

A long series of 'aha!' moments led Thomas Mitchell, a Scottish retired professional pianist, to extract music 'frozen' into the architecture of the 15th century Rosslyn Chapel on the outskirts of Edinburgh. In medieval times, the chapel was the final northern destination for pilgrims walking the ancient route along the Camino Santiago, from St James Cathedral at Compostela in northern Spain, through several cathedrals in France (including the famous Chartres cathedral), up to the Rosslyn Chapel, which was recently popularised at the end of Dan Brown's book *The Da Vinci Code*.

The chapel itself has been described as a 'Garden of Eden set in stone', its interior a proliferation of nature imagery: flowers, leaves, crops and around 100 'green men' faces throughout (each one with an older face than the previous one, depicting a timeline of nature). It also boasts ornate stone arches, carved entirely with projecting cubes covered with symbols. Among the arches there are angel figures playing different medieval musical instruments.

"The chapel has always had a tremendous atmosphere," says Tommy (as he prefers to be called), now 79. "I would look up at the extraordinary architecture and think: *Something is going on here*. Several of the angel figures hold open books, the written pages facing outwards... The Chapel was practically shouting at me to study it."

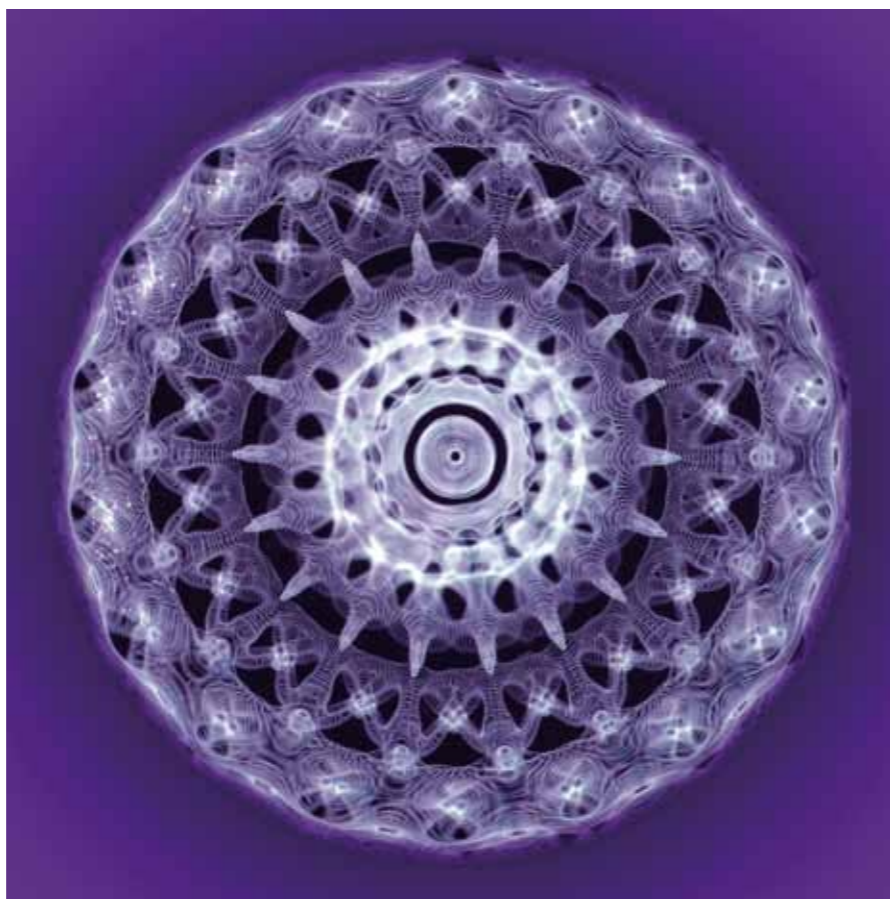
Tommy's journey to crack the mysterious code of this chapel began in the 1950s, when, as an RAF officer, he was stationed near Baghdad, also close to the ancient Sumerian city of Babylon, which he had the fortunate chance to visit. In the air force he worked in a signals unit de-coding cipher messages. Inspired by the scale and sophistication of the excavated sites of Babylon, he returned home determined to explore the secrets of pre-history. "I was fascinated to learn what it was, both physically and spiritually, that made these civilisations so successful," he says.

"I had been visiting the Rosslyn chapel since the 1950s," he explains. "I had written a dissertation on harmonies and researched the Russian mystic Gurdjieff's Enneagram system, which struck me as having links with the laws of resonance and the geometry of nature. It was not until the 80s though that all my knowledge starting coming together and I realised for sure that sacred music must be encoded within this building.

"You have to remember that when the chapel was built in 1446, it was a time of great danger for anyone who opposed the medieval church with heretical ideas. Prior to this, the Knights Templar (a secret spiritual society) had been persecuted and disbanded. I believe that the founder of the Rosslyn Chapel, William St Clair (the 1st Earl of Caithness and also Duke of Orkney), a well-travelled and learned man, wanted to

How Sound CREATES FORM

Music and patterns are inextricably linked, as Helena Foss explains in this fascinating look at sound forms



preserve some of this sacred knowledge by enshrining it in stone."

Together with his son, the composer Stuart Mitchell (and with the 'help' of a single 'stave angel' figure carved into one pillar, pointing with a musical staff to three tones on a treble clef), Tommy set out to decode the chapel's unique architecture. The symbols of the 215 'musical cubes' in the pillars and arches, were found to match geometrical sound patterns, known as *Chladni figures*.

Ernst Chladni, the German musician and scientist (also known as the father of

acoustics), first documented sound patterns in 1787. He used a brass plate sprinkled with salt or powder and vibrated it with a violin bow. He found that depending on where on the edge of the plate the bow was drawn, a whole array of archetypal geometric patterns could be created. (To see this fascinating sight for yourself, search for 'chladni patterns' video clips on YouTube.)

Shapes and patterns

The study of sound and vibration made visible became known as *cymatics*, the roots

of which can be traced back to African tribes who used the taut skin of drums sprinkled with grains, to divine future events. The 4,000 year old art of Chinese gong-making is also based on cymatics, using set patterns (rather than audible notes) as its tuning system. Gongs would be hammered until the 'sound grains' settled into exact patterns – hence the 'dimple' effect of the many hammer indents. "William St Clair travelled extensively to places like China and Tibet" Tommy adds. "I believe he must have learned about Tibetan singing bowls and Chinese gong tuning there."

The Mitchells found that each of the cube patterns matched specific musical tones and – extraordinarily – once these tones had been deciphered, they formed a simple, yet haunting medieval melody. Arranged and scored by Stuart, the composition is known

"...once these tones had been deciphered, they formed a simple, yet haunting, medieval melody."

as the Rosslyn Motet. First performed in the Chapel in May 2007, it is now available to buy on CD.

"We literally discovered the first CD set in stone," Tommy laughs. The Motet was played by candlelight on authentic medieval instruments, the singers in medieval costume. "We had the key – the first three notes – playing on a loop from the crypt as people arrived," Tommy adds, "which built up a resonance before we had even started. You could practically cut a chunk out of the atmosphere. During the recital, everything just gelled. There was such a strong sense of oneness, such a poignancy to the music, there was hardly a dry eye in the house."

To decipher the patterns, the Mitchells worked closely with John Stuart Reid, an acoustic scientist and world authority on cymatics who, along with the American inventor Erik Larson, co-invented the *cymascope*, a device that captures images of sound that look remarkably similar to the mandala patterns found in Tibetan Buddhism scriptures.

According to Reid, the reason the images are always rounded is because sound itself is spherical. Although the term 'soundwave' is still used, sound actually travels in 'sonic bubbles' rather than waves, ballooning outwards, like ripples in a pond once a stone has been dropped in.

Reid's hypothesis on the possible connection between cymatics and mandala shapes is intriguing: "I believe our distant ancestors were probably quite synaesthetic, that is, they would be able to 'see' sound as colours and images. When, say, a 'sound



Cymatics at the Great Pyramid yielded startling results.

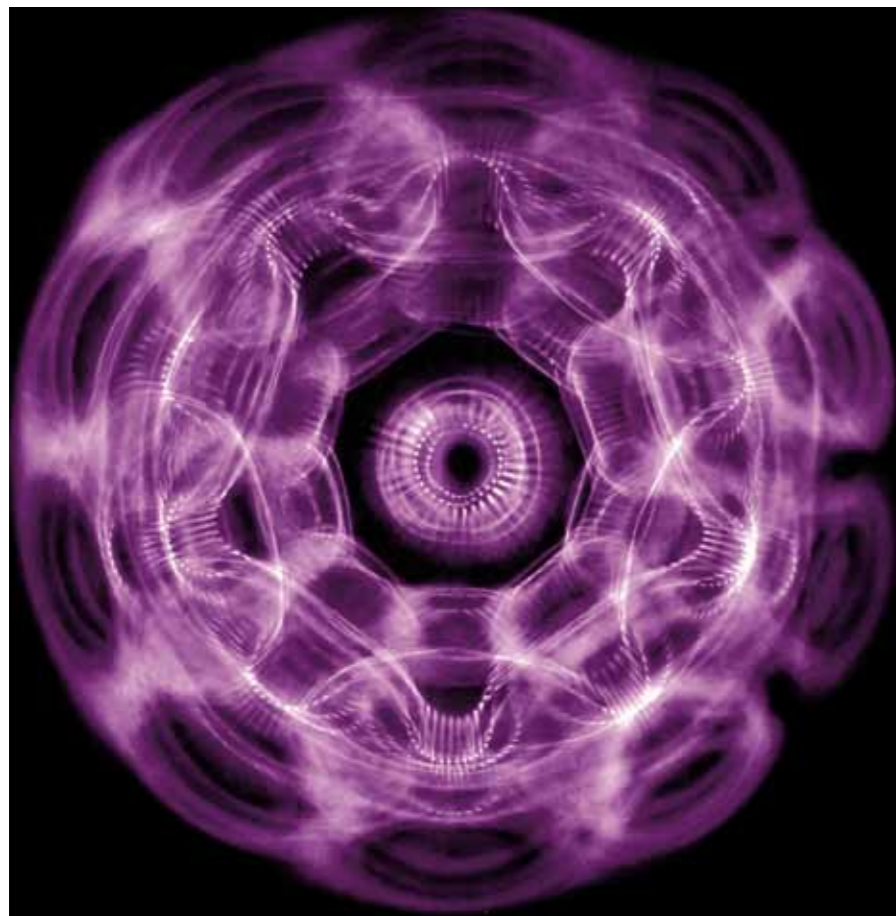
bubble' came out of a sacred musical instrument, it would actually create a pattern of energy on the skin. Our skin after all, is a membrane and all the cells in our bodies have membranes too. Sound, therefore, creates patterns on the 'drum skin' (or Chladni plate) of the body. The ancients would be able to see those patterns in their mind's eye – possibly at a subconscious or subliminal level – and, who knows, this may have been the origin of mandalas."

Reid was also inspired by the work of Margaret Watts-Hughes, a Welsh woman who invented the 'Eidophone' in 1885 (a wooden resonating chamber with a rubber membrane stretched across the end). By singing into her device, she was able to create 'voice figures' which delighted her. In an article accessible in the Cornell University Library she wrote: "I have gone on

singing into shape these peculiar forms and [...] have seen their parallels in the flowers, ferns and trees around me." She added that she hoped her humble experiments would, eventually, "afford some suggestions in regard to nature's production of her own beautiful forms."

Pyramid experiment

In 1996, Reid took his own cymatics technology to the Kings Chamber of the Great Pyramid in Egypt, where he placed a loudspeaker in the sarcophagus and stretched a membrane over the top. Despite conventional wisdom to the contrary, no mummified body of a pharaoh has ever been found inside a sarcophagus (an open topped granite box), let alone the so-called pyramid 'burial chamber'. The most famous example of this is probably Sekhemkhet's



Third Dynasty Pyramid at Saqqara, which was opened for the very first time in 1954 by the Egyptian archaeologist Zakaria Goneim, in front of the world's press. It was empty.

"I was really curious about the soundscape and resonances of the interior of the pyramid," Reid explains. "I was accompanied by the local antiquities inspector, who must have thought I was a slightly mad scientist but who helped me anyway. Three weeks before flying out I had severely injured my lower back, was in a lot of pain, and very nearly cancelled the trip. I tested the whole audio spectrum of sound and, at one point, hieroglyphic shapes started forming. The antiquities inspector was stunned. He kept asking me: 'How you do that? *How you do that?!*' I said: 'I have no idea!'"

"During the experiment, I noticed my back pain had gone. At the time I presumed it must have been all the endorphins from the excitement of seeing hieroglyphics shapes. But, in fact, the pain never came back."

Through research, Reid later found that the earliest date for evidence of granite working was 3,900 BCE (in Hierakonpolis, south of Luxor), the very same time that the earliest hieroglyphic writing appeared. He has had similar results with sounds from the Aboriginal didgeridoo. The shapes look remarkably similar to Aboriginal art. Reid concludes that: "The iconography of each culture must have been inspired by sonic imagery that was sensed by the shamans, priests, bards or scribes of the time."

Another collaborator with Reid, the sound healer and musician Stellar, has been

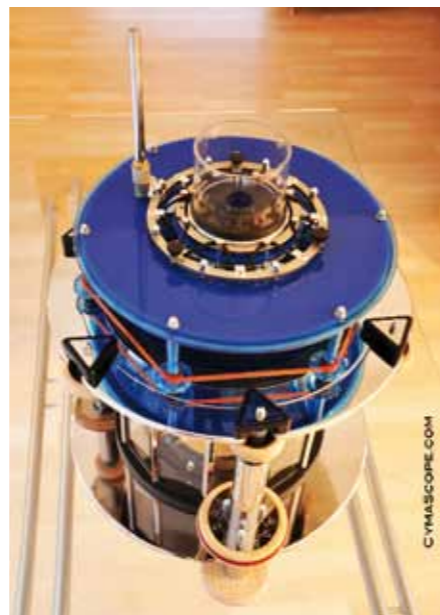
synaesthetic since childhood: "From the age of five I would sing in the bathroom. As I did so, I would feel the whole room vibrate and see shapes in light and colour, which filled me with joy."

She has recorded several albums of ancient healing mantras set to 432Hz, the *phi* resonant pitch of nature. Phi is the mathematical formula behind spiral shapes that can be found throughout nature (such as ferns, nautilus shells and ammonite fossils). This spiral creating number system is also known as the Fibonacci sequence.

Sinister pitch

Our current concert pitch is set at 440Hz, which, so the people interviewed for this feature say, is discordant with the sounds of the natural world (and therefore, discordant with humanity too). Some even go so far as to say that 440Hz was implemented in order to disrupt our own peaceful nature.

The story of how concert pitch was changed from 432Hz to 440Hz has been researched and documented by the outspoken American natural healing expert Leonard G Horowitz and also by Brian T Collins on his campaigning website: www.omega432.com. Alarming, it was recommended to the International Standards Organisation (ISO) by Nazi party spokesman, Joseph Goebbels in 1939. However, there was also American influence involved, when a representative of the US Navy persuaded the American Federation of Musicians at its 1910 annual conference, to adopt the 440Hz as the standard universal pitch for orchestras and bands. Despite the



The CymaScope makes sound visible, as in the image, left, and on page 34.

petitions of over 20,000 musicians in France, the ISO codified concert pitch globally to 440Hz in 1955.

According to Stuart Mitchell: "If you removed all the noise pollution in this world, you would be left with the sounds of nature, birds and animals, which are all at the pitch of 432Hz. Mozart himself kept a pet starling which would sing to him every day, eventually providing him with the melody for his Piano Concerto in G Major." Indeed, all the well-known classical 'healing music' pre the 440Hz concert pitch re-coding, such as Chopin, Vivaldi, Tchaikovsky, Mozart and Verdi is set at 432Hz.

Stuart Mitchell also notes that there are two beehives built into the stone either side of the Rosslyn chapel. His theory is that the bees who might have been encouraged to live there would have created a stereo baseline drone note of 216Hz (half of 432). The chapel, he concludes, is a veritable shrine to nature.

Stellar has been collaborating with Reid and his cymascope to record the particular patterns of her 432Hz music. "I decided to work with a Christ consciousness mantra that came to me in deep meditation," she says. "During the meditation, I also tuned into my 'soul group' who basically told me to make a track of all their voices. I clearly saw 11 other souls, a total of 12 including me, all of whom had another 11 souls associated with them. All together this makes 144 (which happens to be a third of 432). So, I tuned into each one of these soul beings and laid down a track for each. It took a good week! John and I were astonished to see the cymascope picture: a clear image of 12 distinct strands of energy, representing the energy of 12 and multiples thereof. I could hardly believe it. Not only had I created the sound of my soul, I had a picture of it too." ('Stellar, One Four Four Voice of the Monad 432Hz' is available to listen to on YouTube.)

Stellar's latest project is her new EP 'Sounds of Light', most of the vocals of

which were recorded in the Kings Chamber of the Great Pyramid in Egypt. (Available at: stellar1.bandcamp.com)

In indigenous Australian Aboriginal culture, creation myths tell of a legendary, totemic being who wandered all over the continent, singing out the name of everything it came across – birds, animals, plants, rocks and waterholes – hence singing the world into existence. Indigenous Aborigines have no literary tradition. Instead, they relate to their landscape primarily through song (as well as ritual and dance) and are able to navigate the vast wilderness of the Australian bush along the ancient *songlines* (which some equate to leylines), which are, in effect, maps of the landscape encoded in traditional song.

It was Pythagoras who suggested that life in the universe is a symphony. If nature does somehow sing itself into existence, then could our singing actually change the physics of nature?

"If nature does sing itself into existence, could our singing actually change the physics of nature?"

The founder of the modern sound healing movement, Jill Purce, who was one of the first people to bring Mongolian Overtone Chanting to the West in the 70s, believes it can. In fact, it was one such experience in childhood that proved formative in inspiring her well-documented chanting career, or as she likes to phrase it, her mission to 're-enchant the world.'

"I was very young at the time, probably about eight years old. During a family holiday in Ireland, my father, who was quite eccentric, had taken my mother, brother, sister and me on a boat-trip, in the middle of the night, to a remote island. A terrific storm blew up, which terrified me. There were three local women with us in this little fishing boat. They started singing a song that I presume must have been in Gaelic – and it had the most extraordinary calming effect. I was overcome with a sensation of deep peace and then the storm itself died down. It is something that I have never forgotten."

Katie Rose is part of a new generation of young musicians who uses sound with the intention of rebalancing the havoc humanity has wreaked on nature: "Singing mantras, chants and songs creates new patterns within the mind, soothing troubled thought patterns, regulating the breath cycle and boosting physical well-being."

The vibrations of the natural world, she says, go far beyond the scope of human hearing. "Animals respond to the vibrations of earthquakes, storms and tsunamis hours before humans do.



Australian Aborigines believe that the world was sung into creation.

"Sound actually travels four times faster through water than it does through air, which is one reason why whales can communicate with each other across hundreds of underwater miles. Military sonar is disturbing whale song to such a degree that many species of whales are now close to extinction, suffering ear damage, becoming disorientated and beaching themselves." She believes that song and sound can act as a remedy to pollution. Interweaving her own original material with chants and mantras from global traditions (*The Singing Tree* (2009) and *Shiva's Rain* (2011)), her music aims to send healing ripples out into the natural world.

If the world really has been 'sung into being', maybe we can sing it back to health too – back to the original, harmonious sound patterns of creation. 🌿

More information

To download software to retune your music to 432Hz, see: www.audacity.com
 Brian T Collins provides a 432Hz retuning service for a small charge. See: www.omega432.com
 Stuart Mitchell: www.stuart-mitchell.com
 The Rosslyn Motet: www.rosslynmotet.com
 John Stuart Reid and the cymascope: www.cymascope.com
 Stellar: www.starsistrum.com
 Stellar's 'Sounds of Light' album: stellar1.bandcamp.com
 Jill Purce: www.healingvoice.com
 Katie Rose: www.therosewindow.org