



NOISE

A Human History of Sound and Listening

COMPANION TO THE BBC RADIO SERIES



DAVID HENDY

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An Imprint of HarperCollinsPublishers

Dedication

For Henrietta, Eloise and Morgan

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Dedication

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Introduction

We're supposed to hate cacophony, but a few years ago on a cold Sunday in Berlin I was struck by the horror that sometimes lurks in silence and by the warm humanity that often emanates from noise. My teenage daughter and I had taken a suburban train north from the city centre to visit the Sachsenhausen concentration camp in Oranienburg, where more than 200,000 people had been imprisoned under the Nazis. It was still early when we arrived, and only a few other people were around; a chilling mist, which clung to the place all morning, only added to the bleak atmosphere. The utter noiselessness seemed oppressive yet entirely appropriate: whatever life the camp had once contained had been expunged cruelly many years ago. As the two of us walked around, looking at the evidence of one atrocity after another, it was difficult to know what to say to each other. So, like everyone else, we stayed silent.

After a few hours of this, and knowing we had to catch a flight home later the same day, we decided that we needed to cheer ourselves up pretty quickly. We caught the next S1 train back to the city centre and made our way to Café Einstein for cakes and coffee. The moment we stepped inside the venerable wood-panelled Weimar institution, crammed to bursting point with Berliners having the Sunday afternoon treat, we were hit by an extraordinary wall of sound. The idea of finding somewhere quieter never occurred to us, however. The clatter and clinking of cutlery and crockery as waiters hurried from table to table, the ringing of tills, the shouting of orders from the kitchen and, rising above everything else, the constant loud buzz of conversation and laughter coming from everyone. After a long morning's silence this din was a blissful affirmation of life, a sonic two-fingers to the Nazis and the deathly silence they had created at Sachsenhausen.

Noise, it has been said, is sound that is 'out of place'.¹ It is usually something unwanted, inappropriate, interfering, distracting, irritating. Many of us would no doubt concur with the nineteenth-century German scientist Hermann von Helmholtz, who distinguished clearly between 'musical tones' and mere 'noise', the latter being sounds that are all 'mixed up and as it were tumbled about in confusion'.² But on that day in Berlin I saw, as I hope to argue in this book, noise is more important than this. When the bell rings, a factory siren sounds, or the skies fall silent after a terrorist attack, noise – or its absence – is charged with meaning. Noise has been a capacious category throughout human history – one full of surprises and drama.

I am with John Cage. 'Wherever we are what we hear is mostly noise,' he wrote in 1937. 'When we ignore it, it disturbs us. When we listen to it, we find it fascinating.'³ If we open our ears to sounds that are usually dismissed as unmusical or unpleasant, or simply ignored as merely everyday and banal, Cage implies, we start reconnecting with a whole range of human experience that previously passed us by. Instead of worrying about the usual boundaries between noise and music, or cacophony and silence, or speech and song, we need to discover the virtues of breaking them down.⁴

So although this book has the word 'noise' prominently in its title, it is trying to stretch the definition as far as it will go – and in lots of directions, too. It encompasses not just music and speech but also echoes, chanting, drumbeats, bells, thunder, gunfire, the noise of crowds, the rumbles of the

human body, laughter, silence, eavesdropping, mechanical sounds, noisy neighbours, music recordings, radio, in fact pretty well anything that makes up the broader world of sound and listening. When I turn to oratory in ancient Rome and in modern political campaigning, for example, I am interested in the words spoken but I am even *more* interested in the sounds made: the tone, the cadences, the pitch of the voice; how that voice might have been transformed by the environment in which it was heard, and how the audience responded. When I discuss the jazz scene in Harlem during the 1920s, it is less the musical quality of Mamie Smith or Ma Rainey that concerns me and more the impact recording had in allowing 'new' sounds to circulate well beyond a small group of people gathered at a concert or dance-hall and in allowing the 'voice' of a marginalised culture to be 'heard' as never before by an international listenership.

Having said all this, I still want to hold on just a little bit to that original idea of noise as a nasty, troubling thing. For although I think noise is not always a sound 'out of place', nor always strictly speaking unwanted, it can perhaps be thought of as a sound that someone somewhere doesn't want to be heard. By that, I mean that who gets to make a noise and who doesn't, who gets their voice heard and who doesn't, who gets to listen and who doesn't, is of crucial importance. Silence can be golden or it can be oppressive. And as the history of slavery, or the history of the relationship between factory-owners and their workers shows us, whether it is enforced or voluntary makes a world of difference. So this book is really about how sound might help us understand some of the drama and struggle of human history in a new and, I hope, enlightening way.

To trace the story of sound is to tell the story of how we learned to overcome our fears about the natural world, perhaps even to control it; how we learned to communicate with, understand and live alongside our fellow beings; how we have fought with each other for dominance; how we have sought to find privacy in an increasingly busy world; how we have struggled with our emotions and our sanity. It encompasses the roar of the baying crowd in ancient Rome, medieval power struggles between rich and poor, the stresses of industrialisation, the shock of war, the rise of cities, the unceasing chatter of twenty-four-hour media. Throughout all this, we have to keep our ears attuned to the intimate aspects of human life as much as the epic. For, as the historian Elizabeth Foyster reminds us, senses such as listening have always been a part of our private domestic life, our thoughts, our feelings, our memories; in other words, 'a crucial part of the everyday'.⁵

I keep using the word 'human' for a reason. It is to mark out a subtle but important difference between this book and most other work written on sound. Hillel Schwarz's *Making Noise: From Babble to the Big Bang and Beyond*, Veit Erlmann's *Reason and Resonance: A History of Modern Auralities* and Mike Goldsmith's *Discord: The Story of Noise* are just three among several recent contributions to the new frontier of 'sensory history', all of them deeply fascinating.⁶ But they are written from the perspectives of, respectively, a poet, a music anthropologist and a physicist. Though they discuss people – how could they not when dealing with sound? – their main focus, it seems to me, has been with sound as an idea or a metaphysical phenomenon; they offer what is essentially an intellectual history of the subject. Valuable though that is, my own interest lies less with the abstract or physical qualities of sound than with how it gets used in the world by you and me and everyone else. In other words, I am interested in its *social history*, and, equally important, in the history of how and why we have listened to it and reacted to it.

This means a special fascination in what follows with the subjective aspects of sound: what it actually *felt* like to experience certain sounds in certain places at certain times in history. The pioneers in this respect have been historians such as Alain Corbin in France, and Mark M. Smith, Richard R. Ruppel and Emily Thompson in America. Their approach, as Thompson puts it, has been to proceed on the

basis that, like a landscape, 'a soundscape is simultaneously a physical environment and a way perceiving that environment'. 'It is,' she suggests, 'both a world and a culture constructed to make sense of that world.'⁷ These historians take the pioneering idea of the Canadian musician R. Murray Schafer, who first popularised the term 'soundscape' in the 1970s, and test what exactly that meant for ordinary people in very particular times and places: Corbin explored the role of church bells in nineteenth-century rural France; for Smith it was the sounds of the slave plantations and battlefields in nineteenth-century America; for Rath, the drums and guns of colonial-era America; and for Thompson, the cityscapes of the early twentieth century. This work, and other work like it, provides some of the essential building blocks of the story presented here.

But I want to offer, if I can, a wider story, both chronologically and geographically, for, as Richard Rath suggests, a simple noise such as thunder will have been interpreted very differently by, say, Native Americans and New England colonists. I would add that, most likely, it would have been heard very differently by the early humans of the Palaeolithic, by ancient Greeks, by medieval monks or by soldiers in the First World War trenches of Flanders too, though I should hasten to add that it would sometimes have been heard in very *similar* ways, since we find, for example, that medieval monks and nineteenth-century French farmers – both equally irrationally – viewed thunder as having supernatural force behind it. Which is to say that one of the benefits of pursuing a history that stretches all the way from prehistory to the present, and encompasses several different parts of the world, is that, whatever is lost in terms of detail, we can at least start to tease out a few continuities, as well as identify a few dramatic breaches, in the long story of our relationship with sound.

This is important because the history of the relationship between sound and human history has tended to be told almost entirely in terms of a quiet 'then' and a noisy 'now'. When exactly 'then' is of course debatable – as is the perceived cause of any rupture. The most common account puts the Industrial Revolution centre stage. This was the position of the Glaswegian doctor Dan MacKenzie, the writer in 1916 of the allegorical *City of Din*. 'Nature,' the doctor argued, was 'quiet' and 'pleasant'; modern civilisation, on the other hand, 'is noise. And the more it progresses the noisier it becomes.'⁸ This, broadly, was also the line taken by R. Murray Schafer in the 1970s, when he declared that the sounds of nature had been 'lost under the combined jamming of industrial and domestic machinery'.⁹ It's a line that pits the natural world and humanity against each other, and it retains a strong appeal to environmentalists. Yet I worry about it edging into slightly misanthropic territory, as if the world would be better if only the people in it disappeared. And, as Emily Thompson has suggested, there is an equally strong case to be made that soundscapes have 'more to do with civilization than with nature'; indeed, that our soundscapes are constantly changing in subtle ways and not always for the worst.¹⁰ This, I hope to argue, is emphatically not a simple story of irreversible decline into ever greater cacophony.

A rather different way of dividing the human timeline has been to distinguish between an 'oral' then, which was somehow more magical than the present, and a 'literate' now, which is somehow more rational than the past. In effect, this divides 'ear' culture' (listening) from 'eye' culture' (watching and reading) and then proceeds to show that once reading had taken over, 'the visual' came to be regarded as the more comprehensive and trustworthy sense, while 'the aural' was left behind with associations of passivity, superstition and hearsay. According to taste, this fundamental shift happened either in ancient Greece, when writing was systematically adopted, or during the Enlightenment, when the habit of reading spread rapidly. Even if we take this theory at face value, it is worth pointing out that a truly global, multicultural perspective, which anthropologists are good at providing for us, shows that a 'pre-literate' society is something that continues to exist long into the

‘modern’ era. But why take it at face value? We surely need to question almost every assumption that has been made here about the supposed triumph of a visual sensibility as time passes, and about the consequent relegation of aural culture: that hearing is less important now than it has been in the past, that listening is a passive activity, that seeing something provides better proof than hearing something, that what happened in the West also happened in the East. A social history of sound and listening suggests otherwise.

But suggests what, exactly? I hope that the following chapters can, to some extent, simply be allowed to tell a series of separate stories. Even with thirty chapters, the span of humanity covered is too great to offer more than a few snapshots, and sound, especially, is too profuse a subject to pin down into a single, coherent narrative. Yet I suppose there is a running thread of sorts: it is about power. I mean this in two senses. First, it’s about the power of certain sounds to influence us in profound ways. And secondly, it’s about the ability of powerful people – or powerful groups of people like nation states, organised religions or commercial companies – to shape the soundscapes and listening habits of others less powerful. One of R. Murray Schafer’s great contributions to our understanding of the subject was to think of sound as a way of *touching at a distance*. His notion captures perfectly the way that sound travels further than the length of an arm but arrives at someone’s ear as a tangible thing, triggering a real emotional response. It is therefore a force acting upon people, for good or ill. At the same time, sound never bestows absolute power on anyone, since by its very nature it is hard for sound to be entirely owned or controlled. Its natural tendency is to move freely through the air. And although human ingenuity is such that sound can always be manipulated, sound is also too intangible and slippery a thing to remain in the service of elites without also being available for use in inventive and subversive ways by the dispossessed – as a brief history of medieval carnivals, eighteenth-century rebellions and twentieth-century protest marches will show.

Being intangible and slippery, one might easily imagine that sound is almost impossible to write about in the purely historical sense. As Douglas Kahn points out, ‘Sound inhabits its own time and dissipates quickly.’¹¹ It leaves no traces, and the discipline of history needs traces. That is why historians spend their time among written archives: they provide a satisfyingly stable record of what happened in the past. Yet it turns out that many sounds, even of the distant past, are not entirely lost to us. We can make some sensible guesses about them if we deploy a bit of sideways thinking. Archaeologists, for instance, have begun using experimental techniques to explore the acoustic properties of ancient sites. They also now draw on ethnographic studies of present-day hunter-gatherer societies in order to speculate on the possible human uses of sound in prehistory. In doing so, they have invented a whole new discipline, ‘archaeoacoustics’. Historians of later periods have also turned to anthropology and ethnography to help them understand past behaviours, such as the role of eavesdropping in different cultures or the effects of overcrowding. Indeed, it is the fieldwork of ethnographers that has helped, more than anything, to build up today’s voluminous archives of sound recordings, such as the British Library’s collection of several million wax cylinders, discs, tapes and CDs, which now allow us to bring back to life an array of voices and music and soundscapes from over a hundred years ago.

Finally, though, we should not forget that even our most traditional source for history, the written record, sometimes tells us a great deal about the sounds of the past. In countless letters, journals, diaries, speeches and books, people from every period of history and every part of the world have recorded their personal impressions of places and events. In doing so, they frequently wrote not just what they saw but also of what they heard. Sometimes this was because what they heard struck them as extraordinary and so deserved to be recorded in detail; at other times, the references are incidental

and fleeting – but, for us, no less informative. That so many people chose to write about sound is a clear measure of how important it was in their lives. And what these people tell us, in the pages that follow, is this: that the desire to understand and control sound – to enforce silence, to encourage listening, to sing, to shout – is not just hundreds but tens of thousands of years old.

I

Prehistoric Voiceprints

1

Echoes in the Dark

If you have ever been into one of those preserved caves that our prehistoric ancestors visited, you will know that two things usually happen at once. You are pretty quickly smothered in complete darkness and you suddenly leave behind the sound of the outside world. A blissful respite from the noise and bustle of modern life, you might think. In fact, it's far from silent and peaceful. As a listening experience, it can even be quite unnerving.

During the Middle and Upper Palaeolithic, some 40,000 to 20,000 years ago, small groups of men, women and children – Neanderthals at first, then our most direct ancestors – would have gathered near the entrances of caves across Western and central Europe for shelter, and perhaps gone deep inside for rituals. These enclosed spaces have their own acoustic character: echoing voices, of course, but also intensifying them. If you visit them today, you will notice that every sound you make as you walk through them lingers longer, reverberating, and coming back to you from unpredictable directions thanks to the irregular shape of the walls.¹ In certain places there is a cacophony of echoes – each one lasting long enough to merge with the next to create an almost continuous wall of sound, rich and complex and, to the untrained ear, pretty disorientating. When we whisper, hum, speak or sing, they shout and sing back to us. These caves are alive.

Perhaps it's not all that surprising that caves resonate. But several archaeologists have tried an experiment that reveals something rather more remarkable. Moving slowly, and in total darkness along the narrower passages of caves such as Arcy-sur-Cure in Burgundy, and Le Portel near the Pyrenees, they have used their voices as a kind of sonar, sending out a pulse of sound then listening out for any unusually resonant response. Most of us can do this, by the way: almost without noticing it, we tend to use subtle cues such as variations in loudness and variations in the time of arrival at our ears of different echoes to very swiftly 'localise' sound – to navigate, in fact, a bit like bats in the night sky.² The point, in any case, is that when these archaeologists felt the sound around them suddenly changing, they would turn on their torches. And at that precise point they would often see on the wall or ceiling a painting. This might be something as simple as a small dot of red ochre. Or it could be more complex – a pattern of lines, a negative handprint, an animal.³ What is significant is that wherever a cave *sounds* most interesting, you are also likely to find the greatest concentration of prehistoric art.

The first person to map in detail this stunning coincidence of resonance and art was the musicologist Iégor Reznikoff. After walking carefully through the caverns and tunnels of Arcy-sur-Cure for himself in the mid-1980s, and making a detailed map of what he heard and saw, he reckoned that about 80 per cent of the images are in spots where the acoustics are particularly unusual.⁴ For example, near the bottom of a cave called the Grand Grotte, where each sound might provoke up to seven echoes, there are paintings of several mammoths, some bears, a rhinoceros or two, a salmon and some sort of cat and an ibex. And in a mezzanine area near the so-called Salle des Vagues (the 'Hall

Waves’), just where the resonance is really striking, there’s a ceiling densely packed with animals of all kinds, and, on the floor, the delicate outline of a bird. At other caves there’s the same pattern: in the cave of Niaux in the Pyrenees, for instance, almost all the animal paintings are in the Salon Noir, which Reznikoff describes as sounding like a richly resonant Romanesque chapel;⁵ and at Le Portel, a whole series of red dots runs along a ten-metre tunnel, each one, again, precisely where, as Reznikoff puts it, a ‘living sound point lies’.⁶

Why didn’t the artists who made these prehistoric paintings work nearer the cave entrance, where there’s much more space and light? We don’t know for sure: it’s impossible to guess their thoughts. But clearly *something* drew them to the darkest, deepest and most inaccessible parts of each underground complex. Even prehistoric art that has been found outside caves is sometimes located in inconvenient places: high on canyon walls and cliff faces. Again, it’s crowded on to some surfaces while other rocks nearby are left strangely blank. And again, it’s sound that seems to provide the link.

Go rock-art hunting in Horseshoe Canyon, Utah, or in Hieroglyph Canyon, Arizona, for instance, and you’ll find that those places with the greatest concentration of pictures – human figures, mountain sheep or deer – are exactly the same places where echoes are strongest or where sounds carry furthest.⁷ The connection between the sound quality of a particular spot and the art that is nearby just keeps cropping up. So much so that it’s a good guess that our prehistoric artists didn’t select by accident those surfaces – whether deep inside a cave or high up on a cliff – that created the most interesting acoustics. They seem to have chosen them deliberately – as if they couldn’t shake the echoes out of their minds.

What, then, was going on? Why did the sound of an amplified echo apparently fascinate prehistoric peoples so much? One clue has emerged at the Music School in Cambridge, where an intriguing experiment was conducted in 2000. The musicologist Ian Cross, the anthropologist Ezra Zubrow and the archaeologist Frank Cowan came together in an open-air courtyard to practise the prehistoric craft of flint-knapping. Bone pipes or flutes excavated from various sites in Europe had already shown that humans were making music from about 36,000 years ago. But what about before then? The three investigators wondered if even older, stone objects might also have been used to make music.⁸ They tried holding the flints and striking them in different ways, and they soon discovered an array of sounds could indeed be made.

It was impossible to prove that these sounds were actually exploited by prehistoric peoples for anything we might recognise as ‘music’. But in the middle of all the testing something unexpected happened. A stone blade being held between two fingers was tapped, and the three men in the courtyard suddenly heard a high-pitched flutter – what sounded very like a bird nearby flying away from them. Though they were out of doors and in the full afternoon sun, Ian Cross recalled the effect as being ‘quite unearthly ... it seemed that the tapping had suddenly awoken some real yet invisible entity’ – like an avian spirit.⁹ He knew there was a perfectly good scientific explanation to hand: the shape of the courtyard, the mix of building materials, the sound produced, the men’s position – all that had set up a pattern of sound waves, which created a moving, fluttering echo with a life of its own. For the rest of the afternoon they tapped the stone blade again and again, and discovered that, given the right mix of circumstances, they could keep evoking the sound of a bird flying across the courtyard. They knew there was hard science behind the phenomenon. But they claimed this ‘did nothing to dispel the “magical” qualities’ of the fluttering sound they’d created.¹⁰

What is most interesting about the Cambridge experiment isn’t just the creation of a special effect. It’s the idea of an invisible animal spirit having been unleashed through sound. In fact, at many prehistoric sites, echoes conjure up something similar: when a clap in a cave bounces back in a series

of overlapping echoes, it's not so much the cave that comes alive, but the animals painted or engraved on the walls nearby. They gallop and stampede about, as if the sound of hooves really were coming from within the walls themselves. The sound isn't just sharing its space with the image; it's *mimicking* it. Or perhaps the image is mimicking the sound. At other times, a noise made in one place appears to be answered from somewhere else entirely. Occasionally, a sound might seem to come from behind a rock rather than from its surface, as if its point of origin were deep within or the surface itself were a chimera. All these effects are uncanny. Prehistoric people would have had no understanding of the science of sound waves and reverberation. For them any echo would surely have seemed like a new sound, coming from some invisible being or spirit – something, perhaps, from within the rock speaking back, making its own presence felt.¹¹ In other words, it would have seemed supernatural.

And sure enough, if we look at different cultures around the world, time and time again we find myths involving supernatural echoes – myths with their roots almost certainly deep in prehistory. Among the Native American Paiute people, for example, there are stories of witches living among the rocks, taking great delight in repeating the words of passers-by. Among the Cherokee, there are countless names for rocks that 'talk'. In southern Africa, the San Bush people, who have been producing some of the world's greatest rock art for thousands of years, often use images showing figures and patterns crawling out of the cracks or holes of the stone, as if emerging from a teeming spirit world just 'behind' the surface.¹² It's hard to resist this thought: that places which echoed were special – 'labelled' by these painted images as being full of spirits, as sacred places.

There's also an intriguing connection with music, and, through music, to trance. In San rock art, one recurring image is of human figures dancing in a kind of trance state; others include monsters, fish, eels, turtles and the eland. The archaeologist David Lewis-Williams believes these paintings might represent the visions of those in a trance – what they witnessed when they lifted the "veil" suspended between this world and the next'. The images also make sense *because* they're so often found on the walls of rock shelters: these resonant surfaces – walls that seem, from the sound they make, to be inhabited – are, in effect, the very gateways to this spiritual realm.¹³

So perhaps prehistoric people, when they went into caves like the ones at Arcy-sur-Cure, Le Portel and Niaux, weren't just there to stand passively, transfixed in wonder at the strange sounds stirred up by their presence. They might have been going in to actively *invoke* a spirit world, to be in dialogue with it through creating their own noise and listening to the results: tapping flints, perhaps, to set off fluttering echoes, or even hitting a pillar of rock.

We can hear musical stones being played across the world: the 'pichanchalassi' lithophone (or musical stone) in Togo, 'gong rocks' in Namibia, and 'ringing rocks' in southern India, Scandinavia and North America.¹⁴ In one way or another, the sound of the lithophone is ubiquitous – and probably has been for most of human history. So it's perfectly possible that these ringing sounds could also have been drifting through European caves tens of thousands of years ago.

Certainly, in caves at Roucadour, Cougnac and Pech-Merle in France, at Nerja in Spain and Escoural in Portugal, there are rock pillars decorated with red dots and bearing all the marks of being repeatedly hit. Some of them even give off differently pitched sounds when struck.¹⁵ These are also the caves that have left behind some of the world's oldest surviving musical instruments, the bone pipes or flutes mentioned earlier.¹⁶ If found in caves, they were probably played in caves. Indeed, some of the very oldest bone flutes, discovered at Isturitz in the Pyrenees, were found next to a decorated pillar, in the one chamber that amplified sound more than any other part of the cave. There are yet more evidence that some kind of music was an important element in what humans did in such places roughly 20,000 years ago during the Upper Palaeolithic. But prehistoric people didn't real

need to ‘invent’ bone pipes in order to make music in here. They already had stone pillars to hit, their own voices and, of course, the wonderful resonance of the caves or rock shelters themselves. Here, in the dark, with only the flickering half-light of their lamps or tapers, the atmosphere would surely have been perfect for rituals or celebrations, for music and singing, for summoning the supernatural.

In the midst of such apparent magic, our ancestors must have wanted to keep making sound, if only to keep the conversation with the spirit world going too. So we can begin to see that through noise we evolved. In a continuous feed-forward loop, new sounds, tonal effects, notes and rhythms were discovered. They were tried out, they echoed back, they were copied, altered, replayed, thousands of times, over and over again. And, eventually, from chaos emerged order.¹⁷

Of course, all this chanting and playing wasn’t just about communicating with a spirit world. Often it was about communication between living people in *this* world – about men and women and children doing something together in time, about bonding, sharing. Which is why, to help us understand the distant origins of both language and family life, we have to turn to the beat of African drums.

2

The Beat of Drums

One of the great treasures of the British Library's sound archive is a scratchy wax-cylinder recording, made in 1921 by Captain Robert Sutherland Rattray, a British colonial administrator. He lived among the Ashanti people of Ghana, and wanted to capture a particularly remarkable aspect of their lifestyle. His recording is one of the very earliest made of the 'talking drums' of Africa – drums made out of tree trunks and struck with two wooden sticks, one in each hand. The drum itself is hollowed out, so that its shell is left thicker on one side than the other. Just as Morse code is made up of dots and dashes, the talking drum gives out a high tone or a low tone, depending on where exactly it's being hit. A precise combination of these different tones makes up the message, which then travels like a Morse-code signal pulsing along an invisible telegraph wire through the dank, dark equatorial rainforest.

This is a place where it's impossible to see very far: the only way to communicate is by sound. As the talking drum hurls its powerful and complex rhythms into the air along a radius of perhaps six or seven miles – much further, of course, if each message is relayed not just once but is repeated, from village to village, rumbling through the trees, over hills and along rivers, all the time faster than anyone could run. As James Gleick points out, for hundreds if not thousands of years, 'no one in the world could communicate as much, as fast, as far as unlettered Africans with their drums'.¹ But this isn't just a striking example of clever communication by sound, a form of wireless telegraphy before the invention of wireless telegraphy. When asked how long they have been using the talking drum, the people of West Africa say, 'We have always had the drum.' It's a tradition that not only tells us about communication, but also helps us travel back in time to reveal the vital role of sound – and, in particular, of rhythm – in human evolution.

Captain Rattray, who made that recording in wax, wasn't the first westerner to notice the talking drums. In the seventeenth and eighteenth century, slave traders and Christian missionaries had heard their insistent rhythms, too. They interpreted them, rather nervously, as a call to fight, or maybe as some 'Hellish' pagan custom or immoral merrymaking. In any case, they didn't want to enquire much further.² By the 1920s and 1930s, however, Rattray was part of a new generation of more enlightened settlers trying to learn a little more about the people among whom they lived. Another member of this invading western tribe was a missionary called Roger Clarke, based among the Tumba tribes further inland, near the Congo River. Like Rattray, Clarke was no longer content just to marvel at the drum language or to live in fear of it; he wanted to crack wide open its secret code.

After listening attentively with the help of local translators, he concluded that the drum language consisted mostly of curiously long-winded messages. For example, a simple call to fight would, through the talking drums, become something like this:

Make the drum strong; strengthen your legs, spear, shaft and head, and the noise of moving feet;

think not to run away.³

And a farewell to the sun in the evening would become this:

Shining sun, who has made a dwelling in the sky, who has gone to the concourse of counsel, all morning, all day, evening comes, you are going, good-bye.⁴

This is all richly poetic. But Clarke was somewhat mystified by the drum's sounding out of each message taking so much longer than if the message had just been spoken or shouted out loud. Why this inefficiency?

The answer came a few years later from another missionary who had been eavesdropping in the rainforest, John Carrington. Part of the problem, Carrington realised, was that when everything was reduced to two-tone beats, there was lots of potential for confusion. In the Kele tribe version of drum language, for instance, a double stroke on the high-tone lip of the drum could mean moon, bird fowl, kind of fish or countless other things. Add extra drumbeats or phrases though – 'the moon looks down at the earth', 'the fowl, the little one that says kiokio' – and ambiguity evaporates. Carrington and his wife had learned the technique for themselves. So when she wanted to summon him from the forest for lunch she would beat out the following message:

White man spirit in forest come to house of shingles high up above of white man spirit in forest.
Woman with yams awaits. Come come.⁵

This was functional, of course – but also, one hopes, in its delicious verbosity, an expression of love.

The basic mistake of the earlier settlers had been to think of the drum language as simply a way of trying to 'get across' a message from a sender to a receiver. Actually, it's never been a form of signalling; it's really a whole language, and it's used in a conversational way – chatty, informal, jokey, interactive, taking turns. And in conversation, the process of talking to each other – and the manner in which we do it – is almost always as important as what is being talked about. When it works, all that back-and-forth rhythm, with the subtle shifts in tone, weaves a special kind of magic, getting us 'in tune' with each other, pulling us closer together.

There's nothing peculiarly African about any of this. It's a technique that we can find across a wide range of human behaviours. 'Baby talk', or what linguists call 'infant-directed speech' – that singsong voice care-givers use, without thinking, when chatting to their babies – is an example of where the melodic and rhythmical nature of speech, its sheer emotional expressiveness, clearly counts for much more than what is being said. (Babies, of course, can't *really* understand any of the words, and certainly can't yet talk back.) If we were to eavesdrop on midwives, for example, anywhere in the world, we would hear pretty much the same thing. The melodies and intonations of 'infant-directed speech' are virtually identical: it's a universal phenomenon.⁶ So, even though this kind of interaction might help babies learn language, that is not the main point of it. The melody is the message: what is being transmitted is *emotion* – and, through that, the building up of a strong bond, in this case between adult and child.

Sounds provide a means of us 'touching' at a distance – a form of personal contact that can work even when we are physically beyond the reach of one another. So even a dialogue between teenagers texting one another on their mobile phones is all about creating a kind of social glue – social glue that works through the hidden melody and rhythm of that constant toing and froing of words. Such musical qualities are deeply embedded in the way we talk. So deeply embedded, so universal, indeed, that the

give a strong hint about the past: that if we go back, say, to around two million years ago, to a point before we had language or even music – before culture had emerged and started to create an infinite variety of expressive forms in human life – we might find that the very first proto-humans to leave Africa had something else instead. This was something with elements of both language and music, but which was not quite either. It was a kind of sing-song utterance that has been called ‘Musilanguage’. The possible existence of this strange noise is why one leading archaeologist, Steven Mithen, refers to some of our distant ancestors as the ‘Singing Neanderthals’.⁷

One way of getting a sense of how this might have sounded would be to turn to creatures even more distantly related to us: African apes and monkeys. Vervet monkeys, for instance, have a thrilling range of alarm calls – calls that are apparently communicating quite precise information about the kind of predator or threat that has been spotted nearby. The calls of gelada monkeys, from the Ethiopian highlands, are less distinctive, but what their communication lacks in data, it more than makes up for with melody, which is quite complex and rhythmic. Gibbons are less chatty, but no less musical in their own way – males and females sometimes performing a kind of duet. The grunts and hoots of gorillas, chimps and bonobos sound a bit restricted in comparison with all this. But then they use physical gestures as well as vocalisations to get their message across. Their overall toolkit of communication techniques is bigger. It’s with these apes and monkeys that we shared a common ancestor several million years ago, so it’s reasonable to guess that the shrieks are very roughly the kinds of sounds our own human ancestors would also have been making.

When they needed to work together as a group – during, say, a hunt – the ability of these early humans to coordinate was vital. In the dark world of the rainforest this could only be done through sound. We can be pretty certain about this because of the compelling evidence provided by the behaviour of modern humans in the equatorial forests of Central Africa. The BayAka pygmies of the rainforests of the Central African Republic, for example, perform boyobi ceremonies, just before setting off to hunt. The men chant and drum, while choirs of BayAka women weave shimmering webs of polyphonic sound to entice the bobé forest spirits to dance and bless the hunt with symbolic spirit. Wearing leaves, the bobé appear and dance. But if the bobé spirits don’t think the musical skills on display are good enough, they will harangue the hunters in falsetto voices, bringing the group’s rhythmical efforts to a crashing halt. Sing better, drum better, and you will eat tomorrow! There’s lots of information in these sounds. But what is really being created is *coordination*: listening, calling and responding, taking turns.

It’s these men’s ability to fall into a shared rhythm that is vital to the success of their hunt; it’s what tests their fitness to act together in all sorts of ways. By making noise and moving together in time the group isn’t just working well on the occasion of this hunt. Each time it performs the ritual, it’s blurring self-awareness, building up trust, creating a stronger social bond based on shared emotion. The term usually given to this phenomenon is ‘entrainment’.⁸ It’s what happens when different rhythms start to interact and then to synchronise. It’s listening to music and starting to tap our feet or fingers in time. Or the thumping soundtrack of an action film quickening our pulse as we sit mesmerised in the cinema. It’s a group of soldiers adjusting their walking pace to march in unison. Or the repetitive movements of workers on a factory production line, lock-step in time with the robotic machinery around them. In each case, an individual bodily rhythm is being subsumed into a collective rhythm. This is why for those with Parkinson’s disease one way of compensating for a loss of control over movement is to be guided – regulated, even – by some external source of regular beats. It doesn’t always have to be a rhythm imposed on us by others, though. Often, entrainment is more interactive and organic, with every participant constantly recalibrating to keep in unison. In such circumstances

it's impossible to tell the difference between performer and listener, simply because the distinction doesn't really exist. One reason why this falling into time often occurs so easily is that many of the coordinating rhythms are universal: the beat of a heart, the in-and-out of breathing, the steady gait of walking. It was almost certainly these simple biorhythms that continued to shape the undulating patterns of music and language, even when our distant ancestors had left the rainforests of Africa and moved into the open savannahs beyond.

In this new environment of the savannah, hunting, cutting meat and making stone axes would have been never-ending daily tasks. It's not hard to imagine the scene. Proto-humans in family-like groups perhaps humming or cooing as, searching for food, they moved beyond each other's physical reach but still wanted to stay somehow connected. Or small groups crouching together on the ground, the insistent rhythms of their work occasionally drifting imperceptibly into singing, perhaps even dancing. And, as they sang and danced, and hummed, and chipped away, a vague sense of fellowship feeling hanging in the air.

In situations like this, those who were most skilled in conveying their own feelings to others, and in reading the feelings of others, would have been the most useful members of the community. Predicting the behaviour of others and being able to manipulate their behaviour was, in evolutionary terms, undoubtedly a big advantage. Something with the quality of music might well have been a safer evolutionary bet than using words. Words have always been very specific in their meanings. They usually spell out exactly how one feels and what one thinks. Those listening might agree with what is being said; equally, they might disagree and so quickly fall out with the speaker. Music is different. Its meaning is helpfully vague: we can interpret it to be almost anything we want it to be. Through its ability to 'entrain', music is also powerfully bonding. We can be swept along by it, forgetting ourselves a little. Which is why, even today, if an argument is brewing, friends and family members often find it's better not to say anything; they might instead find an excuse to put on some music, perhaps even sing along a bit, and wait until it all blows over.

For our distant ancestors, then, the strange musical vocalisations which archaeologists reckon probably came before 'proper' language quite possibly helped paper over any cracks that were appearing inside the group. These musical sounds would also have been a potent symbol of the group's togetherness in the face of any external enemies – an audible sign of its ability to 'engage in complex, collective and coordinated action'.⁹ It was, in other words, a brilliant means of saying to outsiders, *Look what we can do: attack us if you dare.*

By the time early human groups such as this had reached all corners of Europe, it was still several hundred thousand years before humans were capable of sophisticated cave paintings, let alone the coded language of the talking drums. But these men, women and children were an early sign of what was to come. They give us tiny hints of the vital role that was going to be played by rhythm in driving forward our evolution.

Rhythm remains deeply rooted, a universal feature of human-made sound. It's why we still hear beguiling similarities in music from very different parts of the world – and why we still hear the same underlying melodies at work in completely different languages. But of course, no language or music is ever exactly the same. Over the past million years, as our predecessors spread further and further across the world, their cultures also inevitably drifted apart. In particular, the way they sang, made music or talked would become adapted to the different habitats in which they lived. Nowadays, we like to think of ourselves as having risen above nature. But as it turns out, the wilderness we imagine our ancestors left behind long ago is still deeply embedded in the sounds we make to this day.

3

The Singing Wilderness

In the northern woods of Minnesota, USA, lies one of the less-well-known wonders of the natural world: Burntside Lake. In the middle of this idyllic setting, facing out across the lake and surrounded by willow, birch and weathered pine, there's a small wooden cabin, built in 1956 by the American conservationist Sigurd Olson. In giving this private retreat a name, Olson avoided the predictable. He rejected 'Lake View' or 'Dunroamin', and called it, instead, 'Listening Point' – for this was, he wrote, a place where he could 'hear all that was worth listening for'. It was here, more than any other place that he could experience a 'sense of oneness', simply because it was here more than any other place he knew of that there were 'no distracting sights or sounds'. Rocks, trees, water: these features of the landscape were all well and good. But for Olson the essence of any wild place was its silence. 'Listening Point' was for listening to anything, it was to the very noticeable *absence* of noise.¹

But was Olson right? Is silence really the essence of the world's wild places? It is true that here you will find an absence of *human* sounds. But nature itself can be immensely noisy – even in the woods and seclusion of a lakeside cabin. Evergreen forests give out what has been described as a 'low, breathy whistle'. If the wind gets up, they will seethe and roar and creak as branches rub together and millions of needles 'twist and turn in turbine motion'.² The deciduous woodlands of England have been described eloquently by Thomas Hardy: the holly whistling, the ash hissing, the beech tree rustling as its boughs rise and fall, and then, as winter comes and the leaves are shed, there's a subtle shift in notes.³

Keen-eared writers keep noticing this musical quality wherever they go. In 1874, the conservationist John Muir was deep in the Sierra Nevada forests. As the rain poured down, he heard Aeolian music emanating from the 'topmost needles'.⁴ The tropical rainforests of the Amazon or Africa or Papua New Guinea are denser still, their storms more violent. When it rains in any of these places, an extraordinary cacophony of sound can be unleashed. The great collector of natural sounds, Bernd Krause, described being caught in an afternoon downpour as he set up his recording equipment, witnessing the first 'dense wall of water' falling like a 'freight train approaching', then, a few moments later, the melodic drips on the leaves, the odd splash of water hitting small pools on the ground, and finally, as the storm itself receded into the distance, insects beginning to stridulate – just a few at first, then in their thousands – and countless exotic birds starting to call out to one another, their cries reverberating as if in a giant cathedral.⁵

At moments like this the forest is wide awake. But really it's never fully asleep, because, of course, it's densely populated with living creatures. Which is why, when the young anthropologist Colin Turnbull first went into Congo's Ituri Forest in the 1950s, he discovered not the silence he had been expecting from having read the textbooks, but a rich sonic tapestry that was, in his words, 'exciting, mysterious, mournful, joyful':

The shrill trumpeting of an elephant or the sickening cough of a leopard (or the hundred and one sounds that can be mistaken for it) ... At night, in the honey season, you hear a weird, long drawn-out, soulful cry high up in the trees. It seems to go on and on, and you wonder what kind of creature can cry for so long without taking breath ... Then in the early morning comes the pathetic cry of the pigeon, a plaintive cooing that slides from one note down to the next until it dies away in a soft, sad little moan. There are a multitude of sounds, but most of them are as joyful as the brightly coloured birds that chase each other through the trees, singing as they go; or the chatter of the handsome black-and-white Colobus monkeys as they leap from branch to branch ...⁶

No wonder the Earth has been described as a ‘macrocosmic musical instrument’, the creatures on its surface a ‘great animal orchestra’, pulsing with sound and rhythm.⁷ Even Sigurd Olson, smoking his pipe in the relative quiet of Burntside Lake, Minnesota, wrote of a ‘*singing* wilderness’.

It’s also clear this wilderness sings with a dazzling range of voices. It mutates from hour to hour and from season to season. Its register shifts from place to place. John Muir claimed on his hike through the Sierra Nevada mountains that he always knew exactly where he was based solely on sound. Each square mile of forest has always had its own acoustic signature. As has each stretch of coastline, each bend in a river, each expanse of prairie or meadow – its keynote sounds made up from a distinctive blend of geology, climate and wildlife. In the wind, a forest sings. But a treeless plain nearby will, instead, vibrate like ‘an enormous harp’. The Merrimack River murmurs, ‘kissing’ its banks while it flows. But a Swiss mountain brook will babble. And the Nile at Atbara will roar with fury.⁸ At Coney Island in Brooklyn, the Atlantic waves come ashore on broad, open sandy beaches. They’re gentle and slow. In the Azores, they hit the rocky shoreline with what has been described as a ‘sharp, percussive, slaplike crack’. On the Suffolk coast in Britain, the steep rake of the beach means they arrive sounding agitated.⁹

And wherever we go, the heaving biomass of insects, birds and mammals creates its own tidal flow of noise, ebbing and flowing. Some creatures are at their most vocal when their habitat has dried out by the late-morning summer sun; others take advantage of the dewy dampness of dawn or late evening in autumn to project their calls across greater distances.¹⁰ Go to parts of New Zealand or Australia and you’ll be almost deafened by the cicadas. But only between December and March. In North America it’s the massed croaking of frogs which announces the change of season.

Through sound, then, nature is our satnav, our clock, our calendar. And although we sometimes forget that today, when we have so much technology to help guide us, we would have been permanently tuned in to the natural soundscape for most of our past. As for our most distant ancestors, this soundscape would have been rich in significance – everything in it grabbing their full attention. It didn’t just help them hunt down their prey in the darkest forests or show them when to sow their seeds or even provide their channel of communication with the invisible spirit world – though all this seems likely. The sounds of the wild also determined the first music our ancestors made, the first words they spoke. For the most important feature of early humans’ relationship with nature is that they mimicked it.

We can still hear examples of this in the more remote areas of the world. More than thirty years ago, the American anthropologist Steve Feld noticed that the Kaluli people, who live in the rainforests of Papua New Guinea, have a wonderfully rich vocabulary relating to sounds. They have, for instance, completely different phrases for bird songs heard at ground level and those heard above, those heard nearby and those heard in the distance.¹¹ Show them a picture of a bird, and they’ll imitate the sound

before naming it. Ask them for the bird's name, and they won't tell you what it looks like; they'll say 'It sounds like this'. Kaluli singing, too, is intricately connected with the everyday noises of the forest: birds, mammals, insects, trees, water flowing, rain pouring – these are what the Kaluli sing with, and to, and about.¹² The whooping and whistling and singing of the vocalists 'interlocks' with the ambient noise and observes its rhythm; it copies the insects and frogs in the nearby bush, and echoes back to them.

The Kaluli are not alone in having such acute powers of hearing and mimicry. In the Malaysian rainforest, we might hear the healing dance of the Temiar people, in which bamboo tubes are stamped on the ground in a pulsing echo of the cicada.¹³ Or on the open grasslands of North America, the Native people of the Plains – the Blackfoot and the Sioux – who once hunted bison by driving herds into a ditch, might be heard singing, cunningly, in voices eerily like that of bleating calves. Though thousands of miles apart, both these groups of people have long thought of themselves as having come from the land – of having a kinship with its wildlife. They take the sounds of nature, amplify them, and return them to the world in an attempt to influence it.

The Sioux, the Temiar and the Kaluli provide an acoustic flashback to our distant past. In prehistory, to be human was to be a hunter-gatherer living in the forests or the open savannahs. Ten thousand years ago, as we moved stealthily through the undergrowth in search of food, information about the tracks and trails of particular animals, or news of any sightings, would have had to be communicated with each other. Like modern-day hunters in the bush, we would almost certainly have done this by mimicking the animals – their walk, their movement, their gestures, their *cries*.

Gradually, this mimicry formed into the words we uttered. It's why animal names, even today, are often onomatopoeic. They are made up of individual units of sound that capture the essence of the animals themselves, or which resulted from the gestures made by our tongues and lips while mimicking the creature. Over time, these evolved into more generic linguistic habits that we all share. Try this experiment, first done in the 1920s. Ask yourself which nonsense word would better describe the larger of two wooden tables: *mil* or *mal*? My guess is that you opted for *mal* – because that is what most people do, regardless of nationality. In lots of languages we associate the 'i' sound with small things and the 'uo' sound with bigger things. There have been more recent studies of the way animal names in many parts of the world capture qualities other than size – such as the fast-moving, twitchy essence of birds, or the slow, flowing movement of fish. So again, try this experiment. Which of these two words is a bird and which is a fish: *chunchutkit* and *mauts*? Again, my guess is that you got it right. *Chunchutkit* just sounds like a bird – or rather, it sounds like a bird *sounds*.¹⁴

It's in Latin America, however, that we're best able to see how deeply enmeshed past human cultures have been with the sounds of nature. People here didn't just engage in mimicry. In some of the ancient civilisations of Mexico or the Andes, whole symbolic belief systems evolved which put sound right at their centre. In the mountains of Peru, for instance, the Incas of the fourteenth and fifteenth centuries seemed to view the cosmos as being like a noisy pot-drum. The Quechua language of the region, even today, is full of words associated with containers or pouring, and these are also linked with natural phenomena. The earth, the sky, lakes, mountains, stones, houses and human beings: these are all viewed as being like vessels to be filled or poured out. When there's thunder, the saying in the Andes is that it's like a crack in the sky – in other words, like a break in a pot. Liquids like rain, urine, blood – all have fertilising power, so they were almost certainly fundamental to life and beliefs during the Inca period, and probably before. Containing or releasing them was most likely a sacred act, and pots would have reflected this. Sometimes they'd be beaten, so that their resonance could ring out like thunder. Lots of rituals evidently involved the sounds of pouring, with pots used

echo the natural world's soundscape of trickling rain or running streams, of urination, or perhaps bloodletting.¹⁵

Further north, there was an even dizzier array of sound symbolism. Archaeologists working on houses more than a thousand years old in Oaxaca on the south-west coast of Mexico have unearthed among the remains lots of bells, rattles, flutes and whistles. Many of the pots used for everyday cooking or eating have little hollowed-out feet which contained tiny clay balls acting like rattles. It seems people wanted, quite deliberately, to make quite a noise each time food was prepared or served. Farmers certainly wanted to kick up a din during fertility rites, since they used sticks with rattles to conjure up what the Aztecs thought of as the sound of a serpent. Clothing was embellished with beads or small bells, which must have jangled and chimed as people walked about. Some of these clothing bells had animal images appliquéd on to their tops – birds especially. Indeed, birds keep cropping up in the archaeologists' finds. Many of the pots are decorated with them, and many of the whistles and flutes are shaped like them.¹⁶ In ancient Mexico, as in lots of other ancient cultures, birds clearly had great symbolic power. They were one of the many animal spirit guides, connecting humans with the hidden world of their dead ancestors. Any human-made item that captured some of their essential properties would also surely have recreated some of their valuable powers of sacred communication.

So it's not hard to imagine all these pots and whistles and bells being used in some noisy Aztec domestic ritual to evoke the spirit world by means of connecting their users with the natural world. And although we can't be sure exactly how far back in time these traditions go, we can guess they have their roots far back in prehistory. Aztec imagery makes a great deal of sound and speech and hearing. In their pictures, 'scrolls', decorated with precious objects, often emerge from the mouth of a speaker, as if the human voice were channelling the fragrant, flowery world of the gods and ancestors. But older stone carvings and murals also used flowers and swirls to represent breathing, speaking, singing, rumbling or echoing. Sound mattered in people's lives and beliefs enough for them to have tried hard to symbolise it visually for many generations.¹⁷

At no stage was this some abstract notion of sound. It was nearly always one inspired by the real world – by the singing wilderness of nature. In this respect, humans were just one part of a large spectrum of creatures adding their own layers of noise to the bedrock of sounds caused by wind, sea, thunder and rain. But humans were never content just to copy the sounds of nature to help them get hold of their next meal. Culture kept evolving, giving us bigger, more complex ideas about what could be done with sound: how it could be shaped and manipulated to create dramatic effects and to help us understand our place in the cosmos; how nature might be not merely copied, but mastered.

A Ritual Soundscape

Most of us in Britain probably think of the Orkney Islands as rather exotic and remote: over 500 miles from London – more than 200 miles, even, from Edinburgh – and, although only ten miles north of John O’Groats at their southern end, always a flight or ferry ride away from the mainland. But in the Neolithic era, between 6,000 and 4,000 years ago, Orkney was far from being on the periphery of human life in the British Isles. It was, if only briefly, one of Europe’s centres of civilisation. Here, just a few metres from the North Atlantic waves, and buffeted by the westerly winds, lies Skara Brae, a stunningly preserved sunken village of walled houses, complete with hearths and stone furniture such as beds and dressers; just a few miles to the south-east, two striking stone circles, at Stenness and Brodgar; and, close by, Maeshowe, a massive chambered tomb where the setting sun sends a beam of light along a tiny passageway to illuminate its inner chamber on the winter solstice. All are set in a spectacular natural amphitheatre of hills and lochs and bays.

It’s here, perhaps more than anywhere for thousands of miles around, that we can appreciate the fundamental shift having taken place in human history. By the Neolithic, our ancestors were no longer having to make do with the world as they found it, seeking shelter and spiritual inspiration in nature. They were creating their own monumental buildings. These were not just physical objects. They were almost certainly also the components of a complex ritual life – places capable (though, at first perhaps unintentionally) of creating extraordinary multi-sensual experiences, and, most likely, specific kinds of noise. Tens of thousands of years earlier, the men, women and children of the Palaeolithic would have experienced the natural acoustic qualities of caves or canyons or forests. The Orcadians of the Neolithic, though, were putting up stone buildings of their own design – megaliths which turned out to have their own completely new acoustic identity and which demonstrated a new human mastery over the natural soundscape.

Of course, we don’t know whether the Neolithic monuments of Orkney – or anywhere else – were built especially in order to create new sound effects. It seems pretty unlikely. But we can be fairly certain that no one was living in any of the stone circles or at the chambered cairn, simply because the detritus of domestic occupation has never been found there.¹ These were out-of-the-ordinary places where out-of-the-ordinary events would surely have taken place.

What were these like? Again, we just don’t know. But the lesson of ethnography is that in most cultures, rituals are multi-sensual affairs; and when you enter Orkney’s Neolithic sites they certainly feel a bit like theatre stages, capable of creating lighting effects or strange smells, and encouraging you to move through them in unfamiliar ways. If people using these spaces 4,000 or 5,000 years ago noticed that the monuments that enclosed them also just happened to create striking sound effects, they must have been tempted to exploit them. But exploit them *how*, exactly? Were these the kinds of places where our ancestors came to make a spectacular din – or places where they came in search of silence and sensory deprivation?

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