longer just representational but primarily spatial. As if sculpture, too, manifested a desire to untangle from the predominantly visual (representational, monumental), it has been extended to create its own places, and then further still to include the social space as its medium and reference. This points to some important areas not addressed through a phenomenologically conceived spatiality: how does Neuhaus's work function in relation to the established spaces? What kind of ripples does inverting the experience of listening and seeing produce not only for, but past the listening participant?

One room
divided
in two.

Both
sides
with
sounds
which
seem
identical,

but
open
converse
frames
of mind.

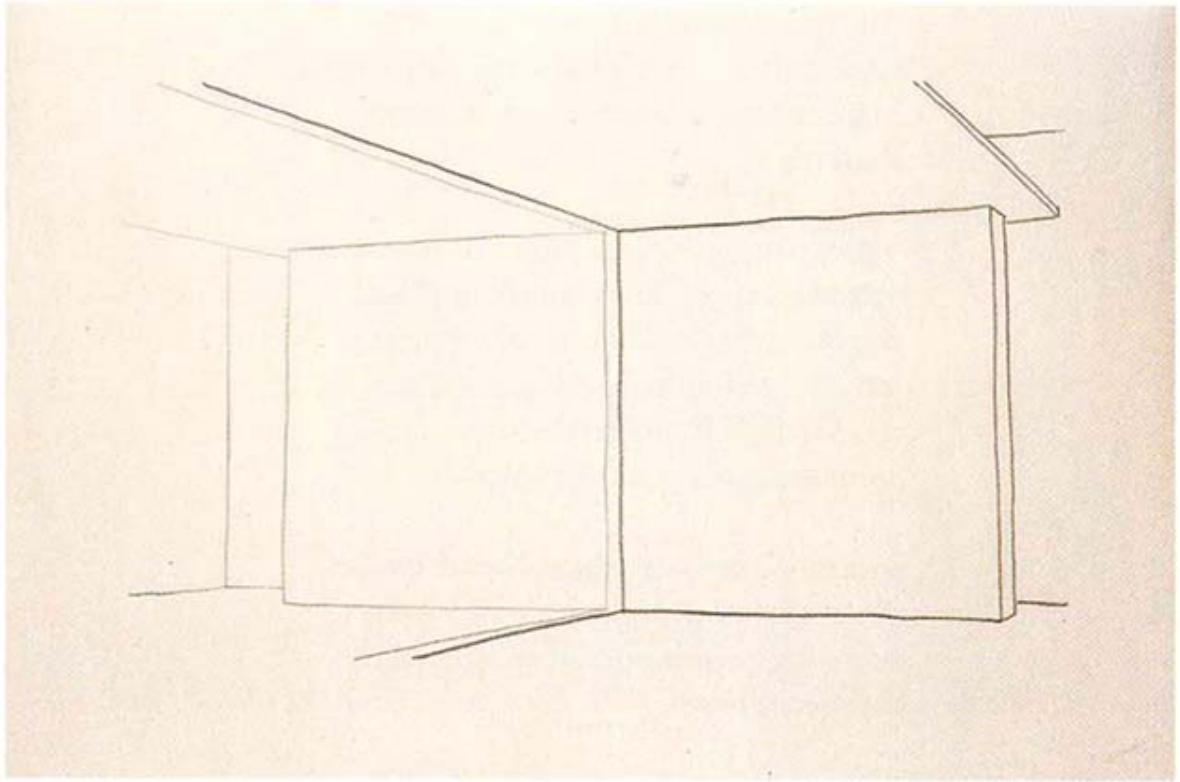
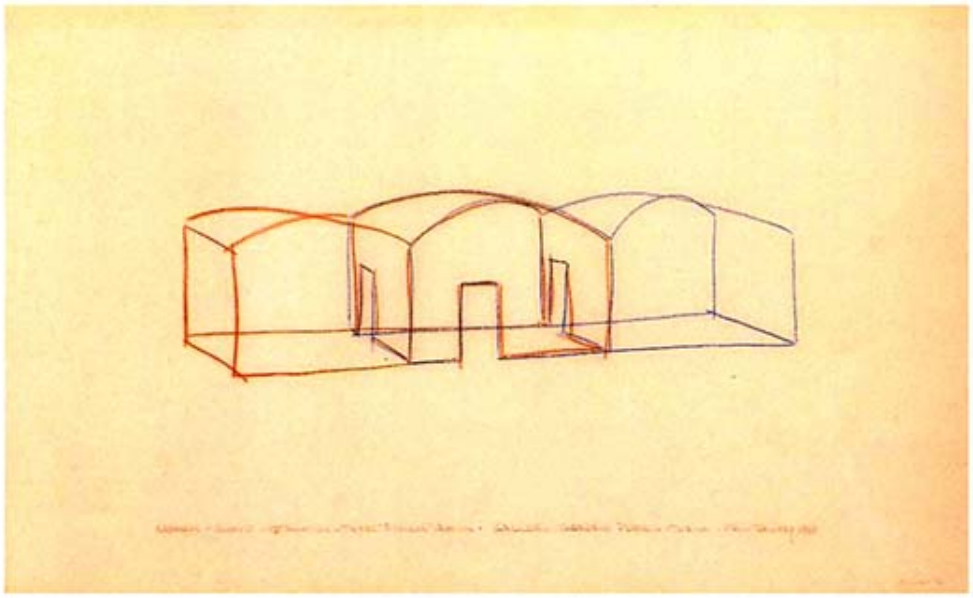


Figure 16: *Two Sides Of The 'Same' Room*, pencil on paper, 1993
61 x 90 cm; 61 x 26 cm

Sound work:
Location: Dallas Museum of Art, Dallas, Texas
Realized: 1989
Extant: January 28 - April 22, 1990



THREE 'SIMILAR' ROOMS

THE THREE ROOMS ARE VISUALLY SIMILAR WITH APPROXIMATELY THE SAME DIMENSIONS, HIGH VAULTED CEILINGS AND CONNECTING DOORWAYS.

THE WORK GIVES EACH ROOM A DIFFERENT SOUND MIXTURE. THE SOUNDS, NOT LOUD BUT QUITE EASY TO HEAR, FORM TEXTURES WHICH ENVELOP EACH SPACE, NOT SO MUCH AS SOMETHING TO LISTEN TO, MORE SOMETHING ONE IS IMMERSED IN.

IN PASSING BETWEEN THE ROOMS, THE EXACT POINT OF CHANGE IS ELUSIVE -- SUDDENLY ONE SIMPLY FINDS ONESELF IN A DISTINCTLY DIFFERENT PLACE.

MAX NEUHAUS

Figure 17: *Three 'Similar' Rooms*, colored pencil on paper, 1989
45 x 70 cm; 45 x 50 cm

Sound work:
Location: Galleria Georgio Persano, Turin
Extant: 1990 - present

As one enters the space, a series of clicks seems to emanate from the far wall.

As one approaches them, they switch their location and seem to come from the opposite wall. If one approaches them there, they appear again from the first wall.

This click train is lyrical.

It expands and contracts in time, gradually getting slower and faster while shifting in pitch. Its loudness contour gives it an emotional character.

The clicks seem to develop an infinite line: a phrase which evolves perpetually.

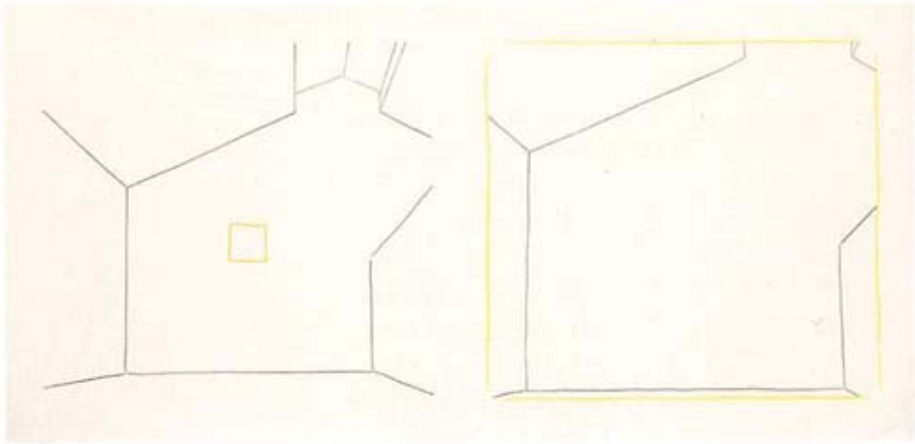


Figure 18: *Infinite Lines from Elusive Sources #1*, pencil on paper, 1993
56 x 71 cm; 56 x 33 cm

Sound work:
Location: Galerie Ghislaine Hussenot, Paris
Extant: 1988-1989

In a clearing
secured by a large oak,
near a path,

hollow clicks
appearing on the ground
from nothing.

Assumed at first to be
sounds of the woods...

but then disclosing
another sense of place
when their contradictions
are found.

by the passerby.

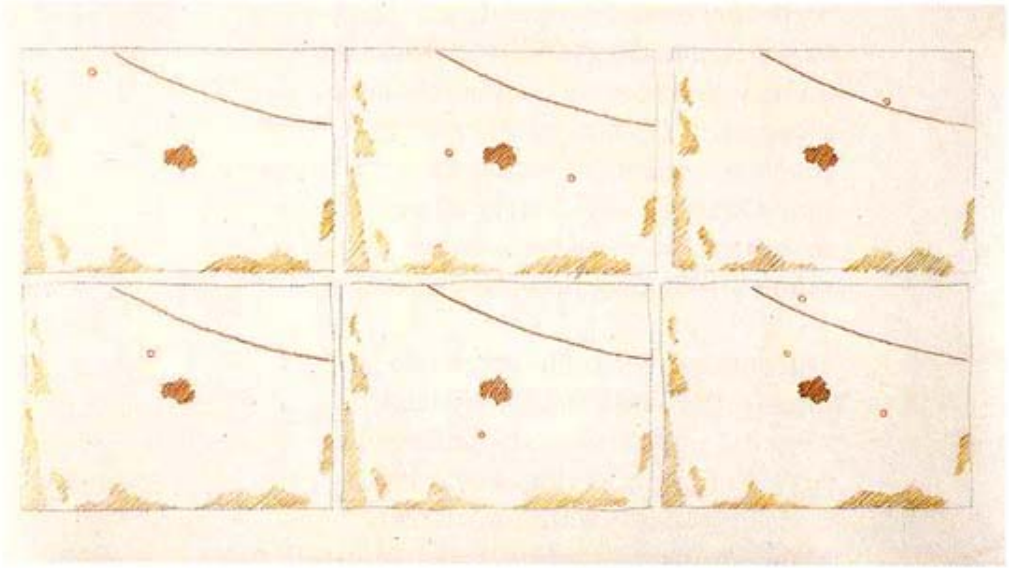


Figure 19: *Untitled,* colored pencil on paper, 1993
55.5 x 99 cm; 55.5 x 28 cm

Sound work:
Location: Documenta VI, clearing in Karlsaue Park, Kassel
Extant: Summer - Fall 1977

The work had no sound of its own.

Instead, it was formed by a single tone,
tuned to a point below our sense of sound
but above our sense of vibration.

This unheard pitch generated a terrain
of regions where each audible sound
in the garden was slightly shifted – a
transparent overlay on the garden's sound
landscape – making fine shadings of hue
in the sounds of fountains, conversation
and street.

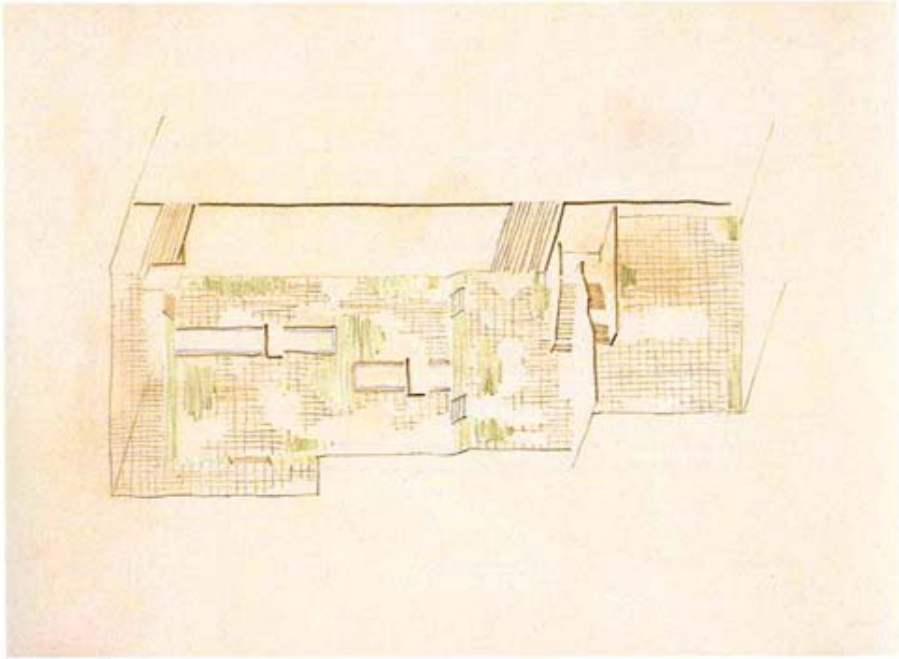


Figure 20: *Untitled*, colored pencil on paper, 1993
53 x 75 cm; 53 x 53 cm

Sound work:
Location: Abby Aldrich Sculpture Garden, The Museum of Modern Art, New York
Extant: Summer 1978

Notes

[1] Neuhaus, "Notes on Place and Moment" in *Max Neuhaus: Moment/Stund*. (Reykjavik: Second Floor, 1997), n.p.

[2] Don Ihde, *Listening and Voice: A Phenomenology of Sound*. Athens (Ohio: Ohio University Press, 1976), 103.

[3] Ibid., 109.

[4] Ibid., 110.

[5] Neuhaus, conversation with the author, 21-22 January 2001.

[6] Jean-Christophe Ammann, "Notes on Max Neuhaus" in *Max Neuhaus, Sound Installation*, trans. Catherine Schelbert (Kunsthalle Basel).

[7] Neuhaus, "Sound Installation, 1983, *Musée d'Art moderne de la Ville de Paris (ARC)*" in *Max Neuhaus, Sound Installation* (Kunsthalle Basel), 22.

[8] Neuhaus, "Sound Installation, 1983, *Kunstahalle Basel*" in *Max Neuhaus, Sound Installation* (Kunsthalle Basel), 23.

[9] Conversation with Ulrich Loock, *Elusive Sources and 'Like' Spaces*, 30.

[10] Ibid., 49.

[11] Ibid.

[12] Edward S. Casey, *The Fate of Place: a Philosophical History* (Berkeley: University of California Press, 1998).
Casey observed several primary issues in ancient considerations of place. One set dealt with genesis and purpose relating to questions of causation and teleology, on the other side were concerns with form and embodiment that related to things like "location and containment: thus, not where place comes from and where is it tending, but how it operates in the present" (76). The consideration of place in all four ways, he notes, was the ancient world's lasting legacy. Aristotle was the most strident advocate of the primariness of place among the ancients. Not without its own paradoxes, noted Casey, Aristotle's bounding and actively supportive world had the virtue of giving power to (proper) places and thereby a certain kind of being. The importance of this view becomes clearer in contrast to the historic fate of place that underlies Casey's analysis. Views antagonistic to Aristotle's, focusing rather on the boundless extensiveness of space, co-existed with those advocating the importance of place on more or less equal terms throughout ancient thought and well into medieval ages, whereupon they took over most discursive practices until the 20th century.

[13] Ibid., 204.

[14] Ibid., 205.

[15] Ibid., 212.

[16] Ibid., 219.

[17] Ibid., 224.

[18] Neuhaus, "Lecture at the Seibu Museum Tokyo: Talk and question period" in *Max Neuhaus: Inscription, Sound Works, volume I*, 60.

[19] Ibid.

[20] Carter Ratcliff, "Space, Time and Silence: Max Neuhaus's Sound Installations" in *Max Neuhaus, Sound Installation* (Kunsthalle Basel).

[21] Because drawings and text are done in (color) pencil on translucent paper, photo reproductions tend to be difficult to read – especially the text. As a compromise, most reproductions included here show text that was typed separately and positioned on the left side, unlike in the original diptychs where it stands to the right of the corresponding drawings.

[22] Neuhaus, conversation with the author, 21-22 January 2001.

[23] David Michael Levin, ed., "Decline and Fall: Ocularcentrism in Heidegger's Reading of the History of Metaphysics" in *Modernity and the Hegemony of Vision* (Berkeley: University of California Press, 1993), 201.

[24] Ibid., 202.

[25] Ibid., 205.

[26] Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (n.p., Great Britain: Routledge & Kegan Paul Ltd., 1962; New York: Routledge, 1999), 235.

[27] Ibid., 216.

[28] Ibid., 221-222.

[29] Casey, *Fate of Place*, 232. It should be pointed out that the criticism of Merleau-Ponty's phenomenological approach, while applauding the liberating aspects of the world understood "as a system of bodily possibilities," brings to the fore the inherent presumptions about the "subject" thus situated, along with other spatial and perceptual implications. Dorothea Olkowski, for instance, points out that "too often women [as well as the poor and minorities] take their own bodies to be the object of action and not the originator of acts within that [phenomenological] system." See Dorothea Olkowski, *Gilles Deleuze and the Ruin of Representation* (Berkeley: University of California Press, 1999), 80.

[30] Ratcliff, "Space, Time and Silence."

[31] Ulrich Loock, "Time Piece Kunsthalle Bern" in *Max Neuhaus, Two Sound Works 1989* (Bern: Kunsthalle Bern and Kölnischer Kunstverein, Cologne, 1989).

[32] Ibid.

[33] Neuhaus, *Moment/Stund*, n.p.

[34] Ibid.

[35] Neuhaus, conversation with the author, 21-22 January 2001.

> *If we wanted to find historical antecedents for such works, we would have to look elsewhere… To approach it, we would need to look in the area of oral poetry, at the Homeric, Indian, tribal, or popular tales that accompanied people's lives in different periods; at the bell towers of medieval villages, the stained glass windows and the organization of light in a Gothic cathedral along a pilgrimage route; at the shadow cast on the desert by an Egyptian pyramid, at the Zen gardens of Japan or the fountains and waterfalls in baroque gardens and palaces; at trompe l'oeil architecture, anamorphoses, halls of mirrors and panoramas; at the Tibetan or Byzantine monasteries, at Mongol chants, at the interplay of tom-toms in Africa or at the arcades of nineteenth-century Paris.*
> Denys Zacharopoulos[1]

The examples herein evoke aural, haptic, visual, psychic, and spatial sensations intersecting in various combinations to achieve the intermedial effect that has been endorsed through these pages. Denys Zacharopoulos's analogies, written in reference to Neuhaus's work, convey situations whose common ground is the experience of dazzled perception, at once deeply meaningful and playful. His advice is apt: to *approach* this kind of art we need to look at the precedents he lists in order to relate to and identify the affectations they share. This is a valuable point because it departs from historicist models both in its vastness of diachronic and cultural references and in the circumvention of form or medium as unifying elements. On the other hand, the historic context is significant – Neuhaus's aesthetics and approach to sound arose out of a specific cultural moment during which, among other things, some artists were certainly inspired by precedents imagined by Zacharopoulos for particular sociohistoric reasons.

When it comes to positioning Neuhaus's work in relation to established categories, the artist prefers to consider it "between sculpture and something else" as opposed to music or architecture and something else.[2] This kind of categorization is sometimes practical because it helps to ground the intermedia rupture that still confuses potential sponsors – remember Higgins's prompt "what that I know does this new work lie between?" As noted earlier, Neuhaus realizes that the vectors that seem closest to the idea of sculpture have been easiest to expand. Sculpture itself has become a widely stretched art category over the past century or so; it has loosened from the architectural support, descended from the pedestal, freed itself from the idea of the monument and representation to become nomadic and self-sufficient, until it has branched off into variants that discover place, transforming into something between sculpture and environment and encircling new territories from land art to installations.

Environment was a term used through mid-seventies, having originated with Allan Kaprow's use of the word in 1958 to describe his room-size multimedia works.[3] Kaprow began to add simple activities with which the visitors contributed to the work and evolved this notion of spectator participation further in his Happenings in which the audience was eliminated because everybody became a participant.[4] While the issue of participation – which can vary in degree from simply moving through space to performing a task – remains one of the defining characteristics of installation art, the adoption of the latter term "was not from Environment to Installation art but, rather, from exhibition to installation," wrote Julie H. Reiss.[5] During the 1970's, "Installation began to be used interchangeably with exhibition to describe work produced at the exhibition site" and was not necessarily a room-size environment.[6] To *install* something in a given space hence became an important part of the artist's process and diverged from specifically sculptural concerns: "the lines along which the material is organized no longer lie exclusively inside the work but also outside it…"[7] which is why José Iges suggested that installations have to be considered "as a separate artistic category, freeing them from the apparent functional dependency on sculpture."[8] In *Blurring the Boundaries*, Ronald J. Onorato described installation art perhaps as tightly as it can be:

> Fundamental aspects of installation artwork are its habitation of a physical site, its connection to real conditions – be they visual, historical, or social – and often, its bridging of traditional art boundaries: public and private, individual and communal, high style and vernacular. The aesthetic power of installation art does not reside in the singular, commodified object but in an ability to become, rather than represent, the continuum of real experience by responding to specific situations.[9]

One can imagine, then, a more fluid inscription of installation art (with subdivisions) inside circles that would function similarly to those of the *Intermedia Chart* (Fig. 5), with room for overlap and expansion. Because of its usually ephemeral nature and a dependence on physical experience, installation art has not received much critical writing and research that would help expose its in-between positions with more clarity and contingency. In her groundbreaking exposition about installations set in the context of the New York City art scene, Reiss demonstrated a viable, historically specific approach. Interestingly, despite the blurry situation, she showed how installations moved from the margins of alternative spaces during the 1960's to "become a firmly established and flourishing genre" internationally by 1993.[10] Viewed positively, as Gilles Deleuze and Félix Guattari proposed, this movement of an art-between-genres toward the center is a form of *deterritorialization* and *decoding* reabsorbed, effectively merging with, while nonetheless weakening, the various authoritarian or

territorial structures and ideologies. This is because of the potential they see as "art and science cause increasingly decoded and deterritoralized flows to circulate in the socius, flows that are perceptible to everyone, which force the social axiomatic to grow ever more complicated, to become more saturated" and therefore more polyvocal and less controlling through a falsely delimited homogeneity.[11]

At the time when Neuhaus began creating in public spaces, the art world was hardly using the word "installation" as we have seen, nor did it have the term "public art." Neither was Neuhaus's work overtly political or community oriented to be accommodated in the vigorous discourse on radical public art that culminated by the mid-nineties. He has maintained a pioneering and marginal status in relation to the mainstream despite the latter's apparent acceptance of new territories and artistic forms. The fact that Neuhaus's sound works successfully elude the goods market though – positioned as they are between the concrete world and sound – does not dismiss the fundraising. The work and equipment required to build and transmit sound entities are expensive in themselves. In the early years, Neuhaus had to devise his own computer gear for the projects; the high quality loudspeakers (several hundred utilized in the permanent *Suspended Sound Line*) are unlike cheaply available products for mass scale markets – a permanent sound entity calls for precision and durability. Of course, Neuhaus has had difficulties convincing potential sponsors, especially outside the art world: it is hard to imagine the value of an intangible and invisible outcome. He compares the cost of commissioning a large steel sculpture to an equally long wall of sound that, in addition, (unlike steel fabrication) cannot rely on ready industrial technology.

Smooth & Striated Space

Again and again however, Neuhaus succeeded in overturning preconceived notions of what constitutes art. Here a more viable consideration of space comes by way of Deleuze and Guattari who articulate an active juncture between what Neuhaus's sound works perform and the social realm, and thus steps beyond the solely phenomenologically constituted space. Deleuze and Guattari proposed alternative polarities for movement in space: one *striated* and one *smooth*. These expressions they borrowed from Pierre Boulez, who applied them to musical parameters and composing – "In the simplest terms, Boulez says that in a smooth space-time one occupies without counting, whereas in a striated space-time one counts in order to occupy."[12] The striated presents us with fixed and variable elements organized in a succession of melodic (horizontal) and harmonic (vertical) forms, whereas the

smooth presents continuity through a variation of form, a development of rhythmic textures.[13] In visual terms, the contrast is that of an octave-determined notation against a graphic score, for example, though "counting" is not necessarily excluded from the latter because a graphic score may conjoin the smooth and the striated spaces which is another way to characterize its intermedia position (Fig. 8, Fig. 9).

Deleuze and Guattari described other models to portray the two spaces. For instance, in striated space the lines correspond to movement from one point to another, which defines the path and the stops. In smooth space, however, the trajectory is more important than the points: "the line is therefore a vector, and not a dimension or metric determination."[14] The directional instead of dimensional quality supplies the smooth space with events and intensities rather than distinct, material features:

> It is a space of affects, more than one of perception. It is *haptic* rather than optical perception. Whereas in the striated forms organize a matter, in the smooth materials signal forces and serve as symptoms for them. It is an intensive rather than extensive space, one of distances, not of measures and properties. Intense *Spatium* instead of *Extensio*…. That is why smooth space is occupied by intensities, wind and noise, forces, and sonorous and tactile qualities, as in the desert, steppe, or ice.[15]

The above concepts relate closely to the authors' aesthetic model in which they juxtapose the notions of *close-range vision* and *haptic space* with *long-distance vision* and *optical space* to distinguish how smooth and striated space are constituted in "nomad art and its successors (barbarian, Gothic, and modern)."[16] In relation to Neuhaus's work, the notions of the haptic and optical are clearly pertinent. First of all, Deleuze and Guattari align close-range vision with smooth space because it does not function purely optically (as does long-distance vision), hence its pairing with haptic space that entertains visual, auditory, and tactile elements. ""Haptic" is a better word than "tactile" since it does not establish an opposition between two sense organs but rather invites the assumption that the eye itself may fulfill this nonoptical function."[17] As for the auditory dimension (which the authors recognize but do not specifically exemplify in this section), Neuhaus's work offers a link par excellence. For while the eye cannot perform the nonoptical function of hearing (exempting such phenomena as synopsia, the hearing of colors), we have already considered how the two corresponding senses complement each other – an interdependency that Neuhaus finds specially fortuitous. Integral to his work is a suspension of the visual support, of optical confirmation. The gap (liftoff, plausibility, elusiveness) thus created redirects attention to haptic space that is modulated sonically, suddenly on a par with the visual or tactile. The background and foreground formulation of the striated space is dissolved by the smooth multiplicity of the local where one cannot organize the space from a single standpoint, as when uniting and

coordinating by way of landmarks to achieve visual orientation. "The first aspect of the haptic, smooth space of close vision is that its orientations, landmarks, and linkages are in continuous variation, it operates step by step."[18] The situation recalls Ratcliff's discerning description of Neuhaus's garden piece at the New York MOMA (p. 59) where the visual mapping was supplemented and displaced in a traversal through the aurally enhanced topography which could not be mapped in visual terms alone. And because smooth space does not disclose itself to "an immobile outside observer," added Deleuze and Guattari, the intrinsic variability of the visual points of reference is instead "tied to any number of observers" who are "entertaining tactile relations among themselves."[19] Again, this proposition opens up an interrelated local space of shared existence and experience that is intensified and facilitated through multiple viewpoints. It is interesting to consider the extent and variances of such interaction in Neuhaus's vectors: the momentary connection created in Moment pieces, the vast geographic communication circle of radio works, versus the perhaps more individually experienced variability of Passage and Place topographies.

Smooth and striated space coexist and intertwine: "Perhaps we must say that all progress is made by and in striated space, but all becoming occurs in smooth space."[20] Hence what mattered to Deleuze and Guattari is what happens between the two, how and what kinds of relationships and combinations are formed: "how the forces at work within space continually striate it, and how in the course of its striation it develops other forces and emits new smooth spaces."[21] Neuhaus's pioneering venture of bringing sound into the field of plastic art and the everyday, public places has to be deliberated along these lines for several reasons. First, it partly answers, or better yet, repositions, the sticky question of evaluating this type of work. Leonard B. Meyer, for instance, recognized the problem of forming criteria for art born out of the egalitarian spirit and the correlated repudiation of canons. He saw one solution in focusing on the process as opposed to the finished product: "Because of the difficulty of judging the value of individual works, there will be an emphasis on the quality of performance. Performances will be judged not only in relation to one another but in relation to ones recorded in the past, sometimes the distant past."[22] It is indeed more productive to assess *how* Neuhaus's uncoded sound character functions in relation to culturally codified sounds than *what* it might be.

Neuhaus in fact operates with smooth space in a three-fold way. Just as his work gives rise to the nonoptical, smooth space through the sense of hearing, it also interrupts the striated with smooth on social and institutional levels. With each proposal for a sound work, Neuhaus is unavoidably challenging the conventional institutional criteria because his work lies between categories (media) and

ordered territories – be it those of the visually oriented art world, or more broadly, the cultural, administrative, and civic when his work involves a public place and constituent authorities. An interesting case that relates to judging and the reception of his sound piece was the untitled installation commissioned by the Museum of Contemporary Art in Chicago for its former location (Fig. 21). Installed in 1979, it may very likely have been the first sound work to ever enter a museum's permanent collection. A low, humming sound emitted from a column of thirty speakers hidden behind a panel of acoustic foam in one corner of the museum's signature stairwell. Neuhaus recalls how John Neff, then the museum's director, asked for his permission to turn the piece off after hours one evening in order to demonstrate to the incredulous museum board that the work was indeed there. The sound, which could be mistaken for an air-conditioning system, was loved by some, went unnoticed by others, but it also spurred some intriguing complaint-letters to Neff.[23] The paradox inherent in having to turn the installation off to prove that the work was there while several visitors found it too intrusive to calmly view adjacent exhibitions on the top floor would make an interesting study involving the theory of reception but stretches beyond the scope of this project. Suffice it to consider how completely commonplace much more sonorous reverberations have become since – on any given day, the MCA visitor will partake in sonic leaks and echoes from video and other installations involving sound throughout the building.

In any case, Neuhaus's work stayed put until the museum moved in 1996. But the second part of the story involves the museum's breech of conduct for fundamentally unrelated reasons as recounted by the artist:

> I invalidated the work in 1989 after a multitude of sins on the part of the museum, i.e., the museum agreed when I completed it that the work would never be turned off and that no other artwork would be shown in its space, but violated this agreement many times over the ten year period.
>
> The final straw came when I walked into the museum unannounced around Christmas 1989 and found electronic music coming out of the work's speaker system. A brochure at the front desk announced that the results of an electronic music contest were being played in the stairwell over the work's speakers – the equivalent of say letting art students have a graffiti contest on your Richard Serra – after ten years they still hadn't gotten past the point of thinking of the work as a very expensive hi fi system which, since they had bought it, they could do what they liked with.[24]

It would have been interesting to find out what kind of responses this particular electronic event procured among sound-intolerant viewers.

Finally, the third level of smooth disruption comes through the character of Neuhaus's sounds that circumvent the coded modalities and open onto an uncoded realm of aural possibilities that relate to extant local sonorities and acoustic properties. This uncoded field ties back to the first level of creating smooth space by inciting the sense of hearing but adds an important dimension. Since the sound or the modulation of existing aural phenomena, when noticed, is not transparent by way of signification, it requires a different kind of listening. On one hand, Neuhaus's sounds enhance a haptic observation of a place, on the other, they augment the ear-mind precisely because they cannot be absorbed and understood through available codes. A new space is created for the ear that can perhaps be approached with the notion of desire as understood by Deleuze and Guattari. That is, desire having nothing to do with lack – a notion they zealously oppose – but desire as that constant process that aims at nothing, that has no ulterior purpose but to keep alive, keep producing, and connecting. Neuhaus's work in this sense, motivates a desire to listen, offers the desiring-ears a possible direction to break through habitual or socially constructed limitations of what is possible or necessary, which reflect and produce reality according to given (intended, inscribed, codified, reappropriating) models. This is a quite subtle process at work but one that underlies the consistency of his approach. In fact, the subtlety of his pieces displays an inherent opposition to control the space, or to a kind of will to power that would dominate or compete for attention. Instead, the power is relayed to the listener who is free to experiment.[25]

Looking back at the *Intermedia Chart* with the notion of haptic space at hand, the decision to approach Neuhaus's work from the direction of sound instead of sculpture becomes more transparent. Intermedia and the haptic quality of sound operate in smooth space that is created within the striated. We have charted the emergence of the smooth in music, moving from the acceptance of everyday sound phenomena and ways of listening, to graphic scores, chance-derived composition, and performer-determined interpretation of the work. In sculpture, too, the process of opening the field up to encompass spaces independent of medium specificity produced crossroads with other media and certain performative elements found in installation art, for instance. Once Neuhaus introduced sound into this broadened space of artistic expression, the stakes were moved further, with smooth places contesting the hegemonies of the visually striated. Therefore the discussion issuing from sound reflects the motion from which the intermedia sensibility in his work was most radically activated and that generated entirely new models of (being in) space accessed by listening. Aside from the fact that not all vectors encompass an affinity with sculpture, they disclose a movement that is fundamentally haptic or smooth by intention and that confidently interrupts the striated formulation of space, including a sculptural one.

The *Intermedia Chart* is a helpful visualization of many aspects present in Neuhaus's work by virtue of their function in-between art categories. But the artist's own diagram of vectors has a centrifugal dynamic with the intermedia kernel already at its core. The interstice through which six of eight vectors cross can be understood as *instrument-score*, the idea that is present in *Max-Feed*, radio loops, and installations, and that also encompasses the listener's ears. The vectors diagram shows a movement that looks like *Intermedia Chart* turned inside out – the intermedia concept is internalized and the outward-stretching directions expose alliances created through extra-artistic media, such as places, networks, and the sounds of the world. These projections (into the everyday) are implied in the *Intermedia Chart*, while the vectors diagram reveals them as primary forces propelling the sound works here and there, and the reason why the works finally elude being clearly characterized between media alone.[26]

One of the strongest qualities of Neuhaus's permanent pieces especially, is the opportunity to experience them repeatedly over time. For the regular passerby or occasional visitor (the works make for an excellent travel itinerary), this is how they achieve their most enduring resonance that accommodates playful experimentation through which we tend to enjoy testing our senses. Ideally situated in a public place, always accessible, these works become part of the everyday with a perpetual, gentle mission – bringing to the perception of sounds around us the same amount of quality attention we reserve for music, for example. While this process may start off by drawing attention to hearing *the sounds in themselves*, their immediate context and the manner with which the artist succeeds to plunge us into the aural realm demonstrate a rootedness that has a lot to do with changing the character of our seeing. For in order to perceive the work, we are asked to perform our part. With the prevalence of the visual cleverly subdued or retracted, this most directly involves the observation of the mutual correspondence between listening and vision, as well as the tremendous haptic quality listening endows to the places we inhabit. We are stimulated to hearing differently; often Neuhaus's sonorities provide a synthesis of daily sounds that seems foreign at first and in absorbing their rich texture we are in fact tuning our ears to the rarely explored possibilities of hearing that emphasize the very direct experiential interaction with the space around us. Rather than a beholding of an object, this is an activity that shifts attention from grasping a thing, or things in a place, to opening onto a heterogeneous field where the aurally experienced environment reveals both a shared social space and a more specific moment or place in which we keenly partake in the intensity of sensorial communication. With the works already extant in quotidian places or otherwise drawing from quotidian sounds, Neuhaus's experientially based aesthetic translates into the practice of everyday life with a particularly resounding immediacy.

The room has unusual proportions, almost square and four storeys high. It also offers a means of exploration in three dimensions – a floating stairway leading from top to bottom.

The work occupies the two extremes of sound spectrum. The lows are composed of resonances of the space and though loud, are hidden in their resemblance to the sounds of flowing air. The highs are soft lines which penetrate the space at various levels.

Together they form a sonic structure both delicate and massive, but which nevertheless remains more of a presence than a sound.

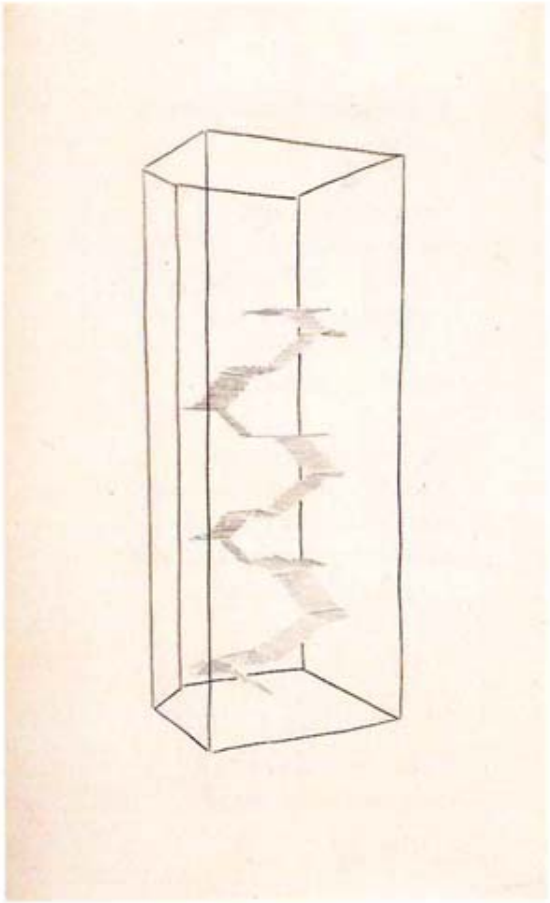


Figure 21: *Untitled,* pencil on paper, 1992
89.5 x 55 cm; 89.5 x 40 cm

Sound work:
Location: Museum of Contemporary Art, Chicago
Proposed: 1978
Extant: 1979-1989

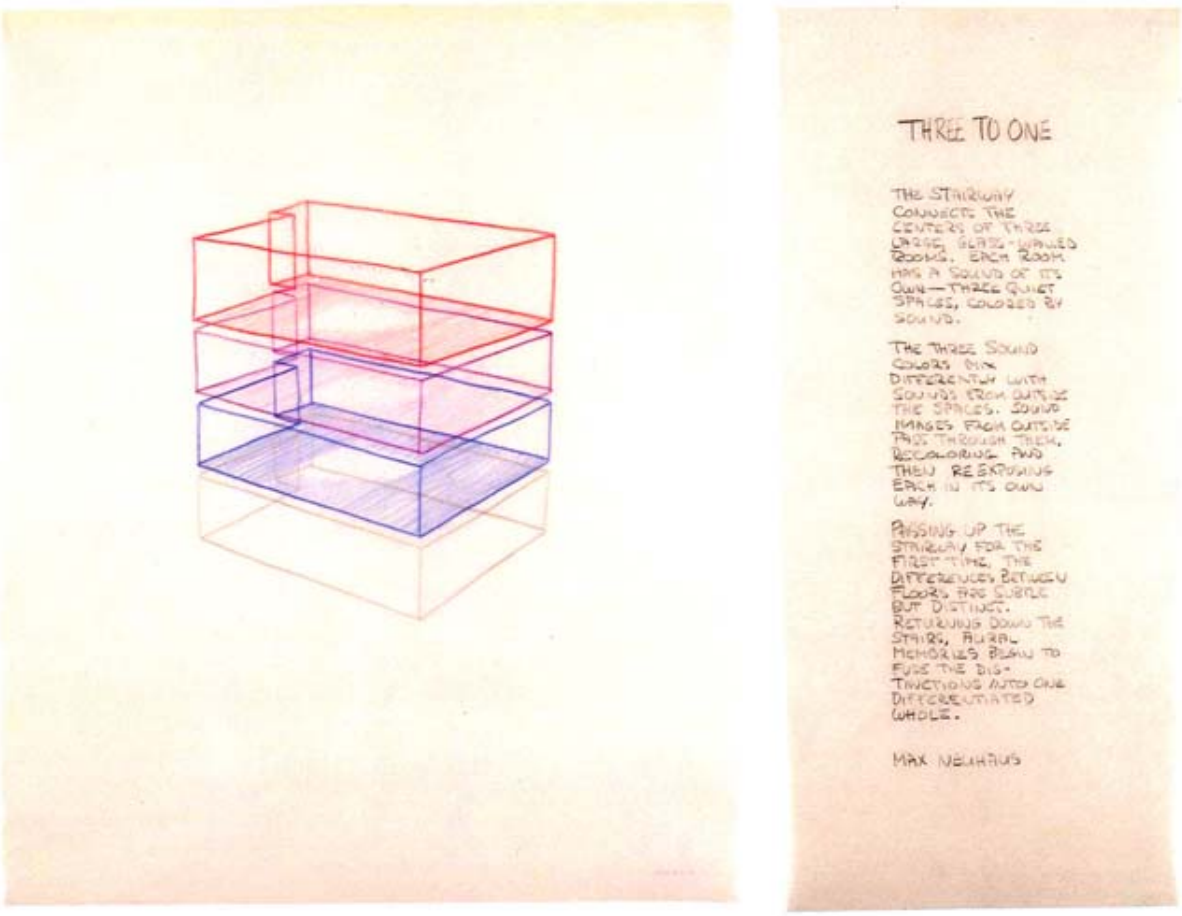


Figure 22: *Three To One*, colored pencil on paper, 1992
89.5 x 74 cm; 89.5 x 40 cm

Sound work:
Location: Documenta IX, AOK Building, Kassel
Realized: 1991
Extant: 1992 - present

Figure 23: Swisscom, Worblaufen-Bern

Sound work:
(untitled)
Extant: 1999 - present

Notes

[1] Denys Zacharopoulos, "Max Neuhaus: A Place within a Place," trans. Charles Penwarden, in *Max Neuhaus: Inscription, Sound Works, volume I*, 102-3.

[2] Neuhaus, conversation with the author, 21-22 January 2001.

[3] Julie H. Reiss, *From Margin to Center: The Spaces of Installation Art* (Cambridge, Massachusetts: The MIT Press, 1999; 2001), xi.

[4] Kaprow's first Happening was staged in 1957 in a class called "Composition as Experimental Music" taught by Cage at the New York School for Social Research. Reiss, *From Margin to Center*, 10.

[5] It is interesting to note that the concept "Installation – as art" appears for the first time in the 1978/79 issue of *Art Index*. It is followed by "see Environmental art" until the early 1990's when it gains stronghold as an independent category while the category Environment slips out of usage.

[6] Reiss, *From Margin to Center*, xi.

[7] Concha Jerez quoted by José Iges, "Areas of artistic activity to listen to and look at." in *The Space of the Sound/The Time of the Gaze* (Koldo Mitxelena Kulturanea Erakustaretoa, Donostia and Sala de Exposiciones Koldo Mitxelena Kulturnuea, San Sebastián, 1999), 102.

[8] Iges, *The Space of the Sound/The Time of the Gaze*, 102.

[9] *Blurring the Boundaries: Installation Art 1969-1996* (San Diego: Museum of Contemporary Art, 1997), 13.

[10] Reiss, *From Margin to Center*, 156.

[11] Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press, 1983), 379.

[12] Deleuze and Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press, 1987), 477.

[13] Ibid., 478.

[14] Ibid.

[15] Ibid., 479.

[16] Ibid., 492.

[17] Ibid

[18] Ibid., 493.

[19] Ibid.

[20] Ibid., 486.

[21] Ibid., 500.

[22] Meyer, *Music, the Arts, and Ideas*, 348.

[23] I thank the MCA Collections and Exhibitions Assistant Amy Rogaliner for providing documentation about Neuhaus's installation, including the visitors' correspondence. The strong tone of some complaint mail is surprising, especially since I had visited the museum a few times before it moved and was one of those visitors who perceived the work unconsciously – in retrospect I remember having sensed rather than truly hearing it. In a recent conversation with a young Swiss artist and musician Ramon Schneider, he offered an explanation to the visitors' negative reactions that rings valid to me – when we do not expect to hear a sound in a certain space, no matter how undistracting, such as the humming of an air-conditioning system, we tend to notice it out of proportion even though it is not any louder.

[24] Neuhaus continued: "I then realized that they never would get beyond that point and that it was best to put the piece out of its misery – conceptually at least – using my last weapon, I declared it no longer valid.

Certainly it was the right thing to do considering what they did at the end – physically destroying the work along with all other site specific works in their collection to get an extra million dollars by selling the building.
They never got it: they even asked me if I would make a new work for them out of the pieces…" Neuhaus, email correspondence with the author, 26 July 2001.

[25] In Cage's words: "…the word "experimental" is apt, providing it is understood not as descriptive of an act to be later judged in terms of success and failure, but simply as of an act the outcome of which is unknown." "Experimental Music: Doctrine" in *Silence*, 13. Clearly, experimentation is meant to dissolve conventional evaluative practices. Deleuze and Guattari refer to Cage's argument to make their own radical case for experimentation in art:: "…the value of art is no longer measured except in terms of the decoded and deterritorialized flows that it causes to circulate beneath a signifier reduced to silence, beneath the conditions of identity of the parameters, across a structure reduced to impotence… It is here that art accedes to its authentic modernity, which simply consists in liberating what was present in art from its beginnings, but was hidden underneath aims and objects, even if aesthetic, and underneath recording or axiomatics: the pure process that fulfills itself, and that never ceases to reach fulfillment as it proceeds – art as "experimentation."" Deleuze and Guattari, *Anti-Oedipus*, 370-71.

[26]Thanks to Deborah Fausch for discussing the two diagrams.

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APPENDIX A

List of sound works

1966/76	*Listen*, 15 sound walks, various locations in USA and Canada
1966	*Public Supply I*, WBAI, New York *Max-Feed*, New York
1966/67	*American Can*, New York *By-Product*, New York
1967/68	*Drive-in Music*, Lincoln Parkway, Buffalo, New York
1968	*Fan Music*, rooftops of 137-141 Bowery, New York *Southwest Stairwell*, Ryerson University, Toronto *Telephone Access*, New York *Public Supply II*, CJRT, Toronto
1970	*Public Supply III*, WBAI, New York
1971	*Water Whistle I*, New York University, New York *Water Whistle II*, Newark State College, Newark
1972	*Water Whistle III*, Walker Arts Center, Minneapolis *Water Whistle IV*, California Institute for the Arts, Newhall *Water Whistle V*, University of California, La Jolla *Water Whistle VI*, State University of New York, Buffalo *Water Whistle VII*, Jewish Community Center, Buffalo *Water Whistle VIII*, University of South Florida, Tampa *Water Whistle IX*, Central Michigan University, Mount Pleasant *Water Whistle X*, Michigan State University, East Lansing
1973	*Water Whistle XI*, York University, Toronto *Water Whistle XII*, Everson Museum, Syracuse *Water Whistle XIII*, University of Southern California, Los Angeles *Public Supply IV*, WFMT, Chicago *Water Whistle XIV*, Rochester Institute of Technology, Rochester
1973-77	*Walkthrough*, Jay Street subway station, New York
1974	*Water Whistle XV*, Leo Castelli Gallery, New York *Water Whistle XVI*, John Weber Gallery, New York *Water Whistle XVII*, Sonnabend Gallery, New York *Listen*, Editorial New York Times
1975	*Drive-in Music*, Lewiston State Arts Park, New York
1976	*Round*, Old U. S. Customs House, New York *Underwater Music I*, Radio Bremen *Underwater Music II*, Institute for Art & Urban Resources, New York (untitled), Rooms, Institute for Art & Urban Resources, New York
1977	*Radio Net*, National Public Radio Network, USA *Underwater Music III*, Radio RIAS, Berlin (untitled), Documenta 6, Kassel

1977-92	*Times Square*, New York
1978	(untitled), Museum of Modern Art, New York (untitled), Stichting De Appel, Amsterdam *Underwater Music IV*, Stichting De Appel, Amsterdam *Listen*, postcard decal, New York
1979	*Five Russians*, The Clocktower, New York
1979-89	(untitled), Collection Museum of Contemporary Art, Chicago
1980	(untitled), Como Park, St. Paul
1983	(untitled), ARC 2, Musée d'Art Moderne de la Ville, Paris (untitled), Kunsthalle, Basel (untitled), Bell Gallery, Brown University, Providence *Time Piece 'Archetype'*, Whitney Biennial, Whitney Museum of American Art, New York
1983-90	(untitled), Villa Celle, Pistoia
1985	(untitled), Promenades, Centre d'Art Contemporain, Geneva
1986-88	(untitled), Domaine de Kerguéhennec, Locmine
1986-93	*Works for One Person I*, Galerie Eric Franck, Geneva
1988	*River Grove*, Roaring Fork River, Aspen *Sound Line*, Centre National d'Art Contemporain, Grenoble
1988-90	*Infinite Lines from Elusive Sources I*, Galerie Ghislaine Hussenot, Paris
1989	*Two 'Identical' Rooms*, Einleuchten, Deichtorhallen, Hamburg
1989-91	*A Bell for St. Cäcilien*, Kölnischer Kunstverein, Cologne
1989-92	*A Large Small Room*, Galerie Karsten Greve, Cologne
1989-93	*Time Piece*, Kunsthalle, Bern
1990	*Two Sides of the 'Same' Room*, Dallas Museum of Art, Dallas (untitled), Lake Luzern
1990-93	*Infinite Lines from Elusive Sources II*, Galleria Giorgio Persano, Milan
1990-present	*Three 'Similar' Rooms*, Galleria Giorgio Persano, Turin
1992-present	*Three to One*, AOK Building, Kassel
1993-present	(untitled), Collection CAPC Musée d'Art Moderne, Bordeaux
1996-present	(untitled), Collection Castello di Rivoli, Museo d'Arte Contemporanea, Turin
1999-present	(untitled), Collection Swisscom, Worblaufen-Bern
1999-present	*Suspended Sound Line*, Collection Kunst im öffentlichen Raum die Stadt Bern, Bern

1999	*Intersection I*, Venice Biennale, Venice
2001	(untitled), La Napoule Art Foundation, Mandelieu-La Napoule
2002-present	*Times Square* (reinstatement), Collection: Dia Art Foundation, New York
2002-present	*St. Luc*, Collection: Pierre Huber, St. Luc, Switzerland
2002-present	*Promenade du Pin*, Collection: Fonds cantonal d'art contemprain, Geneva

APPENDIX B

The exhibition Images from Eight Vectors is an overview of Max Neuhaus' oeuvre. Four pairs of vectors - Place/Moment; Performance/Networks; Walks/Passage; Invention/Sensation - articulate a framework for the primary directions of his work over the past forty-seven years.

Place

Communion with sound has always been bound by time. Meaning in speech and music appears only as their sound events unfold word by word, phrase by phrase, from moment to moment.

My Place works share a different fundamental idea - that of removing sound from time and setting it, instead, in place.

(Intersection I drawing)
Intersection I , 1999
Colored pencil on paper
55 x 76 cm; 55 x 47 cm

Sound work references:
Exhibition: 48th Venice Biennial, Venice
Location: Walkway leading to the Italian Pavilion
Dimensions: Circle 15 meters in diameter
Extant: Summer 1999

works:

Fan Music, rooftops of 137-141 Bowery, New York
Southwest Stairwell, Ryerson University, Toronto
Walkthrough, Jay Street subway station, New York
Round, Old U. S. Customs House, New York
(untitled), Documenta 6, Kassel
Times Square, New York
(untitled), Museum of Modern Art, New York
(untitled), Stichting De Appel, Amsterdam
Five Russians, The Clocktower, New York
(untitled), Collection Museum of Contemporary Art, Chicago
(untitled), Como Park, St. Paul
(untitled), ARC 2, Musee d'Art Moderne de la Ville, Paris
(untitled), Kunsthalle, Basel
(untitled), Bell Gallery, Brown University, Providence
(untitled), Villa Celle, Pistoia, Italy
(untitled), Promenades, Centre d'Art Contemporain, Geneva
(untitled), Domaine de Kerguehennec, Locmine, France
Works for One Person I, Galerie Eric Franck, Geneva
River Grove, Roaring Fork River, Aspen
Sound Line, Centre National d'Art Contemporain, Grenoble
Infinite Lines from Elusive Sources I, Galerie Ghislaine Hussenot, Paris
Two 'Identical' Rooms, Einleuchten, Deichtorhallen, Hamburg
A Bell for St. Caecilien, Koelnischer Kunstverein, Cologne
A Large Small Room, Galerie Karsten Greve, Cologne
Two Sides of the 'Same' Room, Dallas Museum of Art, Dallas
(untitled), Lake Luzern, Switzerland
Infinite Lines from Elusive Sources II, Galleria Giorgio Persano, Milan
Three 'Similar' Rooms, Galleria Giorgio Persano, Turin
Three to One, Documenta 9, AOK Building, Kassel
(untitled), Collection CAPC Musee d'Art Moderne, Bordeaux
(untitled), Collection Castello di Rivoli, Museo d'Arte Contemporanea, Turin
(untitled), Collection Swisscom, Worblaufen-Bern
Suspended Sound Line, Collection Kunst im oeffentlichen Raum die Stadt Bern, Bern
Intersection I, Venice Biennale, Venice

Moment

I call a group of my sound works Moment or Time Pieces. They are artworks which take the form of communal sound signals. The basic idea of these works, though, is to form the sound signal with a silence rather than a sound.

(Whitney biennial drawing) (unpublished)

Projection of sculpture court with sound system
Time Piece, archetype realization,
Whitney Museum of American Art, 1983
Ink and colored pencil on paper
83 x 151 cm

Unlike the traditional sound signal of a bell which begins with a sudden clang and gradually dies away, the concept of these Moment works is the opposite: the sound is introduced gradually. Beginning inaudibly it grows slowly over a period of minutes and, at its height, suddenly disappears. The long subtle emergence of the sound causes it to go unnoticed. It becomes apparent only at the instant of its sudden disappearance, creating a sense of silence.

The drawing describes a model of the concept which occupied the sculpture court of the Whitney Museum for the biennial in 1983. In this case instead of adding a sound, I transformed the live sounds outside the museum. For ten minutes before every quarter hour this recoloration gradually intensified until, precisely at the quarter, it disappeared, re-exposing the sounds of the street within a sense of silence.

works:
- Silent alarm clock
  Whitney archetype, Whitney Museum, New York
  Kunsthalle, Bern
  Text Drawings:
    - Second Floor, Reykjavik
    - Taormina Art '97, Taormina
    - Palazzo dei Pellegrini, Barberino Val d'Elsa

proposals:
- Siebu Building, Tokyo
- Geneva Lighthouse, Lake Geneva
- La Villette, Paris
- City of Lyon
- St. Pancras Station, London
- Gasteig, Munich
- Jesus Christus Kirche, Berlin-Dahlem
- Museum of Contemporary Art , Los Angeles
- Cathedral of St. John the Divine, New York
- Museum of Time, Besancon (France)
- City of Bern (millennium)

Performance

My initial activities as an artist were as a solo performer on large arrays of percussion instruments.

At the age of fourteen, I decided that I wanted to be the best drummer in the world. This took me on a journey which brought me to New York in 1957, to the stage of Carnegie Hall as a solo percussionist in 1962, through a solo tour of European capitals in 1965 and finally to record my solo repertoire for Columbia Masterworks in 1968. At the age of twenty eight, I decided to stop performing.

(Photo 1)

Max Neuhaus performing Karlheinz Stockhausen's Zyklus, June 2, 1964
Carnegie Recital Hall, New York City, Photo:Peter Moore

(Photo 2)

Max Neuhaus, John Cage and Edgar Varese, New York, September 1963, Photo: New York Times

works:

Recordings:

Electronics and Percussion, Five Realizations by Max Neuhaus, Columbia Masterworks MS7139 1968

Earle Brown: Four Systems - For Four Amplified Cymbals
Morton Feldman: The King of Denmark
Sylvano Bussotti: Coeur Pour Batteur - Positively Yes
Karlheinz Stockhausen: No. 9 Zyklus For One Percussionist - A spontaneous realization, counter-clockwise
John Cage: Fontana Mix - Feed

Mass art - Fontana Mix-Feed - 4 versions 1968

Maxfeed
American Can, Central Park, New York
American Can, Park, Staten Island, New York
American Can, Lincoln Center Plaza, New York
By-Product, Something Else Press, New York
By-Product, Park Place Gallery, New York
By-Product, Town Hall, New York
As You Please

Walks

As a percussionist I had been directly involved in the gradual insertion of everyday sounds into the concert hall, from Russolo through Edgard Varese and finally to John Cage where live street sounds were brought directly into the hall. I saw these activities as a way of giving aesthetic credence to these sounds - something I was all for. I began to question the effectiveness of the method, though. Most members of the audience seemed more impressed with the scandal of 'ordinary' sounds placed in a 'sacred' place than with the sounds themselves, and few were able to carry the experience over to a new perspective on the sounds of their daily lives.

I became interested in going a step further. Why limit listening to the concert hall? Instead of bringing these sounds into the hall, why not simply take the audience outside?
(Brooklyn Bridge poster)
(Hear Inc. decal)

The first of these walks was for a small group of invited friends in the fall of 1966. I asked them to meet me on the corner of Avenue D and West 14th Street in Manhattan. I rubber-stamped LISTEN on each person's hand and began walking with them down 14th Street towards the East River. At that point the street bisects a power plant and, as I had noticed previously, one hears some spectacularly massive rumbling. We continued, crossing the highway and walking along the sound of its tire wash, down river for a few blocks, re-crossing over a pedestrian bridge, passing through the Puerto Rican street life of the lower east side to my studio, where I performed some percussion pieces for them.

After a while I began to do these works as 'Lecture Demonstrations'; the rubber stamp was the lecture and the walk the demonstration. I would ask the audience at a concert or lecture to collect outside the hall, stamp their hands and lead them through their everyday environment. Saying nothing, I would simply concentrate on listening and start walking. At first, they would be a little embarrassed, of course; but the focus was generally contagious. The group would proceed silently and, by the time we returned to the hall, many had found a new way to listen for themselves.

There were other manifestations of the idea. I organized "field-trips", sound walks in places which were generally inaccessible and had sounds which could never be captured on a recording. I also did some versions as publications. One of these was a poster with a view looking up from under the Brooklyn Bridge, with the word LISTEN stamped in large letters on the underside of the bridge. It came from a long fascination of mine with sounds of traffic moving across that bridge, the rich sound texture formed from hundreds of tires rolling over the open grating of the roadbed, each with a different speed and tread.

The developers of the South Street seaport project, which is near the bridge, always felt that its sound would limit real estate values in the area. In the late eighties they succeeded in convincing the city to pave over the open grating with asphalt. Afterwards, they discovered that this tremendous added weight caused serious structural problems in the bridge. There is still a sound, but it is not as interesting as it was.

The last work in the series was a do-it-yourself version. I published a postcard in the form of a decal with the word LISTEN outlined in open letters, to be placed in locations selected by its recipients.

works:

- Lower East Side, New York City
- Town Hall, New York City
- Hudson River Pier, Pavonia, New Jersey
- Local power plant, Farleigh Dickenson University
- Niagara Falls Power Plant, Hallwalls, Buffalo
- Bryn Mawr
- Rutgers University
- University of Iowa
- Brooklyn Bridge
- Hear Inc. - decal
- Artforum - decal

Networks

The Networks propose the self-evolution of new musics. Their premise is a form of music-making which remains now only in societies untouched by modern civilization.

Rather than something to be listened to, music in these cultures is an activity open to the public at large - a dialogue with sound rather than a performance. I believe this to be the original impulse for music in mankind.

(Drawing)

Sound Paths, Radio Net, 1978
Cibachrome print and paint
68 x 101 cm

The drawing shows the cross-country sound paths of Radio Net. Sounds phoned in to each of five cities by listeners were mixed and circulated along the paths. With each cross-country pass, each sound made another layer of itself at a different pitch, overlapping itself several times and then gradually dying away. The live National Public Radio broadcast on January 1, 1977 received 10,000 calls from listeners with sounds, over a two-hour period.

works:
- Public Supply I-IV
- Telephone Access
- Radio Net

proposals:
- Audium Model 1992
- Audium

Passage

The Passage works are situated in spaces where the physical movement of the listener through the space to reach a destination is inherent. They imply an active role on the part of listeners, who set a static sound structure into motion for themselves by passing through it.

(Drive In Music, Buffalo drawing)

Plan of antenna configurations
Drive In Music, Buffalo, 1981
Ink and colored pencil on paper
56 x 75 cm

Sound work references:
Location: Lincoln Parkway from Albright Knox Gallery to Soldier's Circle, Buffalo, New York
Dimensions: One half-mile of roadway
Extant 1967-1968

In this first aural topography listeners exposed the sounds for themselves over their car radios as they drove through them. The drawing shows the physical shapes of the work's seven sound elements, each of which was broadcast by a short-range radio transmitter.

works:
- Drive In Music, Buffalo
- Drive In Music, Lewiston
- Suspended Sound Line, Bern
- Untitled, Swisscom Center, Bern

proposals:
- Paris Metro
- Interterminal corridors, Miami Airport
- Freeway Stack, Los Angeles
- Elevator, Total Building, La Defense, Paris
- Elevator, Medical Center, Chicago

Sensation

Water Whistle series

These underwater aural topographies were realized in swimming pools heated to body temperature. The audience listened to the work, which could only be heard underwater, by lying in the water on their backs, ears submerged, nose and mouth out.

These installation events mark the beginning of my transition from working in concert halls to making site-specific sound works. The basis for this series was the exploration of the new sound world offered by our different sense of hearing in water.

(Labels)

Projection of underwater shape with sound-source locations
Water Whistle I, 1983
Ink and colored pencil on paper
96 x 96 cm

Sound work reference:
New York University, New York, 1971

Projection of underwater shape with sound-source locations
Water Whistle VIII, 1983
Ink and colored pencil on paper
96 x 96 cm

Sound work reference:
University of South Florida, Tampa, 1972

The work's sound sources were hydraulic; a network of hoses fed water through a configuration of whistle-like devices, each enclosed in a funnel-shaped reflector to focus the sound. The water pressure in the hoses caused them to flex constantly, reorienting each sound source independently. This formed a shifting sound texture which varied according to the listener's position in the pool.

works:
- Water Whistle I-XVII
- Underwater Music I-IV

Invention

In the 1980's Neuhaus took on the problem of redesigning the sounds of emergency vehicle sirens. The project's focuses were to make sounds that were locatable in an urban environment so people would know what to do when they heard one, to allow two drivers of emergency vehicles to hear each other when their sirens were on so they wouldn't run into each other, and to make sounds we could live with: which would have authority without being authoritarian.

(Drawing)

Controlled tone color dispersion and the resulting aural images of the car
Siren Project, Drawing #3, 1991
Ink and colored pencil on paper
91 x 110 cm

One of the key features of Neuhaus' patent, the first ever given for a sound, is the creation of an aural image of the vehicle which makes it easy for the public to 'see' where an emergency vehicle is by ear and also tell how fast it is moving and whether is coming closer or moving further away.

inventions:

- One-handed trill technique for mallet percussion instruments 1960
- Stressed aluminum tubing stands for percussion instrument arrays 1962
- Acoustic feedback as a sound-synthesis technique 1963
- Concept of live telephone call-in broadcast, Public Supply 1966
- Finger-controlled sound mixer 1968
- Voice-controlled 'instruments'
  - Real-time voice collager, Telephone Access 1968
  - Voice-controlled pitch bank, Public Supply IV 1973
- Granular synthesis, Radio Net 1976
- Siren patent 1992
- Systems for creating place works:
  - Series of analog synthesis circuits for each work 1966-1982
  - Computer-controlled sound palette 1978
  - Digital sound-generation with remote control via CRT (battery-operated TV) and light-pen 1983
  - Multi-processor system linked by a network with remote control 1986
  - Real-time DSP synthesis algorithms with remote control 1998 - present

APPENDIX C

Sirens

In 1978 I decided to try to design a better set of sound signals for emergency vehicles.

The history of emergency-vehicle warning sounds is linked to the history of our ability to shape sound. In New York, before the turn of the century, firemen themselves pulled the waggons carrying pumps and ladders, while one of them ran ahead through the congestion shouting and blowing a trumpet. After the turn of the century, the mechanical siren was invented, the slow rising and falling sound which we associate with air-raid warnings. It was mounted on the waggon and activated by cranking a handle.

When fire trucks became motorized, someone had the idea of putting a whistle on the end of the exhaust pipe and letting the engine exhaust gasses blow it. It made such a horrendous shriek that it was finally outlawed. With the arrival of electricity the mechanical siren was motorized. The operator made it sound with a pedal on the floor: when he pressed it, the sound would begin to rise; when he released it, the pitch would fall.

In the 1960s, when it had become practical for the first time to make loud sounds electronically, our present-day siren arrived. The sounds of the mechanical siren and horns were synthesized electronically and projected from loudspeakers, mounted on the roof of the car.

After looking at the history of these devices, it became clear to me that the sounds themselves had never actually been designed. Instead they were the product of whatever could be found to make a loud noise.

Yet, with the introduction of the electronic siren, a fundamental change had occurred. For the first time the sound possibilities were unlimited; it was as practical to generate one sound as any other. Instead of searching for better sounds, though, the existing sounds were simply copied and the limitations of the old sirens passed on to the new generation.

It turns out these sounds have many problems, the major one being that they are almost impossible to locate; universally people say that they cannot tell where a siren sound is coming from until it is upon them. Unable to find the sound and becoming more nervous by its approach, many simply stop and block traffic until they figure out what to do. Others ignore the sound until they are directly confronted by the vehicle, often with lethal results. Obviously it is not enough just to let people know there is a police car moving somewhere in the city; they need much more information if they are to know what to do.

In New York, the most conspicuous characteristic of sirens is sonic hysteria. Police and firemen, reacting to the frustration of sounds which don't work, have demanded the development of louder and nastier ones. They have reached the point of saturation, and they still don't work.

Siren sounds in Europe and the rest of the world are more melodic; but they still share all the functional problems of American sirens, including being very difficult to locate. It is interesting to note that these European sounds may soon be replaced by the American ones. Along with the spread of broadcasts of old American cop shows on television in other countries comes the desire of every policeman from Paris to Bombay to be just like the super cop, Kojack. The screaming sound of Kojack's New York City police car is a big part of the image. I've recently seen and heard some test cars with the American sounds in France, Spain and Italy. If New York's sirens become world-wide, they will be the sound track for a "movie" none of us can walk out of.

It is not necessary to frighten people in order to get their attention. It is feasible to design a set of sound patterns which are noticed and located quickly, and there is no reason why these sounds have to be hysterical.

In the early eighties, armed with these ideas, I began to approach the powers that be in New York. Through the mayor's office, I arranged a meeting with the directors of the fire, police and hospital

agencies. They were skeptical. Like most people, the heads of these departments were convinced that these particular sounds were unavoidable; they were the best that could be done. The first hurdle was convincing them that better sounds could be designed and they could make a big difference.

Actually, the police were so skeptical that they did not even show up for the meeting. Instead, they called me at my studio later that afternoon and "invited" me to police headquarters. The implication was that if I didn't come, they would come and get me. When I arrived, after a short discussion about my old unpaid parking tickets to put me in the right frame of mind, they began a thorough interrogation: artists are not supposed to fool around with the New York Police Department even if they do have connections in City Hall.

It turned out to be a fair fight. Although, while policing New York, they had encountered practically everything else in life, I do not think they had ever encountered artistic obsession before. After three hours I walked away from it with two of their police cars; they volunteered to lend them to the project and provide any other help they could. They are not fools; they realized it could make their working lives a lot easier. They also assigned a detective to keep an eye on me. I realized then that it was not going to be easy; things were beginning to get interesting.

The new sounds could not be designed on paper; there were too many unknowns to be able to do it by theory. I was adamant about working in a situation as close to the real world as possible, out of doors with flexible sound-synthesis tools producing sounds at realistic levels from moving cars, a procedure with the technical and logistic complexity of shooting a small-scale film on location. It would also take time; I estimated eight weeks of working outdoors. It was clear that I would have to raise some money.

Being an artist didn't help. The scientific community was not interested; they felt threatened by someone who refused to acknowledge that quantification was the only truth. My own community, art sponsors, were always out to lunch; they didn't feel it was within their purview. So much for the rhetoric of the grand union of art and science.

By 1981, I had raised just enough money to get myself into serious trouble. In an attempt to break through the lack of imagination, I decided to go ahead without enough money, to demonstrate what was involved. I was sure someone out there would get it.

I improvised some mobile equipment and, using the cars borrowed from the police, managed to organize some experimentation on an abandoned airfield in Brooklyn. It was not enough time to learn much; but I thought if we shot some video tape while I was working, at least I could demonstrate the scope of what had to be done. It didn't work; no one came forward. I had bankrupted my non-profit organization, and people seemed surprised I hadn't finished making the new sounds.

I went back to being an artist and promised to behave myself in the future.

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In 1988 I was commissioned to make a sound work in Aspen Colorado and give a talk at the International Conference on Design taking place there. I found an idyllic site, a grove of tall pines stretching down a hillside to the edge of a fast-moving river. I was interested by the river's sound, a loud seemingly constant texture which in fact was always changing. I built another very subtle sound texture in the pine grove to match it. The two sounds were completely different but mixed in such a way that as you walked between river and grove you could never tell where one changed into the other. It was quite beautiful.

It was assumed I would talk about this work for my lecture at the conference. I decided instead to bring up the siren subject again. Here was an international body whose concern was architecture, design and urban planning; yet its focus was completely visual. It seemed like a worthy public service to point out the other half of life.

In my talk, I described the problems and then literally drove the point home by sending an aural illusion of a New York City fire truck roaring through the center of the audience with its siren fully on.

It worked. I found a backer. I also found myself, exactly ten years after I began what I thought would be a simple project, with the wherewithal to do it.

I chose a site near the Salton Sea in the California desert to work in for two months. Its paved roads were largely unused, allowing the sound cars to travel at moderate speeds. It was also forty kilometers away from the nearest dwelling. Although I hoped to make a set of sounds that people could live with comfortably, the process of making them would not be pleasant for anyone nearby. There is a big difference between going to a concert and living underneath a piano player who practices all day. In any case, I felt my first task was to try and solve the safety problems; making it sound good was something I had had experience with.

The week I began working, there was a tragic accident in nearby Los Angeles. Two police cars responding do the same emergency came around a blind corner from opposite directions and collided, killing seven people.

The first question one asks is, why they didn't hear each other even if they could not see each other? If you think about it, the answer is obvious. As their sirens had continuous sounds, if you are in a police car with the siren on, the only thing you can hear is your own siren. All other sounds are covered by it.

People in cities say they can't tell where the siren sound is coming from until they see the vehicle. Yet we are born with a very fine ability to locate the source of a sound with our ears; it probably evolved from when we were living in forests where locating danger by ear was a matter of life and death. Why then do we have difficulty in finding these big dangerous sounds in the city? The answer lies in the character of the sounds: nothing like them ever existed in nature!

Our ability to locate sound depends on a rather delicate (though automatic) comparison of the differences in the onset of the sound between the two ears. This mechanism works very well for the sound of a twig snapping, but it is baffled by continuous sounds or those without clear beginnings.

I asked myself if there was any reason why the sounds had to be continuous. If I made spaced bursts of sound with silences in between, not only would it provide a silent period in which emergency-vehicle drivers in different vehicles could hear one another, but also the many beginnings of a series of sound bursts would give the natural sound-locating system of the human ear something to work with.

I went on to ask myself what else besides continuous sound might be wrong with conventional sirens. A New York City police car disperses a swath of sound ten blocks wide and two or three kilometers long for an average emergency call. In order to clear traffic, though, the only intense sound needed is directly in front of the vehicle, to punch through to the usually sealed interiors of cars blocking the way. Pedestrians on the sidewalks need very little sound to know there is danger nearby. In fact, for most of the people in the huge area covered by a siren, the sound is irrelevant. There is no chance that they will cross paths with the vehicle; a large percentage are not even on the street.

A sound-reflective environment like the modern city is an acoustic hall of mirrors; the more sound you put in it, the more confusing it gets. It was clear that to reduce confusing reflections, the projection of the sound needed to be controlled both to the sides and upwards, placing the sound where it was required while reducing it in places where it was neither needed nor wanted. It was possible; in some ways sound can be focused just like light.

A brief look at the speaker systems used by most sirens, however, showed that they were primarily designed for looks rather than acoustics. One of the most common speakers was even promoted as a "jet scoop" and was made to resemble the air scoop of a jet fighter, I suppose, to give the policeman the feeling he was a fighter pilot. But it was quite useless in directing sound.

It seemed to me that all the present systems had taken the brute-force approach; the louder the sound and the more places it reached, the better. By doing this, they had inadvertently robbed the sound of its ability to carry information. Much of the sound was not only unnecessary but actually added confusion to the situation, yet the key question was giving people enough information to know what to do.

One of the ideas I had when I began the project was to build information into the sounds, not special signals that people had to learn, but things they would intuitively recognize about the situation through the character of the sound itself.

The meaning of a siren for pedestrians and automobile drivers differs according to where the siren is coming from. One needs to know, is it coming towards me or going away? If it is approaching, is it from the left or right, behind or in front? Why not try to clarify this situation with sound?
I realized that the directional horn-type loudspeaker itself had a characteristic which I could use to do this. The higher-pitched the sound, the more directional the horn becomes. Low sounds are projected in all directions while high ones become focused into a beam. This meant I could make the car sound different from the side, front and back; I could give the car an aural-shape. Since high sounds generally have a more urgent character than low ones, I could also build this sound-image so that it reflected the relative danger for each of its vectors. I could make the car sound more urgent when you were in front of it than when you were to the side or behind it.

I began by building some metallic timbres with bright upper frequencies. From the side of the car, where you heard only the low part, they sounded harmonic. As the car turned towards you with its front, where the upper frequencies were projected pointing at you, the sound became more harsh. As you entered into the dangerous zone directly in front of the car, the car actually sounded more dangerous.

Nice!

One of the basic principles of our psychology seems to be to ignore the status quo and react to change. Every emergency-vehicle driver I have ever talked to has told me about their technique of switching to a different sound pattern before entering a dangerous intersection, to regain attention. It didn't seem to matter which sound pattern was used; it was the change which got people's attention. A car with an articulated aural-image of the kind I had just made, winding its way through city traffic, would sound different each time it turned, continually prompting attention.

Once I had decided on spaced bursts of sound, the next question was how much time should there be between sound bursts. It soon became clear that the crucial factor was not time but distance. Sound dies fairly quickly with distance, so it was necessary to insure a relatively short distance in the car's path between sound bursts, no matter how fast the car was moving. Then why not link the burst-interval directly to distance? That way automatically, no matter what the car's speed, the sounds would always occur at the optimum distance. The faster the car was going, the faster the sounds would occur - all the sound that was needed, but no more than necessary. There was the bonus that a faster-moving car with its faster sound bursts would also sound more urgent, as it should - two birds with one stone, again.

Very nice!

Although breaking the sound into bursts and focusing its projection had done a great deal for its locatability, it was not enough. In dense cities with many tall buildings, the acoustic situation becomes extremely complex; glass is such a good reflector of sound that it is easy to be misled by false sound-images. One had to be able to hear the location of a car clearly even if it was obscured by buildings, if it was really going to work.

One reason I chose this particular place in the California desert as a work site was that the highway ran through a steep walled canyon with a double "S" curve. The acoustics were surprisingly similar to the canyons of Manhattan but even more complex; the canyon produced some of the most confusing sound reflections that I had ever encountered. If I could make a sound pattern that I could follow by ear through this canyon, it was a good bet it would work anywhere.

I began by stationing myself in the middle of the double "S" and having my assistant drive the car projecting sounds back and forth from one end of the canyon to the other. I changed the sounds on every pass and listened. When I found one sound pattern that I could track better than another, I would try a variation to see if I could improve it. Gradually I began to get the feel of it; I began to know what kinds of sounds would work.

After several weeks I had developed sound patterns which could be tracked easily; one could clearly hear where the car was in the canyon. But it was difficult to tell whether it was approaching or going away; both directions of movement sounded the same. Obviously an important piece of information was missing. I realized then that I had made only half of the car's aural-image, the front half; so I mounted another horn facing the rear and built contrasting sound patterns for it.

I had my assistant take the sound car to the far end of the canyon and drive it in a small circle. It was a wonderful moment. I could easily hear the front and then the rear as the car turned, more than two kilometers away through the acoustic labyrinth.

Now it was time to start defining the sound patterns. This idea of regaining attention by switching between different sounds made it clear that a set of different patterns was required. As long as I was making different patterns, why not have them also mean something? A graduated set of different degrees of urgency was what was needed to give the driver something to work with - an acoustic accelerator and brake, so to speak.

In evolving these specific sound cues I began with the least urgent: one sound burst for every distance interval, high from the front, low from the back. I constructed the burst for the front speaker so that its onset was a specific tone, and as it faded its after-ring became a more complex timbre. This after-ring contained the bright upper frequencies which were only projected directly in front of the car, forming the aural danger-zone I mentioned earlier.

The next pattern became two of these bursts of different pitches in quick succession: the front speaker going low/high, and the rear the opposite, high/low.

For the third and most urgent pattern, I made a frequency sweep, again distinguishing front from rear with opposite patterns: the front speaker sweeping up, the rear one sweeping down.

By this time I had had enough of talking like Demosthenes with pebbles in my mouth. I wanted to try the sounds in a real city. But testing safer siren sounds on city streets turned out to be bureaucratically impossible. A little ingenuity was in order. Under the guise of making a movie, I commandeered a section of downtown Oakland California for several evenings. You can do anything anywhere if you offer a chamber of commerce the publicity of making a movie in their city. Hiring off-duty local police and fire personnel as drivers confused the situation enough so that, when they realized we were doing more than just shooting a film, there wasn't much they could do about it; the policemen on duty were the friends of those driving the cars.

Of course, another reason for hiring real emergency-vehicle drivers was to get their reactions and talk to them about the new sounds; these people worked daily with sirens, and their lives depended on them. The drivers were very impressed at being able to hear one another's sirens for the first time. They also brought up some new points. While running to an emergency with the siren on, they frequently have to get instructions over their radios; with these new patterns, they could hear their radios clearly for the first time. They also spoke about a decrease in their own level of tension with these new sounds. For my part, I was tremendously relieved to find that it was much easier to follow the sounds by ear in a city than in my torturous canyon.

***

I have been talking about the functional aspects of these sounds. As important as these are, the other half of the question is equally so. What should a siren sound like; what about its aesthetic character?

In primitive societies, authority was often designated literally by wearing a threatening costume; the witch doctor dressed as a monster. Visually our ideas about the signification of authority have evolved; we don't dress policemen as monsters. Why then do we think they should sound like them? Aurally we are still in the stone age. The general feeling is that, in order for a police car to have authority, it must sound threatening. But if we made it look as ugly as it sounds, we would all laugh at it.

The aural threat of a conventional siren as it passes through a city is essentially subliminal for the large number of people not directly confronted by it. Its effect on this uninvolved group - their increased level of stress - is not something we can measure. But no matter what it is, it is unnecessary. It is possible to make loud sounds which do not threaten and still clear traffic.

The sounds I tested in Oakland are the equivalent of aural sketches of what the final sounds could be. Along with testing the functional aspects, I also wanted to test the other part of the idea. The general character of these sounds was familiar, not alien; they sounded bell-like and were in fact a little prettier than necessary. I wanted to test and clearly demonstrate that a sound could have authority without being authoritarian. Although none of these sounds had ever been heard before, and the test was not publicly announced, all the drivers we encountered pulled to the side of the road without hesitation.

The next question was how to implement these new ideas. One would think it should not be too hard, after all, to implement something which saves lives and improves urban living conditions.

However, the public agencies which control emergency vehicles have rigid purchasing procedures involving competitive bidding, maintenance contracts and other bureaucratic processes. An organizational structure to manufacture, distribute and maintain the sirens was necessary. The ideas had first to be protected by a patent and then taken over by a manufacturer.

The patent office reflects the same misconceptions about sound as everyone else; the idea that something as intangible as a sound can actually do something seems strange to most people. A patent, by definition, is a new method of doing something. My proposal that these sound patterns constituted a new method of moving emergency vehicles through urban traffic seemed to puzzle them at first; no one had ever patented a sound before.

Finally, on April 30, 1991, two years after I finished testing the sounds, the U. S. Patent Office issued Patent Number 5,012,221, embodying forty-six ideas on how to use sound to move an emergency vehicle through traffic.

One would think the last step would be the simplest: what siren manufacturer would not jump at the chance of a new product which would revolutionize his industry? Not so.

Siren manufacturers insist that police, fire and ambulance drivers want loud nasty sounds in order to reinforce their image of self-importance. This may or may not be true. But in 1989 the New York City Police Department asked to test the new sounds versus the old in one of their precincts. So far no siren manufacturer has shown interest in making a set of prototypes they could try.

There is a reason for this lethargy. The market for new sirens is small. It will mean an investment to put a new siren into production; and the potential return, although the siren would save many lives, won't make anybody rich quickly.

There is no pressure from government for a safer siren because the manufacturers belong to the government committees that are supposed to regulate them. There is no civic pressure because the public doesn't know that a better alternative exists.

You can lead a horse to water, but you can't make him drink.

Footnote: It is impossible to mention all those who have travelled with me at different times over the decade of the project's realization, but I would like to list those whose efforts were crucial. It would not have been the same without the help of Frederick Rheinagel, Judith Bruk, Detective Owen Greenspan, William Jersey, Dominique de Menil, Silas Mountsier, Jay Chiat and Sidney J. Frigand.

Max Neuhaus, 1991 (with addenda in 1993)

Drawing Captions:

1. Spaced sound bursts, equidistant regardless of speed
2. Rear and front sound burst timbre over time
3. Sound burst timbre spatial dispersion
4. Sound images of visually obscured cars, approach and departure

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