Mikrotöne: Small is Beautiful - IV -Edited by A. Castilla-Ávila



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The Lineage from Harry Partch to Manfred Stahnke

Navid Bargrizan

1 Introduction

1 Introduction Harry Partch's microtonal tuning and just-intonation concepts have not only affected Ame-Harry Partens interested Ame-rican microtonalists such as Lou Harrison and Ben Johnston, but also European composers interested in experimenting with microtones, including Georg Friedrich Haas and Wolfgang von Schweinitz. Yet no other European figure has absorbed Partch's ideas more than German composer Manfred Stahnke, who came to the United States in 1979 to study at the University of Illinois Urbana-Champaign with Partch's friend and supporter Ben Johnston. This essay approaches Partch's rebellion not as an isolated paradigm, but in relation to Stahnke's aesthetic and music - who has also sought to expand the intonational and tuning paradigms of Western art music, whom Partch's microtonal theories have influenced.

As Partch did, Stahnke has rejected the dominance of twelve-tone equal temperament, grappling with just intonation, as well as non-Western and ancient tuning systems. The analysis of the aesthetic decisions, compositional procedures, and microtonal structures in Partch's and Stahnke's works articulates the strong link between both composers. In their works, microtonality goes beyond functioning as a mere formative element; it becomes a means to mediate their cultural discourse on the limited scope of the commercialized Western art music. I demonstrate that Partch's theory of microtonality - especially his concepts of tonality diamond, otonality, and utonality have influenced Stahnke's opera Der Untergang des Hauses Usher (1981) based on a short novel by Edgar Allen Poe, as well as his instrumental pieces Diamantenpracht (2005) and Partch Zither (2007).

2 Partch's Theory of Microtonality

Partch's forty-three-tone-to-octave scale based on just intonation not only substantiates his unique instruments and style of writings for voices, but it is also firmly entrenched in his idealized Greek, or non-Western, ancient rituals, therefore closely related to his music-philosophical standpoints, see Example 1 (page 15).

Contemporaneous music critics and scholars tended to focus on Partch's microtonal scale ignoring its aesthetic foundation in ancient Greek, Chinese, or other non-western musical cultures - a fact that Partch objected to repeatedly. Rejecting the controversial idea of the absolute dependency of his aesthetic on his scale, Partch states:

News stories, and even reviews, have almost consistently latched onto the number fortythree, as though this were somehow the touchstone of my life. [...] It is totally misleading. Even on instruments of fixed pitch, I do not necessarily limit myself to forty-three, just monophonic tones.¹

Partch did exploit various possible pitches in-between the forty-three tones on his fretless instruments such as the adapted viola.

He also used common wind instruments, including clarinets and trumpets, in his compositions such as Oedipus (1950), or Ulysses Departs from the Edge of the World (1955). Partch's early works - often called "speech-music pieces" - substantiate his style of writing for voices as close as possible to human speech. His over-exaggerated microtonal scale was a necessity, a tool for him to capture all the inflections of the human speech - The subtle inflections that twelve-tone equal-tempered scale does not capture.

Example 1: Partch's fortythree-tone-to-octave scale



Partch's affection for ancient Greek instruments served as a model for him to build a new monophonic just-tuned intonational system, using the simple ratios of the harmonic series up to the eleventh harmonic. He built several original instruments based on his extended just-intonation, which apply the possibilities of the overtone and undertone series, realized through his concepts of otonality and utonality in his eleven-limit Tonality-Diamond. The terms otonality and utonality refer respectively to a collection of pitches of a harmonic series analogous to major tonality in the common-period harmony, and a collection of pitches of a subharmonic series – an exact inversion of a harmonic series - analogous to minor tonality. Partch designed this arbitrary two-dimensional diagram called "tonality diamond," where one dimension presents the otonalities and the other dimension the utonalities, see Example 2 (see page 16).

The intonational system demonstrated in the tonality diamond presents the harmonic and subharmonic just-intervals stemming from unison (1/1) within an octave (2/1), expanding the five-limit to the eleven-limit intonational system. In Partch's tonality diamond, otonalities appear between solid lines from left to right, and utonalities between dotted lines from right to left. For example, the ratios of just minor-sixth or 8/5 otonality are 9/5, 5/5, 11/10, 6/5, and 7/5. The line of the six ratios demonstrates the maximum number of consonances that are achieved by expanding the identities 1-3-5 of the five-limit system to 1-3-5-7-9-11 of the eleven-limit system. Partch's eleven-limit just intonation, therefore, makes hexads possible, instead of triads.



Example 2: Partch's elevenlimit tonality diamond

This harmony system is the foundation of Partch's instruments - particularly those instruments that he was able to tune precisely. Although Partch's just eleven-limit intervals and his forty-three-tone scale underpin his music, he rarely employs microtonality as just-intoned harmonic intervals, unless his chromelodeon, a re-designed pipe organ, sounds, or if relatively static moments of two, vertical just-intoned pitches appear.

Partch's works often sound as a constant percussive pattern, interrupted with microtonal glissandi, and barely just-intoned. Even though eleven-limit just intonation underpins Partch's conceptual and acoustical terrain, because of the clashes of the timbres, various instrumental techniques, limitations of certain instruments, and oftentimes fast and percussive rhythmical patterns, it is difficult to perceive the resulting sounds as just intoned; Some "strange" intervals emerging from simultaneity of rich layers of microtones often hinder our perception of the pure ratios.

3 Der Untergang des Hauses Usher

Partch's just-intonation system, particularly the concepts of otonality and utonality, as well as his "strange" intervals, influenced Stahnke's meloharmonic constructions. Stahnke coined the term meloharmony to refer to vertical and horizontal structures in an open microtonal field not bounded by any traditional melodic and harmonic concept. His approach to microtonality, although influenced by Partch, exceeds the framework of just intonation. Since he uses a variety of scales and intonational systems, the range of his microtonal procedures is more complex than those of Partch.

In his chamber opera *Der Untergang des Hauses Usher*, Stahnke employs microtonal structures based on just intonation to evoke an intricate web of psychological issues implied in Poe's plot, such as hypochondriasis, hysteria, and melancholia, as well as its grotesque aspects, for instance, incest, vampirism, and horror. The dramatic narrative of the opera, hence, relies on microtonal configurations.

Stahnke's peculiar harp tuning stands at the center of his microtonal construction in *Usher*. The harp represents an image of the old, pleasant days of Usher's mansion. Its microtonal tuning - the dissolution of twelve-tone equal temperament - symbolizes the relentless decay of the mansion, which, throughout the plot, is collapsing. Stahnke intertwines the harp's metaphorical tuning in the narrative of Usher. His innovative harp tuning rests upon just major-thirds and just minor-sevenths based above a B-fundamental, see Example 3.



Example 3: Harp's tuning in *Der Untergang des Hauses Usher*; cent-deviation from equal temperament are shown below the notes

This system gives birth not only to just-intervals in otonality and utonality producing a different sound effect than the harp's usual tuning, but also to idiosyncratic proportions generated through using harp's pedals that are capable of sharpening and flattening each single note in all octaves. These extraordinary proportions would fall under the category of "strange intonation," a term coined by Stahnke himself to refer to Partch's intonational practice, which, although based on just intonation, often does not sound just. Stahnke seeks the tonal contradictions imbedded in his harp tuning as much as the just intervals on which it rests. He relates these contradictions to Partch's "strange intonation":

In several of my pieces, the harp's tuning demonstrates a contradiction imposed by a sort of tonal falseness. In this tuning, the tones are only in a specific context just-intoned; Suddenly the intervals are not just any more, because (by using pedals) I work with twenty-one tones per octave. There I build a "strange-intonation," which I actually learned from Partch. Partch's music is rarely just-intoned; it largely projects a sort of a strange intonation. Many of his instruments, such as cloud chamber bowls or marimba eroica, do not really sound just, although they sound wonderfully. He could not tune them according to just intonation precisely. Such complicated "strange intonations" appear through my harp tuning.²

As Stahnke implies, he embraces the unexplainable tonal proportions emerging from the harp's microtonal tuning, as Partch does in his own pieces.

Otonality and utonality, respectively, stand for the old days and the present days of the Usher's house, metaphorically relating these acoustical structures to the elements in Poe's storyline. Stahnke's use of otonality and utonality demonstrates Partch's influence on his compositional process. While the harp's just tuning, otonality, and utonality inform merely the first and second layers of Stahnke's microtonal construction in *Usher*, he also integrates other layers of microtonality. He employs an approximate, equidistant pentatonic scale that includes five equal intervals of 240 cents, approximately a whole-tone plus sixth-tone, per octave. Indonesian Slendro music, or Baganda music in Uganda, for instance, make use of scales roughly similar to equidistant pentatonic, which Stahnke adopts in *Usher*, see Examples 4 and 5.



Example 4: Equidistant pentatonic scale; cent-numbers are shown below the staff; by means of approximately one-sixth-tone deviations, we can reconstruct such a scale



Example 5: Der Untergang des Hauses Usher; measures 208-211; approximate equidistant pentatonic scale in the strings

4 Partch Zither

As in several of his other works, in his piece for solo zither titled Partch Zither, Stahnke developed a scordatura; In this case largely based on sixth-tone-deviations from twelve-tone equal temperament, see Example 6. Using this scordatura, Stahnke synthesizes Partch's concepts of otonality and utonality throughout *Partch Zither*. The beginning of this piece shows interlacing of an otonality construction above the note G and an utonality structure below A.



Die Dynamik sollte im ppp-Bereich extrem sein. Hier wird oft ein "Tappen" der linken Hand helfen, oder ein wirklich sanflestes Über-die-Saiten-Streichen des Rings

Example 6: Partch Zither; Legend; Zither's tuning explained

For instance, based on his scordatura, Stahnke uses the intervals of just-major-third otonality and just-minor-seventh utonality between G, B, A, and F; B is not only a justmajor-third above G (ratio5/4), but it is also a just-minor-seventh below A (ratio 4/7). Likewise, F is on one hand a just-major-third below A (ratio 4/5), on the other hand it is a just-minor-seventh (ratio 7/4) above G. Stahnke uses the strings tuned based on sixth-tone deviations to reach the seventh and eleventh overtones above G (otonality) and the related undertones below A (utonality). For example, the C-sharp on the lowered A-string is the eleventh overtone above G (ratio 11/8). The related undertone is the E-flat on the higher-tuned C-string: the eleventh undertone below A (ratio 8/11), see Examples 7 and 8.



Example 7: Partch Zither; Measure 1-9; Otonality and utonality constructions



Example 8: Partch Zither; Measure 10-15; Otonality and utonality constructions

5 Diamantenpracht

Stahnke's piece for solo harp *Diamantenpracht* also incorporates the same harp tuning that he developed in 1979, used in his stage work *Der Untergang des Hauses Usher*. Ironically, while using this tuning, a significant amount of beating, or impurity, occurs through the harp's stacked-up just, or pure, intervals. For example, three just-thirds on top of each other - notated in harp strings: B-sharp, E, G-sharp, C - result in an octave approximately a fifth tone, or 42 cents, lower than 2/1 octave-0 cent + 14 cents + 28 cents = 42 cents. Based on this phenomenon, in *Diamantenpracht* Stahnke constructs 'strange' microtonal harmonies, as Partch does consciously and times inevitably in his music.

Manfred Stahnke Diamantenpracht

für Harfe solo in Scordatura Gesine Dreyer gewidmet

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Harfenstimmung: Kammerton 444Hz - darauf His stimmen; dann E -14 Cent (Gehörkontrolle "naturreine Großterz"); weiter Ais -31 ("naturreine Kleinsept"); Gis -28; D -45; C -42; Fis -59 Cent (Gehörkontrolle mit Akkorden des Anfangs). Oktaven normal durchstimmen.

Example 9: Diamantenpracht, The first page of the score; The tuning explained

Stahnke borrowed the title *Diamantenpracht* from Heinrich Heine's poem *Lyrisches Intermezzo* im Buch der Lieder (1827). Robert Schumann set this poem to music in his seventh lied from *Dicherliebe* (1840), where on the metaphor of 'diamond."³ Stahnke's *Diamantenpracht* (diamond splendor) alludes to Partch's eleven-limit tonality diamond, as well as the concepts of otonality and utonality. The first measures of *Diamantenpracht* contain an otonality construction above C (B-sharp), up to the eleventh harmonic (F-sharp), see Example 10.



Example 10: *Diamantenpracht*; Measure 1–5; Otonality construction above B-sharp up to the eleventh harmonic (F-sharp)

In measures 7 and 8, Stahnke builds a utonality construction under F-sharp (ratio 1/4/5/7) and in measure 9 with a utonality construction under D, see Example 11.



Example 11: *Diamantenpracht*, Measure 6–12; Utonality construction under the tome F-sharp in measures 7 and 8, and under the tone D in measure 9.

In fact, all of the next measures through measure 23 demonstrate utonality structures using different transpositions that harp's pedals make possible. Then, in measure 24, another otonality appears, this time above B, see Example 12.



Example 12: Diamantenpracht; Measure 13-29; Utonality and otonality construction

6 Conclusion

Partch found Western dramatic music drained from its ritual and corporeal roots. He reacted against the specialization inherent in Western art, as well as in academies. He also viewed twelve-tone equal temperament as inferior to just intonation. His effort to theorize an intonational system based on just intonation, and the instruments that he built on its basis, inform his revolt against twelve-tone equal temperament. All intertwined aspects of Partch's inventions become means to delineate the philosophical, psychological, and mythical crux of his works, in turn facilitating his polemical stance toward Western art. On the surface, the microtonal constructions in Stahnke's works merely depict their philosophical and psychological implications. But, like in Partch's works, they also mediate Stahnke's polemics about the limited reach of the prevailing, commercialized Western art music. To expand its tonal scope, Stahnke has synthesized just intonation, as well as diverse tuning systems and scales taken from non-Western traditions, in his dramatic and instrumental works. In sum, all musical, theatrical, and technological elements of Partch's and Stahnke's music convey their cultural criticism.

Two elements inform the link between Partch and Stahnke more than anything else; First, both sought to reform Western conventions by looking at non-Western and ancient cultures. Second, their curiosity for microtonality, tuning, and intonation guided their research. Stahnke's flexible, inclusive, and hybrid aesthetic differs from Partch's rigidly-crafted world of one tuning system and a single, central aesthetic as his key principle. However, several of Stahnke's instrumental and music-theatrical pieces contain elements taken directly from Partch's theories. Partch's approach to just intonation has affected any composer who, since the second half of the twentieth century, has dealt with microtonality, tuning, and intonation. Stahnke's works represent one of the most significant cases of the vast influence of Partch's theories on the European counterpart.

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Endnotes

- ¹ Harry Partch, "A Quarter-Saw Section of Motivation and Intonations," in *Bitter Music: Collected Journals, Essays, Introductions, and Librettos*, ed. Thomas McGeary (Urbana and Chicago: University of Illinois Press, 1991), 197.
- ² "Wie die Harfe in vielen von meinen Stücken gestimmt ist, ist durch eine Art Falschheit voll von Widersprüchen. Die Töne sind in einem bestimmten Zusammenhang Just Intonation, aber die Intervalle stimmen plötzlich nicht wirklich. Ich spiele mit 21 Töne pro Oktave in meiner Harfenstimmung. Eine "Strange Intonation" habe ich dann gebaut und das habe ich eigentlich von Partch gelernt, weil Partchs Musik nur zum einen kleinen Teil Just Intonation ist. Zum einen großen Teil ist er einfach "Strange" und er suchte das auch. Partchs Instrumente sind nicht genau Just Intonation. Das ist einfach ein wunderbarer Sound, den er von Cloud Chamber Bowls nimmt oder das wunderbare Marimba Eroica; ein wunderbarer Holzklang. Die kann er nicht so genau stimmen. Das hat nichts Direktes mit Just Intonation zu tun. Dort wo er sein Chromelodeon nimmt, geht er aber sehr präzis auf Just Intonation. Solche komplizierte "Strange Intonation" taucht bei meiner Harfenstimmung auch auf." (Bargrizan, Interviews with Manfred Stahnke.)

³ Manfred Stahnke, "Über Hinterhöfe und Vorhöllen: Wiederbesuchte Mikrotonalität," in Mein Blick auf Ligeti / Partch & Compagnos, ed. M. Stahnke, Norderstedt: BoD, 2017, 349-372. See also Sarvenaz Safari, "Diamond Splendor," Sonus: A Journal of Investigations into Global Musical Possibilities, 32, 1 (2011) 40-57.

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