

WHY EVERYTHING IS GETTING LOUDER

The tech industry is producing a rising din. Our bodies can't adapt.

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Karthic thallikar first noticed the noise sometime in late 2014, back when he still enjoyed taking walks around his neighborhood.

He'd been living with his wife and two kids in the Brittany Heights subdivision in Chandler, Arizona, for two years by then, in a taupe two-story house that Thallikar had fallen in love with on his first visit. The double-height ceilings made it seem airy and expansive; there was a playground around the corner; and the neighbors were friendly, educated people who worked in auto finance or at Intel or at the local high school. Thallikar loved that he could stand in the driveway, look out past a hayfield and the desert scrub of Gila River Indian land, and see the jagged pink outlines of the Estrella Mountains. Until recently, the area around Brittany Heights had been mostly farmland, and there remained a patchwork of alfalfa fields alongside open ranges scruffy with mesquite and coyotes.

In the evenings, after work, Thallikar liked to decompress by taking long walks around Brittany Heights, following Musket Way to Carriage Lane to Marlin Drive almost as far as the San Palacio and Clemente Ranch housing developments. It was during one of these strolls that Thallikar first became aware of a low, monotone hum, like a blender whirring somewhere in the distance. It was irritating, but he wrote it off. Someone's pool pump, probably. On another walk a few days later, he heard it again. *A carpet-cleaning machine?* he wondered. A few

nights later, there it was again. It sounded a bit like warped music from some far-off party, but there was no thump or rhythm to the sound. Just one single, persistent note: *EEHHNNNNNNNNNN*. Evening after evening, he realized, the sound was there—every night, on every street. The whine became a constant, annoying soundtrack to his walks.

And then it spread. In early 2015, Thallikar discovered that the hum had followed him home. This being Arizona, Thallikar and his neighbors rewarded themselves for surviving the punishing summers by spending mild winter evenings outside: grilling, reading, napping around plunge pools, dining under the twinkle of string lights. Thallikar had installed a firepit and Adirondack chairs in his backyard. But whenever he went out to cook or read, there was that damn whine—on the weekends, in the afternoon, late into the night. It was aggravating, and he felt mounting anxiety every day it continued. Where was it coming from? Would it stop? Would it get worse? He started spending more time inside.



The Brittany Heights neighborhood in Chandler, Arizona (Cassidy Araiza)

Then it was in his bedroom. He had just closed his eyes to go to sleep one night when he heard it: *EHNNNNNNNNNN*. He got up to shut the window, but that made no difference at all. “That was when I started getting concerned,” he observed later. He tried sleeping with earplugs. When that didn’t help, he also tied a towel around his head. When that still wasn’t enough, he moved into the guest room, where the hum seemed slightly fainter. Each night, he’d will himself to sleep, ears plugged and head bandaged, but he could feel the whine in his bones, feel himself getting panicky as it droned on and on and on and on and on. The noise hummed 24 hours a day, seven days a week, like a mosquito buzzing in his ear, only louder and more persistent. He sensed it coming from everywhere at once. Thallikar began to dread going home. As the months passed, he felt like he was in a war zone. He wrote in a text message that he felt as though someone was launching “an acoustic attack” on his home.

From April 2019: James Fallows on leaf blowers and activism

The earliest noise complaint in history also concerns a bad night's sleep. The 4,000-year-old *Epic of Gilgamesh* recounts how one of the gods, unable to sleep through humanity's racket and presumably a little cranky, opts "to exterminate mankind."

Noise—or what the professionals call a "very dynamic acoustic environment"—can still provoke people to murderous extremes, especially when the emitter disturbs the receiver at home. After repeated attempts to quiet his raucous neighbor, a Fort Worth, Texas, father of two, perturbed by loud music at 2 a.m., called the police, who came, left, and returned less than an hour later, after the man had allegedly shot his neighbor three times—an incident not to be confused with the time a Houston man interrupted his neighbor's late-night party and, after a showdown over noise, shot and killed the host. In New York City, a former tour-bus driver fed up with noisy parties across the hall allegedly sought help from a hit man. A man in Pennsylvania, said to have had no more trouble with the law than a traffic ticket, ambushed an upstairs couple with whom he'd had noise disputes, shooting them and then himself, and leaving behind a sticky note that read, "Can only be provoked so long before exploding." There's the man accused of threatening his noisy neighbors with a gun, the man who shot a middle-school coach after they quarreled over noise, the man who fired on a mother and daughter after griping about sounds from their apartment, the man who killed his roommate after a futile request that he "quiet down," and the woman who shot at a neighbor after being asked to turn down her music—all since the beginning of this year.

Noise is never just about sound; it is inseparable from issues of power and powerlessness. It is a violation we can't control and to which, because of our anatomy, we cannot close ourselves off. "We have all thought of killing our neighbors at some point," a soft-spoken scientist researching noise abatement told me.

As environmental hazards go, noise gets low billing. There is no Michael Pollan of sound; limiting your noise intake has none of the

cachet of going paleo or doing a cleanse. When *The New Yorker* recently proposed noise pollution as the next public-health crisis, the internet scoffed. “Pollution pollution is the next big (and current) public health crisis,” chided one commenter. Noise is treated less as a health risk than an aesthetic nuisance—a cause for people who, in between rounds of golf and art openings, fuss over the leaf blowers outside their vacation homes. Complaining about noise elicits eye rolls. Nothing will get you labeled a crank faster.

Scientists have known for decades that noise—even at the seemingly innocuous volume of car traffic—is bad for us. “Calling noise a nuisance is like calling smog an inconvenience,” former U.S. Surgeon General William Stewart said in 1978. In the years since, numerous studies have only underscored his assertion that noise “must be considered a hazard to the health of people everywhere.” Say you’re trying to fall asleep. You may think you’ve tuned out the grumble of trucks downshifting outside, but your body has not: Your adrenal glands are pumping stress hormones, your blood pressure and heart rate are rising, your digestion is slowing down. Your brain continues to process sounds while you snooze, and your blood pressure spikes in response to clatter as low as 33 decibels—slightly louder than a purring cat.

“Quiet places have been on the road to extinction at a rate that far exceeds the extinction of species.”

Experts say your body does not adapt to noise. Large-scale studies show that if the din keeps up—over days, months, years—noise exposure increases your risk of high blood pressure, coronary heart disease, and heart attacks, as well as strokes, diabetes, dementia, and depression. Children suffer not only physically—18 months after a new airport opened in Munich, the blood pressure and stress-hormone levels of neighboring children soared—but also behaviorally and cognitively. A landmark study published in 1975 found that the reading scores of sixth graders whose classroom faced a clattering subway track lagged nearly a year behind those of students in quieter classrooms—a difference that disappeared once soundproofing materials were installed. Noise might also make us

mean: A 1969 study suggested that test subjects exposed to noise, even the gentle fuzz of white noise, become more aggressive and more eager to zap fellow subjects with electric shocks.

In the extreme, sound becomes a weapon. Since at least the 1960s, scientists have investigated sound's potential to subdue hostage-takers, protesters, and enemy troops, against whom one expert proposed using low-frequency sound, because it apparently induces "disorientation, vomiting fits, bowel spasms, uncontrollable defecation." The U.S. military, keenly aware of noise's power to confuse and annoy, has wielded soundtracks as punishment: It tried to hurry along the Panamanian dictator Manuel Noriega's surrender by blasting his hideout with rock music (Kiss and Rick Astley made the playlist); attacked Fallujah, Iraq, while pounding heavy metal on the battlefield (Guns N' Roses, AC/DC); tortured Guantánamo detainees with a nonstop barrage of rap and theme songs (Eminem, the Meow Mix jingle); and, under the supervision of the FBI, attempted to aggravate the Branch Davidian cult of Waco, Texas, into surrender with a constant loop of Christmas carols, Nancy Sinatra, Tibetan chants, and dying rabbits. ("If they go Barry Manilow," said a hostage negotiator at the time, "it's excessive force.")

Even when not intentionally deployed for harm, the sound of drilling, barking, building, crying, singing, clomping, dancing, piano practicing, lawn mowing, and generator running becomes, to those exposed, a source of severe anguish that is entirely at odds with our cavalier attitude toward noise. "It feels like it's eating at your body," a man plagued by a rattling boiler told a reporter. A woman who was being accosted on all sides by incessant honking told me, "The noise had literally pushed me to a level of feeling suicidal." For those grappling with it, noise is "chaos," "torture," "unbearable," "nauseating," "depressing and nerve-racking," "absolute hell," and "an ice pick to the brain." "If you didn't know they were talking about noise, you might think they were describing some sort of assault," Erica Walker, an environmental-health researcher at Boston University, has said. This has spurred scientists, physicians, activists, public officials, and, albeit less in the United States, lawmakers to join in the quest for

quiet, which is far more elusive than it may seem. “Quiet places,” says the acoustic ecologist Gordon Hempton, “have been on the road to extinction at a rate that far exceeds the extinction of species.”

From April 2016: The future will be quiet

Thallikar went hunting for the source of the sound. At first he canvassed the neighborhood by foot, setting out around 10 or 11 o'clock at night, once the thrum of traffic had quieted down. When these “noise patrols,” as he called them, yielded no answers, he expanded his perimeter—by bike, then by car. He'd pull over every few blocks to listen for the whine. The hum was everywhere: outside Building E of the Tri-City Baptist Church and the apartments in San Palacio; near the Extra Space Storage and the no perfect people allowed sign at Hope Covenant Church; ricocheting around the homes in Canopy Lane, Clemente Ranch, Stonefield, the Reserve at Stonefield. He'd go out multiple nights a week, for 10 minutes to an hour, taking notes on where the noise was loudest. The patrols dragged on—one week, two weeks, eight weeks—which led to spats with his wife, who wanted to know why he kept leaving the house so late at night.

Finally, as winter warmed into spring, Thallikar thought he'd identified the source of the whine: a gray, nearly windowless building about half a mile from his house. The two-story structure, which had the charm of a prison and the architectural panache of a shoebox, was clad in concrete and surrounded by chain-link and black-metal fences, plus a cinder-block wall. It belonged to a company called CyrusOne.



The CyrusOne data center in Chandler, Arizona (Cassidy Araiza)

There was no thrill in this discovery, just simmering fear that the noise might get worse. Thallikar visited the city-planning clerk, multiple times. She said she couldn't help and referred him to CyrusOne's construction manager. Kept awake by the noise at 11 o'clock one Saturday night, Thallikar phoned the man, who protested that he was trying to sleep. "I'm trying to sleep too, dude!" Thallikar told him. When they spoke again the next day, the call ended abruptly, and without resolution.

According to CyrusOne's website, the company's Chandler campus offers *Fortune* 500 companies robust infrastructure for mission-critical applications. In other words, it's a data center—a columbarium for thousands of servers that store data for access and processing from virtually anywhere in the world. When you check your bank balance or research a used car or book a hotel room, chances are decent that the information comes to you via one of the more than 40 CyrusOne data centers spread around the globe. CyrusOne houses servers belonging

to nearly 1,000 companies, including Microsoft, Country Financial, Brink's, Carfax, and nearly half of the *Fortune* 20.

Thallikar, wanting to confront the noise personally, made a surprise visit to CyrusOne. He found workers putting up a new building, but learned that the whine was unrelated to construction. It came from the chillers, a bulky assemblage of steel boxes and tubes permanently affixed to the sides of the two existing buildings. Servers, like humans, are happiest at temperatures between 60 and 90 degrees Fahrenheit, and the chillers were crucial in keeping the heat-generating machines comfortably cool as they worked. In the fall of 2014, around the time Thallikar started noticing the whine, CyrusOne had had room for 16 chillers. Now it was getting ready to add eight more. During a follow-up visit, Thallikar, who grew up in Bangalore and moved to Arizona in 1990 to study industrial engineering at Arizona State University, said he was informed by a worker at the site that immigrants like him should feel lucky to live in the U.S., noise be damned.

CyrusOne arrived in Chandler shortly before Thallikar did and broke ground two months after he closed on his home. For CyrusOne, Chandler was a “dream come true,” Kevin Timmons, the company’s chief technology officer, told me. The city essentially offered CyrusOne carte blanche to develop an area three times the size of Ellis Island into one of the nation’s largest data-storage complexes: 2 million square feet protected by biometric locks, steel-lined walls, bullet-resistant glass, and dual-action interlocking dry-pipe sprinkler systems. CyrusOne even has two of its own substations humming with enough energy (112 megawatts) to light up every home in Salt Lake City—or, more relevant to the matter at hand, to power several dozen 400- and 500-ton chillers. CyrusOne’s Chandler facility was not only the company’s most ambitious, but the biggest to realize its strategy of wooing clients through ultrafast, just-in-time construction. CyrusOne could now boast of being able to complete a building in 107 days—faster than customers could have their servers ready. “It literally put us on the map,” Timmons said.

Arizona attracts data centers the way Florida attracts plastic surgeons. The state has low humidity; proximity to California—where many users and customers are based—but without its earthquakes or energy prices; and, thanks to lobbying efforts by CyrusOne, generous tax incentives for companies that drop their servers there. Walk 10 minutes due north from CyrusOne's Chandler complex, and you'll reach two other data centers, with a third just down the road. Drive 15 minutes from there, and you'll come across three more. Continue farther east past Wild West Paintball, and you'll hit an Apple data center, which will soon be joined by a Google facility, plus another data center from CyrusOne. Forty-five minutes west of Thallikar's home, Compass Datacenters is building on more than 225 acres of land, a plot three times the size of CyrusOne's in Chandler.

By the summer of 2015, Thallikar had thrown himself into an aggressive campaign to quiet the hum. He went up and down the city's chain of command, pleading for help. He emailed Chandler's economic-development innovation manager, its economic-development specialist, and its economic-development director, who replied that Thallikar was the only resident to complain, but dutifully went out, twice, to listen for the high-pitched whine. He didn't hear it. "I do not think I am imagining things here and wasting people's time," Thallikar wrote back, adding that he'd taken his family on his patrol, "and they too could hear the noise."

For two years, Thallikar complained to anyone who would listen and even to those who would not. Meanwhile, CyrusOne kept building.

Thallikar emailed a news anchor, an executive producer, an editor, and several reporters at the local 12 News TV station, offering to help them "in experiencing the problem so they can relate to it." He emailed the mayor and all five members of the Chandler city council. Multiple times. Then daily. "The noise gets louder in the night and enters our homes. And the streets are filled with it," Thallikar wrote in one email. In another: "Just what will it take for one of you to respond to my emails." He presented his case at a city-council meeting, requesting that a task force be formed to research and stop the whine.

He acknowledged that he'd been told the sound seemed suspiciously similar to the buzz of traffic on the 202 freeway nearby.

Thallikar took his campaign to his homeowners' association and to his neighbors. The response was tepid, though he did persuade one person to email the city. Thallikar reached out, again, to CyrusOne, and to the Chandler Police Department. Commander Gregg Jacquin promised to investigate, but suggested that Thallikar might have more success if he cooled it with all the emails to city officials, which were creeping into the high double digits. Thallikar started keeping a log of how the noise changed, hour to hour and day to day. It was getting louder, he was sure.

In the fall of 2015, Jacquin emailed Thallikar to say that he'd gone in search of the noise, but hadn't heard it. "I am not making this up—even though I do not have the measurement numbers," Thallikar wrote back. "The noise heard over the weekend starting on Saturday starting around 10 pm through Sunday was very very bad. I got a nervous headache, and had to take medications." He never heard back from Jacquin. Before long, Thallikar began to contemplate selling his home.

Noise is a clever enemy. It leaves no trace and vanishes when chased. It's hard to measure or describe. It is also relative. "Sound is when you mow your lawn, noise is when your neighbor mows their lawn, and music is when your neighbor mows your lawn," says Arjun Shankar, an acoustic consultant. Noise is also fiendishly difficult to legislate, though for nearly as long as humans have lived together, we have seen fit to try. The ancient Greeks of Sybaris are credited with introducing the first noise ordinance, in the eighth century b.c., banishing roosters as well as blacksmiths, carpenters, and other "noisy arts" from the city limits. In the United States, the appetite for noise control reached its apex in 1972, when President Richard Nixon enacted the country's first federal statute specifically targeting noise pollution, which empowered the Environmental Protection Agency to quiet the country. Nine years later, the Reagan administration withdrew funding

for the Environmental Protection Agency's Office of Noise Abatement and Control, foisting responsibility back onto state and local governments. Since then, little has changed. "Unfortunately," says New York City's longtime noise czar, Arline Bronzaft, "the federal government is essentially out of the noise business."

In the ensuing decades, the war on noise has shifted to the margins—a loose flock of mom-and-pop organizers whose agitations have all the glitz and edge of a church bake sale. The mood on pro-quiet listservs skews defeatist, the general tone more support group than picket line. (The landing page for the Right to Quiet Society politely instructs newcomers, "If you did not like what you saw here, without telling us, you might consider leaving quietly.") Anti-noise crusaders band together in ragtag crews united by geography or irritant. Depending on whether your trigger point concerns planes, trains, blowers, Jet Skis, dirt bikes, concerts, boom cars, cars, motorcycles, or Muzak, you might join ROAR (Residents Opposed to Airport Racket), HORN (Halt Outrageous Railroad Noise), BLAST (Ban Leaf Blowers and Save Our Town), CALM (Clean Alternative Landscaping Methods), HEAVEN (Healthier Environment Through Abatement of Vehicle Emission and Noise), CRASH (County Residents Against Speedway Havoc), Pipedown ("the campaign for freedom from piped music"), or roughly 150 other organizations with varying levels of activity. In the United States, one of the few emitter-agnostic groups with a national scope is Noise Free America, which has 51 local chapters, noise counselors on call, and, for four out of the past six years, a tradition of going to Washington, D.C., to petition lawmakers—the pinnacle of which was once getting to meet then-Minority Leader Nancy Pelosi's deputy chief of staff.

On a recent Sunday morning, I joined Noise Free America's founder and director, Ted Rueter, for what he billed as a "noise tour" of Brooklyn—a pilgrimage to some of the borough's most sonorously grating street corners. Rueter, a 62-year-old political-science professor, met me at a Starbucks on Flatbush Avenue wearing khaki shorts, a pink polo shirt, and Bose noise-canceling headphones. He was joined by three New Yorkers concerned with the din of their neighborhoods:

Manohar Kanuri, a former stock analyst who lives above the incessant beeping of construction and delivery trucks in Manhattan's Battery Park City; Ashley, a 40-something who's moved three times in an effort to escape thunderous parties; and Vivianne, a woman who lives with the constant staccato of honking livery cabs, dollar vans, and impatient drivers. (Ashley and Vivianne asked not to be identified by their real names.) For Rueter, who was in town from Durham, North Carolina, a tour of New York's cacophony seemed to have the exotic thrill of going on safari. Kanuri, Ashley, and Vivianne had corresponded extensively online, but this was their first time meeting in person, and they appeared delighted at getting to bond with sympathetic ears. "We build coalition this way," Kanuri said.

All three New Yorkers had tried tackling their noise issues through traditional avenues—the 311 nonemergency line (which receives more reports about noise than about any other issue), the local police, their city-council members, the public advocate, the mayor—but found the city unsympathetic, unresponsive, or ineffective. Before heading out on the noise tour, they sat in the Starbucks venting about the difficulties of catching emitters in the act and encouraging police to take action. Ashley had placed so many 311 calls that she worried about getting arrested, like a Bronx woman who was thrown in a holding cell on charges of entering false information in the public record after calling 44 times in 15 months—often to report her neighbors' racket. Vivianne warned Ashley that the police had probably pegged her as a "serial complainer"—among anti-noise crusaders, a dreaded fate.

Noise codes tend to be either qualitative (prohibiting subjectively defined "disturbing" or "unreasonably loud" noise) or quantitative (defining, in measurable terms, what constitutes disturbing or unreasonably loud noise). New York City's noise code, which is the latter, considers barking a nuisance only if a dog yaps for 10 minutes straight between the hours of 7 a.m. and 10 p.m., or for five minutes straight between the hours of 10 p.m. and 7 a.m. (Four and a half minutes of barking at 2 a.m. is, technically, permissible.) At night, restaurants can be fined if their music measures in excess of 42

decibels from inside a nearby apartment and seven decibels above the level of ambient street sounds.

Most ordinances correlate punishable noise with loudness, though if you've ever tried to sleep through a dripping faucet, you know that something can be quiet and still drive you up the wall. Research confirms that what makes a sound annoying is only partially whether it whispers or roars. The volume at which noise begins to irritate varies depending on the source—we tolerate trains at louder volumes than cars, and cars at louder volumes than planes—and its pitch, or frequency. (Humans can hear sounds between 20 and 20,000 hertz, which roughly ranges from the low-frequency thump of subwoofers to the high-frequency buzz of certain crickets.) We are more sensitive to mid-frequency sounds—voices, birdsong, squealing brakes, shrieking infants—and perceive these sounds as louder than they are. Contrary to the stereotype of the old man shaking his fist, age and gender are not necessarily strong predictors of annoyance.

Nor must noises be heard in order to harm. Earplugs may dull the whine of motorcycles chugging outside your bedroom, but they're useless against the engines' low-frequency rumble, which vibrates the windows, floors, and your chest, and is the type of sound that's largely ignored in most official noise calculations. (Harley-Davidson, which considers that thudding a point of pride, tried to trademark the sound of its V-twin motorcycle engine, which its lawyer translated as “potato potato potato” said very fast.) When regulatory officials evaluate environmental noise—to determine, say, whether to soundproof schools near airport runways—their calculations emphasize the mid-frequency sounds to which our ears are most sensitive and discount the low-frequency sounds (think wind turbines, washing machines, kids galloping upstairs) that have been shown to travel farther and trigger stronger stress responses. “If you actually measured sound using the right metric, you'll see that you're harming a lot more people than you think you are,” says Walker, the environmental-health researcher, who is working with communities near flight paths and freeways to rethink how noise is quantified.

Not only was the whine agitating—*EHHNNNNNNNN*—but its constant drone was like a cruel mnemonic for everything that bothered him.

Years ago, the staff of a medical-equipment company became spooked by recurring sightings of a gray, spectral figure haunting their lab. One night, an engineer working late alone felt a chill pass through the room and, out of the corner of his eye, saw a soundless figure hovering beside him. When he wheeled around, no one was there. The next day, while adjusting one of the machines in the lab, he began to feel the same creeping unease. The poltergeist? A vibrating extractor fan, he realized. He published a paper on his ghost-busting, which concluded that the machine was emitting low-frequency sound waves: pulses of energy too low in frequency to be heard by humans, yet powerful enough to affect our bodies—comparable, he found, to the inaudible vibrations in a supposedly haunted cellar and in the long, windy hallways that appear in scary stories. In addition to causing shivering, sweating, difficulty breathing, and blurry vision as a result of vibrating eyeballs, low-frequency sounds can also, apparently, produce ghosts.

Read: City noise might be making you sick

For two years, Thallikar complained to anyone who would listen and even to those who would not. Meanwhile, CyrusOne kept building. The company finished three new buildings and bought 29 more acres of land in Chandler, growing the site to more than 85 acres. In a press release, it congratulated itself for “ensuring CyrusOne maintains the largest data center campus in the Southwest and one of the largest in the United States,” and cheered plans to build a comparable facility in California.

Some nights, Thallikar couldn’t sleep at all. He started wearing earplugs during the day, and stopped spending time outdoors. He looked for excuses to leave town and, in the evenings, returned to his old neighborhood in Tempe to take his constitutionals there. As he drove home, he’d have a pit in his stomach. He couldn’t stop himself from making the noise a recurring conversation topic at dinner.

Not only was the whine itself agitating—*EHNNNNNNNNNN*—but its constant drone was like a cruel mnemonic for everything that bothered him: his powerlessness, his sense of injustice that the city was ignoring its residents’ welfare, his fear of selling his home for a major loss because no one would want to live with the noise, his regret that his family’s haven (not to mention their biggest investment) had turned into a nightmare. *EHNNNN. EHHNNNNNNNNNN. EHHNNNNNNNNNNNNNNNNNN*. He tried meditating. He considered installing new windows to dull the hum, or planting trees to block the noise. He researched lawyers. And he made one final appeal to the newly elected members of the Chandler city council.

Lo and behold, one wrote back, promising to look into the issue.

The council member followed up a few weeks later. “According to the chief, police had visited 16 times on the site and conducted investigations on your claim,” he wrote. “They found the noise level was not significant enough to cause an issue.” Thallikar contacted a real-estate agent. He would lose money, and he’d have to move to a smaller house, but by the end of 2017, he’d decided to sell his home.



Commander Edward Upshaw of the Chandler police doesn't foresee citing CyrusOne for the noise. "Not going to happen," he said. (Cassidy Araiza)

To spend time with noise warriors is to become frustratingly attuned to every gurgle, squeal, clank, and creak. As I set out with Rueter and the three New Yorkers on the noise tour, the anonymous din of Flatbush Avenue splintered into a riotous skronk of bleating cars,

rattling generators, and snarling planes. Sirens yowled and vents whistled; a motorcycle *potato-potato-potatoed* and a can skittered on the concrete.

R. Murray Schafer, a Canadian composer who, in the 1960s, pioneered the field of acoustic ecology, has advocated “soundwalks” as an activity that, even more effectively than ordinances, could curb noise pollution by making people more aware of their habitat’s acoustics. A soundwalk—during which you actively listen to the sonic demeanor of your surroundings—might involve tallying the number of car horns you hear in the course of an hour or scavenger-hunting for sounds with specific characteristics, like a buzz followed by a squeak. Schafer saw soundwalks as a way to address our sonological incompetence. Teach people to tune in to their soundscapes, and they will understand which sounds to preserve and which to eliminate, then act accordingly.

The first stop on our noise tour was, mercifully, a place of quiet. We gathered in silence around a small koi pond on the Brooklyn College campus. I forced myself to listen carefully. An air conditioner purred. Water burbled. A child hollered. “See, once a kid comes, that’s when the screaming starts,” Ashley said.

She and Kanuri discussed the inefficacy of earplugs and the pros and cons of analog versus digital white-noise machines. Ashley said she slept with three white-noise machines (which hardly makes her an exception among the sound-sufferers I met) and, because of a whistler in her office, had started wearing earplugs at work.

“Are you familiar with something called slow TV?” Kanuri asked Ashley. “It’s a sailboat that runs 10 hours, and all you hear is the ship breaking water. That’s it. Every now and then you’ll hear *bruhhhhh*—another ship that passes by. That’s it. It’s beautiful. It’s *beautiful*.”

Stéphane Pigeon, an audio-processing engineer based in Brussels, has become the Taylor Swift of white noise, traveling the world recording

relaxing soundscapes for his website, myNoise.net, which offers its more than 15,000 daily listeners an encyclopedic compendium of noise-masking tracks that range from “Distant Thunder” to “Laundromat,” a listener request. (White noise, technically speaking, contains all audible frequencies in equal proportion. In the natural world, falling rain comes close to approximating this pan-frequency *shhhhhh*.) Impulse noises, such as honking, barking, hammering, and snoring, are the hardest to mask, but Pigeon has tried: While traveling in the Sahara, he recorded “Berber Tent,” a myNoise hit designed to help snorees by harmonizing the gentle whoosh of wind, the burble of boiling water, and the low rattle of snoring. Because covering up a snorer’s brief, punchy *HRROHN!* is exceedingly difficult, “the goal is to try to persuade you that snoring could be a beautiful sound,” Pigeon told me.

After a few minutes at the pond, we reluctantly tore ourselves from the quiet to prowl Brooklyn’s streets for sounds. Farther north on Flatbush Avenue, encircled by lowing horns and a wheezing Mister Softee truck, Kanuri used his sound-meter app to measure the ambient noise—a disappointing 75.9 decibels, lower than everyone had thought but still more than 20 decibels above the threshold at which, per [a 1974 EPA report](#), we get distracted or annoyed by sound. (Decibels, which measure volume, are logarithmic: Turn up a sound by 10 decibels, and most people will perceive its loudness as having doubled.) The soundscape shushed as we approached the stately brownstones near Prospect Park, then thumped to life again when we stopped for lunch at, of all places, Screamer’s Pizzeria. “Would it be possible during our short stay here to turn down the music?” Rueter asked a server.

Desperate ears call for desperate measures, and the noise-afflicted go to elaborate lengths to lower the volume. Kanuri taught himself to code so he could analyze New York City’s 311 data and correlate noise complaints with elective districts; he hoped he could hold politicians accountable. Having tried moving bedrooms and also apartments, Ashley is now moving across the country, to a suburb in the Southwest. I spoke with a New Yorker who, unable to afford a move,

has been sleeping in her closet—armed with earplugs, headphones, an AC unit, a fan, and two white-noise machines. A Wisconsin man who'd re-insulated, re-drywalled, and re-windowed his home was ultimately offered sleeping medication and antidepressants. An apartment dweller in Beijing, fed up with the calisthenics of the kids upstairs, got revenge by attaching a vibrating motor to his ceiling that rattled the family's floor. The gadget is available for purchase online, where you can also find Coat of Silence paint, AlphaSorb Bass Traps, the Noise Eater Isolation Foot, the Sound Soother Headband, and the Sonic Nausea Electronic Disruption Device, which promises, irresistibly, “inventive payback.”

One might also run for president. Arline Bronzaft, the New York City noise czar, speculates that Donald Trump's presidential campaign was motivated by his quest to quiet the aircraft that disrupted Mar-a-Lago's “once serene and tranquil ambience”—so described in one of the lawsuits Trump filed in his 20-year legal battle against Palm Beach County. Six days after he was elected—and the Federal Aviation Administration shared plans to limit flights over his resort—a Trump spokesperson announced that he would abandon the lawsuit.

Scientists have yet to agree on a definition for noise sensitivity, much less determine why some individuals seem more prone to it, though there have been cases linking sensitivity to hearing loss. What *is* clear, however, is that sound, once noticed, becomes impossible to ignore. “Once you are bothered by a sound, you unconsciously train your brain to hear that sound,” Pigeon said. “That phenomenon just feeds itself into a diabolic loop.” Research suggests habituation, the idea that we'll just “get used to it,” is a myth. And there is no known cure. Even for sufferers of tinnitus—an auditory affliction researchers understand far better than noise sensitivity—the most effective treatment that specialists can offer is a regimen of “standard audiological niceness”: listening to them complain and reassuring them the noise won't kill them. Or, as one expert put it, “lending a nice ear.”

From October 2019: Rebecca Giggs on why whale songs are getting deeper

During the summer of 2017, Cheryl Jannuzzi, who lived a short drive from Thallikar, in Clemente Ranch, began to hear humming coming from somewhere behind her house. For a while, she'd had to endure the clang and beep of construction, but this was different—like an endlessly revving engine, or a jet warming up for takeoff.

Jannuzzi contacted the city, and was told that the complex directly across Dobson Road from her backyard was a data center. This was news to her, and she wasn't sure what to make of it. "They're just housing data," she thought. "That shouldn't be making so much noise."

Around Halloween, Jennifer Goehring started to notice a buzzing sound. It gave her headaches and kept her up at night, but her husband couldn't hear it, and neither could her kids. She worried that she might be losing her mind. She began sleeping with sound machines and pillows over her head, and went to the doctor to be sure she didn't have an ear infection. She didn't.

Noise is becoming autonomous and inexhaustible. Human noisemakers have to sleep, but our mechanical counterparts do not tire, die, or strain their vocal cords.

Amy Weber was with her Bible-study group in her backyard when she became aware of a consistent tone that hummed above everyone's voices. She and her husband, Steve, had heard the construction on Dobson Road for ages, but this whirring sound didn't seem to stop, or change. They tried to identify it by process of elimination, even climbing out of bed one night to clear crud from their pool pump, which, they discovered, wasn't turned on.

Eventually, through their own patrols, they identified the source. The week after Christmas, the Webers papered Clemente Ranch with flyers and created a website asking people if they'd been bothered by a "constant humming/whirring sound" coming from CyrusOne. Complaints from more than 120 people flowed in.

Thallikar heard about the Webers' efforts from one of his neighbors, and on January 23, 2018, he went to their home for the standing-room-only inaugural meeting of the Dobson Noise Coalition. People complained about headaches, irritability, difficulty sleeping. Jannuzzi had tried to muffle the sound by installing thick wooden barn doors over her sliding glass doors, and another neighbor had mounted sound-absorbing acoustic board in her bedroom windows. For five years, you couldn't have bought a house on Jannuzzi's block, but now several of her neighbors were planning to move.

When it was Thallikar's turn, the story of his three-year odyssey poured out: the sleepless nights, the feelings of being under attack, the unresponsive officials and unanswered emails. Jaws dropped. He wanted to know why no one else had spoken up earlier. "I think we all went through a period of 'Maybe it'll go away,'" said one neighbor. Others had assumed something was wrong with them, or else had struggled to trace the sound to its source.

The Dobson Noise Coalition jumped into action. Its members circulated a petition asking CyrusOne to stop its racket, which 317 people signed. They wrote to CyrusOne, twice, but heard nothing. They contacted Chandler officials—who were considerably more receptive to the group than they had been to Thallikar alone—and got the city manager to send CyrusOne's CEO a certified letter requesting a "plan of action." For weeks, CyrusOne responded with silence.



Amy Weber, who co-founded the Dobson Noise Coalition, in front of her home (Cassidy Araiza)

The nature of noise is shifting. Sonic gripes from the 18th and 19th centuries—church bells, carriage wheels, the hollering of street criers—sound downright charming to today's ears. Since then, our soundscape has been overpowered by the steady roar of machines: a chorus of cars, planes, trains, pumps, drills, stereos, and turbines; of

jackhammers, power saws, chain saws, cellphones, and car alarms, plus generators, ventilators, compressors, street sweepers, helicopters, mowers, and data centers, which are spreading in lockstep with our online obsession and racking up noise complaints along the way. Communities in France, Ireland, Norway, Canada, North Carolina, Montana, Virginia, Colorado, Delaware, and Illinois have all protested the whine of data centers. That's to say nothing of what drones may bring. "The next century will do to the air what the 20th century did to the land, which is to put roads and noise everywhere," Les Blomberg, the executive director of the nonprofit Noise Pollution Clearinghouse, told me. Noise, having emancipated itself from the human hand, is becoming autonomous and inexhaustible. Human noisemakers have to sleep, but our mechanical counterparts, which do not tire, die, or strain their vocal cords, can keep up a constant, inescapable clamor.

Study after study has reached the hardly earth-shattering conclusion that we largely prefer the sounds of nature to those of machines. A 2008 research project that played subjects 75 recordings, ranging from a cat's meow to skidding tires, found the five most agreeable sounds to be running water, bubbling water, flowing water, a small waterfall, and a baby laughing. Other studies—echoing spa brochures—tell us that natural sounds promote relaxation.

And yet we're muffling them with our racket, to the detriment of other species. The concentration of stress hormones in elk and wolf feces spikes when snowmobiles arrive, then returns to normal when the machines disappear; a similar pattern was observed for North Atlantic right whales subjected to the whine of ship traffic. (One bioacoustics researcher told *The New York Times* that the acoustic emissions of air guns, used to map the ocean floor, are creating a "living hell" for undersea creatures.) Birds in noisy habitats become screechier to make themselves heard above our din—sparrows that "used to sound like, say, George Clooney would now sound like Bart Simpson," one ornithologist told a reporter—and this phenomenon has been linked to decreases in species diversity, bird populations, and tree growth.

Though data are scarce, the world appears to be growing louder. The National Park Service's Natural Sounds and Night Skies Division, which sends researchers to measure the acoustics of the American outdoors, estimates that noise pollution doubles or triples every 30 years. The EPA last measured our nation's volume in 1981; assuming (generously) that our collective cacophony has remained constant, calculations from 2013 estimate that more than 145 million Americans are exposed to noise exceeding the recommended limits. In the absence of more recent surveys, the volume at which emergency vehicles shriek is telling, given that sirens must be loud enough to pierce the ambient noise level. According to measurements by R. Murray Schafer, a fire-engine siren from 1912 reached 88 to 96 decibels measured from 11 feet away, whereas by 1974, sirens' screeches hit 114 decibels at the same distance—an increase in volume, he noted, of about half a decibel a year. The latest fire-engine sirens howl louder still: 123 decibels at 10 feet.

Not everyone bears the brunt of the din equally. Belying its dismissal as a country-club complaint, noise pollution in the U.S. tends to be most severe in poor communities, as well as in neighborhoods with more people of color. A 2017 paper found that urban noise levels were higher in areas with greater proportions of black, Asian, and Hispanic residents than in predominantly white neighborhoods. Urban areas where a majority of residents live below the poverty line were also subjected to significantly higher levels of nighttime noise, and the study's authors warned that their findings likely underestimated the differences, given that many wealthy homeowners invest in soundproofing.

“If you want to access quietness, more and more you have to pay,” says Antonella Radicchi, an architect who helps map quiet spaces in cities. Radicchi believes access to quiet havens should be a right for every city dweller, not only the rich, who can afford to escape noise—via spas, silent yoga retreats, lush corporate campuses. For \$6,450, not including airfare, you too can take a plane to a car to a motorboat to a canoe to a hiking trail to spend three days with a tour group along Ecuador's Zabalo River, which was recently named the

world's first Wilderness Quiet Park. The designation was developed by the acoustic ecologist Gordon Hempton, who has crisscrossed the globe recording natural soundscapes and, through his nonprofit, Quiet Parks International, is on a mission to "save quiet." The organization is developing standards to measure the quietness of parks, trails, hotels, and residential communities, and will offer accreditation to areas that are suitably silent. (The Zabalo River qualified for Wilderness Quiet Park status by having a noise-free interval of at least 15 minutes, during which no man-made sounds were audible.)

Read: [How noise pollution impairs learning](#)

I spoke with Hempton via Skype several days after he'd returned from the Zabalo River. He was tan, with close-cropped gray hair and a tattoo on each forearm—one, of a leaf, inspired by his most recent visit to the Zabalo and another, he said, by an epiphany during his first solo campout in the Amazon jungle. Like other quiet advocates, Hempton speaks with the calm confidence, parallel sentence structure, and hypnotic cadence of a guru. I asked him what he sees as the value of quiet. "The further we get into quiet, the further we discover who we are," Hempton said. "When you speak from a quiet place, when you are quiet, you think differently. You are more uniquely yourself. You are not echoing advertisements. You are not echoing billboards. You are not echoing modern songs. You're echoing where you were." When I asked Hempton's co-founder the same thing, he chided me: "That question itself comes from a noisy situation."

Before starting Quiet Parks International, Hempton launched an effort to preserve the sonic pristineness of the Hoh Rain Forest in Washington's Olympic National Park. In 2005, Hempton could sit in the park for an hour without hearing man-made sounds—there was only the low, breathy whistle of the wind, the tap of rain on Sitka spruce, black-tailed deer crunching over felled hemlock, and marbled murrelets trilling. Today, thanks to an increase in flights from a naval air base, Hempton says the noise-free interval has dropped to 10 minutes.

Cassidy Araiza / *The Atlantic*

This summer, I traveled to Chandler to hear the whine for myself. A few months after the creation of the Dobson Noise Coalition, CyrusOne emailed the group promising to be a “good neighbor” and said it would install “sound attenuation packages” on its chillers by October 2018. But that October came and went, and, the neighbors agreed, the noise was worse than ever.

So they kicked their efforts into high gear. In the 17 months since the Dobson Noise Coalition was founded, its members have consulted lawyers, filed police reports, gotten coverage in the local news, and met with Chandler's chief of police. Armed with videos, written testimony, and detailed timelines, more than two dozen unsmiling neighbors dressed in red presented their grievances to the Chandler city council. That finally got them a meeting with CyrusOne.

In May, delegates from the Dobson Noise Coalition parleyed with delegates from CyrusOne, including an acoustic consultant the company had hired. According to his measurements, the whine of the chillers falls between 630 and 1,000 hertz—directly in the mid-frequency spectrum, the range our ears are most sensitive to—and is a pure-tone sound, widely considered exceptionally irritating. CyrusOne reiterated that it would spend \$2 million wrapping each and every chiller in custom-made, mass-loaded vinyl blankets designed to lower the whine by 10 decibels. Any future chillers would also be swaddled.

Kevin Timmons, CyrusOne's chief technology officer, took me on a golf-cart tour of the exterior of the mission-critical facility, of which no inside tours are permitted without a signed nondisclosure agreement. Even Timmons kept getting locked out of different quadrants and having to summon security guards for help. He first heard about the noise complaints in early 2018, and said the neighbors' annoyance came as a surprise. "We were a little bit stunned for a number of months while we tried to figure out if this was real," he told me. "And it was made clear to us that, whether real or imagined, it is something that we have to do something about." He regretted not acting faster and worried that even after the seven-figure soundproofing, some people could never unhear the whine: "Once you hear an annoying sound, humans could actually start listening for that sound." Recently, he told me, residents living near a CyrusOne data center in Dallas have started complaining about a hum.

The week I visited, CyrusOne had finished wrapping 24 of the now 56 chillers at the Chandler complex. The neighbors were split on whether the blankets helped, but they were unanimously livid that the city had allowed a data center in their backyard in the first place. They had a lot of questions about due diligence: What studies had been done? What measurements taken? None, I learned: Chandler's city planners are not required to consider noise when issuing permits, nor did they. Plus, most of CyrusOne's land was zoned for industrial use in 1983, 13 years before the closest homes, in Clemente Ranch, were built. The neighbors all knew the local noise code, chapter and verse—"No person shall disturb the peace, quiet and comfort of any neighborhood by creating therein any disturbing or unreasonably loud noise"—and demanded to know why CyrusOne hadn't at the very least been cited, given that it was unquestionably disturbing their peace, quiet, and comfort.

I posed that question to Commander Edward Upshaw, a 33-year veteran of the Chandler Police Department, as we cruised the outskirts of the CyrusOne campus, a steady hum faintly audible over the rumble of late-afternoon traffic. "Issuing a citation and charging somebody with a crime for this level of noise? Not going to happen," Upshaw said. We pulled over in Chuparosa Park and stood a few yards from the cinder-block wall that marked the outer edge of CyrusOne. "People sell radios that make white noise or waves that's louder than this," he said. "There's people that pay for this! I don't know what the issue is." We drove inside Clemente Ranch. "If you called a New York police officer for this noise, tell me what would happen. Tell me! Tell me what would happen."

The following evening, I drove to Thallikar's home, one in a row of tidy stucco houses bordered by saguaros and Jeep Wranglers. We sat in his living room next to a glass coffee table covered with folders and papers documenting his noise fight.

After teaming up with the Dobson Noise Coalition, Thallikar decided to hold off on selling his home. He was "cautiously optimistic," but

still wanted to know why the city allowed the “monstrosity,” with its “goddamned machines,” to escape punishment for disturbing the peace. He rejected the idea that anyone could judge the hum based on a short visit. “They are going there and sampling the problem,” Thallikar said. “I’m experiencing it day and night.” But he conceded that CyrusOne’s noise level was about 20 percent better than it had been, and he’d recently moved back into his master bedroom.

As CyrusOne had gotten quieter, though, Thallikar had noticed another, different whine. Through a new round of patrols, he’d traced it to GM Financial, which was equipped with its own platoon of chillers. He presented his findings to the city manager in a PowerPoint presentation, which identified as sources of “injurious noise pollution” chillers and generators at GM Financial; the Digital Realty data center around the corner from his home; and, potentially, the forthcoming Northrop Grumman complex. (Digital Realty and GM Financial said they were aware of the complaints but, after investigating, deemed no action necessary; the owner of Northrop Grumman’s building told me any noise concerns were “unfounded.”)

Thallikar offered to take me on a listening tour of the injurious noise pollution, and we hopped into a road-worn Toyota Camry, which Thallikar steered to the GM Financial parking lot. We sidled up to a locked metal gate. “You hear this?” Thallikar said. *EHNNNNNNNNNN*, said something from within the enclosure. “I don’t know how many units they have inside. You hear this, right? In the evenings it becomes louder and louder.”

After a few other stops, we doubled back to concentrate on the area around CyrusOne. For more than an hour, we circled its campus, pulling over every so often. As the sun and traffic dropped, the intensity of the hum rose. The droning wasn’t loud, but it was noticeable. It became irritatingly noticeable as the sky dimmed to black, escalating from a wheezy buzz to a clear, crisp, unending whine.

“This is depressing,” Thallikar said as we stood on a sidewalk in Clemente Ranch. “Like somebody in pain, crying. Crying constantly and moaning in pain.”

We were silent again and listened to the data center moaning. Which was also, in a sense, the sound of us living: the sound of furniture being purchased, of insurance policies compared, of shipments dispatched and deliveries confirmed, of security systems activated, of cable bills paid. In Forest City, North Carolina, where some Facebook servers have moved in, the whine is the sound of people liking, commenting, streaming a video of five creative ways to make eggs, uploading bachelorette-party photos. It’s perhaps the sound of Thallikar’s neighbor posting “Has anyone else noticed how loud it’s been this week?” to the Dobson Noise Coalition’s Facebook group. It’s the sound of us searching for pink-eye cures, or streaming porn, or checking the lyrics to “Old Town Road.” The sound is the exhaust of our activity. Modern life—*EHNNNNNNNNNN*—humming along.

The hum had settled into a strong, unwavering refrain by the time Thallikar dropped me off at my hotel, which looked out over the CyrusOne campus. I could see a new building under construction, plus a lot for another building of equal size. Beyond that, just down the street from where Thallikar lived, was a bald patch of land with space for two more buildings. CyrusOne had room to add 96 more chillers, almost double the number whining now.