

# Stoicheia (1987/88)

James Wood

- Stoicheion (Gr):
- 1 Element - component into which matter is ultimately divisible  
Empedocles named the four 'Risdomata' (early form of the word 'Stoicheion') as Fire, Air, Earth and Water.
  - 2 Simple sound of speech (first component of a syllable)
  - 3 Fundamental principle
  - 4 Shadow of a sundial, and the Signs of the Zodiac

Aristoxenes (third century musical theorist) wrote three books of 'Stoicheia Harmonika' and two of 'Stoicheia Rhythmika' which show us the astonishingly sophisticated state of harmonic, melodic and rhythmic evolution 300 years before Christ.

Whilst the actual composition of *Stoicheia* took place between September 1987 and March 1988, preparations for it go back to 1982. During this period I devoted much time to the study of many ancient rhythmic techniques, in particular those of Ancient Greek metre, Indonesian Gamelan techniques, Indian and Chinese rhythms, as well as what survives of Aristoxenes' Theory of Rhythm. My purpose has never been to imitate or extract any part of these rhythms - rather I have sought the 'key' to the physical, psychological and aesthetic effects they have on us. I then used these ancient fundamental principles as the foundation of my own particular rhythmic techniques.

The musicians in *Stoicheia* are divided into a central group, representing the Earth, and an outer group, representing the Constellations:

Earth Group: Two solo percussionists  
A 'Chorus' of six percussionists

Constellation-Group: Seven percussionists playing twelve groups of bells (=the twelve Signs of the Zodiac) arranged around the edge of the hall.  
Three of these players join the 'Chorus' during Part II .

Four MIDI keyboard players (whose sound is spatialised around the hall), two triggering Yamaha TX16W Samplers, and two triggering TX802 Synthesisers.

A supporting computer-generated soundfile (also spatialised around the hall) also forms a part of the Constellation-Group.

The bulk of the music is played by the central Earth-Group - their three sections (Parts I, II and III) are framed by four 'Seasons' played by the surrounding Constellation-Group of bells, keyboards and soundfile. The twelve Constellations are laid out around the edge of the hall in the correct order - the Constellation-Group perform only the six or seven 'Signs' which can be seen during a particular season at a constant latitude and time. As each new season presents a partially new set of six or seven 'Signs', the seven bell-players take up correspondingly new positions at the instruments which represent those Signs. Consequently during the course of the work they gradually revolve around the audience almost one complete turn (Plate 1).

*Stoicheia* runs continuously for 65 minutes, and the form of the work can be followed, if desired, with reference to the following diagram:

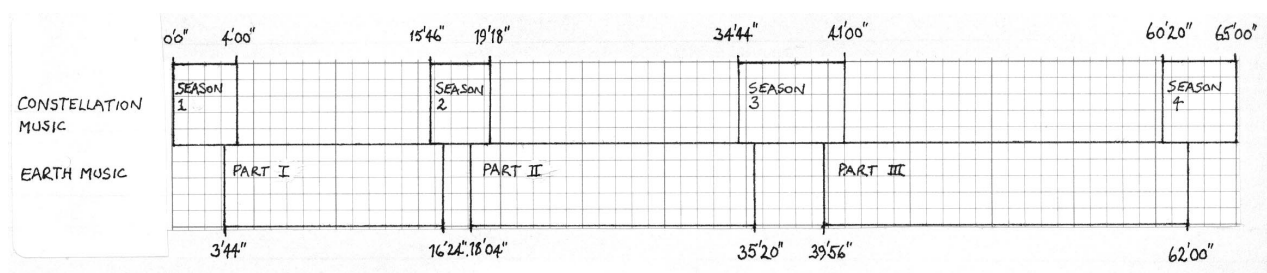
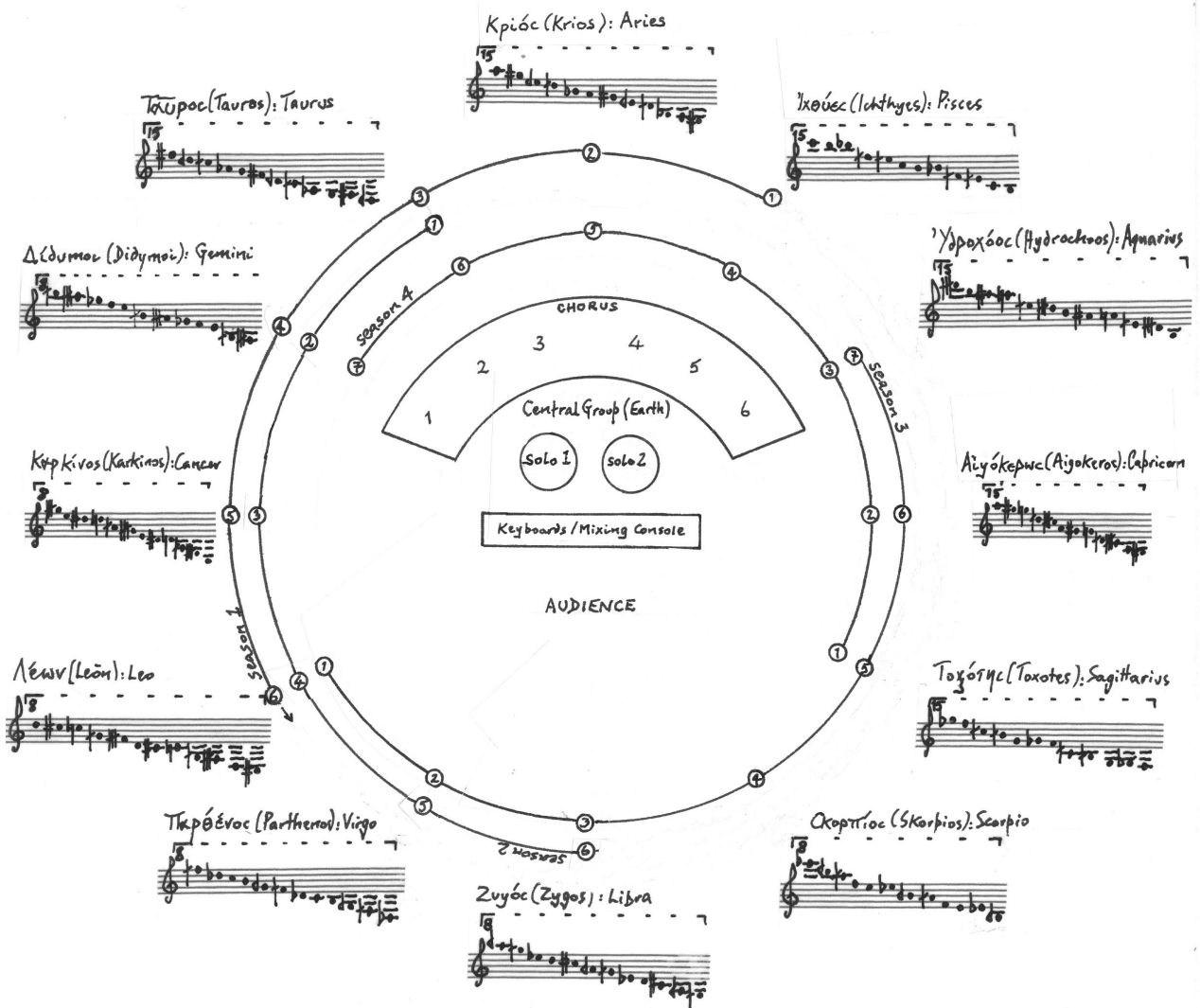


Plate 1



## Stoicheia as 'Elements'

The instrumentation in *Stoicheia* embraces a wide spectrum of resonant materials -

stones:	slabs of mica-schist collected from Loch Glascarnoch in Scotland - this is very old, very hard and brittle, metamorphosed rock - hence its resonant quality. slabs of marble.
metals:	brass, bronze, aluminium, steel.
glass:	bottles of different sizes as well as <i>Cloud Chamber Bowls</i> .
wood:	many kinds of wooden instruments of which the principal ones are the two large <i>Kenthong</i> (Javanese log-drums made from the wood of the Jack-Fruit tree).
bamboo:	<i>Eucal Blossom</i> , clappers, buzzers and chimes.
vegetation:	many kinds of rattles, maracas etc.
skin:	a large array of drums from many different countries, of which the principal ones are Senegalese <i>bugurabu</i> and <i>doundoun</i> .
whistles:	many kinds of whistles from Java and Brazil
voice:	the use of the human voice is both symbolic and structural - it represents the very soul of life on Earth, and is heard at the opening, the mid-point and the end of the Earth-music, like three musical pillars.

In addition to the multitude of these natural sounds are a large variety of electronic sounds - the indigenous natural sounds of the twentieth century.

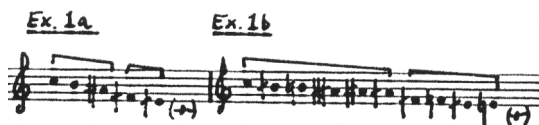
## Stoicheia as 'Simple Sounds of Speech'

The starting point of the Earth-group's music is the set of four 'phonemes' used in Kandyan drumming to imitate the four basic drum-sounds. Just as in Sri Lanka such sounds are used by master-drummers in the teaching of rhythms to student drummers, here the basic rhythms are first presented in vocal form by the two soloists, and answered by the Chorus. Gradually a dialogue is set up, both between the two soloists, and between soloists and chorus. Once everyone 'learns the rhythms', we all try them out and develop them on the instruments. These vocal dialogues form the beginning and ending point of the whole of the Earth-group's music. In the central section (Part II), this embryonic language grows into a rich phonetic language of great expressivity, in an extended vocalisation by the second soloist.

## Stoicheia as 'Fundamental Principles'

The fundamental principles referred to here are those of rhythm, briefly mentioned earlier, and of harmony. The harmonic language stems from a particular 5-note scale based on the principle of the pentatonic scale but having a very distinctive character (ex 1a). All the pitched instruments are based in some way on this scale, albeit with many microtonal variations, and many transpositions - each of the twelve sets of Constellation-bells inhabits a different (1/2-tone) transposition and a different tessitura, involving a wide range in harmonic implication as well as register (plate 1). The keyboards amplify this situation by embellishing the basic scale to 10 notes to the octave (ex 1b). Thus the main character of the scale (the similar gap between the two groups of adjacent pitches) is preserved.

Ex. 1



## Stoicheia as the 'Signs of the Zodiac'

Each of the twelve sets of bells represents one of the Constellations in the Zodiac. For each of these twelve different groups of sounds there are several generations of electronic sounds which will seem to transform these 'sound-characters' - these sounds are distributed among the keyboard players and the computer-generated sound-file.

The performance of the Constellation-music is like a kind of musical 'game'. The bell players read from a circular score which consists of the appropriate constellation printed on a transparent disc which can be rotated through 360° over a fixed grid (plate 2) - as the disc is rotated, different realisations of the constellation will result. Twelve equidistant positions are marked around the edge, giving twelve possible realisations. (For the keyboard players, these twelve positions are actually notated in twelve separate versions). First a Constellation is 'called' (by a 'signaller' from the Earth-Group) - then a 'degree' is drummed out (a series of impulses between 1 and 12); this is then answered by two 'Responses':

First Response: the bell-player at the Constellation that has been called rotates his disc to the degree that has been drummed, and then performs the resulting pattern (once only).

Second Response: the keyboard player with the corresponding 'sound-character' then answers with a second (timbrally transformed) version set at 90° to the first (bell-) response.

A third generation of Responses is provided by the pre-recorded soundfile, which also provides a kind of complementary 'darkness' consisting of drones as well as a third generation of bell-sounds.

This 'Signal-Response' procedure is governed by a complex series of 'Options' for both the Signallers and the Constellation performers, affecting many parameters of performance such as tempo, ornaments, and (in the case of the Signallers) instrumentation. With each new Season, an extra Signaller is added, so that the texture will undergo enormous transformation, resulting in up to a possible four simultaneous signals, and thus a possible twelve simultaneous Responses. The idea of creating a large variety of timbral transformations of the bell-sounds roughly corresponds with the idea of imagining many different perspectives of the stars - each of us perceives the stars in a different way - how do they look from another planet? - how do they appear through different atmospheric conditions? - how did they appear a million years ago and how will they seem in the future? The electronic sounds were originally realised in my own studio using a TX16W Sampler and a TX802 Synthesiser between April and July 1988. For the present production I have devised a new electronic set-up which takes advantage of recent technological advances in spatialization techniques. The sounds themselves remain unchanged from the very first production. The Contrabass Bell-Plates, the 144 Constellation Bells, the Woodblocks and Simantras were specially built by Arthur Soothill. The glass bells were built and generously provided by Volker Staub. We are grateful to the Birkbeck Classics Department (University of London) for assistance with the Greek. *Stoicheia* was commissioned by IMD with funds from the Arts Council of Great Britain. The first performance took place at the Internationale Ferienkurse für Neue Musik, Darmstadt, on 13th August 1988. The work is recorded on Wergo WER 6194-2.

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**Plate 2**