



'My initial exposure to non-music sounds came from listening to the radio in rural Queensland, as a young boy. The reception was mostly difficult so I developed a great interest in these broadcast noises, especially sunspot activity.'

-ANDREW KETTLE

*Sol's Violin* [a Work for the Music of the Spheres] is an audio composition of 521 hours in its entirety. Tones are established for the nine planets in our solar system, based on the geophysical properties of planetary mass and orbital period.

$$\text{frequency} = \frac{1}{\text{orbit}} \times \text{weight} \times 2^{48}$$

Tone is manipulated in real time by astronomical data specific to Brisbane. A planet's rising and setting times control the volume envelope with geocentric position attributed to modulation. This installation of distributed sound consists of envelopes of volume and modulation in 4.5 weeks blocks (77 hours, 111 hours, 111 hours, 111 hours & 111 hours).

**ABOUT THE ARTIST**  
 Andrew Kettle's recording material dates back to 1993, with several CD releases, compositional scores, installations and performances. His work has received extensive radio play nationally and through numerous community radio stations around Australia. His work, heavily influenced by alchemy, is riddled with transmutative processes and experiential work in the natural world.

Small Black Box (May 2003), 2002AD (Adelaide Fringe), REV 2002, Liquid Architecture 2001-02, D>Art2001 (sound), Total Huge New Music Festival 2001-02 (Sound Spaces), Multimedia Arts Asia Pacific 1999, 2001, Australian Interactive Multimedia Industry Awards 1999 (AIMIA), Australian Computer Music Conference 2000,01 and Electrofringe 1999-2001 have exhibited his work in Sound Galleries and performances.

A planned deviation back to laboratory work during 2003 will incorporate further technical influences blending his artwork and alchemical procedures together. Having completed the Secunda class with the Paracelsus College, Adelaide in February/March of this year an aim to advance a exploration in the conscious sensory continues. *Sol's Violin* is the result of a meditation that has taken three years to complete.

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# IMA

Institute of Modern Art

ANDREW KETTLE'S  
**SOL'S VIOLIN**  
 A WORK FOR THE MUSIC OF THE SPHERES

ASTRONOMICAL DATA FOR BRISBANE, QLD  
 31 JULY - 30 AUGUST, 2003

INSTITUTE OF MODERN ART  
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# Sol's Violin [a Work for the Music of the Spheres]

TEXT COMPILED BY ANDREW KETTLE

**I feel that I have achieved a simpility in this work** that I have been striving for, for years. It is a simplicity that has touched the very existence of my soul. *Sol's Violin* attempts to create an experiential sense of connectedness to a meaningful order in the bewildering complexity of the solar system.

To encompass the solar system into a single exhibit is a grand oversized view of our; it puts us in our place as powerless and inconsequential. You will never consume this entire work, however, the music of the spheres can take you too a place where you can compare your microcosmic experience with numinousness of the solar system.

‘Before there was smog and skyscrapers - that is, throughout all human history until about a hundred years ago - it was accepted as an indisputable truth that the heavens were of a transcendental importance that far outweighed the petty doings of this earth.’  
—JAMIE JAMES, *MUSIC OF THE SPHERES*

Pythagoras distinguished three sorts of music in his philosophy: *musica instrumentalis*, the ordinary music made by instruments. *musica humana*, the continuous but unheard music made by each human organism, especially the harmonious (or inharmonious) resonance between the soul and the body. *musica mundana*, the music made by the cosmos itself constructed with crystal spheres.

A sympathetic relationship exists between them all.

‘... the motion of the bodies of that size must produce noise, since on our earth the motion of bodies far inferior in size and speed of movement has that effect. Also, when the sun and the moon, they say, and all the stars, so great in number and in size, are moving with so rapid a motion, how should they not produce a sound immensely great? Starting from this argument, and the observation that their speeds, as measured by their distances, are in the same ratios as musical concordances, they assert that the sound given forth by the circular movement of the stars is a harmony.

... the sound is in our ears from the very moment of birth and is thus indistinguishable from its contrary silence, since sound and silence are discriminated by mutual contrast.’  
—ARISTOTLE, *ON THE HEAVENS*

‘He who lives on the banks of the tumbling waters of the Nile does not notice the noise of the raging torrent.’  
—MOZART, *IL SOGNO DI SCIPIO*

‘The movement of the heavens are nothing except a certain everlasting polyphony, perceived by the intellect, not by the ear’  
—KEPLER, *THE HARMONY OF THE UNIVERSE*

Voyager has redefined our experiential mind. Attempts to comprehend the distance it has travelled fails in value to any measurement on earth. We have created machines that advance our knowledge but we have failed to sculpture minds that appreciate the depths of new existence. You are present with time and significant.

‘A concord of tones separated by unequal but nevertheless carefully proportioned intervals, caused by the rapid motion of the spheres themselves. The high and low tones blended together produce different harmonies. Of course such swift motions could not be accomplished in silence and, as nature requires, the spheres at one extreme produce the low tones and at the other extreme the high tones. Consequently the outermost sphere, the star-bearer, with its swifter motion gives forth a higher-pitched tone, whereas the lunar sphere, the lowest, has the deepest tone. Of course the earth, the ninth and stationary sphere, always clings to the same position in the center of the universe. The other eight spheres, two of which move at the same speed, produce seven tones, this number being, one might almost say, the key to the universe.’  
—CICERO, *SCIPIO'S DREAM*

‘I have not forsaken number. I followed the courses of the sidereal spheres and the whirling motions of the entire mass, assigning tones to the swiftly moving celestial bodies.’  
—STAHL, *THE MARRIAGE OF PHILOSOPHY AND MERCURY*

‘Pure music is number made audible.’  
—AUGUSTINE, *DE ORDINE*

‘... a shield, circular overall, with many inner circles, the whole interwove with remarkable configurations. The encompassing circles of this shield were attuned to each other, and from the circular chords there poured forth a concord of all the modes.’  
—STAHL, *THE MARRIAGE OF PHILOSOPHY AND MERCURY*

‘Sound is generated by motion, while it exists when it is made, it no longer exists once it has been made ... all music, especially measurable music, is founded in perfection, combining in itself number and sound.’  
—JEAN DE MURIS, *ARS NOVAE MUSICAE*

‘Some day there will be new instruments that will allow us to hear the cosmic music.’  
—CAMPANELLA

‘Harmony, musical or of any other kind, consists in the mind’s recognizing and classing certain proportions between two or more continuous quantities by means of comparing them with archetypal geometric figures.’  
—D.P. WALKER, *STUDIES IN MUSICAL SCIENCE IN THE LATE RENAISSANCE*

‘The harmony of the celestial spheres, designated the Sun and the remaining six planets, Mercury, Venus, Earth, Mars, Jupiter, Saturn, by Menas of Apollo with the Lyre of seven strings, measures the intervals of the spheres by the intervals of the tones. Thus they alleged that seven tones are brought into being, which they called the harmony diapason, and that Saturn moved by the Dorian Mode, that is, the heavy one, and the rest of the planets by sharper ones and that the Sun strikes the strings.

The Sun is called by the oracle of Apollo the king of the seven sounding harmony. But by this symbol they indicated that the Sun by his own force acts upon the planets in that harmonic ratio of distances by which the force of tension acts upon strings of different lengths, that is reciprocally in the duplicate ratio of the distances.

The same tension upon a string half as long acts four times as powerfully, for it generates the Octave, and the Octave is produced by a force four times as great.

The proportion discovered by these experiments, on the evidence of Macrobius, he applied to the heavens and consequently by comparing those weights with the weights of the planets and the lengths of the strings with the distances of the planets, he understood by means of the harmony of the heavens that the weights of the planets towards the Sun were reciprocally as the squares of their distances from the Sun.’  
—NEWTON, *PRISCUS THEOLOGUS*

‘If we think of a series of tones grouped around the parent tone...as a planetary system, then C is the Sun, surrounded by its descendant tones as the sun is surrounded by its planets ... The intervals correspond to the distances of the various planets from each other. In their melodic function, the two successive tones of an interval are like two planets at different points in their orbits, while the formation of a chord is like a geometric figure formed by connecting various planets at a given instant.’  
—HINDEMITH, *THE CRAFT OF MUSICAL COMPOSITION*

‘It is naturally better if one hears music that draws one up higher than one is by nature ... to bring ourselves through music into relationship with that which we cannot grasp with the understanding, but which we can feel’  
—STOCKHAUSEN

‘Kepler points out that the changes in tone would not be divided into steps, as required by staff notation, but would rather be an eternal note that rises and falls continuously.’  
—JAMIE JAMES, *MUSIC OF THE SPHERES*

‘Music is the science of modulating correctly.’  
—AUGUSTINE, *DE ORDINE*

Consider the soul of the solar system. *Sol's Violin* guides towards an awareness and contemplation of a higher beauty. To contemplate nature submerges thoughts, attuned to the grace of the body and mind, deep into the chasm of the soul.

‘Music is the very key to the human soul ... the real purpose and meaning of science to be – to help man find his place in the universe.’  
—PLATO

#### NOTES

All quotes from James, J., *Music of the Spheres: Music, Science and the Natural Order of the Universe*, (London: Abacus, 1994). ISBN 0-349105-42-1

#### OTHER SUGGESTED READING

Cousto, *The Cosmic Octave: Origin of Harmony*, translated from German by Christopher Baker and Judith Harrison, Munich. (Mendocino: LifeRhythm, 1988). ISBN: 0-940795-04-3  
Keyword search: music of the spheres, cosmic octave, sound art.