

Michael Pisaro-Liu (b. 1961)

Radiolarians

Muzzix

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michael pisaro-liu radiolarians



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Descriptions of nature can be sharply delimited and scientifically exact, without being evacuated of the vivifying breath of imagination. The poetic character must derive from the intuited connection between the sensuous and the intellectual, from the feeling of the vastness, and of the mutual limitation and unity of living nature.

—Alexander von Humboldt (1769–1859)¹

Perhaps artists today are the final lines along which primordial questions are folded. How are the new fields of the possible going to be fitted out? How are sounds and forms going to be arranged so that the subjectivity adjacent to them remains in movement and really alive?

—Félix Guattari (1930–1992)²

MICHAEL PISARO-LIU IS A COMPOSER, GUITARIST, AND PROFESSOR of composition and experimental music at the California Institute of the Arts. He is a longstanding member of the Wandelweiser collective, a loosely-affiliated international collection of composers and performers whose elaborations on the post-Cagean tradition include, but are not limited to, works of extended duration, ample silence, and the use of contingency or chance strategies for organizing musical material. Pisaro-Liu's own compositional ethos spans works of elegant minimal simplicity—his *Only* (*Harmony Series #17*), for instance, calls for a single performer to sit in an open

¹ Alexander von Humboldt, *Kosmos: Entwurf einer physischen Weltbeschreibung*, (Stuttgart: Gotta'scher, 1845–58), vol. 2, 74. Translated and quoted by Robert J. Richards in *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought* (Chicago: University of Chicago Press, 2008), 34–5.

² Félix Guattari, *Chaosmosis: An Ethico-Aesthetic Paradigm* (Bloomington: Indiana University Press, 1995), 133.

space and repeat quiet, long tones—to works of immense density and complexity, such as the immersive *A wave and waves* for one hundred percussionists. In the past decade, Pisaro-Liu's practice has expanded to include works featuring unedited or manipulated field recordings, plunderphonic collages, improvisation, studio-based composition, and dense electronic and noise works. Though richly varied, his works are linked through their philosophical and ethical concern for the interaction between music and its sounding environment, their openness to the creative contributions of performers, and their capacity for making felt our belonging to and participation in a world of continuous and often surprising variation.

Composed in 2018 and premiered in the same year by France's Muzzix collective, *Radiolarians* finds Pisaro-Liu drawing inspiration from another gifted observer of this world-in-variation, the German zoologist, naturalist, and philosopher Ernst Haeckel (1834–1919). Inspired by the revolutionary findings of his contemporary, Charles Darwin, and driven by militant commitment to an idiosyncratic pantheism, Haeckel promoted and popularized evolutionary thought via extensive monographs and artful renderings of insects, animals, sea creatures, and embryos. His 1862 monograph *Die Radiolarien* melded philosophical ambition to a rich aesthetic sensibility in its cataloging of morphological variation among the radiolarian, ocean-dwelling single-celled protozoa who secrete labyrinthine, hole-pierced silicate and strontium skeletons. Dredged from the ocean floor and placed under his microscope, the magnificently detailed and varied shells of these creatures led Haeckel to compile dozens of illustrations that captured currents of divergence within and between species of radiolaria—a visual evocation of the differentiating force of geological time, cast in crystalline miniatures.³

³ Despite the lasting impact of his work, Haeckel remains a figure of profound contradiction and controversy. Haeckel coined the modern term “ecology” to describe the complex interdependencies between organisms and their

Pisaro-Liu states that it was Haeckel's mode of rendering the radiolaria that suggested a possible world of creative potential, a world shaped by Haeckel's singular scientific-aesthetic consciousness. Arranged into dense, gridded panels, the illustrated pages of *Die Radiolarien* teem with the sensuous figures of radiolarians arranged from the simplest elegant spheroids to complex, asymmetrical figures surrounded by branching spicules and thorn-like protrusions. Figures repeat with elaboration within and across pages; repeated individual radiolaria grow new arborescent spines or develop increasingly intricate patterns of pores and vacuoles, and serial arrangements of differing species deftly condense previously insensible durations and unseen histories of morphogenesis. Haeckel believed that scientists succeeded in making evolutionary thought *intelligible*, but it was the artist's capacity for intuiting and capturing creative forces that rendered the open-ended creativity of time *sensible*. In his illustrations, the infinitesimal became visible and the displacements and drifts attesting to life's immanent unfolding echo in the eye's traversal from figure to figure and from page to page.⁴ Haeckel believed that such aesthetic contemplation of all aspects of the self-varying material, energetic, and

environment and advocated for a religious monism that encouraged reverence for humans and their progenitors on land and sea as well as equal concern for the inorganic substrate of organic life. Unfortunately, Haeckel's zeal for proselytizing evolution via aesthetic means and his inflexible belief in the biogenetic principle ("ontogeny recapitulates phylogeny") led him to overemphasize commonalities between the embryos of mammals, reptiles, and fish to an extent bordering on deception. Similarly, his penchant for totalizing systems led him to overextend biological principles into the social and cultural world. Like many nineteenth-century evolutionary thinkers, he advocated for scientific racism and promoted eugenicist population management, and his work was initially championed and later rejected by Nazi biologists and social theorists. For a more detailed overview of these controversies, see Daniel Gasman's *Haeckel's Monism and the Birth of Fascist Ideology* (New York: Peter Lang, 1998), Nicholas Hopwood's *Haeckel's Embryos: Images, Evolution, and Fraud* (Chicago: University of Chicago Press, 2015), and Robert J. Richards' *The Tragic Sense of Life: Ernst Haeckel and the Struggle Over Evolutionary Thought* (Chicago: University of Chicago Press, 2008).

⁴ In a thought-provoking article that stages a rapprochement between Ernst Haeckel and the French vitalist

psychic world would create a new human subjectivity better equipped to participate in and enjoy its ceaseless production.

For *Radiolarians*, Pisaro-Liu creates what he terms "transcriptions" of individual radiolaria species depicted in Haeckel's drawings. These transcriptions are less attempts to represent the radiolaria than extractions and transductions of morphogenetic potentials from their capture in visual form into the auditory realm, transductions re-enlivening the creative durations implied by Haeckel's recursive figures. Rather than staging an aquatic *Pictures at an Exhibition*, Pisaro-Liu extracts principles of organization from each bundle of illustrations—strategies for creating heterogeneous mixtures of the organic and inorganic, extracting areas of bounded form and areas of open-ended variation, and reenacting tensions between linear development and episodes of unpredictable torsions and divergences.

Radiolarians comprises fourteen compact pieces, each derived from a specific species of radiolaria and ranging in duration from one to nine minutes. Each piece features a mixture of harmonic, melodic, and noise elements corresponding roughly to the structures of each radiolaria, where pitched elements serve as tonal spines unfolding in time as well as spatially within the ensemble, and noise elements capture the twitches and undulations of the protozoic bodies contained therein. Scored for an orchestra of any size and instrumentation, Pisaro-Liu asks that each entity be translated by consorts of like-sounding instruments, thus rendering them bounded and distinct, though variation of instrumentation is requested when any of the Radiolaria segments are repeated. The duration of the work and of individual pieces, the number of pieces, the repetition of

philosopher Henri Bergson, Scott Ferguson offers a novel reading of Haeckel's near-mania for density and graphic detail as a way of rendering sensible the creative, non-mechanical differentiation of organic and inorganic forms. See Scott Ferguson, "The Face of Time Between Haeckel and Bergson; or, Toward an Ethics of Impure Vision," *Qui Parle: Critical Humanities and Social Sciences*, Volume 19, no. 2 (Fall/Winter 2010): 107–151.

Radiolarians, and areas of overlap or spaces of separation are left to the discretion of the performing ensemble.

Like the radiolarians themselves, Pisaro-Liu's structures run the gamut from the simple to the ornate. Radiolaria 3 derives its form from the lacy, nested spheres of *Aulosphaera elegantissima* that Haeckel offered as an entity nearer to his *Ur-radiolarium*, an imagined or intuited figure embodying the common morphogenetic principles that serve as the basis for all existing radiolaria forms and for all radiolaria forms to come. Pisaro-Liu renders the form as a hexagonal assemblage of tones radiating from a central E; from this nucleus, performers move in short, two-note legato phrases from inner ring to associated pitches on the outer ring and back, with intermittent variations where performers move to other pitches on the outer ring. At one to two minutes in duration, it is the most distinct but also the most fleeting: "It is possible for the piece to flicker out (after a minute) and restart or simply stop." Radiolaria 10 is a similarly elegant transcription of *Lithelius alveolina*, whose skeleton spirals out from a central node in a series of increasingly large pores. Here, Pisaro-Liu composes an ascending scale of tones that progresses from microtonal bends through increasingly large intervals that result in a delicate feathering out of instruments as the series extends beyond their playable range. In Radiolaria 12, Pisaro-Liu converts the thorned exoskeleton of *Sphaerozoum ovodimare* into a map of four- and six-note chords chimed by up to six groups of musicians, and in Radiolaria 4, the draped asymmetry of *Litharachnium tentorium* is fashioned into a cascade of ascending and descending fourths and fifths.

Other radiolaria appear in more complex and multi-layered arrangements. Radiolaria 7, the first organism presented in this performance, dramatizes the interlinking substructures of *Cladococcus cervicornis*. The single shells of these radiolaria are pocked with irregular hexagonal pores and surrounded by lengthy, antler-like bifurcating silicate spikes, which Pisaro-Liu recasts as a harmonic/melodic spine that splits into a branching

cluster of minor and major thirds, major seconds, and minor seconds. Played on keyboard instruments, the phrase repeats amidst sounds from a second group of musicians producing brushing and scuffing sounds, again dichotomizing into two subgroups playing at differing intervals and densities. A still-smaller group offers sparse clicks and pops at long and irregular intervals—a trace or flicker of organic movement within the geometrical order. A similar layered approach informs the composition of Radiolaria 1, where Pisaro-Liu extracts three interpenetrating levels of activity from the honeycombed nucleus, rigid radial spicules, and hair-like wisps of *Arachnosphaera oligacantha*. A first group alternates between percussive, pitched, and electronic sounds staggered in alternating five-second intervals of silence and sound and arranged in contrapuntal layers of gradually increasing complexity, while a second group plays a series of sustained tones in canon. A third group layers what Pisaro-Liu calls "spinal interference" against the tone row, intersecting the pitched sounds providing each extended note with a complexifying fringe of electronic or instrumental sound.

Rings, spirals, and cycles guide the form of the remaining radiolaria appearing in this performance, though the repetitions unfurling in time generate their own variations and asymmetries to create novel individuations rather than rote recurrence. The score for Radiolaria 13 converts the fractalizing, filigreed shell of *Dorataspis polyancistra* into spirals of delicate arpeggios lightly reinforced at their tonal nodes and nestled in mists of fricative white noise flashes. Radiolaria 2 (*Acanthrometra muellerii*) and Radiolaria 9 (*Collosphaera huxleyi*) present two strategies for transcribing organisms whose bodies form nested sets of concentric spheres—the former layering a twenty-note melody amongst recurring washes of granular pitched sounds, white noise, and nearly-inaudible low tones, and the latter weaving together solitary tones and melodies of two, four, and nine notes. Radiolaria 5 (*Aulacantha scolymanta*) and Radiolaria 8 (*Amphilonche heteracantha*) employ overlapping drones and microtonal inflections to create variable acoustic

beats and pulsations, abstracted reconfigurations from the undulating surfaces of their respective organisms. Pisaro-Liu extracts the thistled, crosshatched protrusions and ovoid pockmarks of *Thalassoplaneta cavispicula* in Radiolaria 11 and recasts them as a mesh of ethereal glissandi, the rubbing of eggs against amplified glass, and slowly rotated maracas. Here, the apparently representational elements take leave of their original context and become a dynamism again, the sound of things in-forma-tion rather than already formed.

Around and amidst these musical cells is what Pisaro-Liu calls the “primordial sea,” a field of sound acting as the environment which both holds and induces variation in the radiolarians. The score calls for the incorporation of water movement in ongoing variation in either live or recorded form or the through the production of wave-like sound from radios, electronics, or instruments: “Gentle sounds of liquid moving, the soft noise of rushing water, dripping, draining, pouring, rinsing, swirling, whirling, spraying, falling, and barely audible sense of water placidly at rest.” In this rendering by the Muzzix ensemble, the primordial sea functions as an element as variable and active as the radiolarians themselves, at times buffering the individual pieces from the environmental noise of the performance or listening space, at times thinning to near-silence or surging through in dense sub-bass rumbles or waves of white noise that flood the more delicate regions of these sonic organisms. It is an intimate and active force that renders the self-contained elements permeable and subject to novel variations, with electronics and instruments introducing subtle and unanticipated fluctuations in held pitches or providing symbiotic reinforcement of the pinprick pops and splinters of more active structures. True to Haeckel’s vision of a creative continuum between the inorganic and organic, the movements of this sea have an inner life of their own, a milieu moving and responding in reciprocal determination with forming and deforming radiolarians contained therein.

Pisaro-Liu’s inventive transcriptions are brought to life in this sensitively performed and masterfully recorded actualization by the Muzzix ensemble, whose balance of technological and acoustic elements reincarnate the fragile balance of the crystalline and amoebic in audible form. As Haeckel’s serialized drawings allow the viewer to counter-actualize forces of becoming from the static images on the page, this performance of *Radiolarians* again carries those forces into motion and places them into music’s temporal flux. Across a spacious fifty-three-minute performance, the radiolarians appear more or less serially as in Haeckel’s illustrations, providing the listener opportunity to experience in musical time the heterochronic reverberations and anticipations of recurring organizing forces, such as the stringing together of notes in languid melodies or the surge and retreat of waves. Moments of contingent, unforeseen serendipity link elements of the primordial sea to the fragile becomings of emergent forms to create zones of indiscernibility suggesting past and future incarnations unheard but *felt* extending from the temporal bounds of this performance. Likewise, the ensemble’s heterogeneity and seamless blending of technological and traditional elements recapitulate anew the sense of enmeshed temporalities and a cross-cutting of the natural, cultural, and mechanical in Haeckel’s monographs.

World events in the span between the composition of *Radiolarians* in 2018 and the release of this recording in 2022 have deepened and made more poignant its philosophical and ethical implications. The COVID-19 pandemic—the product of a virus whose body bears an eerie resemblance to Haeckel’s spined radiolarians—has again made palpable the feeding-forward of evolution on the microscopic scale into the fluxes of our bodily, social, and economic lives as well as the reciprocal impact of our political and ethical commitments on the development of further disruptive mutations. The threat of climate change and its attendant ecological, social, and political catastrophes unfurl at temporal and spatial scales both too small (for instance, the death of phytoplankton in

warming seas) and too large (decades-long rises in temperature, changes in the circulation of oceanic water separating its warmed surface and nutrient-rich lower layers) to register in perceptual systems evolved to detect changes in mid-sized objects in nearly infinitesimal spans of geologic time. Grappling with these imminent disasters will require the invention of modes of aesthetic contemplation capable of expanding our sensibilities to accommodate their interlocking rhythms. In recent interview, philosopher Achille Mbembe offered the following summation of this pressing issue:

*I would go as far as to insist that more than any other time in our brief history on Earth, we are experiencing a clash of temporalities: geological time, the deep time of those processes that fashioned our terrestrial home; historical time; and experiential time. All of those times now fold in on one another. We are not used to thinking of time as simultaneous. We think of time as linear: past, present, future. So how do we begin to think about time in a way that takes these concatenations seriously?*⁵

Our current political and social formations have thus far offered little to help with these questions through the standardizing and deadening forces of technocratic governance, hollow platitudes and sloganeering, infantilization by mass media, and blind faith in markets and technological innovation. Modest in scale as they may be, Haeckel's illustrations and Pisaro-Liu's reanimation of them offer an alternative mode of developing new felt senses-of-the-world adequate to the challenges of our times, conferring sense to the previously insensible and of reawakening a feeling of wonder

⁵ Achille Mbembe, interviewed by Nils Gilman, "How To Develop A Planetary Consciousness." *Noema*, January 15, 2022, <https://www.noemamag.com/how-to-develop-a-planetary-consciousness/>.

and yearning to rejoin and reintensify our participation in the creation of new individual and collective subjectivities.

—Joe Panzner

Joe Panzner is a psychotherapist and computer musician living in Columbus, Ohio. He is the author of The Process That Is the World: Cage/Deleuze/Events/Performances (Bloomsbury, 2015).

Michael Pisaro-Liu (born 1961 in Buffalo, New York) is a guitarist and composer and a long-time member of the Wandelweiser collective. While, like other members of Wandelweiser, Pisaro-Liu is known for pieces of long duration with periods of silence, over the past two decades his work has branched out in many directions, including work with field recording, electronics, improvisation, and large ensembles of very different kinds of instrumental constitution.

Pisaro-Liu has a long-standing collaboration with percussionist Greg Stuart, and has frequently played in duos with Christian Wolff, Keith Rowe, Taku Sugimoto, Antoine Beuger, Graham Lambkin, Toshiya Tsunoda, Reinier van Houdt, and filmmaker Cheryln Hsing-Hsin Liu.

In addition to a previous release on New World Records (*A mist is a collection of points*), recordings of his music can be found on Edition Wandelweiser, erstwhile records, elsewhere music, Potlatch, another timbre, ftarri, winds measure, and other labels, including his own imprint, Gravity Wave.

Pisaro-Liu wrote an article on notation for the *Ashgate Research Companion to Experimental Music* (2011) and has written book chapters for *Writing the Field Recording* (University of Edinburgh Press, 2017), *Perspectives for Contemporary Music in the 21st*

Century, (Wolke Verlag, 2016), *Word Events: Perspectives on Verbal Notation* (Bloomsbury, 2012), *Best Music Writing 2009* (Greil Marcus, editor, DaCapo Press); and for the journals *Revue TACET* (Paris), *Revue et Corrigée* (France), *Positionen* (Berlin), and others. He has written on filmmaker James Benning (in *James Benning*, Österreichisches Filmmuseum, Vienna, Austria, 2008) and translated a book of poetry by Oswald Egger (*Room of Rumor: Tunings*, Green Integer, 2004).

Pisaro-Liu is the Director of Composition and Experimental Sound Practices at the California Institute of the Arts. He was Fromm Foundation Visiting Professor of Music Composition in the Department of Music at Harvard in the Fall of 2014.

Muzzix is a collective of around thirty musicians based in Lille, active since the late nineties. Its musical universe spans jazz to experimental and improvised music, in varied forms that range from solos to large orchestras, from concerts to sound installations and performances. Muzzix's overall activity revolves around artistic creations emanating from the collective, and exploring contemporary musical and sonic languages while focusing on experimentation. Today, there are over thirty projects annually that express the lively creativity of the collective, produced regionally, in France, and increasingly crossing borders into Europe, Asia, and North America.

Muzzix:

Christian Pruvost, trumpet, project leader

Sakina Abdou, sax

Sébastien Beaumont, guitar

Samuel Carpentier, trombone

Claude Colpaert, gangsa, percussion

Ivann Cruz, guitar

Barbara Dang, keyboard

Xuân Mai Dang, flute

Raphaël Godeau, guitar

Martin Granger, keyboard

Patrick Guionnet, voice, objects

Christophe Hache, bass

Matthieu Lebrun, bass clarinet, saxophone

Philo Lenglet, guitar

Fred Loisel, guitar

Claire Marshall, flutes

Yanik Miossec, electronics, objects

Maxime Morel, tuba

Christophe (Pher) Motury, trumpet

Peter Orins, percussion

Stefan Orins, piano

Maryline Pruvost, flute

Jean-Baptiste Rubin, saxophone, clarinet

Anne Sortino, violin

In addition to the instruments listed, all the musicians played a variety of objects for the recording.

SELECTED DISCOGRAPHY

A mist is a collection of points. New World Records 80772.
Achilles, Socrates, Diotima (The Poem of Names No.2). INSUB Recordings CD04.
Continuum Unbound. Gravity Wave GW 011-013.
Hearing Metal 1. Edition Wandelweiser Records EWR 0902.
Revolution Shuffle. erstwhile records ErstSolo 00602.
ricefall (2). Gravity Wave GW 001.
Nature Denatured and Found Again. Gravity Wave GW 016-020.
The earth and the sky. erstwhile records ErstClass 001-3.
Tombstones. elsewhere music 017.

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Pisaro-Liu, Michael and Nate Wooley. *stem flower root*, essays, recording, interviews. Tisser Tissu Editions 002, 2021.

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In memoriam Pher Motury

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Francis Goelet (1926–1998), *In Memoriam*

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