

## EPISTEMOLOGY OF TONE: AN OBITUARY FOR JULIEN JALÂL ED-DINE WEISS

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**Abstract:** During the 1980s, Julien Jalâl Ed-Dine Weiss, founder of the Al-Kindi ensemble of Aleppo, invented a qânûn in just intonation with which he attempted to solve a major discrepancy between the theory and practice of maqâm-scales. Weiss objected to the introduction of Western standards, observing that they distort the significance of interval ratios and prevent a comparative understanding of the modal system as a transnational phenomenon. In the twentieth century, the implementation of equal-tempered semitone emerged simultaneously with a notable invasion of sociological criteria into musical inquiry. The polarity observed between westernisation and tradition can be seen most visibly in the present search for identity amongst Middle- and Near-Eastern musicians, but this schismogenic process can also be observed in the history of the Western avant-garde, where microtonal explorations have been halted in favour of extra-musical conceptuality. While cross-cultural musicians are faced with a new climate of distrust, it seems most likely that the principles that draw us apart may originate in the very patterns of thought in which our notion of culture operates. Weiss's tuning system may serve as a helpful tool to foster a new and universal epistemology of tone, bridging and transcending the apparent contradictions between the two spheres.

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Now, Queequeg is my fellow man. And what do I wish that this Queequeg would do to me? Why, unite with me in my particular Presbyterian form of worship, consequently, I must then unite with him in his; ergo, I must turn idolator.

Herman Melville, *Moby Dick*, Chapter 10, 'A Bosom Friend'.

### Maqâm and Globalisation Today

World Music, with its 'political solidarities across borders',<sup>1</sup> consciously re-enacts social habitus in selective representations. But commuters across cultures achieve more than providing information between static spheres: by incorporating the unknown, they resolve

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<sup>1</sup> Martin Stokes, 'Music and the Global Order', *Annual Review of Anthropology* 33 (2004), p. 67.

cultural barriers per se and thus help foster trans-boundary values. In Near-Eastern music, however, this communication is faced with new challenges, as lively practice coagulates into flagpoles of patriotic demarcation. In overpopulated Asia, urbanisation has failed to yield the futuristic multiculturalism of Western societies. Instead, cities devolve into gigantic villages, their vernacular memory dwindling away into a monotony of concrete architecture and mass economy. This decay particularly manifests itself in Islamic society, which, after a long period of tacit assimilation, seems unable to reform its obsolete ways of thinking. Pushing its ethnic minorities out of its territories, it undergoes an internal fragmentation in a quest for identity that has equally caught hold of music. Methodological inventiveness and structural transformation (in Arabic, 'aql: 'reasoning') are being replaced by a new hegemony of customs (naql: 'transmission'), cementing culture on impenetrable surface patterns in order to distinguish what is supposed to be most 'authentic' in the tradition.

The study of Ottoman court music owes some of its earliest written sources, namely the *Meġmū'a* by Wojciech Bobowski and Dimitrie Cantemir's *Kitābu 'Ilmi'l-Mūsīkī* (both seventeenth century), to contributions by outsiders. Today, under a scepticism towards Western intervention, this heritage is being converted increasingly visibly into national property. Recently, this cancellation of cross-cultural exchange has endangered the legacy of just such a foreign convert, paradoxically one who explicitly meant to rid the modal system of its foreign constituents. In January 2015, Julien (born Bernard) Jalāl Ed-Dine Weiss, a French virtuoso of the qānūn and founder of the ensemble Al-Kindi, who brought the local tradition of Aleppo to worldwide recognition, died after a long battle with cancer. Since the 1980s he had experimented with tuning systems, eventually emerging as a prominent critic of equal semitone-temperament. From a variety of different designs, he constructed two qānūn prototypes, realised in a total of nine models which today figure among the most complex instruments in just intonation.<sup>2</sup>

Weiss observed that not only does the intonation of decisive maqām scales differ in the general Arab and Turkish performance tradition, but that many smaller, regional schools have retained distinguishable customs. The qānūn from Aleppo, vanished since the 1970s, had once been built customarily upon the local preferences of its home town.<sup>3</sup> The implementation of Western standards, however, has left conventional qānūns, both in the Arab world and Turkey, with an arbitrary division of their tuning levers (Arabic: 'urāb; Turkish: mandal) thus notably affecting the modal system.

Weiss's objections to equal-semitone temperament may equally be thought of in the context of the European post-war avant-garde, where music theory retreated under an invasion of sociological criteria. A comparative examination uncovers that the 'New Music' of the Darmstadt school drew its primary relationship to tradition from a polarity similar to that observed between Islamism and Westernisation. The possibility that, behind the conventional categories of ethnicity, we are in fact looking at the same principle from

<sup>2</sup> Stefan Pohlit, 'Julien Jalāl Ed-Dine Weiss: A Novel Proposal for the Middle-Eastern Qānūn', *Analytical Approaches to World Music Journal* 2, no. 1 (2012), pp. 49–86.

<sup>3</sup> Julien B. J. Weiss and Stefan Pohlit 'Divisions of the Apotome on the Middle-Eastern Qānūn' in *Mikrotonalität. Praxis und Utopie*, ed. Caspar Johannes Walter and Cordula Pätzold (Stuttgart: Schott, 2014), pp. 212–15.

different sides, may challenge microtonal and cross-cultural music with new dimensions of meaning.

### The Weiss Qānūn

It seems that a certain discrepancy between theory and practice has always compelled maqām musicians to devise their own ‘meta-theory’<sup>4</sup> in order to bridge the incongruities of the major systems of notation. The conference of Cairo (1932) settled on a general scale of 24 notes per octave,<sup>5</sup> but the practice of intonation, taking into account many regional diversifications, seems far more uncharted. While performers with their intimate ways of transmission have never held music theory in particular esteem, recent attempts by the Istanbul Conservatory of Turkish Music reflect an ambition to replace the conventional Turkish 24-note system by Hüseyn Sadettin Arel and Suphi Ezgi with an augmented pitch supply.

Nail Yavuzoğlu pleads for a simple division of 48 equal eighth-tones,<sup>6</sup> promptly wiping out the age-old distinction between commas, leimmas and diatonic intervals, thereby heightening the contradiction between theory and notation. Ozan Yarman, on the other hand, has constructed a qānūn with 79 pitches per octave calculated from the thirty-third division of the perfect fourth  $4/3$  or 498.05 cents ( $498.05/33 = 15.09c$ ),<sup>7</sup> a compelling approach which creates intervals very close to pure ratios. Both proposals however remain ungrounded in the oral tradition, and neither has been adopted by practising performers; their approximated representations obscure rather than explain intervallic relationships.

Weiss, on the other hand, did not rely on a fixed system, but rather combined modules of justly tuned interval families in order to unite the maqām phenomenon, itself an amalgamation of many regional traditions which consider a variety of historical sources, in one single instrument. This eclectic approach unveils the perspective of the foreign commuter who refused to grant only one set of customs singular authority. Among the traditional heptatonic array of strings (which may be compared to that on the Western concert harp), the distance between the lowest and highest tuning position on Weiss’s qānūn remains a Pythagorean apotome  $2187/2048$  (113.69c) on all choirs of strings. This basic major semitone is broken down symmetrically into twice the syntonic comma  $81/80$  (21.51c) and, within one Zarlino semitone  $25/24$  (70.67c), into four Zalzal intervals. Regional contexts are represented by a variety of approaches to the calculation of ‘quarter-tones’: (a) ‘Ibn Sīnā’s low neutral second  $13/12$  (138.57c; Figure 1, ‘D-3’) which features prominently in the Iranian Dastgāh-tradition but also appears in the Arab-Turkish maqām context, namely in the low second degree of genre ‘Uššāq; (b) the common Arab quarter-tone,  $12/11$  (150.63c; Figure 1, ‘D-4’); (c) the higher quarter-tone of the Aleppian tradition, standing halfway between Arab and Turkish general customs,  $11/10$  (165.00c; Figure 1, ‘D-5’).

<sup>4</sup> Scott Marcus, ‘The Interface between Theory and Practice: Intonation in Arab Music’, *Asian Music* 24, no. 2 (1993), pp. 39–58.

<sup>5</sup> Rodolphe D’Erlanger, *La Musique Arabe* V (Paris: Geuthner, 2001 (1935)), p. 20, fig. 6.

<sup>6</sup> Nail Yavuzoğlu, *21. Yüzyılda Türk Müziği Teorisi* (Istanbul: Pan, 2012).

<sup>7</sup> Ozan Yarman, *79-Tone Tuning Theory for Turkish Maqam Music as a Solution to the Non-Conformance between Current Model and Practice* (PhD diss., İstanbul Teknik Üniversitesi, 2008), p. 93.

	2048 2187 113.69c														
	81			25				81	81			25		81	
	80			24				80	80			24		80	
	21.51c			70.67c				21.51c	21.51c			70.67c		21.51c	
	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14														
<b>DO</b>	2048 2187 -113.69c	128 135 42.18c	2560 2673 -74.78c	704 729 40.41c	1053 1024 -28.35c	44 45 35.70c	80 81 21.51c	1 1 0	81 80 21.51c	49 48 35.70c	1053 1024 21.51c	729 704 40.41c	2673 2560 74.78c	135 128 92.18c	2187 2048 113.69c
	b	ḅ	ḃ	p	t	ḍ	d	h	ḥ	ḣ	ḏ	ḏ̣	ḏ̇	ḏ̇	ḏ̇
<b>RE</b>	256 243 90.22c	16 15 111.73c	784 729 125.92c	13 12 138.57c	12 11 150.63c	11 10 165.00c	10 9 182.40c	9 8 203.91c	729 640 225.41c	147 128 239.60c	9477 8192 252.36c	6561 5632 264.32c	24057 20480 278.40c	1215 1024 294.00c	19683 16367 319.39c
<b>MI</b>	32 27 294.14c	6 5 315.64c	98 81 329.83c	39 32 342.48c	27 22 354.55c	99 80 368.91c	5 4 386.31c	81 64 407.82c	6561 5120 429.32c	1323 1024 443.52c	85293 65536 456.17c	90049 68340 468.23c	216513 163840 482.59c	10933 8192 500c	177147 131023 521.51c
<b>FA</b>	8192 6561 384.36c	512 405 405.87c	20880 19683 420.06c	104 81 432.71c	128 99 444.77c	176 135 459.13c	320 243 476.54c	4 3 498.05c	27 20 519.55c	49 36 533.74c	351 260 546.39c	243 176 558.46c	891 640 572.82c	45 32 590.22c	729 512 611.73c
<b>SOL</b>	1024 729 588.27c	64 45 609.78c	3136 243 623.97c	13 8 636.62c	48 36 648.69c	22 15 663.05c	40 27 680.45c	3 2 701.96c	243 160 723.46c	147 96 737.65c	3159 2048 750.30c	2187 1408 762.37c	8019 5120 776.73c	405 256 794.13c	6561 4096 815.64c
<b>LA</b>	128 81 792.18c	8 5 813.69c	392 243 827.88c	13 8 840.52c	18 11 852.59c	33 20 866.96c	5 3 884.36c	27 16 905.87c	2187 1280 927.37c	441 256 941.56c	28431 11284 954.21c	19683 9060 963.21c	72171 40960 980.64c	3645 2048 998.04c	59549 32768 1019.55c
<b>SI</b>	16 9 996.09c	9 5 1017.66c	49 27 1031.79c	117 64 1044.44c	81 44 1056.52c	297 160 1070.87c	15 8 1088.27c	243 128 1109.78c	19683 10240 1131.28c	3969 2048 1143.47c	255879 131079 1158.03c	177147 90112 1170.19c	649529 327680 1184.53c	32805 18384 1201.95c	531441 262144 1223.46c
<b>DO</b>	4096 2187 1086.31c	256 135 1107.82c	5120 2673 1122.01c	52 27 1134.66c	64 33 1146.73c	88 45 1161.09c	160 81 1178.49c	2 1 1200c	81 40 1221.31c	1053 24 1235.70c	124835 512 1260.41c	729 352 1274.78c	2973 1280 1292.18c	135 64 1313.69c	2187 1024 1313.69c

Figure 1: The Weiss ‘système’

Turkish standard notation converts all quarter-tones into commas. With the syntonic comma, Weiss replaced the Pythagorean comma of previous descriptions, such as Arel-Ezgi theory<sup>8</sup> or, the Holdrian comma ( $\sqrt[53]{2}$ , 22.64c) which equal temperament may imply. This decision stems from a confusion in Arel/Ezgi’s approach to Western staff notation where the Pythagorean ratio 8192/6561 ( $2^{13}/3^8$ , 384.36c), taken from Şāfi al-Dīn’s strictly Pythagorean 17-note scale from the thirteenth century, was erroneously represented as a harmonic minor third. In the correct derivation from a column of perfect fourths, it would normally signify a diminished fourth. Weiss, on the other hand, decided that this complicated ratio had ultimately been intended to approximate the harmonic major third 5/4 (386.31c; Figure 1, ‘E-6’), a simple ratio but lying outside a strictly Pythagorean limit-3 approach. He also retained the diminished fourth (Figure 1, ‘E-7’) at its originally intended position. For that reason, Weiss’s qānūn is able to produce the schisma 32805/32768 (1.95c) between the harmonic major third and the diminished fourth.

In combining empirical survey with acoustic science, Weiss described the modal system as an amalgamation of different regional traditions. Because his qānūn translates most of the commonly known pitch supply into the language of mathematics, it could prove helpful especially in the context of cross-cultural music where the interpretation of harmonic structures may reach beyond the confines of the maqām tradition. Ernest MacClain, in analysing the dimensions in the Kaaba of Mekka, suggested that the acoustic world-view of the ancient Babylonians was continued in an Islamic ‘Theory of Proportions’.<sup>9</sup> Weiss’s aesthetic of integer ratios, based upon the Pythagorean

<sup>8</sup> Karl Lloyd Signell, *Makam: Modal Practice in Turkish Art Music* (Sarasota: Usul Editions, 2008 (1977)), pp. 41, 44–45; and İsmail Hakkı Özkan, *Türk Müsiki Nazariyatı ve Usulleri* (İstanbul/TR: Ötüken, 2006 (1982)), pp. 38, 62.

<sup>9</sup> Ernest. G. MacClain, *Meditations Through the Quran: Tonal Images in an Oral Culture* (York Beach, ME: Nicolas Hays, 1981), pp. 78–90.

Figure 2:  
Comparison: The Diminished  
Fourth and the Harmonic Major  
Third in Arel-Ezgi's and Weiss's  
notation



methodology of medieval theorists such as Farābī und Šāfi al-Dīn,<sup>10</sup> is equally reminiscent of Ancient Greek arithmeticians, reconnecting the shared numerical symbolism of the three religions of the book on a map of acoustic significance.

### Schismogenesis

The future of Weiss's qānūn remains uncertain. After his death, when the Syrian civil war had already wiped out most of his estate, the remaining instruments in Istanbul fell into the hands of a burglar. One of the first specimens, built by Ejder Güleç of Izmir in the 1990s, was later retrieved and, through my procurement, has since remained under stewardship of the Berlin-based Neophon Ensemble. In contrast to Aleppo, Weiss's efforts have never been recognised in Istanbul, although he had lived there since 2005. This situation appears even more unfortunate in light of the lack of recognition of his valuable individual contribution regarding the technique of qānūn playing. For instance, his last composition, *Sinfonia Sacra* (2009–14), which was first performed within a larger stage production, *Stabat Mater Dolorosa, Christian and Muslim Homage to Mary*, at Beiteddine Festival in Baalbek/Lebanon in 2011, contains an elaborate adaptation of the Iranian Čāhār-Mezrab genre in an unusual array of scales, relying on a quasi-polyphonic instrumental treatment specifically adopted from the Persian santūr. This work, along with a detailed catalogue of his calculations of modal genres from my doctoral thesis and all of his other scores written over a span of more than 20 years, has never been published. Although he explicitly raised his voice against false international standards, it appears most likely that his work will disappear under the growing outcry against the West. This resistance seems to be linked to a new rise of traditional hierarchies. Ironically, the orthodox ṭarīqāt, who stand behind a new codex of initiation, might owe much of their influence on performers to Weiss himself since, with his close ties to the Whirling Dervishes of Damascus, he once served as a forerunner to popularise Sufi rituals on the World Music stage. The raised objections have occasionally included absurd conspiracies and accusations, as even respected scholars from major Turkish conservatories have suspected him of espionage on behalf of foreign intelligence organisations.

The ethnification with which Islam retaliates for the objectifying views of Orientalism is entirely self-destructive: by harnessing Western thought uniquely through machinery but rejecting the humanitarian tradition without which, after all, modern technology would never have occurred, Near-Eastern society has declared war on democracy and free expression, the very foundations of inquiry it would need to redeem itself. At first glance, this crisis seems to stem from within Islamic culture alone: 'The West is the actor, the Orient a passive reactor', complained Edward Said.<sup>11</sup> But this relationship seems far more complicated today. Despite the West's historic and present entanglement in Near-Eastern affairs,

<sup>10</sup> Ernest. G. MacClain, *The Pythagorean Plato. Prelude to the Song Itself* (York Beach, ME: Nicholas Hays, 1978), pp. 78–9.

<sup>11</sup> Edward Said, *Orientalism* (New York: Vintage, 1979), p. 108.

and although the media should offer ample sources for mutual understanding, our communication is being exhausted in a polemic of symbols, expressed in clerical gestures not unlike the religious emblems which Islamists have usurped for their political agenda.

During the 1930s, Gregory Bateson observed that communities determine their boundaries not by means of absolute standards but relatively to the behavioural patterns of other groups. Given that no cultural process can therefore be explained independently, Bateson concluded that 'our categories "religious", "economic", etc., are not *real* subdivisions which are present in the cultures which we study, but are merely *abstractions* which we make for our own convenience when we set out to describe cultures in words'.<sup>12</sup> If the response between communities escalates, a progressive differentiation or *schismogenesis* leads to gradual exaggeration of an aggressive polarity, rendering trans-boundary communication more and more difficult and, likewise, affecting the individuality of each member of the groups.<sup>13</sup> This pattern characterises the relationship between Islam and the West. The paradoxical symmetry of this relationship – 'deux bourgeoisies qui s'affrontent' – was described by Claude Lévi-Strauss in the 1950s:<sup>14</sup> in the sense of their religious as well as political rivalry, and considering that modern science and mathematics were originally invented by Muslim Arabs, Islam may well have 'Islamised' the West (notably since the Crusades), but, under the hegemonic power of the modern West, being continuously pushed to respond either by assimilation to or rejection of Western standards, Islamic societies have become more 'Islamic' than ever before in their history.

The break from the *fin de siècle*, triggered by World War I, occurred simultaneously in Europe and in the successor states of the Ottoman Empire. In music, it became manifest through a change of paradigms. In contrast to Islamic art, with its traditional ban on imagery, Occidental music has involved, since the Greek philosophers, the concept that sounds – not unlike iconography – may convey meaning beyond their acoustic surfaces. Yet, in the Islamic world, this Western music has never been able to unfold its metaphorical dimensions because, as a counter-proposal to local traditions, it merely epitomised the self-awareness of economic elites. The early one-party government of the Turkish republic even promoted it as an aesthetic remedy for inducing democratic consciousness into its burgeoning society. Democracy, however, cannot rely on the rights of majorities alone; it only thrives where the need for consent acts as a principle. Based on an approach to polyphony that bears closer resemblance to late-medieval than Renaissance music, the new style of Westernised Turkish composers may thus have faithfully mirrored the oligarchic persuasions of their rulers. Despite being advertised as 'synthesis',<sup>15</sup> the emergence of this new school through Ziya Gökalp's idealisation of 'Turkishness'<sup>16</sup> marks a departure from the hitherto smooth Europeanising tendencies of the *Mızıka-yı Hümāyun* (Imperial Chapel, i.e. the first military music conservatory based upon Western models, 1828), because, for the first time, modernisation was formulated as antithesis to 'tradition'.

If we look at the West, the same antagonism can be identified in the post-war avant-garde's schismogenic relationship to its historical

<sup>12</sup> Gregory Bateson, 'Culture Contact and Schismogenesis' in *Steps to an Ecology of Mind* (Northvale, NJ: Jason Aronson, 2000 (1936)) p. 64.

<sup>13</sup> Bateson, 'Culture Contact', p. 68.

<sup>14</sup> Claude Lévi-Strauss, *Tristes Tropiques* (Paris: Plon, 1955), p. 486.

<sup>15</sup> Yılmaz Aydın, *Türk Beşleri* (Ankara: Müzik Ansiklopedisi, 2003), p. 67.

<sup>16</sup> Ziya Gökalp, *Türkçülüğün Esasları*, (Istanbul: Toka, 2002 (1923)), pp. 147ff.

background. Notably, the standardisation of equal-semitone piano tuning reveals striking resemblances with Westernisation in the Near East. As much as the performance practice of the maqām-system exceeds its theoretical 24-note octave, Western tonal music has never been limited to only 12 notes. However, equal-semitone temperament did not always operate as a restriction. Rather, it can be observed that, during the nineteenth century, the piano contributed to a transformation of real intonation into a metaphorical psychology of keys. The mysteries which fed an increasingly paradoxical harmonic texture into the harmonic language, from Schubert's major-third modulations to Wagner's Tristan and Klingsor cadences, would have otherwise overturned the harmonic system much earlier. Schoenberg described these grey areas as 'fluctuating tonality',<sup>17</sup> a label which obscures the fact that, in reality, we are dealing with twin structures composed of several possible harmonic solutions, distinguished only on a micro-tonal level. The smoothing of these differences bestowed a certain magical quality on these chords as long as an echo of their former association prevailed. The spiritual significance of the 12 notes appeared once more in the staggering allegory of Schoenberg's *Moses und Aron*. However, it seems forgotten that biblical numerology, along with the betraying kiss from the legend of Judas, might primarily be founded in Pythagorean musical thought and not vice versa.

In post-war serialism, atonality did not emancipate dissonance, but rather eliminated an integrative network of intervallic tensions. This is by no means said to vilify the creativity which this technical confusion inspired. In light of sine waves and following Stockhausen's 'Wie die Zeit vergeht' (1957), composers must have been well aware that they had separated tonal epistemology from its substance. However, the significance of interval relationships, and, along with it, serialism's total parametric control, was reduced to a mere paraphrase on musical metaphor per se. Its public reach necessitated an informed critique, but this need could not be satisfied outside its intellectual milieu and even to a lesser extent in a cross-cultural surrounding.

In the nineteenth century, the theoretical limitations regarding the increasingly ungraspable harmonic structure coincided with the formalist-expressionist dispute among musicologists. This dilemma was eventually transferred by Theodor W. Adorno to a sociological scope of duties where it devolved into a schismogenic polarity.<sup>18</sup> As Hakan Ulus observed during the 2016 Darmstadt Summer Courses, the dependency of the post-war avant-garde on mainstream music can still be seen when composers seek temporary salvation in popular culture.<sup>19</sup> By 'breaking ironically with the avant-garde',<sup>20</sup> they continue to spin in the same hamster wheel, keeping the old triadic system alive rather than overcoming it by means of a new paradigm.

This aesthetic tradition of contextualisation, one which can be traced back to Berlioz's programmes and earlier, explains Julien Jalâl Ed-Dine Weiss's general lack of interest in Western contemporary music. Christopher Trapani, after collaborating with him in 2009

<sup>17</sup> Arnold Schoenberg, *Theory of Harmony*, trans. Roy E. Carter (Berkeley: University of California Press, 2010 (1911)), pp. 383ff.

<sup>18</sup> Theodor W. Adorno, *Philosophie der neuen Musik* (Frankfurt am Main: Suhrkamp, 2000 (1958)).

<sup>19</sup> Hakan Ulus, 'Nehmt die Musik wieder ernst! Zur Lage der Darmstädter Ferienkurse 2016', *Musiktexte* 151 (November, 2016), p. 94.

<sup>20</sup> Harry Lehmann, 'Avantgarde heute' *Musik und Ästhetik* 38 (April 2006), p. 34.

(only the second composer to do so since Klaus Huber worked with him on *Die Erde bewegt sich auf den Hörnern eines Ochsens* in 1993) recounted to me Weiss's poor reaction after he had introduced him to the music of Gérard Grisey. While the spectralist method of micro-tonal notation may mimic acoustic partials fairly realistically, Weiss deemed it 'too imprecise' because, in his understanding, music was supposed to correspond with nature rather than merely imitate it.

Adorno's claim that tonal awareness was merely a result of social agreements<sup>21</sup> has been refuted in recent neurobiological studies, such as in Gerald Langner's investigations in the auditory mid-brain.<sup>22</sup> The idea that musical meaning may simply be programmed by means of digital coding, returns, however, in current German conceptualism (*Neue Diesseitigkeit*). For instance, Harry Lehmann, author of 'Gehaltsästhetik' and philosopher-spokesperson of this movement, has declared that because the avant-garde has sufficiently exhausted its materials, its future will have to draw on purely conceptual approaches.<sup>23</sup> This assertion seems flawed from the perspective of micro-harmonic composers who are far from being out of ideas, but rather are in need of reliable trajectories towards an understanding of tone ratios, harmonic space and the physical determinants of scale structures. Prime-limits, often interpreted in analogy to spatial dimensions, can be depicted in a variety of geometrical shapes beyond the one-dimensional overtone-series. Hans Kayser, in his outline of harmonics, transcribed partial-coordinates further into a cube,<sup>24</sup> an octagon,<sup>25</sup> circles, and spheres;<sup>26</sup> music theory has not even started to fully comprehend their functions.

Comparing the historic development of musical aesthetics with Darwinian differentiation,<sup>27</sup> and quite in tune with Christopher Small's *Musicking*,<sup>28</sup> Lehmann already seems to acknowledge that evolution, beyond the survival of the fittest, may be bound to an interconnected environment rather than autonomous entities. His reasoning on the biology of music, however, excludes that, within the filter mechanisms through which periodic signals are processed in the auditory system, such principles of selection actually depend on arithmetic proportions,<sup>29</sup> thus confirming the theory of harmonic prime-limits as 'intrinsic properties of our brain'.<sup>30</sup>

The monastic attitude of the post-war years lost its validity many years ago. However, what's left today from a dynamically expanding intonation practice does not resemble more than the bark scraped off a tree. Bearing in mind the sheer insurmountable obstacles which microtonal composers still face in the performance culture of contemporary music, the universality of equal-semitone temperament, which lies at the heart of an aesthetics of musical estrangement, may require new assessment.

<sup>21</sup> Adorno, *Philosophie der neuen Musik*, p. 20.

<sup>22</sup> Gerald Langner, 'Temporal Processing of Periodic Signals in the Auditory System: Neuronal Representation of Pitch, Timbre, and Harmonicity', *Zeitschrift für Audiologie* 46, no. 1 (2007), pp. 8–21.

<sup>23</sup> Harry Lehmann, *Gehaltsästhetik: Eine Kunstphilosophie* (Paderborn: Wilhelm Fink, 2016)

<sup>24</sup> Hans Kayser, *Der hörende Mensch* (Stuttgart/D: Engel u. Co., 1993 (1930)), p.79f.

<sup>25</sup> Kayser, *Der hörende Mensch*, p. 86, fig. XXVII.

<sup>26</sup> Kayser, *Der hörende Mensch*, p. 89f.

<sup>27</sup> Lehman, *Gehaltsästhetik*, p. 9.

<sup>28</sup> Christopher Small, *Musicking. The Meanings of Performing and Listening* (Middletown, CT: Wesleyan University Press, 1998).

<sup>29</sup> Langner, 'Temporal Processing', p. 21.

<sup>30</sup> Langner, 'Temporal Processing', p. 11.



### Perspectives of Microtonal and Cross-Cultural Music

In 1975, the first Conservatory of Turkish Music was opened in Istanbul, following a new reconciliation with the local heritage. This trend, ultimately caused by the international World Music movement and paralleled by a reconsideration of triadic harmony in Western postmodernism, came, however, too late for Turkish society. Having undergone continuous re-Islamisation since the 1960s, the Near East has since overturned Westernisation by simply reversing its symmetry. Schismogenesis may, thus, be the fork in our road: it shows that our civilisations will only reconcile their differences if we manage to move beyond the auspices of ideology and kinship.

Now, if I, as a composer, intend to comment on the present state of warmongering and mutual rejection, I would wish, in the words of Paul Celan, for a 'Medusa head'<sup>31</sup> with which to unmask the hidden paradigms. But such an accomplishment is beyond the reach of an anti-aesthetic concept of music. In the past, atonality could serve as a critical reflection on a world come apart, but in the age of fracking, whistle-blowers and international conspiracies, this approach has lost its sting, most notably because its antagonistic perspective resembles too obviously the structure of *schismogenesis*. Behind its extended techniques lurks the same fundamental disdain of nature, characteristic not only of fundamentalist discourses, but in the more and more reckless exploitation of our landscapes. For that reason, it may be argued that contemporary music has become part of the very industry which it once set out to oppose: the wasting of its materials and its prostration before technology put an aesthetic seal on our destructive economy.

Meanwhile, Just Intonation composers such as Harry Partch and Ben Johnston, or Marc Sabat and Wolfgang von Schweinitz, with their Helmholtz-Ellis JI microtonal pitch notation, are receiving broader recognition. Contemporary discourse is beginning to recognise that many precise constants still remain hidden in the tone itself. But it does not suffice to simply notice these phenomena in order to entrust them, once more, to the measurements of other scientific disciplines (as it has previously been done with the overtone-series). The study of microtonality can dissolve the threshold of *schismogenesis* because its foundation already spans traditions and for that reason operates across cultures. Music should be qualified to provide a reliable regulatory tool to reflect on our humanity, reconnecting individual and collective perspectives. It does so more than any other form of art, due to its innate capability to examine and balance relationships. As a speculum of the aural sense, music proposes a cybernetic model with which it can replace the battle of 'identities' by means of 'identification'. In this sense, Julien Weiss's *qānūn*, transcending our differences through a musical language of analogies, retraces a journey of naked embodiment in the unknown: an attempt which, due to the vulnerability it implies, I would call rather Christian than Islamic.

<sup>31</sup> Paul Celan, 'Der Meridian: Rede anlässlich der Verleihung des Georg-Büchner-Preises am 22. Oktober 1960', *Gesammelte Werke in sieben Bänden*, Vol. III (Frankfurt am Main: Suhrkamp, 1986), p. 192.