

Le Centre International de Recherche Musicale (CIRM), Nice
présente au
F . A . U . S . T . 1994

IN CORPUS

de
Michel Redolfi

Musique: Michel REDOLFI

Scénographie : Michel REDOLFI
Systèmes cybernétiques : Luc MARTINEZ
Ingénierie subaquatique et supervision : Dan HARRIS

Avec les voix de
Susan BELLING
Yumi NARA

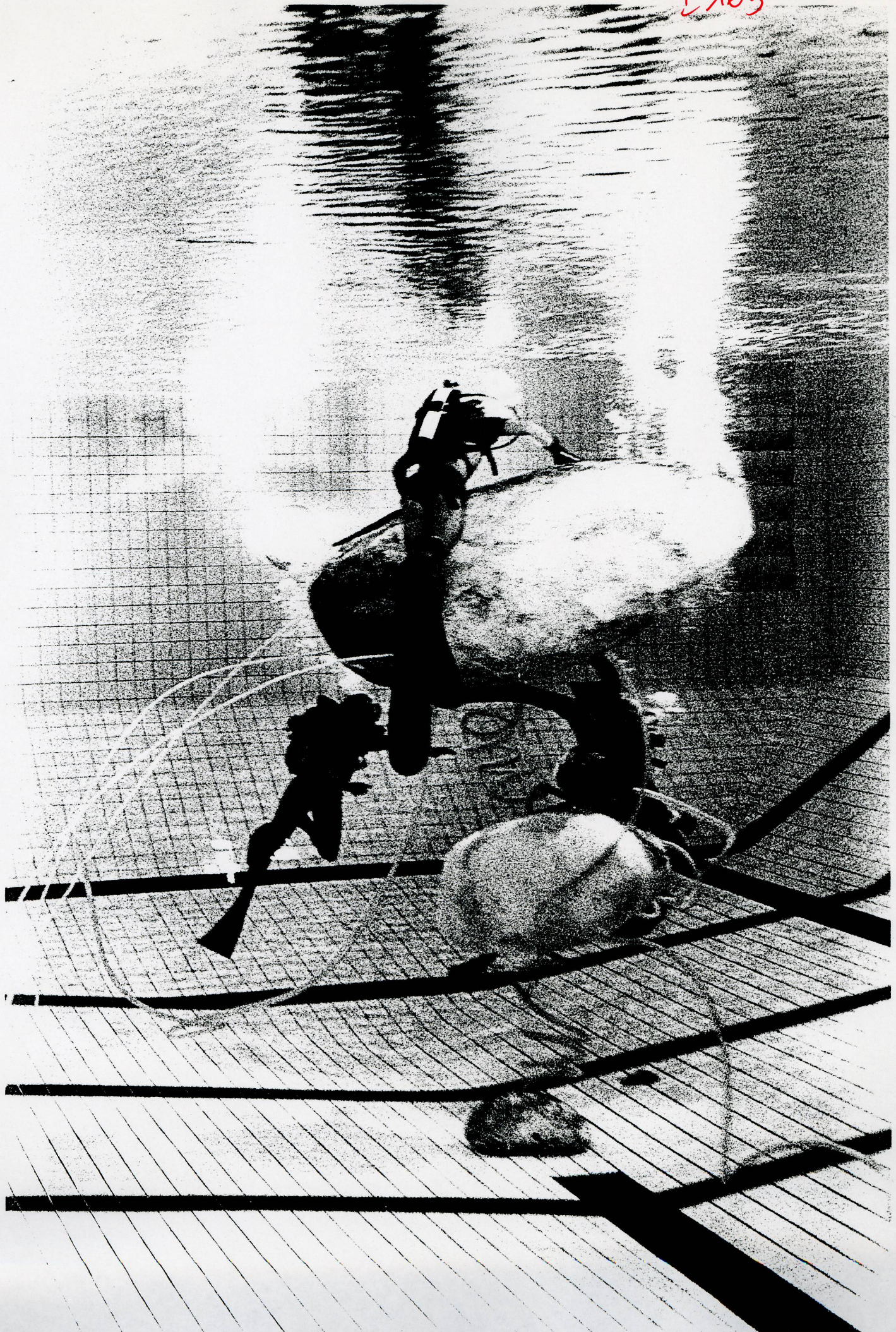
Chorégraphie : Ciro CARCATELLA

Danseurs
Ciro CARCATELLA
Nathalie LARQUET
Stella SPITALERI

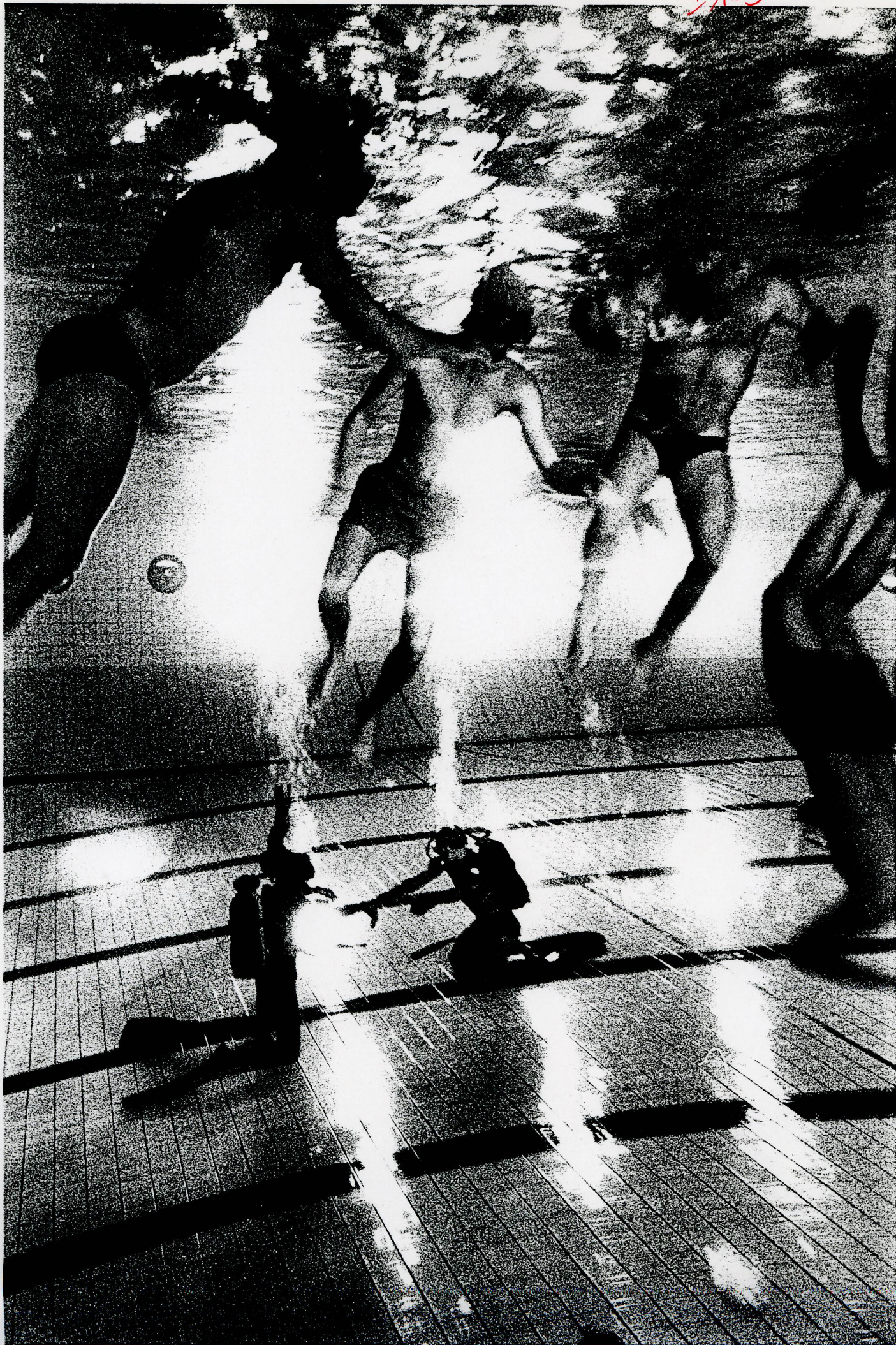
Conception des costumes : Michel REDOLFI
Programmations informatiques : Vincent FILALI, Damian ARCHER, Gérard CANTON
Fragrances : Ivan COSTE-MANIERE

Direction du spectacle Michel REDOLFI

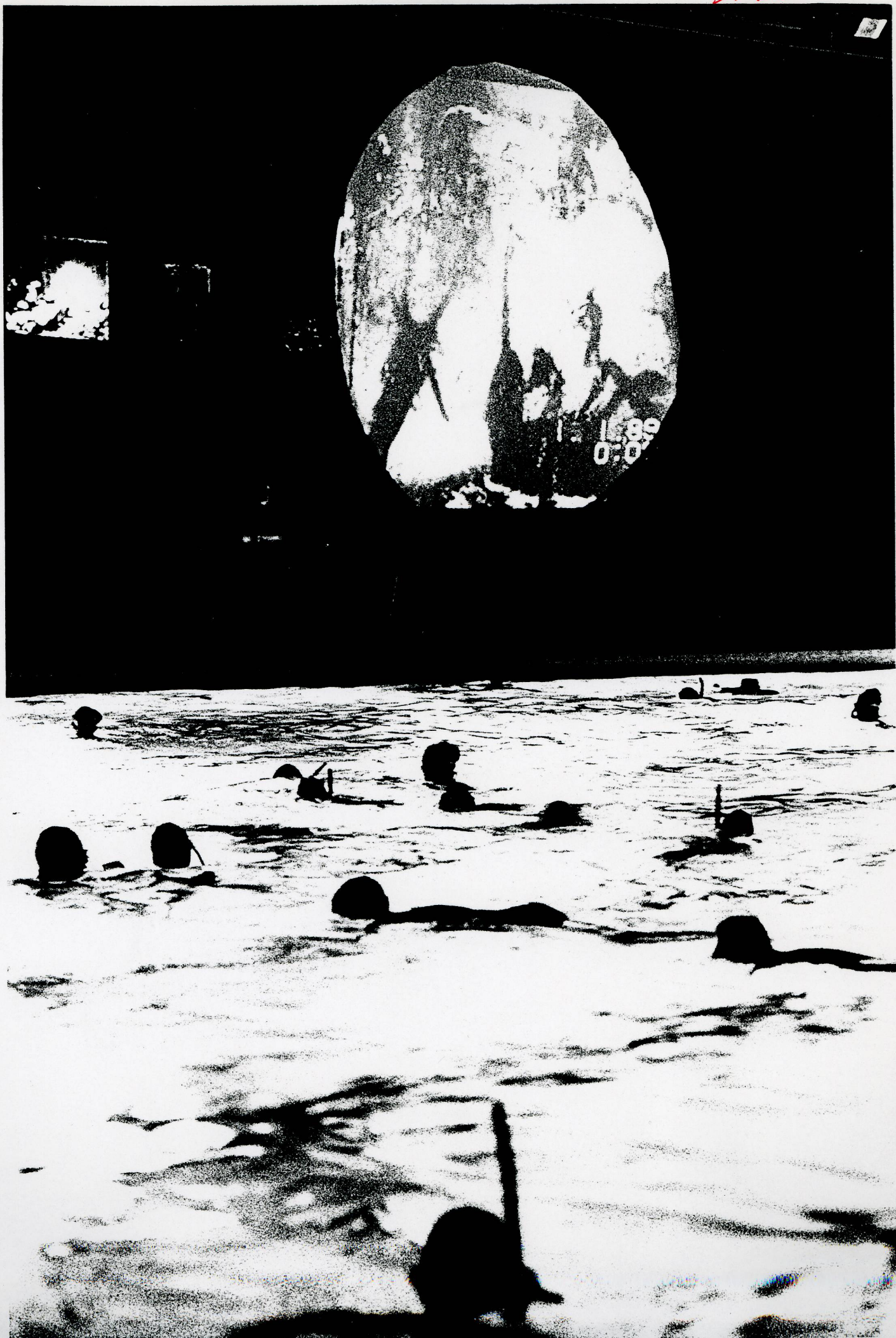
T 163



T 163



I163



Singing Waves

Notes on Michel Redolfi's *Underwater Music*

Daniel Charles

Defining the Intermedia

Breaking down the walls which isolated the main arts from each other, the intertextual forms of art of our epoch have been generally understood by musicians as achieving "the rational extension of composite forms such as ballet and opera". In fact they do not only integrate, or try to integrate, the various art forms available, they are as well "the result of the need for visual activity in connection with tape music";¹ and if they answer this need for the concert as a visual experience, one may be tempted to identify, as musicologist Stanley Gibb has done, the level of control which the composer makes a point of maintaining when he fuses different sense-datas. Let us recall Gibb's classification; it includes:

- 1) The loose structure of "multimedia", which does not require any integration between the dimensions involved;
- 2) The "mixed media" or "environments", which tend toward an equalization of the elements and therefore try to avoid any hierarchically ordered pattern;
- 3) The "intermedia", which tend to integrate the elements according to the ideal of an "interpretation without obstruction", and therefore require a "merged medium".²

The reduction of metaphor to get at presence

In order to obtain such a "merged medium", one may for instance apply the spatial determinations of visual perception to the aural ones, and try to parallel visual directions with the positioning of sound-producing sources: the extension of instrumental possibilities to self-performing sound-sculptures may include spacing and placement as solutions to sound-balance problems. Since the artist focuses upon the "merged medium", he has to intensify the relationships between the characteristics of sound and the features of the "real space" in which the piece resonates; therefore he must share at least some of the concerns of the visual artist, namely those which have been brought forward by the new technologies such as film or video and have made it necessary to add the temporal dimension to the three-dimensional field of spatial entities. In other words, he has to exhibit the

"presence" of the work, i.e. the work *qua* existing *hic et nunc* and *qua* ceasing to exist as soon as the performer and his audience split. We may remind ourselves here of what the visual artist Robert Irwin once remarked, in reference to his early minimal paintings: "The thing to realize was that the reduction (involved in these paintings) was a reduction of imagery to get at physicality, a *reduction of metaphor to get at presence*".³ As Thomas DeLio has said in his commentary, "the goal was to expurgate all *metaphors* of presence from the experience of art and to replace them with a conscious awareness of perception. In the best experience of this art, the perceiver is located at the very moment his own perceptions become manifest to himself—at the very brink of his first contact with the world. This, in turn, leads to a re-examination of the role of the perceiver in the experience of the artwork as it forces a heightened awareness of the act of perception".⁴

Horizontality vs. Verticality

The concern with "pure" physicality leads us to realize that the purpose of art needs not be the expression of the artist's conception of the world, but the very *construction* of such a conception, thus inviting the spectator to participate in the building of such a world. The creator, Robert Irwin adds, allows "people to perceive their perceptions", he intends "to make people conscious of their consciousness".⁵ But this result will never be attained if the various materials remain "subservient to the expression of the artist's personal aesthetic impulses",⁶ i.e. if they are preordained "to be shaped into some personal utterance" which may only numb the process. Such an "inexpressionism", which had its roots, DeLio tells us, "in the seminal works of John Cage", began to "dominate the work of almost all progressive American artists, writers and composers" throughout the Sixties and Seventies.⁸ The sculptor Carl André has been one of the most emphatic of all of them about the denial of traditional shaping processes in favour of "presentational" ones. His *Timbre Piece* (1964), for instance, which "consists of a simple rectangular construction fashioned from roughly cut pieces of wood arranged in a repeated interlocking pattern", removes "all suggestion of sign-value",⁹ so that the viewer has only to become aware of the presence of the bare physicality of the materials. Now one may ask how the "merging medium" typical of the "intermedia" form is to be experienced. But the sculptor's answer is clear: since the work is rivitted to the ground, "the floor plane becomes a dynamic component of the visual structure. The object's massive weight seems to press downward with intensity toward the ground beneath it. The floor becomes a presence which actively engages the sculpture and helps determine its boundaries. In addition, the floor planes tends to focus even more attention upon materials. For André, the most natural place for materials to exist and be themselves is close to the ground".¹⁰ DeLio's commentary remarkably pinpoints the very nucleus of the "intermedia" form: to abolish verticality means to restore the material to itself, to its existence or presence; and simultaneously to unbolt it and open it to the fluctuations of its concrete spatio-temporal environment; as Carl André himself says, "Horizontally is what we know—is what is here; if sculpture rises in space, it runs the risk of becoming just an artificial construction whose very structure takes on more importance—as a sign—than the fact of the sculpture itself".¹¹

Music and Presence

The curators of the *Sonorità Prospettiche* exhibition (Rimini, 1982), which was devoted to several "intermedia" projects elaborated by composers such as John Cage and Karlheinz Stockhausen, Pauline Oliveros and Terry Riley, Max Neuhaus and Walter Marchetti, have stated how difficult it was to understand the new situation in music, since the "manifest loss" of the main categories which had "oriented" the development of musical thought from the time of the avant-gardes onward. Even if nowadays so many projects aim at uniting sound and environment, they lack common denominators, because the artists have very different starting-points; and even if it seems easy to imagine tracing a dividing line between artists from a musical background and artists from a visual background, other cleaving lines prevent us from defining, for instance, "musical thought" as constituting a cultural area. There are some artists—notably in the United States: for example Alvin Lucier, who, in his research work, has "positively concluded both Cage's critical labours and a vein of musical thought directed toward the equalization of sound and noise"¹²—who feel that presence leads to a geography of sound: for Lucier, environment means "the absolute physicality of acoustically operating space, which is actually operated in such a way that the occurrence of sounds is determined by the specific characteristics of space itself". Therefore Lucier's attitude is "positively experimental", "liberated from what was previously meant by experimentation in the field of musical thought". For other artists—notably European: let us evoke Dieter Schnebel, Urs-Peter Schneider or Hans Otte—one has to take up "a very different position, whereby the environment is primarily the place of fruition of sound and musical events, a place characterized by this usage and a place whose physicality is, in fact, a secondary characteristic".¹³ According, then, to Schnebel, Schneider or Otte, "an extreme psychological situation is proposed as the 'working environment', as the place where the concert takes place"; so that presence ceases to be defined in a "positively experimental" manner. Rather "the idea of environment is connected to a negative thought which overthrows its own discipline".¹⁴ To confirm this opposition between American and European composers, it would be interesting to compare Alvin Lucier's *Vespers* and Urs-Peter Schneider's *Nichts*: whereas *Vespers* uses actual sonic echoes helping the performers to move about a room or concert hall, so that, the author says, the echoes "exist in physical space" and, being real, not symbolic, "don't have to stand for anything else",¹⁵ Schneider's *Nichts* does not give to the musician anything but contradictory intimations, such as "You don't play this music" or "You play some pieces if you want to".¹⁶ Of course, we know that the composer of *Nichts* studied with Stockhausen and has been influenced by anthroposophy . . . We will nevertheless ask: is such an antithesis between the absolute positivity and the absolute negativity an insuperable one?

From Presence to Actuality: Michel Redolfi

The American composer Jon Appleton, in the colourful full-length portrait he has given of the French composer Michel Redolfi, has stated that Redolfi is today "the only composer to reconcile the French and American styles of electronic music".¹⁷ In the absence of the Hegelian-like synthesis between positivity and negativity we

were calling for, let us dwell a little upon this more temperate *via media*. First, Michel Redolfi is without doubt—electronically speaking—of French lineage: born in 1951, he was one of the founders of the GMEM (Groupe de Musique Expérimentale de Marseille) in 1969; and now he is both the organizer of the New Music Festival in Nice (the MANCA or “Musiques Actuelles Nice-Côte d’Azur”, founded some years ago by the composer Jean-Etienne Marie), and the Director of the International Center for Music Research (CIRM, also in Nice). But, second, Redolfi has resided from 1973 to 1984 in the United States, where he collaborated with the major centers for computer music (Dartmouth College, University of California, California Institute of the Arts). “Who is this guy Michel Redolfi? He shows up on my door step in 1973, Jon Appleton says. We had just started working with our first computer system and he proposed to write a program . . . *Nuit Solaire* was the result, one of the most important pieces done in our studio. In 1976 he came back with the *Body-Speaker*, a weird live-electronic device you can wear like a jacket. He built one for me while I introduced him to our digital synthesizer, the *Synclavier I* . . . In 1980 he invited me to join his French group, the GMEM, for a concert tour of the United States and then he decided to stay in San Diego, California, our last stop. At first I thought he had become just another surf bum, but it turns out he had gotten the support of the French government to research underwater acoustics at the University of California and pioneer this music you can only hear in the water. Great! He gave a performance in the 90 degree heated indoor pool of Dartmouth College in January, 1982; outside it was 45 degrees below zero, the coldest day of the year. The underwater concert was a huge success and brought him national media attention . . .”¹⁸ From 1981 onward, Michel Redolfi’s *Underwater Concerts* have taken place throughout the United States, Canada and Europe, and at least since his “sleep in” concert of 1984 (*L’écume de la nuit*, Roman Baths of Strasbourg at the Musica Festival), he is not only “nationally”, but internationally known—inasmuch as his production is variegated, and includes several compositions “that can be listened to in a good armchair”.¹⁹ The common characteristic of Redolfi’s works consists, as he himself has said, in that they realize “a sensory utopia in which new sounds can be discovered in unique performance situations”: in fact the listeners of the *Underwater Concerts* “immerse themselves not only in the 90-degree heated swimming pool, but in the sound itself”.²⁰ If we want to understand what we call Redolfi’s “*via media*”, we have to keep in mind his concern with the “unique” character of sensory experience. As well as Alvin Lucier, Redolfi is a zealot of presence and “presencing”; and as we have suggested with regard to the American composer, we may as well, à propos of Redolfi, trace back the definition (or re-definition) of presence to minimalist sculpture and structural cinema. Minimalist sculpture, art historian Thierry de Duve has said, “does not place the beholder in front of an object, but plunges him into a situation of which he is a part”:²¹ thus the beholder is not able any more to rely on Kant’s confidence in time and space as being *a priori* forms of sensibility, but he has “to produce their reality as a result of his own reflexive experience of being confronted with an *installation* in which he is included”. And whenever “experimental cinema focuses on the medium itself and on the real time-and-space conditions of its perception, it elicits the same reflexive response from the spectator and produces him as the *a posteriori* subject of the work’s experienced presence”.²² We may call *actuality* such a presence which has to through every artistic experience and is meant at least in principle not to depend upon any prejudice.

Actuality as Re-production

But if such "actuality" is to be opposed, in Michel Redolfi's aesthetics, to what presence meant in classicism, i.e. *a priori* concepts of space and time, it has to be opposed as well to the mere inversion of these concepts in modernism, e.g. to the "deconstruction" of presence, as in Derrida's philosophy, or to the suspicion that presence is impossible, as in Urs-Peter Schneider's *Nichts*. Indeed what does the "negative" musical thought of Schneider—and also of Dieter Schnebel, or of Hans Otte, in their *Sonorità Prospettiche* projects²³—mean, if not that the three of them shudder to think what would happen in the case of a complete swarming of music by the new technology? Thierry de Duve has shown in very convincing terms that the "typically modernist" definition of aesthetic experience as "suspended, withdrawn or uncanny presence" had already infiltrated Walter Benjamin's conception of the artwork's *aura* in the Thirties. But while, according to Benjamin, the photographic reproducibility of the works of art stripped them off their *aura*, both the minimalist sculptors and the experimentalist video artists have shrewdly attempted "transferring the conditions of aesthetic experience from the modernist *aura* to the postmodern *actuality*, by acknowledging art's reproducibility".²⁴ Hence the decisive character of the technological commitment of an artist like Michel Redolfi: for him as for an Alvin Lucier or a Max Neuhaus, the new ("post-modern") definition of presence as actuality "must include the intervention of some recording device"; and with striking recurrence indeed, the live arts of our time paradoxically rely on "information machines of all kinds, especially feedback systems that both distance and connect the performer from and with the audience".²⁵

Forerunners and Parallels

True, Redolfi's "technological commitment" is essential. Indeed in this field, even with all his fresh inventiveness as an explorer, he is in no way an isolated figure. Suffice it to remember, in the field of instrument-making, John Cage's use of the "water-gong", or the invention of the "water-phone" by this musician with an interesting patronymic, Waters: just like them, Michel Redolfi—who acknowledges that the hand-made instruments by Harry Partch always fascinated him—brings Jules Verne to life again, for instance when he designs, for his La Jolla Cove Underwater Park Concert of September 10, 1982, "a floating electronic system contained entirely within a giant inflatable sculpture modeled after an Imaginary Jellyfish. Made of vinyl by the Robert Keith Company, the Jellyfish projects lights and sounds from its tentacles under the surface up to two miles away. Handles inserted around the Jellyfish head provide a first-row comfortable floating position for sixteen listeners".²⁶ Of course this "low-tech" device may be taken in itself, as Redolfi tells us, as a sculpture; but it is not employed "for its own sake, or even for its own *products*, but rather to reveal some aspect of nature".²⁷ And in a somewhat comparable manner, the traditional musical instruments—Lanie Goodman's ravishing yelps and yaps at the flute, or Melissa Morgan's gurgles and rumbles at the harp, together with Lee Ray's computer processing of this latter, as in *Music for Fresh Water* or *Music for Salt Water* (eight pieces, composed from 1981 to 1983)—are not treated at all in the usual way: they are less "played" than "used as 'resonant objects', no more or less important than other such objects".²⁸ Such an attitude does

not only recall Alvin Lucier's apparent impassiveness, it seems close to Max Neuhaus' denial of aggressiveness—so that we might draw a parallel between Neuhaus and Redolfi: in fact it is well-known that after the cessation of his activities as a performing musician, in 1969, Max Neuhaus decided to live mobile, on a boat along the Eastern sea coast of the United States, and began in 1970 serious studies in underwater acoustics. Then, from 1971 to 1974, he composed no less than 17 underwater works (*Water Whistle I-XVII*), and from 1976 to 1978 four more pieces (*Underwater Music I-IV*). A serious forerunner . . .

From Sculpture to Music

And yet the differences between Neuhaus and Redolfi are overwhelming. In his *Notes on Max Neuhaus*, Jean-Christophe Ammann has given a striking description of the artist's sound installation at the Musée d'Art moderne de la Ville de Paris (ARC) in the summer of 1983; and this description is suggestive of the disentanglement or disembodiment which are so characteristic of Neuhaus' aesthetics. "I was, Ammann says, faced with a puzzle: the room—almost square—was empty, filled only by the typical sound of a hot day, that of the not very efficient air conditioning system. What did the work by Max Neuhaus consist of? I tried to determine whether other sounds were cloaked by that of the air conditioning, but all I could hear was the fluttering sound of the system itself, which stood in curious contrast to the motionless thin slats on the glass roof, shielding the room from the sun. Actually, Max Neuhaus had 'only' amplified and modified the sound of the air conditioning by means of ten electronically controlled sound sources. Had they been turned off, the difference would have become audible. In this way it was not. And yet Max Neuhaus had succeeded in making the visitor's awareness of the room a unique experience by combining sight and sound in such a way that the two perceptual mechanisms were channeled into each other simultaneously and on the same level".²⁹ Using, then, the particular existing surroundings, Neuhaus does not add other sounds, but he manages to "enhance" the aural situation by working up certain of its features from below the threshold of audibility towards nearly imperceptible accents, so as to obtain, in Carter Ratcliffe's terms, "an automatic consonance between work and site";³⁰ and even if he composes—as has been the case confronting the buzzing sounds of the cicadas at the Villa Celle, near Pistoia (summer 1983 too)—"a pattern of tones that is clearly the result of human, not Natural intentions", he arranges it so as this pattern "never clashes with its setting": as if his purpose were "to make electronic sound feel at home in a bosky grove".³¹ Therefore we first perceive only what we are able to identify with something already known; "only later do we discover a displacement between our perception and that with which we have identified it. This displacement is like a gap, a sonority-space-image that becomes fixed in our minds as a memory".³² Consequently, the link between the sounds and the place is so intimate that no recording is possible: Neuhaus does not use tapes, and the perceptive scanning of the soundscape depends upon the spectator's frame of mind—he might very well hear the music without even noticing that its pattern ought to be experienced as a work of art. To sum up, Neuhaus, formerly a virtuoso percussionist, has emphasized the spatial aspects of sound at the expense of its temporal aspects in so deep a manner, that he has moved "far from the world of music and close to the sculptor's domain";

he has entirely put "his command of time, of rhythmic interval, at the service of his spatial concerns", and that explains "why we find his works in spaces designed for the exhibition of visual artworks, not in the concert hall".³³ In comparison, Michel Redolfi has done just the opposite. According to critic Jim Aikin, he is "strictly a sonic sculptor: no drum tracks or melodies". But, Aikin adds, "his music is nonetheless warm, rich, and exciting". In what sense? He is the first, Aikin argues, to have figured out "how to use a digital synthesizer for some other mood than empty hallways and interstellar spaces. Redolfi (N.B.: in *Immersion/Pacific Tubular Waves*, 1979) uses two sound sources, a Synclavier, and recordings of water sounds (everything from surf to puddle dripping). The synthesizer creates droning chords, woody twitterings on pentatonic scales, assorted buzzes and beeps, finger cymbal sounds with odd volume envelopes, and so on. The water gurgles and roars and (when processed, as it often is) crackles".³⁴ What is at stake, then, is not the spatial idiosyncrasy of the environment, but the degree of achievement of the blending of a music which can be described as simple, tranquil and transparent, with the physical characteristics of the water—its density, temperature, and color. In lieu of Max Neuhaus' ascetic and aseptic discipline, we are asked to participate in the unfurling of an unexpected lyricism: the very concept of underwater sound, Redolfi says, goes all the way back to the songs of the sirens, the bells of submerged cathedrals, the voices of lost mariners. "These noisy and eerie myths, he notices, have been swept away by the XXth Century and replaced by a quiet and sterile belief in the ocean as a silent world and occasionally disturbed by the long song of the Aqua Diva whale." But the fact is that the sea is a cacophony of sound, complete with fish "barking and croaking", shrimp "snapping", dolphins "whistling" and sea urchins "click-click-click-ing". Nevertheless, Redolfi is only concerned with humans: "Every dolphin, he says, has a person nowadays to take care of him. Every whale, as well. I prefer to take care of humans. Who is doing that? I want to broaden my sense of communication not so much with the ocean as with my fellow human beings."³⁵

The "Sensitive Chaos"

Beyond Michel Redolfi's will to reconcile himself with human beings and human beings with themselves, the doctrine that comes to light resembles, in comparison with the thought of other contemporary intermedia artists, rather Leonardo's or Goethe's natural philosophy. At least concerning water, Redolfi seems to consider it as the image of all fluid elements, not yet fixed but remaining open to the outside: as indeterminate and informal as Novalis' "sensitive chaos". "Water", Redolfi has written, "materializes sound, thickens it, and makes it palpable and penetrable. Water and sound, combined together at the molecular level, create a sonic and fluid substance that can be appreciated not only by looking at its surface reflections, but by sinking oneself into its volume, density, warmth and vibrations. *Sonic Waters* is an amorphous music which could be measured either in decibels, cubic feet, degrees Fahrenheit or Hertz. Concert-goers are free to pass through it as they desire and to carve out from it their own emotional forms: *Underwater concert is a Dream Reservoir*."³⁶ Then the composer quotes Bachelard: "One doesn't dream deeply with objects. To dream soundly, one must dream with substances."³⁷

Once we know the composer's aim, we may seize how he managed to reach it.

Let us give some details about his various tries toward the Bachelardian "dream with substances". In his *Pacific Tubular Waves*—the music which won the Luigi Russolo Award at Varese, Italy, in 1979—Redolfi had not yet expressed his thesis about water's substance, and he did not seek to evoke it directly. He was only concerned about conjuring the various movements of the waves rising up along the Californian coast. Hence a "kinetic sound composition" in five parts, beginning with microscopic motion (movement I) and ending with an "oceanic contemplation" (movement V). The composer describes his work as "a voyage inside the tube (N.B. the foaming rim of the wave), with an ear glued to the surfboard".³⁸ In fact it was a stylistic exercise on the Synclavier, which "entailed the creation of an organic poetry of sound exclusively through programming, but one that would also elude the timbres and forms that refer back to the computer."

From 1981 to 1983, Redolfi elaborated as we have seen the eight movements of his key work, *Sonic Waters* (*Music for Fresh Water I–IV*; *Music for Salt Water I–IV*), in a "compatible" air-water version "conceived to sound efficiently both in the air (with the speed of sound at 1150 feet per second; stereophonic reception through the eardrums) and in the water (with the speed of sound at 4750 feet per second; monophonic reception principally by bone conduction of the skull)."³⁹ The timbres (flute, harp, synthesizers) and their mixings as well as the computer processings were chosen so as to allow the penetration of "the two environments of this planet" by a music itself conceived as both "aerodynamic" and "amphibian", and accordingly composed first in a "dry version", before being "water-tested" during nearly fifty concerts.

The recording of *Sonic Waters* realized in 1984 by Hat Hut Records offered to the listener the opportunity to experience, in annex to the "dry version", three of the "water-tests", showing what the "wet version" could be like in three different samples and contexts. Of course, to listen to the "wet version" through a recording means to dry it: even if we are told that "optimal simulation of underwater listening will be obtained with headphones", we must not forget what the composer himself said: that "the sound waves go through the water and through your skin like the skin does not exist, because the skin is 80% water. So it bypasses your eardrum and gets right to your bones. So the head transmits the sounds to the inner ear directly. So we have a pure signal going directly to the brain through the nerve."⁴⁰ In other words, underwater listening can be enjoyed by some deaf people as well. But, deaf or not, the underwater listener loses his sense of space and location. "It's impossible to guess whether you are left or right, Redolfi added, because of the way the sound is transmitted through the bones. Almost everywhere, the sound is the same, as if you were wearing giant headphones. The sound becomes almost like matter, like jelly. Soon, you are swimming in sound, getting lost inside it."⁴¹ Still more sensuously, teenager Laurie Melvin noticed during a concert of 1982 at San Diego that she could feel every part of her body "in a state of suspension . . . I thought, this must be the way you would hear and feel if you were a porpoise or a sea anemone."⁴² And why not a mermaid?⁴³ Even if we hesitate to agree with the Romantics for whom water was the bearer of all the living formative processes, we must admit the accuracy of Bachelard's formula.

And that's why we may not underestimate the role of technology, which has become absolutely central in the setting up of the very "substance" of the "merged medium". In the case of *Sonic Waters*, the studio recording of the "dry version" is meant to be broadcast under the ocean through underwater speakers; moreover,

the composer will need several hydrophones (underwater microphones) in order to pick up the transformation of the music through the liquid medium and its natural mixing with the sounds of the deep. Innumerable combinations may be tested. In *Sunny Afternoon at Bird Rock Beach*—a recording made by Redolfi near La Jolla, California, on May 5, 1983, from 1.00 to 4.00 pm, during high tide—three hydrophones were installed to record the underwater soundscape created by the encounter of musical and natural sounds; one was fixed under a reef in order to record the breaking of the waves against it, while the two others, swept away by the currents, were rolling freely on the bottom; through contact with the ocean floor, they revealed its motion and material: sand, pebbles, shells, etc. Let us remember that a wave behind a stone in a stream remains in principle at the same spot, with new water flowing through it, whereas in the sea or the stationary water of a lake the form of the wave is transferred in a wandering movement across the surface, the water itself remaining at the same place; so that water behaves like a sense organ, "which becomes 'aware' of the smallest impacts and immediately brings the contrasting forces to a moving rhythmical balance."⁴⁴ By superimposing wave trains coming from different directions, one obtains more or less regular interpenetrations and interference patterns, which if they do not produce sounds, at least distort them: in such a stratified polyrhythmy, "the most varied movements can occur at one and the same place in space";⁴⁵ they may be independent of space, even if they necessarily appear in it. Therefore any sea or lake or pond or pool may reveal its fundamental period of vibration—the "note" to which the water basin is "tuned"—and it may include also overtones, which will vary according to the wind, or the air pressure, or the moon; or the variegated movements of the basin's inner volume.⁴⁶ Redolfi's music brings out all the shades of this spectrum.

Other recordings of fragments of *Sonic Waters* were constructed live. At the University of California Pool, during an underwater concert of April 10, 1983, a cameraman swimming under the 120 listeners filmed the performance for the French television network Antenne 2: thanks to a microphone mounted inside his face mask, it has been possible to recreate a scuba diver's perception of his environment. The music, filtered by the glass of his mask, took on the rhythm of the bubbles produced by compressed air breathing; and in spite of the continuous motion of the diver throughout the pool, his bone conduction listening froze the acoustic space perception within the center of his head. This shows the essence of the rhythmic impetus: when a wave begins to break, i.e. to fold over and curl under, hollow spaces appear which imprison air in the water, so that eddies and vortices arise; the same process may take place horizontally, when two currents or more meet; or with the bubbles of the diver. More generally, the vortex tends to occur whenever two qualitative differences in a flowing medium come together and form two layers one of which rolls upon the other: "wherever the finest differentiations are present the water acts as a delicate 'sense organ' which as it were perceives the differentiations and then in a rhythmical process causes them to even out and to merge"⁴⁷. In that sense, every vortex has its own story, and the "hollowing out" of inner spaces appears as a fundamental process—"an archetypal form-gesture in all organic creation, human and animal,"⁴⁸ as well, we may add, as geological or astronomical. Now we may come back to what Redolfi said about the "inner ear": it plays a fundamental role in the interface between the body and its environment. "As the sounds of the external world enter, Theodor Schwenk tells us, whole vortex trains pass through the fluid of the internal ear"⁴⁹: the interfusion of water and air,

or, as Redolfi has put it, the "sonic and fluid substance" born from the combination of water and sound at the molecular level, ready as it is, as Novalis had thought, to receive form "from the outside", engenders in fact its own form—the vortex.

De-linearizing Music

If we want to summarize the differences between the live music of today with all its unpredictable complexity and the classical definition of *a priori* musical form, we may consider that the way we deal for instance with the sonata form: AABA, is to present it graphically, while the shaping of an intermedia work, as well as the "form" as the Greeks characterized it, i.e. as an *eidos* or "generative idea", should be meant primarily for the ear and not primarily for the eye. Now for the Greeks, what gives birth to musical form is a configuration of *tonos*; and this word, as F. Joseph Smith has shown, "has perdured through medieval *tonus* up to, and including, both tonality and 'atonality'", precisely because it "has to do exclusively with an aural experience. It has to be directly related to the tuning of the Greek *kithara*". And that tuning, F. Joseph Smith adds, "had to do with the various degrees of the tenseness of the string, as every string player knows in his fingers. Thus the tablature, though mediated through the eye, was really a contact between the fingers and what I would like to call a musical *tensor*. (. . .) And a tensor, *as a vibrating unit in the primordial experience of music*, is meant for the ear. (. . .) And thus the visual symbols of traditional music history, while hardly excluded, are made to play a subservient role. They can no longer dictate musical or aesthetical conceptuality, as they have in the past."⁵⁰

Now since musical form, far from being "empty" and waiting to be filled with musical "material", has depended—at least during all the classical era—upon the *tension* of *tonos* or *tonality*, we probably ought to interpret in a similar manner, i.e. in terms of tension, the dimensions of what Husserl has defined as the "internal time-consciousness", i.e. the *pro-tentions* and the *re-tentions* as well as the phenomenon of *at-tention*. As it was the case with form, Western thought has conceived musical (and, first, philosophical) *time* in a visual manner: as extended in space. Linearized in a series of now-points. But when Husserl—who had studied with the musicologist Carl Stumpf, and borrowed for the most part the examples which illustrate his theory of time-consciousness from the analysis of musical tone—wanted to describe the experience of time from a phenomenological, i.e. concrete, perspective, he apparently contented himself with metaphors and spoke of "a whole network of tissue of experience that thrusts ahead or pro-tends itself and leaves a trail of after-shadows", and defined "retention" as a "musical tail", "a series of after-echoes exemplified in the flight of a bird". Thus, according to Husserl, temporality cannot be described as "horizontal"—its flow is "diagonal", and must be called "vertical"⁵¹.

But where does such a "verticality" come from? From what F. Joseph Smith, "embroidering" the thought of the successor of Husserl, Heidegger, calls a *vortex*. What does this mean? "Time, Smith writes, can be called 'vortical' in that it takes shape within the whirlwind of Being." Why a whirlwind? Because Being unfolds itself in an "ek-static temporality": this *ek-stasis*—a Greek formula, to be translated as "spring"—consists in "the standing-out of temporality in its various modalities of future, present, and past. For the thrust in this case is from the future, as that

which is to come about or happen, as that which a musical tonal pattern can become . . . It is easy to interpret the musical *tonos*, as a tensor, in terms of ekstatic temporality . . . there is no longer *merely a succession of given now-points* extended in imaginary space. Rather music becomes "timeless" because of this expanded notion of time . . . And in this criticism of linear theme in music we may be able to break through to an understanding of why rhythm is the more important element, for the rhythmic nucleus is what generates any 'flow' of sound, later measurable with the calibrated linear conceptuality of Western temporality."⁵²

In all apparence we are here confronting a metaphor. "Vortex" is a metaphor for the "circularity" of time. But the "circle" of time is another metaphor. As everybody knows, all metaphors are out of the way: they are abstract and necessarily arbitrary, and they have as such to be immediately replaced by something else—which runs the risk of appearing in its turn as metaphoric. What then can we do? We may of course relativize metaphors, and try to explain why we use them. But the most elegant solution is Robert Irwin's one: to deliberately suppress all metaphors, all similes and all symbols; not to say anything else than the thing-in-itself. This was, as we have seen, the minimalist solution. Alvin Lucier and Max Neuhaus have adopted it. But it has not been the case with Redolfi. And that's where his inventiveness takes root. For him, the creator may advance one step further: *not only reduce all metaphors at presence, but make of presence the metaphor of itself*. In that sense, Redolfi is no more a minimalist: thanks to technology, he transforms the very status of presence until presence becomes, through the acceptance of its reproducibility, an instance which does not need any more to be interpreted or symbolized or displaced, because it entails its own interpretation or symbolization or displacements. Metaphors were, until now, based upon relations which had to be identified beforehand, or, as Kant said, *a priori*: this was true, in particular, for all that depends on space and time. But now we have learnt how to reduce metaphors, i.e. how to neutralise the *a priori*; in the field of music, it means that we have to go "beyond Bergson", as Carl Dahlhaus has suggested, and ask: "is time a mere medium of processes in it? Or is time itself an occurrence, which advances from the past into the present or approaches the present from the future? And does music situate itself 'in time', or does music rather have 'time in itself'?"⁵³—With the help of such questions we may discover that the artwork "which has torn down the bridges of metaphor, necessarily becomes a metaphor whose only frame of reference is itself"; namely, "a kind of absolute metaphor"⁵⁴.

Now why should we prize Redolfi's underwater work more than any other technological (and therefore reproducible, and centered on reproducibility) piece of art? Answer: if presence is both an anti-metaphor and an "absolute" metaphor, the "metaphor" of "vortical time" becomes *absolutely essential*. Let us recall Heidegger's thesis about the "stillness" of time: "Time times simultaneously the has-been, presence, and the present that is waiting for our encounter and is normally called the future. Time in its timing removes us in its threefold simultaneity . . . But time itself, in the wholeness of its nature, does not move: it rests in stillness."⁵⁵ In a similar manner, the "eye" of a vortex, in the ocean or in every molecular bubble of the scuba diver, "rests in stillness". But since Redolfi's recording *re-produces* such a "stillness", how will we avoid understanding it as turning back into a "vulgar" metaphor? Answer: by simply listening to it, as a thing-in-itself; to its presence (even) as (re-)production. To the musical event. This musical event is temporal; but its temporality is not an arbitrary characteristic introduced from outside, it is proper

to the event as such. *To a vortex, vortical time is appropriate.* This appropriation is the only thing to hear—the last word to say. That's why Novalis' "sensitive chaos" is informal, i.e. open to any form: it is itself in progress and in process, "like" the sea, because it "is" the sea "itself". In so far as Michel Redolfi's music appears as an idiom, speaking for instance the "lingua franca" of electronic music, it may be criticized and judged according to the ordinary criteria of the present epoch, for instance according to conventions of transience or linearity etc. But in so far as it invites us to experience time as such, i.e. time not as flowing or passing, but emerging literally in flashes or in waves, transience or linearity is nothing else but the foam of the wave. To return to the vortex of time, i.e. to rhythm, is to return to the very form of Nature as source: to the "merged medium" of Being. Or to the substance of our dreams.

Notes

1. David H. Cope, *New Directions in Music*, Fourth Edition, Dubuque, Iowa, Wm. C. Brown Publishers, 1984, p. 207.
2. Cf. Cope, *op. cit.*, p. 209.
3. Quoted by Thomas DeLio, *Circumscribing the Open Universe*, Lanham, Md, University Press of America, 1984, p. 92.
4. DeLio, *op. cit.*, *ibid.*
5. Quoted in DeLio, *op. cit.*, *ibid.*
6. DeLio, *op. cit.*, p. 93.
7. DeLio, *op. cit.*, p. 91.
8. DeLio, *op. cit.*, p. 91–92.
9. DeLio, *op. cit.*, p. 93.
10. DeLio, *op. cit.*, p. 92.
11. Quoted in DeLio, *op. cit.*, p. 92–93.
12. Franco Masotti, Roberto Masotti, Veniero Rizzardi, Roberto Taroni, *Sonorità Prospettiche, Suono/ Ambiente/Immagine*, Rimini, Ed. Comune de Rimini, 1982, p. 9.
13. *Sonorità Prospettiche*, *op. cit.*, *ibid.*
14. *Sonorità Prospettiche*, *op. cit.*, *ibid.*
15. Quoted in DeLio, *op. cit.*, p. 94.
16. *Sonorità Prospettiche*, *op. cit.*, p. 124–125.
17. Quoted in the Program Notes of the Hat Hut Record of Michel Redolfi's *Sonic Waters* (Hat Art 2002, 1984).
18. Jon Appleton, *ibid.*
19. Michel Redolfi, Program Notes of the INA Record of *Desert Tracks* (INA/GRM C 1005, 1988).
20. Redolfi, *op. cit.*, *ibid.*
21. Thierry de Duve, 'Performance Hic et Nunc', in Chantal Pontbriand ed., *Performance, Text(e)s & Documents*, Montreal, Ed. Parachute, 1981, p. 221.
22. de Duve, *op. cit.*, *ibid.*
23. *Sonorità Prospettiche*, *op. cit.*, p. 122–123 and 105.
24. de Duve, *op. cit.*, p. 222.
25. de Duve, *op. cit.*, *ibid.*
26. Redolfi, Program Notes about *Sonic Waters*, *op. cit.*
27. James Tenney, 'About Alvin Lucier', in the Catalogue of the Alvin Lucier Exhibition at the Ezra and Cecile Zikha Gallery, Middletown, Connecticut, Wesleyan University, Nov. 2–23, 1988, p. 10.
28. James Tenney, *op. cit.*, *ibid.*
29. Jean-Christophe Ammann, 'Notes on Max Neuhaus', in Max Neuhaus, *Sound Installation*, Kunsthalle Basel, 1983, p. 14.30. Carter Ratcliff, 'Space, Time and Silence: Max Neuhaus' Sound Installation' in Max Neuhaus, *Sound Installation*, *op. cit.*, p. 10.
30. Carter Ratcliff, *op. cit.*, *ibid.*
31. J.C. Ammann, *op. cit.*, p. 14.
32. Carter Ratcliff, *op. cit.*, p. 7.
33. Jim Aikin, 'Records', in *Contemporary Keyboard*, January 1981, p. 61.
34. Michel Redolfi, interview with Mike Granberry, *Los Angeles Times*, April 7, 1982, p. 15.

36. Redolfi, Program Notes about *Sonic Waters*, *op. cit.*
37. Gaston Bachelard, quoted by Redolfi, *op. cit.*, *ibid.*
38. Redolfi, Program Notes about *Pacific Tubular Waves in Desert Tracks*, *op. cit.*
39. Redolfi, *Sonic Waters*, *op. cit.*
40. Redolfi, interview with Granberry, *op. cit.*, *ibid.*
41. Redolfi, interview with Granberry, *op. cit.*, *ibid.*
42. Quoted in Matt Damsker, 'Sonic Waters: Feel of Music from the Depths', *The San Diego Union*, April 5, 1982.
43. As suggested Karen Anderson-Laib. Cf. Mike Granberry, Music: Mellow Underwater Sound, *Los Angeles Times*, April 7, 1982, p. 13.
44. Theodor Schwenk, *Sensitive Chaos*, Trans. Olive Whicher and Johanna Wrigley, New York, Schocken Books, 1976, p. 28.
45. Schwenk, *op. cit.*, *ibid.*
46. Schwenk, *op. cit.*, p. 30.
47. Schwenk, *op. cit.*, p. 39.
48. Schwenk, *op. cit.*, p. 41.
49. Schwenk, *op. cit.*, p. 87.
50. F. Joseph Smith, *The Experiencing of Musical Sound*, New York, Gordon & Breach, 1979, p. 154-155.
51. Smith, *op. cit.*, p. 158.
52. Smith, *op. cit.*, p. 159-160.
53. Carl Dahlhaus, *Esthetics of Music*, trans. William Austin, Cambridge University Press, 1982, p. 75.
54. Beda Allemann, 'Metaphor and Antimetaphor', in Stanley Romaine Hopper & David Miller ed., *Interpretation: The Poetry of Meaning*, New York, Harcourt, Brace & World, 1967, p. 114.
55. Martin Heidegger, *On the Way to Language*, trans. Peter Hertz, New York, Harper & Row, 1971, p. 106.

they are as well "the result of the need for visual activity in connection with tape music";¹ and if they answer this need for the concert as a visual experience, one may be tempted to identify, as musicologist Stanley Gibb has done, the level of control which the composer makes a point of maintaining when he fuses different sense-datas. Let us recall Gibb's classification; it includes:

- 1) The loose structure of "multimedia", which does not require any integration between the dimensions involved;
- 2) The "mixed media" or "environments", which tend toward an equalization of the elements and therefore try to avoid any hierarchically ordered pattern;
- 3) The "intermedia", which tend to integrate the elements according to the ideal of an "interpretation without obstruction", and therefore require a "merged medium".²

The reduction of metaphor to get at presence

In order to obtain such a "merged medium", one may for instance apply the spatial determinations of visual perception to the aural ones, and try to parallel visual directions with the positioning of sound-producing sources: the extension of instrumental possibilities to self-performing sound-sculptures may include spacing and placement as solutions to sound-balance problems. Since the artist focuses upon the "merged medium", he has to intensify the relationships between the characteristics of sound and the features of the "real space" in which the piece resonates; therefore he must share at least some of the concerns of the visual artist, namely those which have been brought forward by the new technologies such as film or video and have made it necessary to add the temporal dimension to the three-dimensional field of spatial entities. In other words, he has to exhibit the