4 MURMURS: EXPERIMENTS IN GLITCHING

Amorphous

Origin: from the Greek a-morphe: without form, or shapeless (Dictionary.com, s.v. "amorphous"; *Oxford English Dictionary*, s.v. "amorphous")

"Having no determinate shape, shapeless, unshapen; irregularly shaped, unshapely" (*Oxford English Dictionary*, s.v. "amorphous")

Formless (Bataille 1985)

"having neither definite nor apparent structure" (Dictionary.com, s.v. "amorphous")

Vague (Fara 2000)[1]

"Belonging to no particular type or pattern; anomalous, unclassifiable" (*Oxford English Dictionary*, s.v. "amorphous")

Indefinite (Solà-Morales 2014)

"Unshapely" materials include chocolate mousse, shaving cream, mayonnaise, and mud, whose "particles jam collectively" (CNRS 2008). Oobleck—or "goop"—made of cornstarch and water, fills the sensory tables of preschools across America. Its surface appears solid, but slide your fingers into it at an angle and it wobbles and oozes across your palm, dripping off in blobs that meld seamlessly back into the substance below, entirely indistinct.

ATMOSPHERIC CONDITIONS

Air density—the relative amounts of nitrogen and oxygen. Humidity—the amount of water in the air. Wind—the atmosphere regaining balance. Weather disrupts noise measurement. For LAWA noise monitors, wind at Ontario Airport—Santa Ana winds—"corrupts data." L.A. County Public Health Department engineers bring a weather station along with their noise-monitoring equipment and will throw out data "if marred." For the sake of noise measurement and mitigation, objects block sound. Atmospheric conditions, on the other hand, might amplify it; clouds, for instance, send sound waves back to the ground, "like water waves against Jello," an environmental engineer said. A July 8, 1952, account of complaints received by the airport explained that "the reverberation of the aircraft taking off in low pitch, flying under the overcast in a Westerly direction, intensified the noise, which lead people adjacent to Imperial Highway area, to believe that the aircraft was actually flying over their homes."[2] This is a common occurrence around LAX, where fog is a regular atmospheric condition because of the airport's proximity to the ocean.

A meteorologist explained that fog *refracts* rather than *reflects* sound, bending and distorting sound "waves." While significant as a dimension of experience, such atmospheric interactions with sound are excised from noise measurement, the objectivity of which is based on the least varying bases of perception and atmosphere. Veneklasen and Associates' 1968 study, *Noise Exposure and Control in the City of Inglewood, California*, presented eighty-eight rather than one hundred samples because "twelve recordings of Boeing 727 aircraft were made on a day in which weather conditions resulted in large sound attenuation at high frequencies." The relative humidity of 18 percent was sufficiently less than the usual 70 percent humidity for the area, which skewed the decibel readings lower for the two higher-octave bands tested. Because a relative humidity of 18 percent occurred only 1.3 percent of the time, they "felt justified in deleting this data as non-representative of the noise in these two octave bands" (42).

Maintaining atmospheric conditions that do not alter sound too much can be a messy endeavor, both mathematically and materially. At the Western Electro-Acoustic Laboratory in Santa Clarita, when testing materials for sound absorption, it is important to maintain the humidity level throughout the process, and to maintain a level that affects sound absorption the least. Previously the lab was at the firm's offices in Santa Monica, where, closer to the ocean, it was more humid. And because humidity affects sound absorption unevenly, they need to maintain humidity around the range where its effect is "flatter." As the engineer said, "the test standard requires that for the transmission loss test it has to be at least 30 percent. For this test it has to be at least 40 percent. So we have a humidifier." Laughing, he says, "We often end up just throwing water on the floor."

The industrial hygienist for the Los Angeles County Department of Health told me that the desert—at least when it is not windy—is the ideal place to take noise measurements.

THE MATTER OF AIR

According to Malcolm C. Henderson, Vern Knudsen's study of the effects of temperature and humidity on the absorption of sound and air "made it dramatically evident" that "sound, like light and electromagnetic radiation in general, became a tool for the investigation of the properties of matter" (Henderson 1963, 28; Knudsen 1931). In other words, the quality of matter mattered, and it mattered on the molecular level. Though limited by physical properties—"No one can boil a kettle by shouting at it, whether watching it or not!" (Henderson 1963, 29)—Knudsen's discovery was significant for materializing air through sound. Air newly mattered, becoming matter.

The air of the laboratory was distinguished from the "open air," where "a whole battery of unwanted effects arises to obscure measurements that would lead to understanding the logical, regular, and predictable behavior of the molecules. In the laboratory, we can neglect thermal inhomogeneities and turbulence, which cause refraction, the presence of fog or dust, reflection from the ground or other objects, scattering and diffraction around buildings or trees, and, of course, also the inverse-square law that spreads the sound beam" (Henderson 1963, 30).

Around the time Knudsen was studying how temperature and humidity affected sound in air, he drafted an essay, "Proposed Standards for the Control of Noise" "for *American Standards Magazine*" (as scrawled on a corner of the title page). "The value of quiet" has been demonstrated: workers are more efficient and less annoyed, profit lost to the company weighed against the cost of acoustical treatment. And though there were noise meters, there were no standards, making their measurements relative. Subcommittees of the Acoustical Society of America had been formed to tackle four dimensions of this problem: "fundamental acoustical measurements, nomenclature and definitions, the absorption and insulation of sound, and the measurement of noise."[3] And so it began.

AIR, SOUNDED

Toshiya Tsunoda's field recordings are "pieces of air" (2001). An airplane is heard "crossing the sky both by its reflection on the ground, and by the original sound wave undergoing mixing and interference," suggesting, "Perhaps this airplane could be interpreted as tracing geographical features with its sound." His field recordings reconceptualize the work of the microphone as a sensing perceiver of airspace. They emphasize sound as atmospheric, with specific qualities shaped by air. Air is produced as space by sound. Air is *sounded*. Sound is *aired*. The microphone is a *sounding* device.

PINK NOISE

I watch silently as an engineer holds a noise measurement device in the air, moving it slowly around the room at shoulder height. The loud SSHWSSS-HSHSHHH of the pink noise blasting from the speaker dangling off the basket of the cherry picker that had been audible through the door is now diffused in the bedroom in which we stand, a teen girl's room with cheap perfumes on the vanity, a graduation photo, an Elie Wiesel novel under the bedside table. The room is small and messy. I am directed to be quiet. We stand still in a clear area and do not touch anything. Outside, another microphone is detached from the monitor, attached to the top of an extension pole with gaffer's tape, the monitor secured closer to the bottom. The microphone is held against the stucco of the exterior wall to avoid the unpredictability of sound's "bounce" off a surface. It is as if the microphone, in an intimate alliance, listens with the wall, hears what the wall hears. This is not so much the sound of the wall but that of airborne sound as it encounters the wall. Later the pink noise will be adjusted by mathematical calculation to replicate the sound of a jet. These fly over as the test ensues. Also loud, their high-frequency whine distinguishes them from the wash of sound from the speaker.