

# Stuart Greenbaum

## ***90 Minutes Circling the Earth (Hymn to Freedom)***

Writer: **Stuart Greenbaum**, composer

### **Hymn to Freedom**

*90 Minutes Circling the Earth (Hymn to Freedom)* started out as a sketch back in about 1989. That sketch was less than a minute of material and was not specifically for any instrumentation. The sketch, at the time known only as *Hymn to Freedom*, lay undeveloped and unfinished in the drawer for nearly ten years.

When Symphony Australia commissioned an educational piece in 1997 for The Melbourne Symphony, I knew that I wanted to compose something around the idea of space travel and specifically around the image of the Earth as seen from outer space. I had been browsing through a book of photographs<sup>1</sup> showing the Earth as captured from a space shuttle accompanied by short comments made by astronauts from around the globe. Their observations struck me as much as the extraordinary images:

*"The earth was small, light blue, and so touchingly alone, our home that must be defended like a holy relic." <sup>2</sup>*

**Aleksei Leonov - USSR**

Many other astronauts have made similar comments about the absurdity of boundaries between countries and the wars between them. At this early point in planning my orchestral piece, these sentiments reminded me of my early sketch, *Hymn to Freedom*, and I knew then that this would be the musical material I would finally find a home for.

### **"Exploration is not a choice, really, it's an imperative..."**

90 Minutes is the time it takes for a space shuttle to circumnavigate the Earth. *90 Minutes Circling the Earth (Hymn to Freedom)* is inspired by observations made by astronauts from various countries regarding what the Earth looks like from outer space. It is the 4<sup>th</sup> of **Four Essays on the Passing of Time (symphony No.1)**, the first three being *4 Hours in a Holding Pattern*, *4 Minutes in a Nuclear Bunker* and *Moments of Falling*. These all function separately as individual pieces in their own right and this article concerns only the final 'essay', *90 Minutes Circling the Earth (Hymn to Freedom)*.

Of particular interest to me in this piece was the notion of 'sunset' and 'sunrise':

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<sup>1</sup>Kevin W. Kelley, [The Home Planet](#)

<sup>2</sup>Kelley

*"The sun truly 'comes up like thunder', and it sets just as fast. Each sunrise and sunset lasts only a few seconds. But in that time you see at least eight different bands of color come and go, from a brilliant red to the brightest and deepest blue. And you see sixteen sunrises and sixteen sunsets every day you're in space. No sunrise or sunset is ever the same."* <sup>3</sup>

**Joseph Allen - USA**

I am fascinated by 'alternative' time-frames and music can be an effective vehicle for bending normal 'Earth' time. Consequently, this piece takes about 5 minutes to represent a 90-minute space flight that visually encompasses a full 24-hour 'Earth' day. The piece begins in outer space in the **Night** cycle, floating through the immense blackness and isolation:

*"We entered into shadow. Contact with Moscow was gone. Japan floated by beneath us and I could clearly see its cities ablaze with lights. We left Japan behind to face the dark emptiness of the Pacific Ocean. No moon. Only stars, bright and far away. Very slowly, agonizingly, half an hour passed, and with that, dawn on Earth. First, a slim greenish-blue line on the farthest horizon turning within a couple of minutes into a rainbow that hugged the Earth and in turn exploded into a golden Sun. You're out of your mind, I told myself, hanging onto a ship in space, and to your life, and getting ready to admire a sunrise."* <sup>4</sup>

**Valeri Ryumin - USSR**

The dramatic event of **Dawn** ushers in the **Day** cycle:

*"We orbit and float in our space gondola and watch the oceans and islands and green hills of the continents pass by at five miles per second.... the breathtaking speed of the ship is in odd and confusing contrast to the feel of perpetually floating within the spaceship... Are you speeding past oceans and continents, or are you just hovering and watching them move beside you?"* <sup>5</sup>

**Joseph Allen - USA**

Finally comes **Sunset**:

*"the minutes of the evening twilight are fabulous. The hull of the station is lit by the golden rays of the sun. The daylight part of the Earth with its pink clouds and evening haze above the surface is still visible while our spacecraft is already sailing into the blackness of night."*

<sup>6</sup>

**Vladimir Vasyutin - USSR**

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<sup>3</sup>Kelley

<sup>4</sup>Kelley

<sup>5</sup>Kelley

<sup>6</sup>Kelley

During the writing of *90 Minutes Circling the Earth (Hymn to Freedom)* I became an uncle and the dedication of the work to my new-born niece, Megan, is reflected in the final observation:

*"When the history of our galaxy is written...if the planet Earth gets mentioned at all, it won't be because its inhabitants visited their own moon. The first step, like a new-born's first cry, would be automatically assumed. What will be worth recording is what kind of civilisation we Earthlings created and whether or not we ventured out to other parts of the Galaxy. Were we wanderers? Human history so far indicates we are indeed. It's human nature to stretch, to go, to see, to understand. Exploration is not a choice, really, it's an imperative"* <sup>7</sup>

**Michael Collins - USA**

## Development of Early Sketches

The early sketches of *Hymn to Freedom* contained an accompanimental motive and an anthem, the two of which were intended to be superimposed. The accompanimental motive is constructed over a bass line (see Ex. No.1):

### Musical Example No.1



### Prominent Features of Bass Line:

- Mostly quaver values
- Contains all the notes of F major
- steady conjunct rise towards top F
- Composite (changing) metre

This metrical scheme is quite complex but does contain some interesting patterns. If the 4/4 + 3/4 bars (marked with a solid bracket) are added together, they can be seen as a 7/4 bar. Both times, this is followed by a 7/8 bar (marked with a dotted bracket) which is a metrical diminution (by half) of the previous two bars. This pattern is repeated twice followed by a cadential 6/8 turnaround.

At first, this metrical pattern is complex in that the metre changes every bar. The quavers of each bar can be added up as follows:

$$8 + 6 + 7 + 8 + 6 + 7 + 6 = 48$$

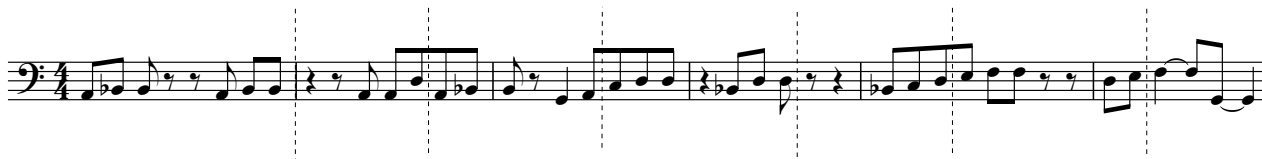
This total of 48 quavers is important because it is a 'natural' number that can be divided into 6 x 8 (or 4 x 12). When orchestrating the early sketch, I thought it would be more

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<sup>7</sup>Kelley

practical for the orchestra and conductor to work in a simpler metre and I redefined the motive as follows (see Ex. No.2):

### Musical Example No.2



#### Prominent Features of Redefined Bass Line:

- Quaver pattern still exactly the same
- Now all in 4/4 metre
- 6 bars instead of 7

The dotted lines show where the barlines used to be. This does create a slightly different syncopation due to the implied accent of the bar line, but both patterns are exactly the same notes over a 48-quaver pattern. An orchestra can play both - passages of Stravinsky's *Rite of Spring* are more complex again - but I adapted the simpler six bars of 4/4 so that the anthem (also in 4/4) could more easily be superimposed on the motivic figure.

## Harmonisation of Accompanying Motive

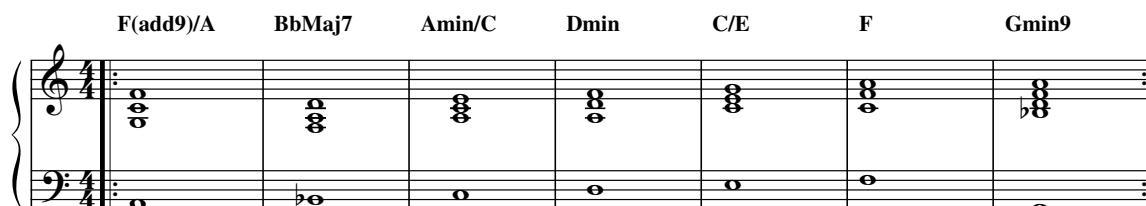
When harmonised, using jazz-influenced 7th and 9th chords, this motive fills out as follows (see Ex. No.3):

### Musical Example No.3



A harmonic reduction of this pattern highlights the core structure of this harmonic progression (see Ex. No.4):

### Musical Example No.4



### Prominent Features of Harmonic Reduction:

- All notes fit within F major pitch set
- Bass notes rise by step
- Chords cadence in pairs except final G min9 (turnaround)

The complexity of the harmonic progressions comes not from chromaticism but from added tones, bass note inversions and the actual voicing of the notes of any given chord. Whilst the theory of jazz harmony is based on stacked 3rds, the voicing of these notes is sometimes in 4ths. The first chord, based on A is a clear example of this (see Ex. No.5):

#### **Musical Example No.5**

The image shows two musical staves. The first staff is labeled 'FMaj9' and shows a chord voicing with notes F, A, C, and G stacked in thirds. The second staff is labeled 'FMaj9/A' and shows the same notes (F, A, C, G) stacked in fourths, with the bass note F in a lower octave than the other notes.

The F major triad (F-A-C) has a 9th (G) added to it and the 7th is omitted, by stacked 3rds. When stacked in 4ths, this chord sounds very different in quality, even though the four pitches are the same. This alternative voicing is also known as octave disposition, because three of the four notes are voiced in a different octave.

## **Anthem and Variations**

Along with the first sketches of *Hymn to Freedom* was a simple anthemic melody (see Ex. No.6):

#### **Musical Example No.6**

The image shows a single musical staff in 4/4 time. The first four measures are bracketed and labeled 'Antecedent'. The next four measures are bracketed and labeled 'Consequent'. The melody starts on F, moves to A, then C, and ends on F. The consequent phrase starts on F, moves to D, then E, and ends on F.

### Prominent Features of Anthem:

- Limited tessitura of Antecedent phrase - all within the interval of a 5th
- Consequent phrase adds the 6th (D) and 7th (E) to complete F major pitch set
- Complete phrase starts and ends on root note of F
- Ornament at end of Consequent is an inversion of the Antecedent ornament
- Consequent adds an extra note to the start of the anacrusis

The commission from Symphony Australia called for a work in Theme and Variations form. *90 Minutes Circling the Earth* is not a traditional 'Theme and Variations' but it does cast a modern 'minimalist' slant on the form. The largest source of variation comes from the way that this theme is orchestrated (Ravel's *Bolero* has some similarities in this

regard). The most crucial variation, however, is a metrical one and involves the re-scoring of the anthem in 12/8 (see Ex. No.7):

**Musical Example No.7**

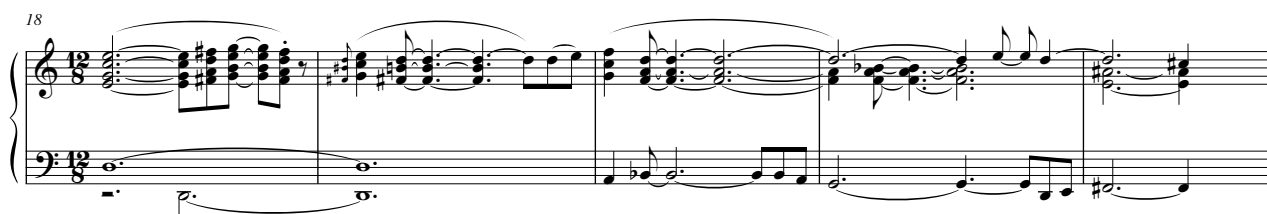


Bearing in mind that the accompanying rhythmic motive is 48 quavers long, it is possible to rescore 6 bars of 4/4 (Ex. No.6) into 4 bars of 12/8 (Ex. No.7). Both are exactly 48 quavers and the note patterns are identical but the placement of the barlines and the subsequent implied accents creates two very different pulses. The rescoring of the 4/4 into 12/8 also applies to the accompanimental motive which is similarly displaced by the different relative position of the barlines. Furthermore, when the anthem appears later in the piece (bar 65), the gap between the antecedent and consequent is reduced to one bar of 4/4 rather than three of the longer 12/8. This closer distance helps to keep the development of the anthem moving towards the full orchestral climax.

The contrast between the 4/4 anthem and the 12/8 anthem is the largest and simplest structural division of the piece. It starts and ends in 12/8 (which represents Night and Sunset) and has a middle section in 4/4 (which defines Dawn and Day). The transition into and out of the middle 4/4 section is achieved by way of rhythmic modulation (e» e). In addition to that, the choice of 4/4 for the daytime is due to its faster pulse (crotchet rather than dotted crotchet) and this connects to Joseph Allen's observation of the Earth during daytime as their space shuttle is "speeding past oceans and continents".

In addition to the main anthem is a B theme, which only occurs during the first Night cycle (see Ex. No.8):

**Musical Example No.8**



### Prominent Features of 'B' theme:

- Only occurs in 12 / 8
- Melody (top line of RH) mostly conjunct
- No leaps greater than a 3rd
- Initially rises (to G) then gradually descends
- Harmonised in parallel motion

If the Accompanimental Motive (see Ex. No.3) is considered as Theme 'C', and the Anthem as Theme 'A', this makes three main motives. There are two other minor variations which can be connected back to the anthem. After its first appearance in the English horn, the anthem is answered by the oboe at bar 7 (see Ex. No.9) in augmented rhythmic values using duplets:

### Musical Example No.9

Musical Example No.9 shows three staves of music in 12/8 time. The top staff is Oboe, the middle is English Horn, and the bottom is French Horn. The Oboe part starts at bar 4 with an 'Augmented variation' marked with a dashed line. The English Horn part starts at bar 4 with a melody marked *mf* and *f*. The French Horn part starts at bar 4 with a melody marked *mp* and *mf*. The Oboe part has a '2 2' marking under a duplet. Dynamics include *mp*, *mf*, and *f*.

This augmented variation gains greater structural significance later in the piece as an answering theme in the 4/4 metre as the whole orchestra builds the polyphonic texture. It reappears in the woodwinds from bar 71 building to a dramatic statement in the lower brass at bar 77 (see Ex. No.10):

### Musical Example No.10

Musical Example No.10 shows three staves of music in 4/4 time. The top staff is Trom 1, the middle is Troms 2 + 3, and the bottom is Tuba. The Trom 1 part starts at bar 77 with a melody marked *mf* and *f*. The Troms 2 + 3 part starts at bar 77 with a melody marked *mf* and *f*. The Tuba part starts at bar 77 with a melody marked *mf* and *f*. Dynamics include *mf* and *f*.

Finally, as the orchestral build-up climaxes, a Fanfare Variation is introduced in the trumpets at bar 81 (see Ex. No.11) which is an extension of the first four notes of the anthem and harmonised triadically:

**Musical Example No.11**

81 Trumpets

*ppp* < *f*



## Harmonic / Thematic Structure

The three main motives (A, B + C) are occasional superimposed but their principle roles are defined in Table No.1 (listed below):

Bars	Time	Thematic area	Key
1 - 40	Night	A - A - B A - A - B	E major
41 - 52	Dawn	C - C	F major
53 - 88	Day	A - A - A - A - A	F Major
89 - 94	Twilight	C	Bb major
95 - 110	Sunset	A - A - A	
111 - 118	Night	C - A	E major

This table shows that the Anthem (A) appears 13 times in the course of the piece. This is quite a high motivic level and is offset by the varied orchestration of the anthem. The 'B' theme occurs only in the first night section and the 'C' theme (or Accompanimental Motive) is often used as a pivot between sections. It should be noted that 'A' is 'accompanied' by 'C' and that the sections marked 'C' indicate where it appears, featured by itself only.

The key structure as shown above highlights that the piece starts and ends in E major. The arrival of 'Dawn' is supported by the modulation to F major which gives the key a slight lift and this stays right through the day section. When 'Twilight' arrives, the key moves one flat further around the harmonic cycle and this takes it to Bb major which is the furthest tonal distance away from the main key of E major. Up to this point, all key changes have modulated pivotally, using common tones to smoothly join the sections.

At bar 111, however, the move back to E major is deliberately non-functional to reflect the journey of the space shuttle, whose view of the Earth has finally been darkened by the sun's disappearance beneath the Earth's horizon.

*"The daylight part of the Earth with its pink clouds and evening haze above the surface is still visible while our spacecraft is already sailing into the blackness of night."* <sup>8</sup>

**Vladimir Vasyutin - USSR**

At this point, the winds continue in fragmented fashion (still in Bb major) whilst the strings are simultaneously constructing an E major pitch set. The effect created by this superimposition of keys is one of strangeness and remoteness - of distance from light.

## **The Four Sections of the Orchestra**

Part of the commission brief from Symphony Australia was to compare and contrast the four sections of the orchestra. The orchestration called for double winds (2.2.2.2.), standard brass (4.3.3.1), 2 percussion, timpani and strings. The approach taken to this format was to feature soloists, as well as entire sections building up to the use of the whole orchestra later in the piece. For musical reasons, the four sections (wind, brass, percussion and strings) were not necessarily used in isolation but featured as the prominent colour at a given point in the structure (see Table No.2):

**Table No.2**

<u>Bars</u>	<u>Time</u>	<u>Section featured</u>
1 - 22	Night	Woodwinds
23 - 40		Strings
41 - 52	Dawn	Percussion
53 - 64	Day	Woodwinds
65 - 76		Strings + Winds
77 - 88		Full Orchestra
89 - 94	Twilight	Winds + Percussion
95 - 102	Sunset	Brass
103 - 110		Full Orchestra
111 - 118	Night	Woodwinds

The woodwinds are the first section featured and the approach taken here was to build a polyphonic web of lines based around (and including) the main Anthem (see Ex. No.12):

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<sup>8</sup>Kelley

## Musical Example No.12

13

The musical score for Musical Example No.12, starting at measure 13, is written for a woodwind ensemble. The parts are: Piccolo (Picc.), Flute (Fl.), Oboe (Ob.), English Horn (E.H.), Clarinet (Cl.), Bass Clarinet (B.Cl.), Bassoon (Bsn), and Contra Bassoon (CBsn). The music is in 12/8 time. The Piccolo part starts with a piano (*p*) dynamic and a half note. The Flute and Bassoon parts play a melodic line with a slur and a fermata. The Oboe and English Horn parts play a similar melodic line. The Clarinet part has a complex rhythmic pattern with a piano (*p*) dynamic. The Bass Clarinet part is silent. The Bassoon and Contra Bassoon parts play a melodic line with a slur and a fermata. The score includes dynamics such as *p*, *pp*, *mp*, and *mf*, and articulation marks like slurs and fermatas.

The anthem (antecedent) is found in the flute and bassoon (two octaves apart) and is answered by the consequent in the clarinet four bars later. In between, variations of the anthem provide a polyphonic texture, linking the two together. Double winds (2.2.2.2.) can more simply require 2 flutes, 2 oboes, 2 clarinets and 2 bassoons. Due to the intended polyphony, however, I wanted to be able to separate the wind colours as much as possible. The doublings chosen, therefore, are: piccolo/flute, oboe/english horn, clarinet/bass clarinet, and bassoon/contra bassoon. As well as providing clearer variation of colour, the piccolo and contra (in particular) provide a wider pitch range up high and down low - both of which are exploited during the course of the piece.

The strings open the piece with harmonics that (along with the percussion) represent outer space. These are subtle effects, however, and the true string section sound does not appear until the lead up to bar 23 (see Ex. No.13), as it does dovetails out of the woodwinds:

### Musical Example No.13

20

vln 1 arco *p* solo *f* div. tutti *pp*

vln 2 arco *p* *pp*

vla arco *p* *pp*

vc arco *p* *pp*

cb pizz. *gliss.* *mp* *mf*

The string sound here is mainly arco (bowed) and features a violin solo above the rest of the tutti strings. At the bottom of the texture, the double basses are playing pizzicato, embellishing the bass line of the cellos.

Initially, the most vexing problem in the orchestration was in how to make the percussion section (2 players + timpani) balance against the other three, larger sections. It is true that even a few percussionists can make a great deal of noise, but in order to represent the material I was working with, I decided early on that I would co-opt the other three sections (wind, brass and strings) into the percussion section for the advent of Dawn (bar 41). In the case of the woodwinds, this involved key clicks (see Ex. No.14):

### Musical Example No.14

41 All wind instruments: Key clicks - approximate pitch

*mf*

This percussive effect is strongest in the lower winds (bassoons and bass clarinet) since their key pads are larger, whereas the key clicks on the piccolo are very subtle. But since all eight wind players perform this effect in rhythmic unison, the sectional effect is clear.

The brass section plays exactly the same figuration in rhythmic unison with the winds, but instead of key clicks, they tap the bell of their instrument (see Ex. No.15):

### Musical Example No.15

41 All Brass: tap fingernails on bell

The musical notation is on a single staff in 4/4 time. It begins with a quarter rest, followed by a quarter note with a triplet of eighth notes marked with 'x's. This is followed by another quarter rest, another quarter note with a triplet of eighth notes marked with 'x's, and a final quarter rest. The dynamic marking *mp* is centered below the staff.

The wind key clicks and brass taps together create an effect somewhat like insects scuttling across the ground. This imagery of nature was not intended but perhaps reflects the idea of Dawn and of life on Earth as the sun begins to shine on it.

The strings, meanwhile perform two percussive effects: pizzicato and col legno. The pizzicato is percussive in the same way that a guitar or harp is percussive. The material for this is the Accompanying Motive (already presented in the winds and strings) but this is the first time that it is heard in the 4/4 metre (see Ex. No.16):

### Musical Example No.16

41

The musical score is for five string parts: Violin 1 (Vl.1), Violin 2 (Vl.2), Viola (Vla), Violoncello (Vc), and Contrabasso (Cb). The time signature is 4/4. The score shows the following markings:

- Vl.1:** Col Legno Battuto, *p*
- Vl.2:** Col Legno Battuto, *p*
- Vla:** Col Legno Battuto, *p*; Pizz., *mf*
- Vc:** Pizz., *mf*
- Cb:** Pizz., *mf*

The Accompanying Motive starts in the cellos and by bar 47, the whole string section plays it. The slurs marked on the pizzicatos are either left hand 'hammers' or 'pulloffs' a technique more commonly found in guitar writing. Col legno translates literally from the Italian as 'with the wood' and asks the player to hit the string with the wooden back of the bow.

The final layer added to all these percussive effects is the actual percussion section which features temple blocks, roto toms (played on the rim with drum sticks) and timpani played with wooden mallets near the rim (see Ex. No.17):

### Musical Example No.17

44

wooden timpani mallets - near rim

Musical score for Musical Example No.17, measures 44-47. The score is in 4/4 time and features three staves: Roto toms (on the rim), Wood blocks, and wooden timpani mallets - near rim. All parts play a rhythmic pattern of eighth notes with triplet markings. The dynamics are marked *pp*.

This creates a loose rhythmic polyphony, central to the 'activity' of Dawn.

The brass section performs a number of minor roles in the piece but doesn't come into its own as a featured section until the move back to 12/8 at bar 95, representing Sunset (see Ex. No.18):

### Musical Example No.18

Musical score for Musical Example No.18, measures 94-98. The score is in 12/8 time and features six staves: Hns 1+2, Hns 3+4, Tpt.1, Tpts 2+3, Tbn 1, and Tuba. The brass section plays a complex rhythmic pattern. Dynamics range from *mf* to *ff*. The score includes markings for *a2* and *(a2) sim.*

This excerpt shows the brass in full flight: the horns, trombones and tuba playing the Accompanimental Motive while the trumpets play the Anthem. Reserving the full splendour of the brass section for the return of the slower pulse (12/8) is a technique also employed in similar fashion by Benjamin Britten in *The Young Person's Guide to the Orchestra*. It was used in this piece to reflect Vladimir Vasyutin's description:

"the minutes of the evening twilight are fabulous. The hull of the station is lit by the golden rays of the sun. " <sup>9</sup>

The brass choir is gradually joined by the other instruments of the orchestra until a full orchestral tutti is reached in bars 103-106.

## Special Effects

In addition to some of the extended techniques already covered, a few others are worth mentioning. *90 Minutes Circling the Earth* is not overtly designed to feature extended instrumental techniques, but by necessity, some were incorporated according to the musical and programmatic nature of the piece.

The opening and ending sections represent outer space, in order to help 'place' the listener 'in orbit'. In addition to the string harmonics, the percussion are central to creating this effect (see Ex. No.19):

### Musical Example No.19

(regular timpani mallets)  
Place large Japanese Temple bowl on timpani

1

The musical score for Musical Example No.19 is written in 12/8 time and consists of four measures. The top staff is for Crotales, with instructions for 'struck' and 'bowed' techniques. The middle staff is for Vibraphone, also with 'struck' and 'bowed' instructions. The bottom staff is for Timpani, featuring a 'Pedal gliss' instruction. Dynamics include *mp* and *p*. Performance notes include 'always let ring' and '(Motor ON - SLOW)'. A 'Pedal gliss' instruction is accompanied by a wavy line indicating a gradual slowing down.

The most unusual technique found here is in the timpani, which has a Japanese temple bowl placed on it. This bowl is then struck, and while it is ringing, the pitch pedal is adjusted, creating an eerie, almost electronic, wavering effect. Coupled with this are the crotales and vibraphone which are both struck and bowed. They are bowed with a cello or double bass bow, and this effect is similar to rubbing a wettened finger around the top of a wine glass until it resonates.

The use of glissandi is not limited to the timpani effect above. The strings all use it in different sections, but none more so than the double bass (see Ex. No.20):

<sup>9</sup>Kelley

**Musical Example No.20**

This use of pizzicato-glissandi bass is typical of much acoustic jazz, a style that is influential in the conception of this piece. It works best on the basses (as opposed to the violins or violas) because the longer, thicker strings also resonate longer (after plucked) and so the motion of the glissandi is most noticeable.

The trombones are another obvious choice of instrument to exploit glissandi effects and they are used here on a number of occasions. A good example of this is the use of all three trombones at bar 65 (see Ex. No.21):

**Musical Example No.21**

In bar 68 of this example, the 1st trombone glissandos upwards while the 2nd and 3rd trombones glissando downwards, in contrary motion. The glissandi are deliberately marked 'slow' so that the effect is emphasised.

Finally, the use of drum kit in the piece is slightly unusual. It is not 'new' - Bernstein, amongst others uses it, but it is certainly not standard. There are two basic patterns used in conjunction with the tambourine. The first is in 12/8 (see Ex. No.22) and has a laid-back jazz feel:

**Musical Example No.22**



In the 12/8 pattern, the ride cymbal holds the pulse and the tambourine plays around it but generally not on it. In the 4/4 pattern (see Ex. No.23), the feel is racier:

### Musical Example No.23

76

Drum Kit

*mf*

Tambourine

*mp*

Here, the tambourine plays consistent semiquavers whilst the kit plays a funk/rock pattern. In the case of both the rock and jazz feels, the beats emphasised are 2 and 4 (rather than 1 and 3 as in 'classical' music). In live performance, it is suggested that the drum kit and percussion are set up in the middle of the orchestra - rather than the back - so that the whole orchestra can more accurately slot into the grooves created.

## Reflections on a Compositional Process

Most pieces that I have written have involved learning new techniques and grappling with new concepts 'on the fly'. *90 Minutes Circling the Earth (Hymn to Freedom)* is no exception to this rule. In some ways, it was a chance to capitalise on aspects of earlier pieces, particularly the ones listed below. In other ways it represents, for me, the start of new ideas. On reflection, I am happy to have had the opportunity to incorporate aspects of blues, jazz and minimalism (found frequently in my recent chamber music) into a large, orchestral ensemble. 5 minutes of music can fly by pretty quickly: the above analysis reminds me of the time it can take to dream up and construct a short orchestral work!

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## Terms for Reference:

augmentation  
anacrusis  
antecedent  
anthem  
col legno  
composite metre  
consequent  
duplets  
glissandi  
key clicks  
minimalist  
octave disposition  
pitch set  
pivotal modulation  
polyphonic  
programme music  
syncopation  
tessitura  
theme and variations

## Works for Comparative Study:

Stuart Greenbaum	<i>Moments of Falling</i> <i>4 Hours in a Holding Pattern</i> <i>4 Minutes in a Nuclear Bunker</i> <i>But I Want the Harmonica</i> <i>The Last Signal</i>
Benjamin Britten	<i>The Young Persons Guide to the Orchestra</i>
Maurice Ravel	<i>Bolero</i>
Philip Glass	<i>The Canyon</i>
Steve Reich	<i>The Four Sections</i>
Pat Metheny	<i>The First Circle</i>
Matthew Hindson	<i>Rave-Elation</i>
Igor Stravinsky	<i>The Rite of Spring</i>

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