

**Stimmung:**  
**Tuning, Timbre, Form and Performance**

Kevin Swenson

October 2018

## Stimmung

Karlheinz Stockhausen is among the most influential and controversial composers of the 20<sup>th</sup> century. Most known for his highly serialized works of the 1950's such as *Gruppen* and *Kontra-punkte* as well as his experimentation with some of the first electronic music compositions, it is easy to pigeonhole Stockhausen as a composer who avoids any semblance of traditional harmonic structures in his music. However, in the 1960's Stockhausen made some notable explorations in music which used motivic structures as well as more consonant harmonies than in much of his earlier works. A true gem among his pieces of this era is *Stimmung (1968)* a piece for six vocalists which consists of only one chord. Though *Stimmung* may seem simple on the surface, there are many subtleties lurking underneath that add up to a powerfully evocative and spiritual composition.

## Background

The late 1960's are an infamous time, marked by the violence and protest of the Vietnam war and the neo-spiritualism of the psychedelic movement. Stockhausen's *Stimmung* is all too fitting for the era; a synthesis of east and west via its construction based on the B-flat harmonic series, the use of the overtone singing technique and it's calling of the "magic names" of deities drawn from a plethora of world religions both ancient and modern. In many ways the piece appears to be a product of its time, but is also foreshadowing the spiritual implications of Stockhausen's latest and strangest works, most notably the *Licht* opera cycle.

Obvious parallels have been drawn between Stockhausen's approach in *Stimmung* and the drone based music of other prominent composers of the time such as Stockhausen's former student La Monte Young and Terry Riley. In fact, Stockhausen is known to have visited Young in New York city in 1964 or 1965 while Young was working with his *Dream Syndicate*. Potter writes that Stockhausen, "requested tapes of the group's performances which, perhaps surprisingly, Young gave him." <sup>1</sup>Although

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<sup>1</sup> Potter, Keith. *Four Musical Minimalists: La Monte Young, Terry Riley, Steve Reich, Philip Glass* Cambridge University Press 2000 (page 89)

Stockhausen insisted on having arrived at his approach in *Stimmung* independently of other, younger composers of that era, it is impossible not to question whether or not he was influenced by their work.

Regardless of Stockhausen's possible influences from other composers for the piece, it is clear that his intention was to write an overtly spiritual and meditative piece, perhaps even religious. He remarked specifically on his having been inspired by a trip he made to Mexico, visiting the ancient pyramids of the Mayans and Aztecs. "What was important for the creation of *Stimmung* was the fact that I'd just come back from Mexico where I'd spent a month walking through the ruins, visiting Oaxaca, Merida, and Chichenitza, and becoming a Maya, a Toltec and a Zatopec, an Aztec, or a Spaniard – I became the people. The magic names of the Aztec gods are spoken in *Stimmung*." <sup>2</sup> In addition to the Aztec gods which are named, *Stimmung* includes eleven unique "magic names" for each of the six vocalists, including Shiva, Jesus, Anubis and Quetzalcoatl, further solidifying the universalist religious appeal of the work.

### Harmony and Intonation

The importance of tuning at various levels is made obvious from the title of the piece alone. As the composer says in conversation with Cott, "it means 'tuning' but it really should be translated with many other words because *Stimmung* incorporates the meaning of the tuning of a piano, the tuning of the voice, the tuning of a group of people, the tuning of the soul (...) when you say: We're in a good *Stimmung*, you mean a good psychological tuning, being well tuned together." <sup>3</sup> In writings about the piece, Stockhausen reveals further subtlety of meaning in the title. "There is in the German word *Stimmung* the connotation of 'atmosphere', 'ethos', 'spiritual harmony' (...) in the word *Stimmung* is hidden 'Stimme' - 'voice'! <sup>4</sup>

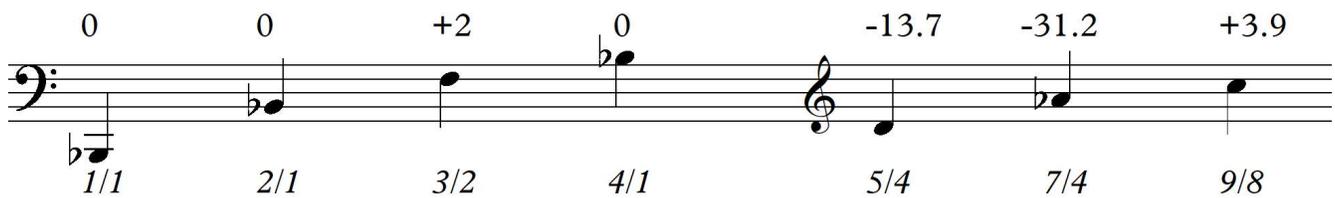
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<sup>2</sup> Cott, Jonathan. *Stockhausen – Conversations with the Composer*. Simon and Schuster New York, 1973 (pg. 163)

<sup>3</sup> Cott, Jonathan. *Stockhausen – Conversations with the Composer*. Simon and Schuster New York, 1973 (pg. 162)

<sup>4</sup> Wörner, Karl H. *Stockhausen; life and work*, translated and edited by Bill Hopkins. University of California Press 1973 (pg. 65)

As it is clear that tuning is central to the piece's conception, it is therefore critical to examine the use of just intonation in its harmonic structure. Unlike much of Stockhausen's music, *Stimmung* uses essentially only one extremely consonant harmony throughout the piece, a B-flat 9 chord. What makes this truly interesting is that the chord is tuned according to the 2<sup>nd</sup> through 9<sup>th</sup> partials of the note B-flat1. In the explanations for the score of *Stimmung* Stockhausen writes, "a **chord** of 7 sine- or square-waves of the following frequencies: 57 – 114 – 171 – 228 – 285 – 399 – 513 Hz, each to be heard equally loud is to be recorded on tape. (...) This chord is to be blended in unnoticeably over loudspeaker after the entry of the first model, played quietly during the whole performance, and blended out towards the end of the last combination. The pitches of the singers are to be identical with the pitches of the chord."<sup>5</sup> What Stockhausen makes abundantly clear with this direction is that the just-tuning of the chord is not merely a theoretical consideration but is integral to the performance of the piece. Some readers may find this to be nothing more than an object of fancy but a closer look at the deviations from the usual twelve tone equal temperament tuning (12 TET) shows considerable and obvious differences in sound. Figure 1 shows these deviations. The numbers above the written notes are the differences in cents between 12 TET and natural harmonic intervals. The numbers below the written notes are the whole number interval ratios which represent the individual notes in the harmonic series. Note that the 6<sup>th</sup> and 8<sup>th</sup> harmonics are not pictured which correspond to the notes F4 and B-flat4 respectively as they are not included in the taped chord prescribed by Stockhausen.<sup>6</sup>



(Figure 1)

<sup>5</sup> Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 10)

<sup>6</sup> Partch, Harry *Genesis of a Music: An Account of a Creative Work, its Roots and its Fulfillments 2<sup>nd</sup> Edition*, Da Capo Press, New York 1974 (pg. 461-463 – Appendix A – Used in reference to calculate deviations of just intervals from 12 tone equal temperament)

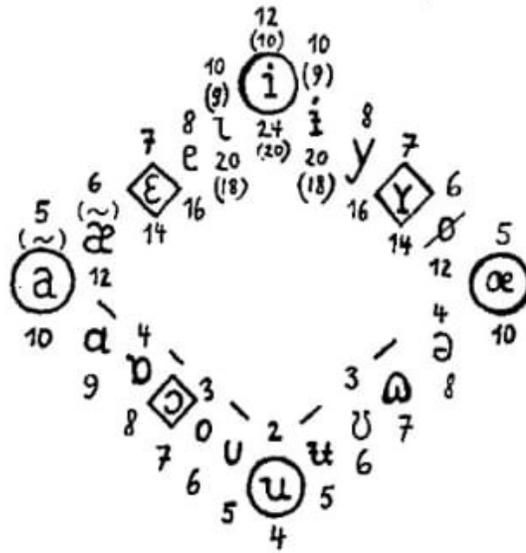
The most apparent differences are obviously at the 5/4 just major 3<sup>rd</sup> which is 13.7 cents lower than the 12 TET major 3<sup>rd</sup>, and the 7/4 septimal minor 7<sup>th</sup> which is 31.2 cents lower than the 12 TET minor 7<sup>th</sup>. These differences of pitch are more than noticeable even to the untrained listener when compared directly with one another and should absolutely not be considered negligible. Of course the real question is whether or not the use of just intonation has an impact on the effectiveness of the piece. The answer is a resounding yes. It is a fact that TET is a clever, albeit artificial creation of human consciousness. The vibrations of natural bodies, either earthly or celestial do not resonate according to the tuning of our pianos, but instead pure tuning, nature's tuning, God's tuning. In the context of *Stimmung* then, the use of just temperament is made a necessity because of its semi-religious context. At the same time *Stimmung*'s inherent spirituality is made even more powerful and real by the implementation of justly tuned intervals.

#### Timbre and Overtone Singing

Related to the use of intervals tuned as whole number ratios from the overtone series is the use of the overtone singing technique wherein a singer uses various vowel shapes to produce overtones above a sung fundamental. In the case of *Stimmung* Stockhausen calls for isolated overtones ranging from the 2<sup>nd</sup> to the 24<sup>th</sup> to be performed with the fundamental sung so that “the pitch one is singing is relatively soft and the dominating overtone is relatively loud.”<sup>7</sup> Each singer is given a page of 8-9 “models” comprised of various rhythmic figures with numbers signifying the overtone that is to be produced above the sung fundamental along with an accompanying phonetic symbol defining the vowel used to perform the necessary overtone. Figure 2 shows the vowel square which Stockhausen provides as a reference to the overtones which are to be produced with each respective vowel shape.

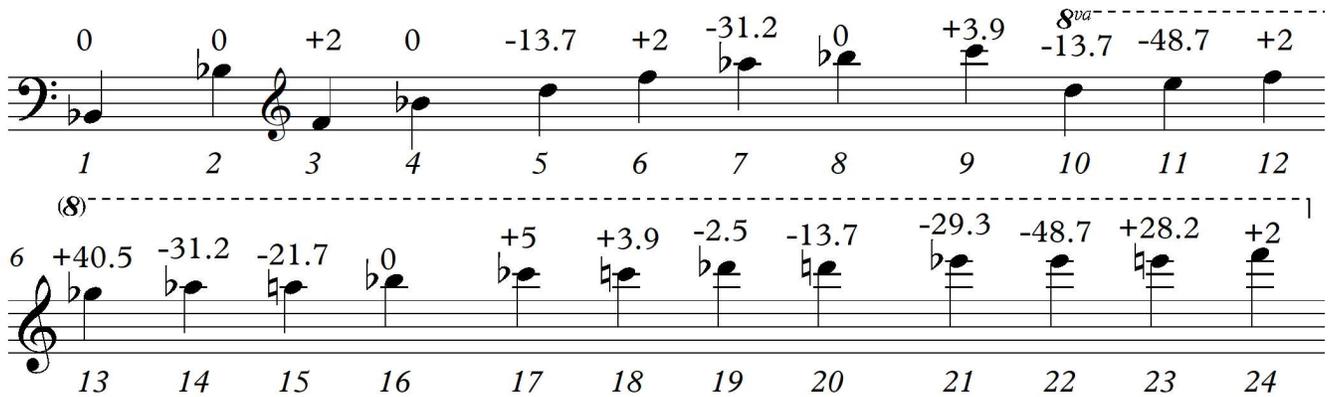
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<sup>7</sup> Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 13b)

(Figure 2)<sup>8</sup>

As is shown in the diagram, the lower overtones, either the 2<sup>nd</sup> or 4<sup>th</sup> harmonics, are produced by [u] pronounced “oo” and the upper partials, either the 10<sup>th</sup>, 12<sup>th</sup>, 20<sup>th</sup>, or 24<sup>th</sup> harmonics, are produced by [I] pronounced “ee.” Because Stockhausen calls for the overtone to be relatively loud in comparison to the fundamental tone being sung, it is useful to notate the overtones up to the 24<sup>th</sup> harmonic. Figure 3 shows the harmonic series on the note B-flat<sub>2</sub>, the lowest sung pitch in the work. Numbers below the notes are the number of the given harmonic. The deviations in cents from 12 TET are shown above the notes to further emphasize the importance of microtonal harmonic tuning to *Stimmung*.

<sup>8</sup> Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 13b)



(Figure 3)

It is important to note that although figure 3 shows only the notes of the B-flat harmonic series, the singers in *Stimmung* are directed to perform overtones on all five pitches of the B-flat 9 chord used throughout the piece. This means that while the individual chord tones are still tuned according to the B-flat harmonic series, each chord tone in turn becomes a secondary fundamental on which a singer will produce overtones of said chord tone's harmonic series. For example, a given singer may be on the note A-flat, the 7<sup>th</sup> harmonic relative to B-flat, the fundamental note of the whole piece, but simultaneously using the overtone singing technique to produce the 9<sup>th</sup> harmonic of the A-flat harmonic series. The result is an incredible synthesis of complex ensemble timbres that arise from the introduction of inharmonic sonic materials from outside of the harmonic series of B-flat, similar to filtering techniques used in the production of electronic music.

Interestingly the 9<sup>th</sup> harmonic of the A-flat harmonic series is the note B-flat, but it is not the same B-flat as the one used to tune the piece. The A-flat tuned as the 7<sup>th</sup> harmonic of B-flat is approximately 968.8 cents (and two octaves) above the fundamental, leaving 231.2 cents to complete the octave at the 8<sup>th</sup> harmonic. The 9<sup>th</sup> harmonic of the secondary A-flat harmonic series is 203.9 cents (and three octaves) above the fundamental which in this case is a B-flat. Therefore there is a 27.3 cent difference between the B-flat which is the 8<sup>th</sup> harmonic of the B-flat harmonic series and the B-flat which is the 9<sup>th</sup> harmonic of the A-flat harmonic series.

It is through this technique that Stockhausen generates much of the interest of the piece, keeping the listener's attention primarily by making shifts in timbre while always maintaining the B-flat drone. The listener hears a variety of timbral transformations on a macro scale as changes in the written overtones between subsequent models, and on a micro scale by the implementation of unique repeated rhythmic configurations within each model which Stockhausen calls "periods". Figure 4 shows one page of models for a female vocalist in order to better illustrate the way in which individual models order timbral changes rhythmically. It also shows that emphasis is placed on different overtones across models.

Stockhausen  
*STIMMUNG*

Modelle

frauenstimme

Music  
M  
1582  
.S76  
S7  
1969

6  
T=72

2  
ca 47

5  
T=135

3  
d=81

7  
T=126

9  
T=189

manchmal individuell da capo

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(Figure 4)<sup>9</sup>

Form and Structure

One of the most intriguing aspects of *Stimmung* is its free and malleable form which is different

from performance to performance and ensemble to ensemble. While Stockhausen notates the individual models to be performed by each singer, the order in which the models are heard is not fixed. Similarly, the length of time that each model continues is not determined in the score, but is instead governed by the way in which the singers interact. Instead each singer has sections where they must act as leader of the ensemble, introducing the material of one of their models while the other five singers begin to assimilate the material of the predominating model. Stockhausen provides a form scheme made up of 51 combinations which shows when each ensemble member acts as leader, the desired pitches for each vocalist, and the way in which the models are to be assimilated by singers who are subordinates in each section. Figure 5 shows the form scheme for *Stimmung* extracted from the score.

Music  
M  
1582  
.S76  
S7  
1969

Stimmung

FORMSCHEMA

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Karlheinz Stockhausen

The figure displays a form scheme for the vocal ensemble *Stimmung*, consisting of 51 numbered sections. Each section is represented by a horizontal line with a circled letter (M) or 'var' above it, indicating the model to be used. Below these lines are musical staves for six vocal parts: Sopran I, Sopran II, Alt, Tenor I, Tenor II, and Bass. Vertical dashed lines connect the model letters to the corresponding notes on the staves, showing the assimilation of the model. Thick lines on the staves indicate the leader's part in each section. The sections are numbered 1 through 51, with some numbers missing (e.g., 17, 18, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51).

(Figure 5)

Notes which are followed by a thick line denote the part which sets the model in each section, as is the case for the Bass in section one. Stockhausen says that “the singer of the model repeats his

period until he feels that all those who are to become identical with him, have done so; then he repeats the period several times more and gives the cue for the model that is to follow.”<sup>10</sup> Arrows with a dotted line are used to show which part becomes the lead in each new section, telling the previous leader who to cue.

Notes which are followed by a thin line are to be interpreted one of four different ways depending on their horizontal placement. If they occur after a pause or double bar, then the singer is to perform in “identity” with the lead model’s “tempo, rhythm, timbre and envelope” immediately.<sup>11</sup> If they occur without a barline, then it is sung with the same period as in the previous model. If they occur after a barline, then the period of the previous model is to be gradually transformed by the singer until identity is reached with the lead model. Pitches on which this transformation occurs are marked with a circled T on the form scheme. If a note with a thin line begins before a barline then the singer repeats the period of the previous model a few times along with the singer of the lead model before beginning the transformation process to reach identity with the lead model.

Six sections of the form scheme are marked with a bracket to show that all of the voices are singing the same pitch in each combination under the bracket. During these sections singers with notes followed by a thin line after a pause are to sing “varied deviations” of pitch, tempo, rhythm, timbre or envelope in a continuous oscillation, but only on a single parameter at one time.<sup>12</sup>

Twenty-nine of the combinations are marked with the letter N which means that after identity has been reached among the voices, one of the singers besides the leader may choose to call one of their given “magic names.” The other singers who have reached identity then repeat the name which was called periodically. Stockhausen writes that the names should be called “with the same pitch, tempo and approximately the same articulation as that of the model and in this manner attempt to

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10 Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 6)

11 Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 4a)

12 Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 5)

integrate the name into the model and to reach identity again. The lip and mouth positions of the model should therefore be retained, as a result of which the name sounds more or less deformed.”<sup>13</sup>

Stockhausen adds that at least one magic name must be called in each combination marked with an N, but no more than six different names are to be called in any one combination. The introduction of a magic name is intended to change the character of the model, and so the character of each combination is changed from performance to performance depending on which name, or names are called by the singers.

Stockhausen does not define the length or combination, instead leaving the duration to arise of its own accord. However, he does call for the duration of the individual combinations to not be too similar, writing that “those combinations in which identity is reached quickly are relatively short (...) at least three combinations – one in the first third, one in the second and one in the third third of the performance – last extremely long.”<sup>14</sup> As a result the form of *Stimmung* feels extremely organic, and meditative, moving slowly between individual moments. In notes about the piece Stockhausen writes, “*Stimmung* is indeed meditative music. Time is suspended. One listens to the inner self of the sound, the inner self of the harmonic spectrum, the inner self of a vowel, *the inner self*.”<sup>15</sup>

### Performance and Staging

Some electronic equipment is often employed during performances of *Stimmung*. Singers are each given a microphone which is held close to the mouth, so that the subtle timbral nuances produced in the piece are clearly audible as sung by the performers and heard by the audience. Stockhausen calls for loudspeakers to be placed near the singers so that the amplified sound mixes with the natural sound. In addition, he calls for an assistant to control the mix of the singers in the sound system so that the amplified sound can be adjusted for balance throughout the performance.

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13 Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 7a)

14 Stockhausen, Karlheinz *Stimmung for 6 Vocalists* Universal Edition 1969 (Explanation 12)

15 Wörner, Karl H. *Stockhausen; life and work*, translated and edited by Bill Hopkins. University of California Press 1973 (pg. 66)

The staging is another interesting feature that adds to the mysterious nature of the piece. Speaking about the staging Stockhausen explains that, “it is possible to have the performers in the middle of the audience. *Stimmung* we have often performed with the six singers in a circle on a podium 1.10 meters high in the center of the hall with the audience seated around, and the effect is very good for this piece.”<sup>16</sup> Figure 6 below shows a photograph of one of 72 performances of *Stimmung* given by the Collegium Vocale Köln at the 1970 Osaka Worlds Fair in Japan which shows the intimate grouping of the ensemble used in performance.



(Figure 6)<sup>17</sup>

The performances given at the Osaka Worlds Fair are even more interesting because of the hall in which they were performed. A spherical pavilion designed by Fritz Bornemann was constructed for the Fair, and Stockhausen came up with a design which involved a system of 50 loudspeakers placed throughout the hall in seven rings. Stockhausen’s design was then realized by Siemens and Technical University, Berlin with slight modifications. The final construction featured seven rings of

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16 Maconie, Robin *Stockhausen on Music: Lectures and Interview* Marion Boyars Publishing 1989 (Page 153)

17 Nordin, Loco Ingvar. “Stockhausen Edition no. 12 (*Stimmung*),” *Sonoloco* (blog), April 20, 2010.

<http://www.sonoloco.com/rev/stockhausen/12.html> (source for picture)

loudspeakers with 5 each in the top and bottom two rings, and 10 each in the middle three rings. <sup>18</sup> The idea was that sound could be rotated around the spherical design of the loudspeakers, but there appears to have been some discrepancy between the initial conception and the final outcome of this rather daring design. Nonetheless, it is a fascinating idea, and the inside of the pavilion is quite impressive as is shown in Figure 7, which pictures Stockhausen behind the mixing console.



(Figure 7) <sup>19</sup>

### Conclusion

*Stimmung* is a piece which stands out in Stockhausen's output, both for its stark contrast in comparison to much of the rest of his catalog in terms of its harmonic content and emphasis on just-intonation. Its meditative nature, perhaps an outgrowth of the psychedelic movement of its time, is a powerful and compelling feature for listeners of today who may find some escape in *Stimmung* from our chaotic and fast paced world, overflowing with technology constantly buzzing for our attention.

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18 Williams, Sean. "Osaka Expo '70: The Promise and Reality of a Spherical Sound Stage." *Insonic* 26-28, Karlsruhe, Germany November 2015.

19 Braddell, Rory. "Karlheinz Stockhausen's *Stimmung*," *Eircom* (blog), February 27, 2003. <http://homepage.eircom.net/~braddellr/stock/index.htm> (source for picture)

*Stimmung* can carry the listener away to another state of mind, calm and quiet, with a strong feeling of that which is holy and ancient. In conversation with Cott, Stockhausen says, “If you met the singers, you’d see how as human beings they’ve changed. They’re completely transformed now that they’ve sung it more than a hundred times since the World Fair in Osaka.”<sup>20</sup> With enough careful attention and surrender, *Stimmung* also has the capacity to impart a change in the one who hears it.

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<sup>20</sup> Cott, Jonathan. *Stockhausen – Conversations with the Composer*. Simon and Schuster New York, 1973, (pg. 39)