

# TWO ETUDES OF CONSONANCE

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## Program Notes

Since the time of Pythagoras, tuning and temperament have perhaps been the foremost and ongoing dilemmas of Western music. Just-tuning is commonly recognized as the most pure sounding tuning as it employs harmonically tuned intervals that do not beat. Diatonically, this tuning is pure; however, chromatically it can become grotesque. To account for this phenomenon temperaments were created, such as twelve-tone equal temperament, which has been the standard temperament of Western music since the 19<sup>th</sup> century. Twelve-tone equal temperament, however, tempers all twelve tones equally – robbing the pure intervals of Just-tuning of their perfection to compensate for the coarseness of the non-pure intervals.

By the 1920s Charles Ives was exploring the use of intervals smaller than the size of a semitone as seen in his work for two pianos, *Three Quarter-Tone Pieces*, where one of the pianos is detuned a quarter of a whole step – this provides twenty-four-tone equal temperament. Later in the 20<sup>th</sup> century, the issues of tuning, temperament, and microtonality were again revisited by composers such as Harry Partch (43-tone/octave scale), Ben Johnston (re-use of Just-tuning), Easley Blackwood (non-12-tone equal temperaments), Gérard Grisey and Tristan Murail (spectralism), Klaus Huber (third-tones), and Alois Hába (sixth-tones).

Similar to Ives' *Three Quarter-Tone Pieces*, *Two Etudes of Consonance* employs two pianos where one has been detuned. However, rather than detune the second piano a quarter-tone, it is detuned 15 cents of a semitone, or  $3/40$  of a whole tone. Such a relationship between the "in-tune" and "out-of-tune" pianos allows the possibility to more closely approximate just-intonation simultaneously in all keys while also allowing extreme chromaticism. In this composition, the consonance and dissonance is strictly controlled by contours. The relative consonance and dissonance (chord x is more dissonant than chord y) of a collection of tones (i.e., a chord) may be effectively quantified by mathematically representing existing axioms of sound. This allows a numerical value to be assigned to any chord which in turn can be compared to other such values. When a series of such values is used in this composition, only the area of proximity is taken into account when identifying suitable sonorities and chords, thus allowing thousands of choices per dissonance value, yet strictly controlling the movement of consonance and dissonance.

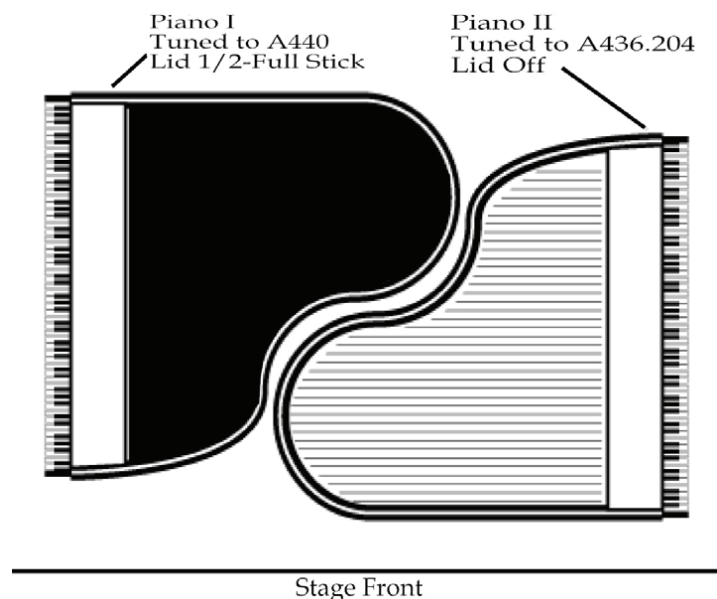
- I. Etude I borrows the concept of rhythmic pedal from Olivier Messiaen yet reinterprets it in the realm of consonance and dissonance – a series of seven fundamentals and a series of seven dissonance values constantly repeat. Additionally, the rate of change (how many successive dissonance values are assigned to each fundamental) changes from section to section while occasionally omitting values.
- II. Etude II serializes twelve dissonance values. Unlike Klaus Huber's *Des Engels Anredung an die Seele*, consonant intervals are not serialized; rather, this Etude serializes the relative dissonance of complex sonorities. In addition to the relative consonance and dissonance, the fundamental tone and the number of tones in each sonority revolve around a twelve-tone series borrowed from Anton Webern's *Concerto, Op. 24*.

## Tuning

*Two Etudes of Consonance* employs the use of two pianos: one tuned to A440 (Piano I) and one detuned exactly 15 cents (Piano II). Remaining in equal temperament, this places Piano II at A436.204. Tuning Piano II 15 cents flat tempers a pure major third (root on Piano I, third on Piano II) and a pure minor third (root on Piano II, third on Piano I). Perceptually, this creates justly-tuned major triads by correcting the fifth partial. Other partials which are in disagreement with equal temperament frequency ratios (such as the seventh and eleventh) may be more closely approximated through careful analysis to determine on which piano they should be played. The most straightforward procedure of achieving this unique tuning is as follows.

1. Tune Piano I to A440 Equal Temperament.
2. Tune Piano II to A436.206 Equal Temperament If tuning with a machine, set the pitch 15 cents flat of A440 and skip to step four. If tuning aurally, proceed to step three.
3. Tune Piano II's A4 to Piano I's F4 making a narrow third with  $1/3$  beats per second.
4. Using the lowered A4 on Piano II as the reference, tune the remaining strings of Piano II to A436.204 Equal Temperament.

## Stage Placement



# Two Etudes of Consonance

## I.

Bryan W. Christian

**Con brio** ♩ > 112

**Piano**

**I**

**II**

*p*

*mf*

*pp sub.*

*p*

*f*

*pp sub.*

*p*

*f*

*pp sub.*

*p*

*pp sub.*

*p*

63

I

7/16 (cresc.) fff

6/8 fff

3/8

II

7/16 (cresc.) fff

6/8 fff

3/8

66

I

mp

5/4

II

mp

5/4

69

I

f p

5/4 3/4 1/4 3/4

II

f p

5/4 3/4 1/4 3/4

73

I

ppp

3/2

II

ppp

3/2

## II.

**Grave**  $\text{♩} = 52$  *mp*

**Piano**

**System 1 (Measures 1-5):**  
Hand I: *pp*, *mp*, *f*, *p*  
Hand II: *pp*, *mf*, *p*, *mf*

**System 2 (Measures 6-10):**  
Hand I: *f sub.*, *mp*, *f*, *ppp*, *f*  
Hand II: *sfz*, *mp*, *p*, *f*

**System 3 (Measures 11-15):**  
Hand I: *p*, *f*, *ff*, *p*  
Hand II: *mp*, *f*, *ff*, *p*, *mf*

REMAINDER OF SCORE UNAVAILABLE TO PREVIEW

for a full score, please send a request to  
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