51 Harmonies
("The sun sets and rises without saturation of the senses, rises and sets without redemption of the soul")

for three percussionists,
electric guitar, and live computer

percussion/guitar score

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comissioned by the West German Radio, Cologne
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for the *Trio Le Cercle*

Introduction
51 Harmonies is a companion work to the earlier *51 Melodies* (*"Pride holds the multitudes in a continual, habitual process of readornment"*), a computer composed work for two guitars and rock band. *51 Harmonies* consists of a score, in part computer composed, for three percussionists (who may also play keyboards) and electric guitar, and a live computer part. The computer generates sound as well as notational instructions for the performers.

Performance Instructions
The piece is divided into 51 sections, played in sequence. Each section is repeated some number of times before the next section is played.

Each performer has a computer, linked via MIDI to a central machine running the main program for the piece. Each performer's screen displays real-time instructions telling the performer when to begin a new section, which part to play for that section, and how long (number of repeats) the section lasts. The length of sections (number of repeats) is the same for all parts, but performers need to react quickly, switching parts and instruments for each section.

Some dynamics are specified in real-time by the computer, but when not specfied they are generally strong. Each part must be heard more or less equally (with the possible exception of *melody 2*, which might be softer).

The tempo is fast, and may be adjusted in the computer part to match each performance. Quarter note equals somewhere between mm. 176 and mm. 212.

The computer part is synchronous with the live percussion parts. The part called *arpeggios* is heard frequently in the computer sounds, and acts as a kind of conductor when present.

In general, accidentals apply through a measure. Many redundant courtesy accidentals are given.

The score is the same for all three percussionists and the guitarist. It is divided into 5 staves with the names:

- *melody 1*
- *melody 2*
- *chords*
- *arpeggios*
- *rhythm*

The computer display tells the performers which part to play for each section of the piece. Except for the rhythm part, the score is for pitched instruments (mallet instruments, or optionally, the percussionists playing keyboards). The rhythm part is for unpitched percussion.

For each of the 51 "harmonies", or sections of the work, the performers are given live instructions by the computer to play one of the five parts, for the duration of that section. The performer then choses what instrument to play the part on. These instructions will change from performance to performance, so a significant part of the performance of the work has to do with rapid decisions and reactions on the part of the musicians.

Performers make their own decisions about which instruments on which to play any part for a given section, according to the descriptions below for each part.

Melody 1 and *Melody 2*
Both these parts are played on mallet instruments: marimba, xylophone, vibraphone, etc. Melodies are "octave relocatable": any melody may be played in any octave, but an entire harmony (section) is played in the same octave, once an instrument and octave is chosen.

The melody parts should be rhythmically in sync with the three other parts.

In general, *melody 2* is an "accompaniment" and should be played softer than *melody 1* (except when otherwise notated). Each percussionist might alternate between 2-3 different mallet instruments for the entire work, choosing a different one each time they play one of these top parts (or the other pitched parts, *arpeggios* and *chords*).

Chords
The *chords* are rhythmic and harmonic accents for the *arpeggios*, articulating the metric divisions of each measure. They may be played either in the voicings written on the stave, or in the voicings of the performer's choice, using the chord symbols (in standard jazz notation) above the staff. A slash indicates harmonic ambiguity, giving the performer additional choice (e.g Eb/Ebm indicates that *either* an Eb major or Eb minor triad may be played). A small circle indicates a diminished triad. These harmonic choices are also indicated in the stave by parenthetical pitches, usually a half-step away from one of the pitches in the chord.

The *chord* part, like the *arpeggio* part, may be played on keyboards as well.

Arpeggios
The *arpeggios* may be played in any octave, on either mallet instruments or keyboards (electronic or acoustic). They should be played in time, and synchronously with both the other percussion parts and live computer part. There are two types of accents in this part, primary (indicated by a double accent) and secondary (single accent: >). The first should be much stronger than the second. Slurs indicate groupings of unaccented notes. The *arpeggio* part is the only part which is the same in the computer and in the live parts, and it is the basic pulse of the piece.

Rhythm
The *rhythm* part is in two parts, notated on one stave. The first is a low note (bass clef A) which should be played on bass drum, large cymbal, gong, low tom-tom or roto-tom, or some other low non-pitched, resonant and sustaining percussion (perhaps including the possibility of electronic instruments). These low notes are rhythmically the same as the metric divisions of the *arpeggios* and the *chords*., and should of course be in rhythmic unison with those other parts. As in the other parts, each percussionist should choose from a pallette of 2-3 instruments, each time this *rhythm* part is played.

The second part should be played by three other higher non-specifically-pitched percussion instruments: toms, wood blocks, temple blocks, small cymbals, cowbells, suspended tambourines, etc. These should be clearly graduated in pitch. For a given section, these three notes may be from a homogenous or heterogenous set of instruments (e.g three high toms, or one tom, one wood block, one cowbell) but if different instruments are used, care should be taken to have three distinctly different graduated pitches.

Version without computer
A version of *51 Harmonies* without the live computer is also possible. In this version, the performers should simply specify the number of repeats for each section, and make their own decisions during the performance itself about which part to play for each section.

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