Rosenfeld's audiovisual installation *μ* takes us deep into the infrastructure of sound through a hyper-magnification of its material conditions. Using microscopic cameras, dual video screens provide varied perspectives and magnifications of the surface of a hand-manipulated dubplate, while multichannel audio demonstrates a correspondingly "microscopic" attention to the sounds produced as the stylus encounters the record.

I first encountered *μ* at the 15th Gwangju Biennale, which director Nicolas Bourriaud framed as an exploration of "the sound of ecosystems in the age of the Anthropocene." Within this curatorial context, the work emerged as part of a vital engagement with the interface of human and nonhuman actors in our contemporary period of technological acceleration and ecological crisis, interrogating those technological mediations McLuhan characterized as "extensions"—mediations that have increasingly become transformations, or even substitutions, of the human.

Here, Rosenfeld's title *μ* (from the Greek letter *mu* in *mikros*) acquires a complex resonance. In mechanics, μ represents the coefficient of friction between two bodies pressed together, as when a stylus needle rides the record groove. As a measure of distance, the micrometer (μm) is 10-6 meters in length, the scale best suited to describing a record groove (30-50 microns). And in the temporal domain, the microsecond (μs) operates beneath the threshold of audible pitch or rhythm, yet functions as a fundamental unit of spatial localization: an interaural time difference as minute as 20μs registers perceptually as a sound's precise spatial position.

Rosenfeld's medium here is the "acetate": a somewhat misleading term within the music community that refers to a unique audio inscription on nitrocellulose lacquer. Distinct from "vinyl" records, in which many copies are pressed from a nickel master stamper, the dubplate is cut as a singular, unique impression, not unlike the "direct positive" of slide photography. And unlike vinyl, the nitrocellulose used for dubplate recordings is very fragile, degrading with every encounter between the stylus and the record groove.

Rosenfeld has long employed the dubplate for sonic and extra-sonic investigation. Originating in Jamaica's soundsystem culture before migrating to UK over the Windrush generation, these prototype impressions were often customized by DJs to forge unique sonic signatures. Rosenfeld evokes this tradition of personalization through her application of pigment and lacquer to create what might be termed an "assisted readymade" (Duchamp) she then "plays" by hand. Within *μ*, the video observes

the stylus both tracks and modifies this material surface, while the soundtrack articulates a field of microsound emerging from this process. Both visual and auditory registers operate within the domain of the barely perceptible—an interstitial realm, neither fully macroscopic nor microscopic, that demarcates the boundary of human perception.

Beyond musical traditions, however, Rosenfeld's interventions engage directly with a central axis of modern art history and theory. Following photography's invention in the nineteenth century, vigorous debates emerged concerning the possibility and nature of photomechanical authorship. The photograph could hardly be said to be "authored" in the manner of painting or sculpture, contemporaries argued, given that the actual "work" was mechanically driven by light's interaction with chemical substrates. Constrained by cumbersome cameras and tripods, with aperture and shutter speed limited by available light and photochemical technology, early photographers seemed more proficient mechanics than artists. Edison may have invented a recording machine, but his recordings were not understood as unique artistic works.

In the early twentieth century, diverse artists and theorists addressed this challenge, from Duchamp's "assisted readymade" sculptures (1913) to Benjamin's "The Work of Art in the Age of Mechanical Reproducibility" (1936). Yet the aesthetic theory most germane to Rosenfeld's practice emerged between these landmarks in László Moholy-Nagy's essay "Production—Reproduction" (1922). While Cocteau and Astruc would later invoke the image of *cinéma-stylo* (cinema of the pen) to argue for a model of personal cinema, Moholy-Nagy had already proposed an analogous *stylo-sonore* through his term *Ritzen-Handschrift*: "the handwriting of the cut."

In that essay, he argued that a "laboratory-style" investigation of the audio recording apparatus was necessary to transform familiar models of sonic *reproduction* into a newly experimental field of sonic *production*. Such investigations would create a feedback loop: extending the human capacity to perceive, while opening the path to a "fundamental reconstitution of sound production (new, as yet non-existent sounds and tonal relationships), composing, and the entire conception of music."

What we might call Rosenfeld's *stylo-sonore*, true to its Latin root "stilus," operates fundamentally as a sculptural practice. It begins not with the metaphorical tabula rasa to which something is added, but from a specific material and its history, into which it carves a negative trace. This subtraction becomes an addition, but also a *détournement*

(Debord: hijacking or rewiring) of an apparatus of faithful reproduction into one of experimental production.

Within art history, Nam June Paik is now primarily remembered as a video artist, but his early education was in music, studying in Darmstadt with Cage and Stockhausen in the 1950s, and performing in Stockhausen's musical "happening" *Originals* in 1962 and its New York premiere under Charlotte Moorman in 1964. That same year, Paik's *Zen for Film* remixed Cage's earlier *4'33* (1952) by projecting a continuous loop of clear film leader during a festival devoted to "expanded cinema." This ostensibly "blank" film redirected the audience's perception from the express content on the screen toward the environmental conditions of the theatrical space traditional cinema was always at pains to excise. Furthermore, as the film looped and dust and scratches inevitably accumulated upon its surface, perception was once again redirected, this time toward the fragile substrate materiality typically rendered invisible. Cage observed that Paik's film functioned akin to Rauschenberg's early "white canvases," activating the social space of encounter through their illumination of ambient dust and shadow.

That these social, environmental, and performative dimensions were explicitly intended can be evidenced from Paik's *Random Access*, created the previous year. There he deconstructed two modes of sonic reproduction—phonograph and tape recorder—inviting participants to "play" compositions manually. Audio tape was glued to the wall of the gallery like an abstract painting, transforming participants into composers as they selected paths along which to draw their playback heads. And on a precarious wooden spindle, Paik mounted vinyl records that he proceeded to "play" by clasping the stylus in his mouth — transmitting sound not through air but directly via bone conduction. He thus foregrounded not only the fragility of "reproductive" media but their inherently social, environmental, and performative dimensions.

Rosenfeld's practice has long elaborated this vital strain of modern art, yet with *μ* she extends these investigations through a uniquely scalar perspective that holds human and nonhuman elements in dialectical tension. Film theory has long been fascinated by the close-up, interpreting its capacity to intensify and denaturalize as oscillating between intimacy, monstrosity, and aporia. Strictly speaking, however, *μ* does not employ close-ups, because it withholds the anthropocentric reference frame from which such views must depart. As the needle incises the surface lacquer, record swarf accumulates in delicate skeins, shimmering like a bejeweled, curiously animate necklace. Traversing Rosenfeld's

pigmented landscape, we encounter a thoroughly nonhuman domain paradoxically bound intimately to the artist's hand—a form of technological prosthesis. On the second monitor, magnification approaches the optical threshold as depth of field collapses and a field of apparent gemstones emerges from microscopic pigment. Throughout, the soundscape appears to parallel this material landscape, translating the dubplate's topography into a terrain of microsound.

Zachary Horton has argued that the Anthropocene demands a new "scalar theory" capable of negotiating both our material condition and the nonhuman life with which we are symbiotically intertwined at scales radically incommensurate with human phenomenology. The transistor began as a one-inch cube soldered by hand; by 2025, it can only be visualized through the most powerful electron microscopes. In this sense, the scale at which Rosenfeld operates inhabits the interface between the mechanical and the computational.

Nikola Tesla famously claimed that the universe's secrets lay in the study of "energy, frequency and vibration," and the sonic arts have consistently returned to natural-world physics as a source of aesthetic exploration and philosophical inquiry. The record groove might appear microscopic to human phenomenology, but within quantum physics, it remained firmly "macroscopic" throughout the twentieth century - far above the scale of objects thought capable of exhibiting quantum effects. Yet in 2023, a 16-microgram sapphire crystal resonator—an object significantly larger than a record groove—was observed in quantum superposition of positive and negative phases.

Rosenfeld's scalar perspective thus limns the mesoscopic realm: a scale at which quantum effects manifest within so-called "ordinary" matter. Across the natural and life sciences, engineering and information science, this scalar realm is of vital importance within the Anthropocene, and its aesthetic interrogation is well overdue. Neither classically humanist nor polemically antihumanist, Rosenfeld's *μ* interrogates a realm I like to think of as the paranthropic — the manner in which the contemporary body is imbricated within natural and technical ecosystems that have been historically outside of human perception, but which modern technologies have increasingly allowed us to perceive and begin to understand.