

## PROLOGUE

'Time' has ceased, 'space' has vanished. We now live in a global village . . . a simultaneous happening. We are back in acoustic space. We have begun again to structure the primordial feeling, the tribal emotions from which a few centuries of literacy divorced us. Electric circuitry profoundly involves men with one another. Information pours upon us, instantaneously and continuously. As soon as information is acquired, it is very rapidly replaced by still newer information. Our electricity configured world has forced us to move from the bait of data classification to the mode of pattern recognition. We can no longer build serially, block by block, step by step, because instant communication ensures that all factors of the environment and of experience coexist in a state of active interplay. We have now become aware of the possibility of arranging the entire human environment as a work of art.<sup>2</sup>

I was struck by the 'primordial feeling' that the Velvet Underground awoke in McLuhan as he wrote his book. It spoke of what I'd been connecting with and what, I think, all of us who 'get it' seek in the drone.

That primordial feeling . . .

### **The Universal Drone**

What do we mean by drone? The word is myriad. It can carry connotations both sinister and banal. A drone can drop a cluster bomb or deliver a pizza.

In music, drone is an audio space where age-old markers, such as verse, chorus, verse or complex progressions are rendered redundant. Sounds don't (or, crucially, *appear* not to) change at all.

Static, hiss, white noise, feedback — these are all drones. In essence, drone equals sustain — sustained sustain, if you will. Environmental and mechanical drones form the auditory backbone of urban and wild spaces alike. The acoustic by-products of the natural and man-made world are inescapable. Traffic; background conversation; wind; turbines — to be alive is to live with multiple background drones, whether we're conscious of them or not.

Think of a power cut and how it brings into focus the eerie quiet that befalls a house when the various mechanical drones that our brains are so adept at tuning out — the low hum of central heating, the buzz of the refrigerator, the churn of the dryer — actually stop. The removal without

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forewarning of the small domestic symphony we seldom otherwise notice has a disquieting effect.

But enough of the dishwasher.

What of the cosmic infinity? What of the godhead?

I'm sitting in my kitchen with a cup of tea, listening to the sound the universe made as it expanded 600,000 years after the Big Bang. It sounds like Hawkwind. More specifically, it sounds like the band's electronics division circa 1973, Del Dettmar and Dik Mik — bearded purveyors of rare cosmic misanthropy — setting up their rickety table of rudimentary ring modulators and letting rip in some musty Ladbroke Grove squat.

I imagine the scent of Peshawar hash and patchouli oil heavy in the air, boxes of the *International Times* dotted around, Moroccan rugs lining sparse wooden floors, chipped mugs of brick-coloured tea offering some respite to the rising damp that surely permeated my imagined dilapidated seventies west London terrace.

I listen again, lost in the magic of the cosmic infinitude. It sounds viscous, alive, intelligent. I hear transmuting sub-bass, phasing, a creepy Doppler effect that builds with ominous portent.

That I'm sitting here — now — at my kitchen table listening through time to this universal sound feels miraculous.

In the early universe there were no atoms, only charged particles. Charged particles don't allow light to travel. The early universe was therefore black. Any light was absorbed, immediately. Eventually protons and electrons began to form hydrogen atoms — the building blocks of what we think of as life. The universe was no longer black.

At this point — as Professor John Cramer explains to me over a crackly phone line from Washington DC — 'a burst of radiation — what we call the cosmic background radiation (CBR) — was released. It has been travelling through time ever since. This is what satellites are picking up: radiation that was produced around 600,000 years after the Big Bang. As the universe expanded, it essentially became a bass instrument. The sound waves shot downwards at the same rate of expansion, which creates a Doppler effect.'

You might be wondering by this point how we can hear such an event, billions of years after the fact. Cramer took the data from a satellite system called Planck sent to measure fluctuations in temperature in the CBR. He converted it to pressure variations (all sound is created by vibration — fluctuations in pressure) and entered the data into a computer program called Mathematica which, in turn, translated it to the sound file I'm now listening to at my kitchen table.

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When Cramer played it through a powerful subwoofer his dogs sat up, entranced.

‘I’d never seen them behave that way,’ he laughs. ‘People ask, “How could there be sound waves in the early universe when space is a vacuum?” But the early universe was hardly a vacuum. It was filled with matter and had a higher density than the Earth’s atmosphere. There was no problem with sound waves travelling through it. Think of it like a drum head,’ he continues, ‘a vibrating sphere. By analysing the frequency, you get information about what was happening. The frequencies are too low to hear — these were very large wavelengths, very low frequencies.’

Make no mistake: we’re talking *very* low-frequency sound — a tumbling leviathan of universal sub-pressure, getting ever lower the further the wavelengths are stretched. Cramer had to boost the resulting frequency 100 *septillion* times (100 followed by 24 more zeroes) just to get the recordings into an audible range. Could we, I tentatively ask, say that the sound of the universe expanding was really more drone than bang?

‘It wasn’t really a bang at all,’ he agrees. ‘It sounded more like an aeroplane flying low over your house. In that respect, yes — it was more of a drone than a bang.’

Cramer’s sound file feels like cosmic magic, a beautiful synergy of scientific endeavour, sonic mystery and the humbling vastness of the expanding universe. It isn’t the only link between the cosmos and the drone, however. Researchers at the University of Cambridge’s Institute of Astronomy recently discovered what they describe as a ‘singing’ black hole among a distant galaxy cluster that emits the lowest sound waves ever detected.

Situated amid a group of thousands of galaxies known as the Perseus Cluster — around 250 million light years from Earth — Dr Andrew Fabian and team found the sound it makes is a ‘single note . . . really a drone’.<sup>3</sup> Using a middle C as reference point, Fabian determined that note was a B flat. However, this B flat is 57 octaves below middle C — approximately one million, billion times lower than the lowest sound audible to the human ear.

While Cramer measured the temperature fluctuations, Fabian and team measured the distance between enormous pressure ripples on the outside of the black hole. These ripples — caused by the rhythmic squeezing, heating and movement of cosmic gas amid the intense gravitational pressure of clustered galaxies — equate to sound waves. By measuring the location of the ripples and the speed at which sound may travel between them, the team determined the musical note of the drone.

Ambient producer William Basinski’s recent album *On Time Out of*

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*Time* works with a similar sound, sourced from MIT's Gravitational Wave Observatory in California — a piece of equipment tasked with observing cosmic gravitational waves. His album takes the sound created by these waves — what he describes as 'ripples in space-time' — and transposes them to the ambient sphere. The Berlin debut of the record reportedly opened with Basinski stating: 'This is about what happens when two black holes fuck.'<sup>4</sup>

It's humbling to be listening to audio fundamentals of such immense celestial force. But there is also a strange comfort in the idea of the cosmic drone. Rumbling outside the scope of human perception, a bass weight of godlike depth, out in the planetary ether.

A *living* sound that cleaves to the ultimate universal mystery.

Indeed, the idea of the drone as a singular force — *the* singular force — runs through philosophy, mathematics and theology like a gilded sonic thread. Take string theory. The theory of (almost) everything. In short: all universal matter is made up of infinitesimally minuscule vibrating strings. The Large Hadron Collider, Paul McCartney, a wooden chair — drill down far enough . . . it's all vibration.

Vibration produces sound. All matter exerts force on the airwaves surrounding it. Every object has a natural frequency at which it vibrates when struck. Can 'natural frequency' therefore be applied to the universe itself? From a spiritual perspective, this idea takes on interesting significance.

In Buddhism and Hinduism alike, the drone manifests as the sacred Om (which we'll explore more in later chapters) — the vibration of universal matter. In Hindu philosophy, sound carries uniquely sacred significance. The concept of Nadha Brahma translates as 'Sound is God' — a fundamental tenet of Vedic scripture. The divine is codified not as matter, but as *sound* vibration that runs through everything — coexisting in everything and everyone simultaneously. The unified nature of reality itself is — in theological terms — intimately tied to the drone.

The idea of celestial sound vibration was also considered by Pythagoras in the concept of *musica universalis*, the music of the spheres — the idea that celestial objects, stars and planets in orbit, emit sound. Legend has the Ionian Greek philosopher and mathematician walking past a blacksmith and noticing that the pitch of each hammer changed, depending on its size. 'Harmony' could, he deduced, be mapped: distance in sound charted in much the same way as the *physical* distance between, say, the village blacksmith and the village baker. He transposed his harmonic hypothesis to a cosmic scale — *musica universalis* — which theorised that the separation between planets should harmonically 'map' to their respective distances: 'There is geometry in the

humming of the strings, there is music in the spacing of the spheres.’

Many artists have taken inspiration from the music of the spheres and the infinitude of the cosmic drone. We’ll delve deep into Hawkwind’s space-conquering acid maelstrom, the mystic thrum of Ash Ra Tempel and others later.

For now, though, let’s take it back to our own beginnings. Humanity’s relationship to the drone begins in inner, rather than outer, space.

## The Sonic Womb

The womb is a dynamic audio environment. The maternal drone is our first auditory experience. Of the five senses, hearing is the first to develop. Bodily sounds — the rushing of the blood, the beating of the heart, the gurgles of the digestive tract — are not merely perceptible to a fetus *in utero* but heard, loud and clear. A 1990 study recorded levels of womb sound at around 88 decibels at full term, much higher than previously anticipated and equivalent to a food processor or a car wash at twenty feet.

Drone sounds evoke the womb. They remain demonstrably soothing for the early years of a child’s life. At time of writing my infant son won’t go to sleep without a drone generator. The ubiquity of these sleep aids — whereby static, wave sounds, rain or gentle traffic noise are played in a continuous loop — is testament to their effectiveness. A Pavlovian audio marker that says ‘sleep time’, such devices frame the drone as aural security blanket: a comforting sonic shield that leads back to the interior.

Sleep is a precious commodity for us all now. The endless drone of content and commerce has driven us to seek refuge in other, more benign, drones. Recent years have seen specific Spotify ‘sleep playlists’ gain popularity while drone generators and meditation apps have moved into the mainstream.

Ambient music is functional. Like an ambient temperature, it is by definition *ignorable*. This is why it facilitates creativity or relaxation. Inevitably, ambient producers have riffed on sleep, hypnosis, waking-dream states. Producer Max Richter’s 2015 *Sleep* is an eight-hour piece mirroring a typical sleep cycle. Using electronic drones, field recordings, piano and strings, Richter attempts, in his words, ‘an eight-hour personal lullaby for a frenetic world and a manifesto for a slower pace of existence.’

Richard D. James aka Aphex Twin sought to harness the peculiarly fertile psychic ground between wakefulness and sleep on his record *Selected Ambient Works Two*. He composed much of the album immediately on waking. Fitful sleep in the studio, then straight on the buttons in an attempt to capture the

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fleeting hypnagogic state that fades like mist.

At the all-night late-sixties San Francisco concerts of minimalist pioneer Terry Riley, the audience were encouraged to bring hammocks and sleeping bags and be lulled to sleep by cyclical tape loops and, no doubt, pungent herbaceous smoke. Riley's somnambulant sounds were a letting go of the pinpoint focus of the avant-garde, anticipating ambient with its use of the drone as sleep aid.

For some the idea of 'sleep as muse' — not to mention the ambient predilection for surrender, passivity and beatific calm — is anathema, an insult to artistic motion, a mollifying tonic that disavows the very pulse of life and creativity. When confronted with the twee commodification of YouTube's audio 'wellness' division it's hard to disagree. Here, the drone is deployed in gratefully winsome terms. A cursory search for 'meditation music' or similar will bring up thousands of hours of polished pre-set mulch accompanied by questionable descriptive claims: 'remove *all* negative thoughts'; 'find *instant* bliss' et cetera. However, this does the real thing a disservice — and we'll investigate the fundamental difference between ambient as quick-fix wellness product and considered artistry later.

It makes sense that in times of stress we seek solace in sounds that evoke a return to the cocoon — to stasis and the fugue state of womb-like immersion; indeed that descriptor comes up time and again. Some composers have gone direct to the source, with viscerally arresting results. *Biostasis* (1974) — by minimalist composer Éliane Radigue — combines slowly unfurling synthesiser tones with the heartbeats of her son and unborn grandchild. In her words, a 'hymn to the perpetuation of life', it's simultaneously comforting and mysterious. The merest hint of a synth drone is offset against a gentle pulse, evoking an amorphous, aquatic state.

Radigue is a master of using the drone to traverse both the beauty and sadness of life. *Trilogie de la Mort* (1988) was inspired by the death of her son and follows the journey stages of the *Tibetan Book of the Dead*: *Kyene* (birth), *Milam* (dream), *Samtem* (meditation), *Chikai* (death), *Chonye* (clear light) and *Sippai* (crossing and return), playing like an attempt to articulate what she described as the 'mysterious power of the infinitesimal',<sup>5</sup> forging a sonic path through to the beyond.

Is the drone fundamentally transformative? Is it mentally cleansing, having a similarly positive effect on the mind as exercise does to the body? If so, then what of catharsis? Are the harsher metallic landscapes of Sunn O))), Neurosis, Sleep and the like — where expurgation, as well as transcendent meditation, is a primary goal — so far removed from the works of Radigue, Eno and others?