[Excerpted from Roald Dahl, "The Sound Machine," in *Someone Like You* (London: Penguin Books, 2011). Reprinted courtesy of the Roald Dahl Literary Estate.]

The Sound Machine

Roald Dahl

Klausner moved across the room to the box. The top of the box was open, and he bent down and began to poke and peer inside it among a mass of different-coloured wires and silver tubes. He picked up a piece of paper that lay beside the box, studied it carefully, put it down, peered inside the box and started running his fingers along the wires, tugging gently at them to test the connections, glancing back at the paper, then into the box, then at the paper again, checking each wire. He did this for perhaps an hour.

Suddenly he heard footsteps on the gravel path outside and he straightened and turned swiftly as the door opened and a tall man came in. It was Scott. It was only Scott, the doctor.

The Doctor came up closer and bent down to look into the box. "What's this?" he said. "Making a radio?"

"No, just fooling around."

"It's got rather complicated looking innards."

"Yes." Klausner seemed tense and distracted.

"What is it?" the Doctor asked. "It's rather a frightening-looking thing, isn't it?"

"It's just an idea."

"Yes?"

"It has to do with sound, that's all."

"Good heavens, man! Don't you get enough of that sort of thing all day in your work?"

"I like sound."

"So it seems." The Doctor went to the door, turned, and said, "Well, I won't disturb you. Glad your throat's not worrying you any more." But he kept standing there looking at the box, intrigued by the remarkable complexity of its inside, curious to know what this strange patient of his was up to. "What's it really for?" he asked. "You've made me inquisitive."

"All right, I'll tell you, if you're interested." There was another pause, and the Doctor could see that Klausner was having trouble about how to begin. He was shifting from one foot to the other, tugging at the lobe of his ear, looking at his feet, and then at last, slowly, he said. "Well, it's like this… the theory is very simple really. The human ear… you know that it can't hear everything. There are sounds that are so low-pitched or so high-pitched that it can't hear them."

"Yes," the Doctor said. "Yes."

"Well, speaking very roughly any note so high that it has more than fifteen thousand vibrations a second—we can't hear it. Dogs have better ears than us. You know you can buy a whistle whose note is so high-pitched that you can't hear it at all. But a dog can hear it."

"Yes, I've seen one," the Doctor said.

"Of course you have. And up the scale, higher than the note of that whistle, there is another note—a vibration if you like, but I prefer to think of it as a note. You can't hear that one either. And above that there is another and another rising right up the scale for ever and ever and ever, an endless succession of notes an infinity of notes… there is a note—if only our ears could hear it—so high that it vibrates a million times a second… and another a million times as high as that… and on and on, higher and higher, as far as numbersgo, which is… infinity… eternity… beyond the stars."

"I believe," he said, speaking more slowly now, "that there is a whole world of sound about us all the time that we cannot hear. It is possible that up there in those high-pitched inaudible regions there is a new exciting music being made, with subtle harmonies and fierce grinding discords, a music so powerful that it would drive us mad if only our ears were tuned to hear the sound of it. There may be anything... for all we know there may—" "Yes," the Doctor said. "But it's not very probable."

"Why not? Why not?" Klausner pointed to a fly sitting on a small roll of copper wire on the workbench. "You see that fly? What sort of noise is that fly making now? None—that one can hear. But for all we know the creature may be whistling like mad on a very high note, or barking or croaking or singing a song. It's got a mouth, hasn't it? It's got a throat?" The Doctor looked at the fly and he smiled. He was still standing by the door with his hands on the doorknob. "Well," he said. "So you're going to check up on that?"

“Some time ago," Klausner said, "I made a simple instrument that proved to me the existence of many odd inaudible sounds. Often I have sat and watched the needle of my instrument recording the presence of sound vibrations in the air when I myself could hear nothing. And those are the sounds I want to listen to. I want to know where they come from and who or what is making them."

"And that machine on the table there," the Doctor said, "is that going to allow you to hear these noises?"

"It may. Who knows? So far, I've had no luck. But I've made some changes in it and tonight I'm ready for another trial. This machine," he said, touching it with his hands, "is designed to pick up sound vibrations that are too highpitched for reception by the human ear, and to convert them to a scale of audible tones. I tune it in, almost like a radio."

He plugged the wire connections from the earphones into the machine and put the earphones over his ears. The movements of his hands were quick and precise. He was excited, and breathed loudly and quickly through his mouth. He kept on talking to himself with little words of comfort and encouragement, as though he were afraid—afraid that the machine might not work and afraid also of what might happen if it did.

Then he turned to the box on the table and pressed a switch on its front. He put his left hand on the volume control and his right hand on the knob that moved a needle across a large central dial, like the wavelength dial of a radio. The dial was marked with many numbers, in a series of bands, starting at 15,000 and going on up to 1,000,000.

And now he was bending forward over the machine. His head was cocked to one side in a tense, listening attitude. His right hand was beginning to turn the knob. The needle

was travelling slowly across the dial, so slowly he could hardly see it move, and in the earphones he could hear a faint, spasmodic crackling.

Behind this crackling sound he could hear a distant humming tone which was the noise of the machine itself, but that was all. As he listened, he became conscious of a curious sensation, a feeling that his ears were stretching out away from his head, that each ear was connected to his head by a thin stiff wire, like a tentacle, and that the wires were lengthening, that the ears were going up and up towards a secret and forbidden territory, a dangerous ultrasonic region where ears had never been before and had no right to be.

The little needle crept slowly across the dial, and suddenly he heard a shriek, a frightful piercing shriek, and he jumped and dropped his hands, catching hold of the edge of the table. He stared around him as if expecting to see the person who had shrieked. There was no one in sight except the woman in the garden next door, and it was certainly not she. She was bending down, cutting yellow roses and putting them in her basket.

Again it came—a throatless, inhuman shriek, sharp and short, very clear and cold. The note itself possessed a minor, metallic quality that he had never heard before. Klausner looked around him, searching instinctively for the source of the noise. The woman next door was the only living thing in sight. He saw her reach down; take a rose stem in the fingers of one hand and snip the stem with a pair of scissors. Again he heard the scream.

It came at the exact moment when the rose stem was cut.

At this point, the woman straightened up, put the scissors in the basket with the roses and turned to walk away.

"Mrs Saunders!" Klausner shouted, his voice shrill with excitement. "Oh, Mrs Saunders!"

"I'm going to tell you something, Mrs Saunders," he said, "something that you won't believe." He put his hands on top of the fence and peered at her intently through his thick spectacles. "You have, this evening, cut a basketful of roses. You have with a sharp pair of scissors cut through the stems of living things, and each rose that you cut screamed in the most terrible way. Did you know that, Mrs Saunders?"

"No," she said. "I certainly didn't know that."

"It happens to be true," he said. He was breathing rather rapidly, but he was trying to control his excitement. "I heard them shrieking. Each time you cut one, I heard the cry of pain. A very high-pitched sound, approximately one hundred and thirty-two thousand vibrations a second. You couldn't possibly have heard it yourself. But I heard it."

"Did you really, Mr Klausner?" She decided she would make a dash for the house in about five seconds.

"You might say," he went on, "that a rose bush has no nervous system to feel with, no throat to cry with. You'd be right. It hasn't. Not like ours, anyway. But how do you know, Mrs Saunders"—and here he leaned far over the fence and spoke in a fierce whisper "how do you know that a rose bush doesn't feel as much pain when someone cuts its stem in two as you would feelif someone cut your wrist off with a garden shears? How do you know that? It's alive, isn't it?"

He tried to imagine what sort of noise a human would make if he had to stand anchored to the ground while someone deliberately swung a small sharp thing at his leg so that the blade cut in deep and wedged itself in the cut. Same sort of noise perhaps? No. Quite different. The noise of the tree was worse than any known human noise

because of that frightening, toneless, throatless quality. He began to wonder about other living things, and he thought immediately of a field of wheat standing up straight and yellow and alive, with the mower going through it, cutting the stems, five hundred stems a second, every second. Oh, my God, what would that noise be like? Five hundred wheat plants screaming together and every second another five hundred being cut and screaming and no, he thought, I do not want to go to a wheat field with my machine. I would never eat bread after that. But what about potatoes and cabbages and carrots and onions? And what about apples? Ah, no. Apples are all right. They fall off naturally when they are ripe. Apples are all right if you let them fall off instead of tearing them from the tree branch. But not vegetables. Not a potato for example. A potato would surely shriek; so would a carrot and an onion and a cabbage.

[Excerpted from Lendl Barcelos, "Audition Under Sensory Deprivation," presented at the Tuning Speculation II: Auralneirics and imaginary networked futures, Toronto, 9 November 2014.]

Audition Under Sensory Deprivation

Lendl Barcelos

UNSOUND

Beyond the ports of auditory sensibility are regions of what Steve Goodman (hyper)dubs "unsound".[1] These zones form where audition becomes unbound and "sound is inaudible but still produces neuroaffects or physiological resonances."[2] Typically these ællusive locales are described in terms of what lies outside the sensitivities of the average human auditory apparatus: sounds that are too low or too high in pitch to be heard, or are those lying within the 20 Hz – 20 kHz bandwidth but are simply too quiet. To be sure, this does not foreclose the listener's access to this occulted region, for there are diverse strategies to gain access to it.

[1] Steve Goodman, *Sonic Warfare: Sound, Affect, and the Ecology of Fear,* Technologies of Lived Abstraction (Cambridge: MIT Press, 2010), xx.
[2] Ibid., 198.

As audio theorist and artist Yolande Harris makes clear, there are ways to sound the inaudible.[3] Harris outlines three distinct strategies to make the inaudible audible: *audification*, *sonification* and *visualization*. The first, audification, is the process of "scaling existing vibratory signals into human hearing range."[4] In this way, unsound is transposed into the 20 Hz – 20 kHz bandwidth so that it can be explicitly heard. Harris describes the second process, sonification—which is often confused with audification—as the act of "translating and mapping a choice of sounds onto data."[5] What distinguishes this method from the first is that sonification encodes non-vibratory information as sound, thus requiring a choice of specific "compositional strategies" that map variations in data onto sonic parameters. Visualization, the third process, is an inverse of the second in that sound is mapped onto data. Although Harris focuses on the data visualization of sound, the strategy can be generalized if thought of as a transmutative codification that enables a transmodal alchemy of sonic signs. In this way, it becomes possible to conceive of other ways to encode the sonic via other sensory modalities. What is interesting to note is that, for Harris, although this third process functions through non-auditory means, these transmutative codifications modulate audition, enabling the (infra_)perception of sounds that may not have been heard otherwise—sounds the listener is otherwise deprived of.

Even though there are processes of making the inaudible audible, unsound always lurks inside the bounds of auditory (im)perception. *Difference limens* or 'just noticeable differences' occur at thresholds within the continuum of perception below which stimuli cannot be distinguished—like a perceptual aporia. It is easiest to make this clear with an example. If we hear a pitch—such as a sine wave oscillating at 7777 Hz—and then hear another pitch below the difference limen, vibrating slightly slower—at 7776 Hz, for example—no difference will be heard. This will also occur if a pitch vibrating slightly higher is sounded, such as one at 7778 Hz. It is possible to select any frequency as the initial perturbation that, once heard, organizes the distribution of unsonic in(fra_)sensibles. Difference limens not only occur within pitch, but are also present for other audial parameters—or any other variable aspect of sensory perception within any modality. The space within the difference limen of pitch—to remain with the current example—acts as a *mobile unsound within sound*. Thresholds of sonic in(fra_)sensibility are constructed as a lossy compression of a more multifarious vibratory continuum. As such a sounding pitch becomes an anchor from which a blurred identity is constructed: for an average human auditory apparatus 7777 Hz is indistinguishable from 7776 Hz & 7778 Hz. Yet, via technologies that encode the sonic data—as Harris identifies with her notion of visualization—it is possible to conceive of differentiations beyond our capacity to perceive, perhaps seemingly inducing audition within sensory deprived regions. Without this codification, hearing or listening below the thresholds of just noticeable difference becomes deprived of sense. The codification acts as a kind of second observer in order to gain traction on the space between difference limen—whether through sonic technology or even the perception of difference tones when the pitches are played simultaneously. However, it should be stressed that any and every sound technology will

[3] Yolande Harris, "Scorescapes: On Sound, Environment and Sonic Consciousness" (Universiteit Leiden, 2011), *45–56*.
[4] Ibid., *47*.
[5] Ibid., *47*.

have its own difference limens based on the (in)sensitivity of its sensors—its particular breed of lossy compression, or way of *thinking* of the field of sound in general.

Sound technologies gesture towards the sonic outside of the strictures of normative human perception; they *hear* beyond anthropocentric auditory horizons. Taking this seriously demands that one treat particular sound technologies as having unique orientations within the general vibratory continuum; which is to say, re-distributions of the sensible—according to specific auditory apparatus—entail ontological demarcations.