

Oscar van Dillen



DRONE  
SCAPE 11

concerning whale languages

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# Dronescape 11

**Dronescape 11: Concerning Whale Languages** (an acousto-electronic symphony) is the fifteenth in a series of albums containing contemporary Electronic Symphonies created by Oscar van Dillen using the latest technology.

The work on this album was conceived of, composed, created, recorded, post-produced and mastered from February-April 2023.

Music and cover art were created by Oscar van Dillen.

(Post-)Production and mastering by Oscar van Dillen.

Photo Oscar van Dillen by Elise van Rosmalen  
*[www.elisevanrosmalen.nl](http://www.elisevanrosmalen.nl)*

additional images from Wikimedia Commons

## Tracks

Dronescape 11 :

Concerning Whale Languages  
*an acousto-electronic symphony*

- |                                       |       |
|---------------------------------------|-------|
| 1. Moderato – Whales perceiving ideas | 41:03 |
| 2. Largo – Whales traveling North     | 20:07 |
| 3. Adagio – Whales sharing dreams     | 22:25 |
| 4. Largo – Whales travelling South    | 20:07 |
| 5. Andante – Whales telling tales     | 31:48 |

**Total duration**

**2:15:30**

## Dronescales

The title Dronescape suggests the contraction of the terms *Drone* and *Soundscape*, inferring a music which might at first sight be mistaken for ambient only. But not at serious listening: there is mostly a friendly and pleasant surface character to most compositions, but careful listening will reveal less obvious details and sounds, sometimes surprising, at other times perhaps disturbing.

In music, a *drone* (or *bourdon*) is understood to be a continuous sound, interval, or chord, usually an accompaniment to a modal structure (melodic music based on a particular scale). Special instruments exist, dedicated to playing the drone only, such as the *tanpura* and the *swar peti* from India. Instruments are found all over the world that include drones within the melodic instruments themselves, such as the *taraf* strings on many Asian string instruments, but also the drone pipes next to the *chanter* in bagpipes, or the hurdy gurdy, and its predecessor the *organistrum* with their drone strings.

Aboriginal didgeridoo music can be considered to consist purely of a rhythmized drone. Traditionally, drones with their sustained pitches are used as a harmonic support to the melodic music performed. In the Dronescares by van Dillen the music itself has become rhythmized drone and soundscape at the same time, foregoing the traditional compositional hierarchies of theme and accompaniment, by using the following musical elements, in order of prominence: 1. sound 2. harmony 3. rhythm 4. melody. This non-prominence of melody stresses the absence of a traditional theme and accompaniment-oriented music, instead the work moves towards a more inclusive approach. This does not mean there are no developing linear structures, but rather that in a way the album can perhaps be regarded as being semipermeable to outside additions, whether coincidental and random (such as happening when listening outdoor or with windows opened), or improvised, or composed, or even as a large *minus one recording*, open to be supplemented by the listener, whether in imagined or performed future additional music.

## Concerning Whales

In biology, whales, dolphins, and porpoises are grouped together as Cetaceans, an infraorder of aquatic mammals. They are not fish as is sometimes erroneously believed. On the contrary, they have lungs and need to take regular breaths, albeit far less often than land mammals do; their bodies and blood have adapted over tens of millions of years of evolution to different breathing patterns suited for underwater life. An average whale for example can hold its breath underwater for an hour, but there are also exceptions such as the sperm whale, which has been known to dive very deeply to hunt giant squid and hold its breath for up to 90 minutes even.

The cetaceans form a far larger family than most people are aware of, they vary in size from 1 to 30 meters, and are grouped as Porpoises, Dolphins, and Whales, then divided further into subgroups. All are remarkably intelligent.

The first subgroup consists of right and gray whales, and feature the Bowhead whale, Northern and Southern Right

whale, the Gray whale, all of which have no dorsal fin, and the Pygmy Right whale.



at 30m a huge and incredibly streamlined blue whale, singing at 12Hz

The second subgroup consists of the Rorqual whales, which have a dorsal fin set far back. These feature the

Minke whale, Bryde's whale, Humpback whale, Sei whale, Fin whale, and the Blue whale, this last one is the largest of animals to ever have existed, far larger and heavier than the biggest dinosaur even, weighing up to 120 tons.

The next group is called the Sperm whales, and feature Sperm whale proper, Dwarf Sperm whale, and the Pygmy Sperm whale; all these are toothed whales.

Next there are the Narwal, and the Beluga. Less known are over 20 species of beaked whales, resembling very large dolphins, the largest of which weighs up to 15 tons.

The next group is called the Blackfish, somewhat closer related to the dolphins without closely resembling them. Among these are the Orca (aka killer whale), Pygmy killer whale, False killer whale, Melonheaded whale, Short-finned Pilot whale, and the Long-finned Pilot whale.

Next there are the Dolphins, largely split into two groups, depending on their environments: oceanic and river dolphins. Some oceanic dolphins listed by increasing size: Tucuxi, Spinner dolphins, Hump-backed dolphins, Spotted



dolphins, Rightwhale dolphins, Common dolphin, Striped dolphin, Rough-toothed dolphin, and Bottlenose dolphin. There are fewer river dolphins, among these are: La Plata river Franciscana, Chinese river dolphin Baiji, Indus and Ganges river dolphins and Amazon river Boto.

Although many but not all species above are threatened, the final group in particular is. The porpoises, sometimes described as smaller dolphins, are under threat of extinction. Probably closer related to the larger whales than to the dolphins proper, there are the following species still occurring: Vaquita, Finless porpoise, Harbor porpoise, Burmeister porpoise, Spectacled porpoise, and Dall's porpoise.

In the past years new species have been added to this list, even large ones such as Rice's whale (15m and 30 tons), demonstrating how little we still know about these animals.



at 1.5m a small and toothed harbor porpoise, singing up to 130kHz

## **Concerning Animal Apartheid**

Humans fear to be compared to animals. For millennia they have strived to convince themselves that they

themselves are not animals, and for some reason even above them in the scheme of things. So naturally humans have learned to look down upon animals as inferior in some or many ways. A similar scheme of discrimination humanity has applied to itself: discrimination of women. Women have long been treated as less worthy and less valuable to others and to God and have been or are being denied education and fundamental rights, still to this day in many places. Today there are nevertheless more and more female scientists who help in unraveling the lies at the base of this apartheid. Unless we change our language(s) which still contain this *apartheid* into the fabric of their grammar and vocabulary, our thinking is unlikely to change, unless very slowly, in such matters.

More and more we start to discover most animals have emotions very close to ours. This is clearest with mammals but not limited to these. Not only do we share emotions, most if not all animals also share cultures, uncovering the truth that animals are not merely biological mechanisms consisting only of instinctive reactions to their environment

and each other. Modern biology clearly establishes this as a scientific fact. Can we share thoughts as well?

It was long assumed that humans would not survive in the wild when left to their own devices, yet animals on the contrary would, instinctively, or if you like, automatically, mechanically as it were. The truth is quite the contrary: many animals would not survive at all in the wild when left to survive on their own. Survival skills need not only to be learned, but also to be shared between members of the same species. This is the essence of what we call a culture, it enables survival of a group, of a species. Such cultures of animal behavior have been widely observed to exist and are themselves developing constantly. Nature provides a learning environment in which the ability to experiment and to copy successful behavior forms a natural part of all animals' individual lives and shared cultures, including those of us, the animal called human.

You, reader, are an animal. You, listener, are an animal. This simple and factual statement is, however, mostly used in a derogative manner, revealing its long-nurtured denial.

The composer of this album is an animal, and any artist whether alive or dead. So are the scientists, philosophers, political rulers, church leaders and prophets. And finally also the people that instinctively disagree with this notion.

Younger people suffer perhaps slightly less from this system of global indoctrination telling them to set animals apart from, and below, humans. There are many organizations and institutions which have a vested interest in keeping such misconceptions a silent part of the contemporary human mind, mainly "to protect their business", be it of a financial or ideological nature. The bio-industrial complex is one of them, exploiting the world's populations of pigs, sheep, cows, chickens, fish, sharks, cetaceans, insects and many more, beyond the tipping points of sustainability. Today all too often scientific research is not free, as it may be funded for a large part by such industries, among which also the oil industries should be mentioned.

This global belief system of animal apartheid, proclaiming humanity to be a separate entity, not an animal himself, quasi divine, able to dispose over the lives and well-being

of other life, is close to wiping out most life, generating mass extinctions in the wake of which humans themselves may collectively die out.

But this apartheid is a lie. Next to the human-like apes, it is cetaceans par excellence that prove that this is a lie. It is time to tell the truth about these animals, about their intelligence, about their languages, and about their cultures. Indeed some species of dolphins are being suspected of being more intelligent than humans are.

A quick look at how we treat ourselves and each other, our animal brothers and sisters, the natural world, and the planet as a whole, makes one wonder whether human intelligence might perhaps be overrated. Science always measures differences rather than absolute values when talking about animal intelligence, animal language, or the supposed lack of it, in order to downplay animals' abilities. All scientific attempts at defining intelligence have failed, therefore any attempt at measurement is impossible. Meanwhile there is no accepted scientific definition of the concept of *consciousness*, and Hindu Advaita Vedanta

philosophy is as likely as biology (or maybe even more?) to provide a practically applicable description.

There is a significant lobby among scientists to deny animals their abilities, and especially their rights. On a more hopeful note: it seems inevitable that at some point we will all have to change such opinions and views. Especially the growing number of women scientists in the field of research biology, led by people such as Jane Goodall, is already changing the general tendency away from the older system of beliefs. In particular women are capable of overcoming such apartheid thinking, having suffered themselves for millennia from a similar kind of discrimination, within the species *homo sapiens*.

To arrive at a more inclusive view and vision of ourselves and the natural world, humanity will have to accept this:

*"no animals should be more equal than others"*<sup>1</sup>.

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<sup>1</sup> Obviously referring to George Orwell's book *Animal Farm*.

## **Concerning interspecies communication**

As a result of millennia of animal apartheid thinking humans have begun to believe themselves to be alone in the universe. For example the SETI institute was founded to search for intelligence elsewhere, meaning elsewhere in the universe. Meanwhile it is still often overlooked that we definitely are not alone, not even on our very planet. We are closely related to other mammals, but also to reptiles, to amphibians, fish, plants, trees, mosses, fungi, and to microscopic life. All of it forms one huge and diverse web of life forms sustaining each other, and humans are part of it, dependent on the health of the whole. The refusal to accept the consequences of this modest place is not intelligent behavior, quite the contrary: it is stupidity.

It can be expected that the more closely related life forms are, the more likely they are able to communicate with each other, albeit partially in some cases. There is a growing number of biologists who have realized this, and are acting upon it, collecting a vast amount of data on animal communication, including recordings, both in



audio and video. Modern AI technology greatly facilitates the mining of this treasure trove of data. It is already partly possible to decipher animal communication.

As to cetaceans, it is noteworthy their vocal apparatus is much more versatile than that of humans, as is their hearing, and they can both achieve and perceive a far greater range of complex waveforms, using sound frequencies out of range for human hearing. The larger whales use both higher and lower frequencies than the human ear can hear; these are called ultrasound and infrasound. When listening to dolphins one has to realize there is a whole range of frequencies we simply cannot hear, but we can record them and visualize them in waveform and spectral graphs. In an experiment, dolphins were presented with two different sounds, one meaning play with a ball in their pool and the other meaning play with a ring. The dolphins quickly learned to produce these sounds themselves and started to ask the "trainers" for a particular type of play (it is questionable whether we should even call them trainers as they may be the trainees

at times, especially in view of what happened next). At a certain point the dolphins produced a new sound which the “trainers” did not understand nor recognize. After recording this sound and looking at its graphs, it was discovered this sound contained the two sounds for ball and ring, in one. Just try and imagine the human voice pronouncing the word ball and ring *at the same time*, as one new word-sound! This is not possible for us, yet easy for dolphins. It reminds us of music, where with polyphonic means composers have been doing this for a while. But in human music, polyphony, meaning many voices at the same time, has to be performed by several musicians at the same time, not just one. The dolphins showed their voices are capable of producing such a polyphony by a single performer only! Such unexpected phenomena may make it very hard for the human mind, programmed to believe its own limitations to be the summit of the naturally possible, to comprehend cetacean communication, which apparently can contain single sounds with layered meanings inside them. How many words can a dolphin pronounce at the same time?

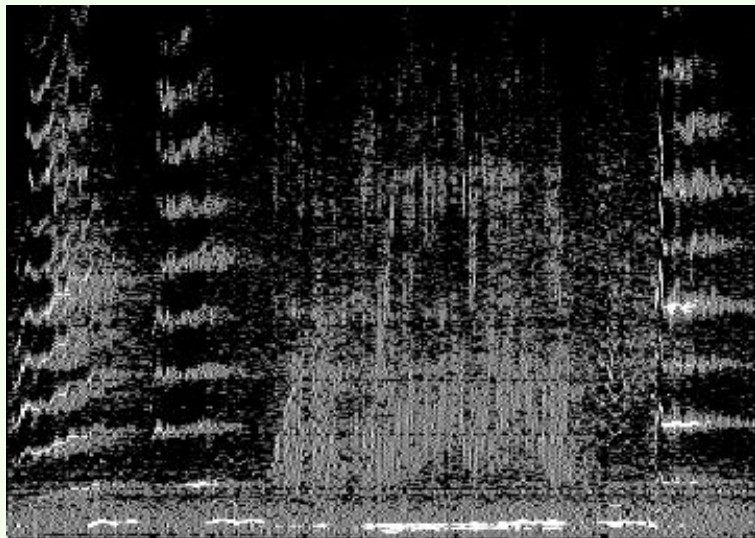
## **Cetaceans' sounds**

Dolphin pronunciation uses a well-known technique, also known in electronic music, called modulation. Electronic music distinguishes between frequency modulation FM, amplitude modulation AM, and ring modulation RM, depending on the signals and how they are used. Sound research has demonstrated that dolphins use amplitude modulation to a variety of fundamental frequencies, a vocal technique hardly possible for a human voice. Singing techniques from human cultures resembling this phenomenon most closely may be found in Central Asian cultures such as the music of Tuva, Mongolia, and Siberia, called overtone singing. The fundamental frequencies modulated by these human voices are low to very low, 100 Hertz and lower. Most of the dolphin fundamental frequencies have been found to be close to 20 kHz, while others go well above that, up to almost 30 kHz. And these are still only the fundamentals, meaning the modulation produces much higher tones, up to about 150 kHz. Such frequencies are certainly outside the range of the human

voice and hearing. Dolphins and whales, on the contrary, are equipped to produce and fully perceive the full range of the human voice, so for them to understand us seems to be the likely first result of an attempt at communication! For us to understand them is much harder, and it cannot be done without some technological means. We may feel proud as humans to have such technology, but at the same time our organisms are flawed in so many ways that we depend on technology to survive at all, are we not the weakest of all animals? Dolphins and whales, having a similar and possibly even superior creative intelligence, hardly use tools, simply because they don't need them. Their organisms moved to, and evolved further, in an aquatic environment, radically adapting their bodies to survival, to perfection. Humans took to making tools, thus finding solutions outside their bodies. We also evolved but our bodies still resemble those of our ancestors closely. We have never changed our body design in a similar radical way, and now instead increasingly depend on tools and machines we make, to compensate for our lack of natural abilities to bodily perform the tasks needed for survival.

Recent research shows how dolphins and whales not only use sounds to communicate but that among these sounds are so-called signature sounds to identify groups and individuals. In other words these mammalian swimmers have names for their pods, for themselves, and therefore for each other: they have names, just like we do.

High frequencies allow for very complex sounds for communication at short range, the very low frequencies can be used for communication at long range, very long range even. It is entirely likely that whales swimming before the coast of say Ireland were able to infrasonically communicate with whales off the coast of New England, at the other side of the Atlantic Ocean. "Were able", because the very low frequencies produced by our large ships seriously interfere with this oceanic communication, producing enormous sound pollution: deafening, and blinding the whales in fact. Fact is, cetaceans "see with sound", their systems of so-called echolocation in reality are systems of vision through sound, functioning in dark and muddy waters.



humpback whale sound spectrogram

## Concerning Whale Languages

This acousto-electronic Symphony concerning whale languages makes use of hybrid technologies, using mostly sampled sound in coordination with pure synthesis and electronic modulations. The sampled sounds are of musical instruments: violin, viola, cello, contrabass, flute, oboe, clarinet, trumpet, piano, vibraphone, harp, and percussion, among which are timpani. These have been changed and modulated to alter their pitch, their sound, and in the case of longer samples, their phrasing.

No samples of whale and dolphin sounds were used at all. In other words, the composer tried to “speak whale”, to “speak dolphin”, using human means, human musical instruments, and contemporary musical technology.

The time scale of the work is large, leaning more towards the time scale of a whale song than that of a classical symphony. This music requires patience and an attention span well beyond that conditioned into us by our social media apps so popular in our mobile phones. Almost a

sound movie, best listened to in stereo and in a quiet environment, preferably your own living room. A few decades ago our living rooms had stereo systems at their core, giving more meaning to the time spent listening to music, putting a work into a personal context. In the 21<sup>st</sup> century music listening has developed into something which is done while on the road, walking, moving, running, travelling. Most music is listened to on headphones or earplugs, turning it into a solitary experience, quite the opposite of a traditional concert setting, and also of a concentrated listening session at home.

Tate gallery researched that visitors of an exhibition spend on average 8 seconds on an artwork; today's concert audiences' attention span is longer in certain genres, but also similar in others, as for example the average serious music work commissioned is generally between only 6-12 minutes of duration. van Dillen's works mostly break with this practice of fast art, as they venture into the difficult territory of very long durations, traditionally more often still encountered in non-European music.



## **Moderato – Whales perceiving ideas**

The work opens with timpani which accompanies a duet between violin and cello, this is followed by a reply by what seems to be a combined wind section of a large Symphony Orchestra. There is the suggestion of a male human voice singing along. The harmony is spectral and chromatic, different types of clusters create a sense of harmonic modulations, and the clearest harmonic motion is perceived in the use of register. The overall sense is that of some large underwater music, far larger in scope and far more complex than Wagner's Rheingold prelude.

After 8 minutes, non-orchestral sounds start being merged into the polyphonic structure. These are high pitched quasitonal sounds, recalling high pitched cetacean calls. Coherence and form are created by use of register and by various recurring phrases and themes, motives. This first part, moderato, with its over 41 minutes duration, is in itself a 5-part form: a miniature symphony of 41 minutes.

Although this Moderato keeps the sense of an overall orchestral work there are several elements used that are outside the customary palette. Some tones are just too low and others too high, creating a sense of an enlarged and enhanced orchestra: a "prepared orchestra" in the sense of John Cage's prepared piano.

### **Largo – Whales traveling North**

The tempo indication Largo here is used to indicate a very slow tempo or rhythm of breathing, the music breathes in and out again, at a tempo actually lower than normal metronome indications.

The sketches van Dillen made for the traveling musics are each over an hour in duration. In steps this was brought back to 60, then 30, and finally 20 minutes. These parts, whales travelling, contain no samples, and they are created by sound synthesis, partially employing modular design. This music does not resemble an orchestra. Instead it is clearly another universe of sound, referring in different ways to cetacean sounds.

The titles travelling North and travelling South refer to the yearly migrations without precisely defining geography, North may mean Polar, but it can also mean Equatorial, and the reverse as well as the same are true for South.

### **Adagio – Whales sharing dreams**

The third part, called Adagio - Whales sharing dreams, consists of a musical fantasy about cetaceans dreaming and sharing dreams, although little to nothing is known on this topic. Maybe it is a wet midsummer night's dream by, and for, porpoises, dolphins, and whales?

Have you ever wondered how whales sleep? To be a breathing animal living in the water means you need to be close to the surface regularly, or you suffocate. All cetaceans sleep close to the surface, and for example dolphins sleep for a couple of hours at a time, and mostly during the night.

In part 2 we hear familiar sounds of orchestral instruments, complemented with environmental sounds, and the instruments use monumental glissandos, unlike any

physically possible on the actual instruments. Such frequency ranges are however perfectly natural for cetaceans: the composer is attempting to “speak whale”, but with human musical means, including the use of breathing sounds.

### **Largo – Whales travelling South**

The traveling South music technically uses as its base the northward travelling music reversed. Special sound design and modulation removed an overall impression of the track listened to backwards, but this origin can still be heard in places. A clever sound design trick was used to remove redundant reverb: the track was duplicated, then phase reversed, silencing the sum, then compression was gently applied to this second track, opening up the sound again, while gently removing most reverb. In this way the travelling South music sounds very different from its counterpart. As should be, because the two migratory directions have a very different meaning in the lives of whales. This part has a quiet, soft, and open ending.

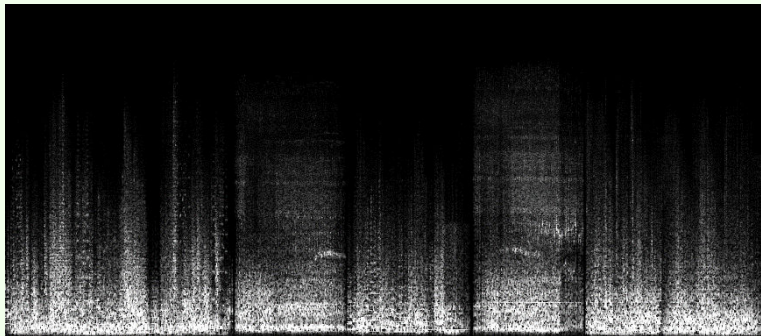
The tempo indication Largo is used to indicate a very slow tempo or rhythm of breathing again, the music breathes in and out again, at a tempo actually lower than normal metronome indications. In this second traveling music, the breathing is slightly restless, expectant of things to come.

### **Andante – Whales telling tales**

The final part starts with what the composer describes as a “wet sound”, linked to the traveling part before.

A large part of its structure is played by the cellos and contrabasses, and it loosely follows a fugue-like form. Its periods are contrasted by more static rhythmic sections featuring harp and percussion, dynamically spaced in the stereo field, clearly heard after 5 minutes for the first time, most clearly after 23 minutes, and also forming the final ending. In this part glissandos also play a major part of the musical melodic means employed. These are especially dramatic when applied to the piano, an instrument normally not found in an orchestra. A third music pops up

now and then, similar to the way Charles Ives featured a marching band in his work *Central Park in the Dark*. The composition evolves as a story containing stories, with a structure like Chaucer's *Canterbury tales* or Boccaccio's *Decamerone*: a frame narrative in which the shorter tales are bound together by the larger fuge.



full spectrogram of the 5 parts of concerning whale languages

## **Dronescape series**

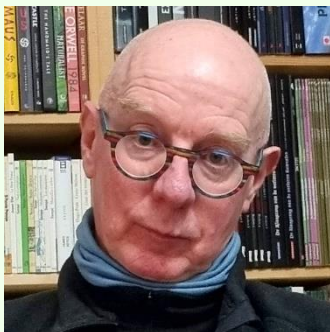
So far, the following Dronescapes have been released:

1. Genesis
2. Genomes – Emanations
3. Infinity
4. Requiem for a Planet
5. Myrmecology
6. Oneirology (series of collaborations)
  - a. solo version Oscar van Dillen
  - b. version with Kudsi Erguner
  - c. version with Henri Tournier
  - d. version with Pier Sante Falconi
  - e. version with Leo Vervelde
7. Jñāna – Rigpa
8. The four Pillars of Reason
9. Matters of Life or Death
10. Anthropocene
11. Concerning Whale Languages

*A word of warning: after careful listening, the world around you  
may not sound the same any longer.*

## Oscar van Dillen

Oscar Ignatius Joannes van Dillen ('s-Hertogenbosch 1958), flutist, composer, and visual artist. A generalist rather than a specialist, next to his music studies in Indian classical music, Jazz, European medieval and renaissance music, and contemporary composition and music theory, he also studied architecture and mathematics. He was a founding member of the Rotterdam School of Composers, having written its manifesto in 1997. His works span a wide variety of styles and genres, encompassing full score compositions for classical musicians ranging from solo pieces to full orchestras, style-specific scores for ensembles of jazz and world music musicians, as well as electronic works, and electro-acoustic compositions. In a more advisory role, he has been and is part of cultural advisory boards and competition juries, as well as on the board of Donemus, and on the board of Wikimedia International, having founded the Wikimedia organizations in the Netherlands as chairman.



He teaches composition, improvisation, music theory, and music history at Codarts University of the Arts Rotterdam.



Oscar van Dillen's personal website can be found at

*[www.oscarvandillen.com](http://www.oscarvandillen.com)*

OIJRECORDS can be found at

*[www.oij-records.com](http://www.oij-records.com)*

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music is sound and silence



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