instrumental ecologies

Micologies by Mark Peter Wright

When I press record, a supply chain of natural resources conducts and transforms the sound of an environment. Captured at 48 kHz and 24 bits per second, the field is stored temporarily on a polyvinyl chloride (PVC) SD card. Inside the microphone, a diaphragm made from thin plastic transduces sound wave—pressure vibrations—and begins the process of converting acoustic into electrical energy. Copper coil responds and voltage is produced. Rare earth minerals such as cobalt or neodymium surround the coil to create a magnetic field and allow electrical current to flow. Plastic enshrines all materials and helps to create a technological Pandora's box.

The full recipe list for how field recordings become field recordings is immense. We must consider a network of actors from microphones, cables, recording devices, SD cards, and batteries. Copper, neodymium, PVC, rubber, silicon, silver, gold, aluminium, zinc, and manganese are just some of the natural resources that facilitate digital capture. Storage and playback are part of a critical media ecology too: speakers and screens cannot be separated from the microphone.

Practice and media are dependent on the Earth's resources. Lithium for example is the time keeper of field recording. It forms the basis for batteries used in the field, where no power extension is possible. Duration is marshalled by this alkali metal, found in abundance in Chile and created through chemical processes of distillation and refinement. What are the consequences of such entanglements? What are we not hearing when we grip the plastic casing of a microphone? What sonic ecologies exist beyond the instrument and the so-called "signal"? What footprint is going unheard?

Instrumental Ecology #1

Sat at a table with a selection of screwdrivers, I try to disassemble a Røde NT4 microphone. I begin towards the very end of its complex five-pin cable input. No joy. Near the top of the fixed X-Y stereo condenser microphone is a silver ring. After some force it begins to turn. An array of colourful wires and a circuit board link the longer, bottom section of the mic. Inside, the soldering is meticulous. I stare at its electrical guts for a while, spellbound. A drink of water, a nervous smile, and then paranoia sets in: how will I get these pieces back together? There is no further way up into the microphone head, and no way down. I manage to reconnect the two parts and slowly tighten the silver ring.

I look to the lower end of the microphone and notice a join in the casing. There is nothing to unscrew, but I hold both ends and give a sharp counter-clockwise twist of the lower portion: it comes loose! Pulling back the casing, I sense the microphone's weight. It has a presence that makes the whole process somewhat terrifying, as if I am performing an operation on a patient, knowing full well I do not fit the job description. As the outer shell slides away, I turn into a bomb disposal expert, holding my breath, waiting for the worst possible outcome. The lower casing falls off. It leaves a hollow body, vulnerable, as it lies strewn on the table top. The section is empty because it is where you can place two nine-volt batteries. Inside is a printed label that states "made in Australia" and a hand-written serial number.

I unscrew the top section again. Staring at the separated head

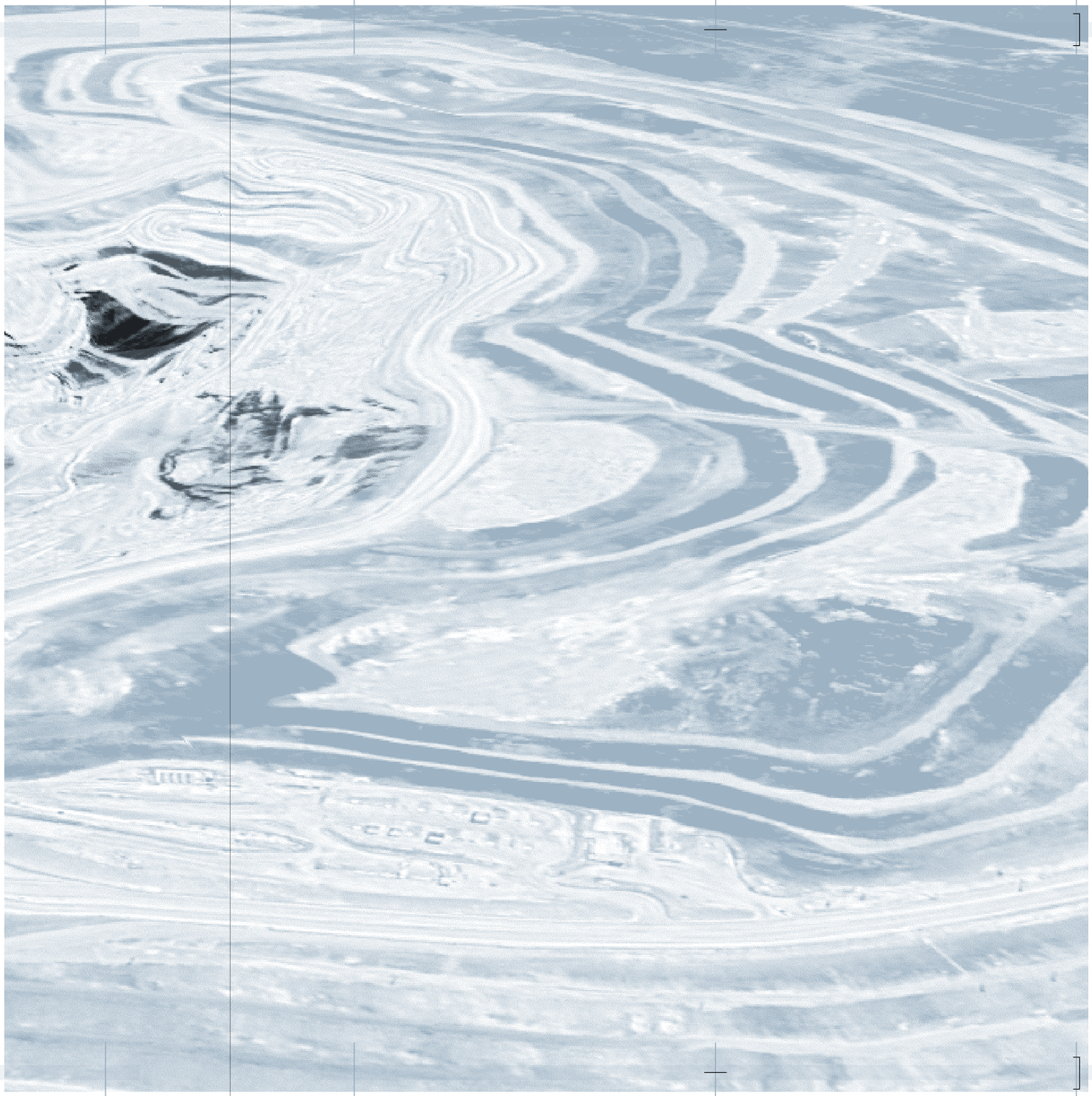
and body, a few cables, a circuit board, and an empty section for batteries, it is striking how little there is inside. The outer casing is robust and heavy, it provides armour for the precious materials and processes within. Sound capture needs a fortress of protection, but at what cost? Where does this microphone come from and where might it end up?

Instrumental Ecology #2

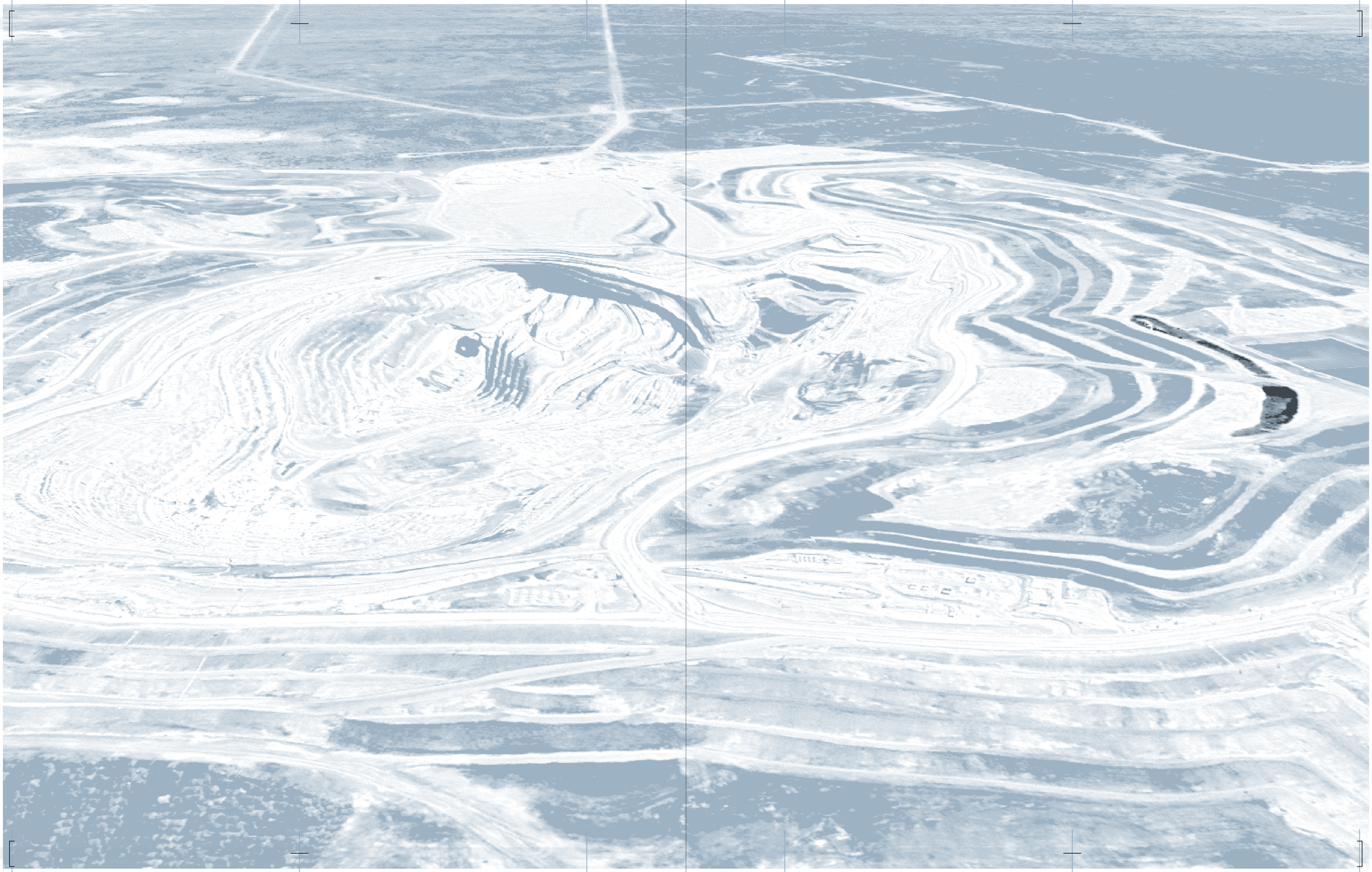
Opening a new browser tab on my laptop, I type "Røde," the manufacturer, into Google Earth. Minerals and magnets heat and cool in the elsewhere fields of cloud computing. I hover above what looks to be an industrial business area flanked by the Duck River (Sydney, Australia) and two or three large warehouse structures. I am closer yet more estranged than ever to my microphone and its chain of production. Street View allows me to "ground" truth to my location.

The Røde NT4 manual promises "immaculate stereo detail." Peter Freedman, Røde CEO, goes to great pains to stress the clean labs and sterile environments in which these microphones are produced and assembled. The illusion of immaculate sound capture, enabled by hands in dirt-free labs, obfuscates the murky elsewhere fields that resonate a supply chain of signal: the natural resources and exhausted landscapes of where technology comes from and where it ends up.

After extracting knowledge and materials from China, Freedman wanted Røde to be a self-sustainable operation with in-house processing and assembly at the centre



Lynas Corporation Mount Weld, Google Earth.



of its manufacturing culture. Where the natural resources come from is a little more veiled. Copper, neodymium, or petroleum-based plastics always start in the ground. These elements are not grown in a lab, they are not synthetic products, arriving instead from environments, hands, and machines.

Rare earths are in plentiful supply in Northern Australia, as is copper. I type "Lynas Corporation's Mount Weld Mine" into Google Earth and soon I am flying again, this time over scorched earth, ochre-coloured and isolated from human habitation. A landscape of pockmarks and lunar-like craters: is this where my microphone comes from? I can only imagine a mechanical site-specific soundscape of extraction, the hum of generators and diesel engines. The actual soundscape I hear—at my desk in London—is the ironic noise of the whirring fan in my laptop. These fields are full of speculation and circumnavigation, not immersion or fact.

Instrumental Ecology #3

No recording is impartial; no recording is clean. The chain of accountability starts when a microphone is gripped, a tacit connection is made. The inaudible frequencies of natural resource extraction and exploitative labour practices graft (like a shadow) onto the process of capture, and initiates a chain of distortion that veils as much as it amplifies.

I open another browser tab and type "Agbogbloshie" into Google Earth, a well-documented site in the cycles of digital media production — this time we are examining one of the world's largest e-waste sites. With one click, I fly from Australia to Ghana in two seconds. The soundscape is dominated again by the whir of my laptop fan. I hover across a more inhabited space than my previous searches. There are houses and living areas within a stretch of grey land, speckled by cream pixels. Close to a river edge, I notice a pile of burning waste. Smoke billows into the sky. Electronic ashes float into the atmosphere: inhaled across bodies and frozen in screen time, the pixelated image offers a long-distance pause. Where are the microphones, batteries, and broken hard drives I no longer have? Are they in the land or lung?

Listening-with

Who or what is the instrument? Who or what is being instrumentalised? Microphones, the prime interlocutors for sound-arts practice, are neither silent nor neutral. They are not impartial conduits but entangled actors, and should be considered as part of an assembly of relations and sites that impacts conceptually and materially, across human and non-human knowledge-making bodies. Micological research must consider technology and the authorial hand that grips it as inseparable parts of hearing the affects of anthropogenic climate change. The dilemma, in conclusion, revolves around finding methods of listening, in the field or site of audition, to draw out that which one cannot hear.

Listening-with is a critical sensibility that might assist the search for sites and sounds or processes and consequences that are not immediately apparent. It is a mode that seeks to foster critical alliance toward the sounds I hear, or do not hear, rather than approach them as something to listen to or for. It encourages a listening practice that strives for meaning as a process of construction as opposed to identifying sonic signs. Listening-with asserts that there is no singular subject but instead a plethora of ears, bodies, perspectives, recordings, and mediations at stake: stretched across site and species and scaled over thresholds of audibility and equity. Listening-with is not a celebration of such entanglements. It acknowledges complexity and the consequent demand placed on the ear of the recordist as much as the elsewhere listener, to disentangle and reassemble meaning as an ongoing process of responsibility and ethical commitment.

Listening-with is full of overlaps, contradictions, and gaps. Within this mesh of perforations, of knowledge lost and found, sonic research

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