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Microtonal Restraint

ANNIKA FORKERT

Abstract This article proposes that the beginnings of twentieth-century microtonal music and thinking were shaped more by restraint in composers' thinking than by a full embrace of the principle of 'progress for progress's sake'. Pioneering microtonal composers such as Ferruccio Busoni, Julián Carrillo, John Foulds, Alois Hába, Charles Ives and Richard Stein constitute an international group of breakaway modernists, whose music and writings suggest four tropes characterizing this first-generation microtonal music: the rediscovery of a microtonal past, the preservation of tonality, the refinement of tonality and the exercise of restraint. The article traces these tropes of early twentieth-century microtonal experiment in works by Carrillo, Foulds, Hába, Ives and Stein with reference to writings and music by Busoni, Nikolay Kul′bin, Harry Partch, Karol Szymanowski and Ivan Vyschnegradsky. It adds to the growing scholarship about early twentieth-century tonally based aesthetics and techniques, and broadens perspectives on the history of twentieth-century microtonal music.

> It will surely be abundantly clear that no additions to our technical equipment – no quarter-tonal, no modal systems, no additions of new timbres to our orchestral resources, in short, no technical means whatever – will in themselves aid us in our efforts to widen the field of musical appeal.
>
> John Foulds, *Music To-day* (1934)[1]

Early twentieth-century debates on progress and innovation in music frequently mirror the hysteria underlying broader *fin-de-siècle* discourses. The decline of the West becomes that of melody, of the diatonic system, of Richard Wagner or of the arts in general. In his examination of Ferruccio Busoni's poetics, Albrecht Riethmüller characterizes these debates as 'shrill and destructive' (*schrill und destruktiv*) where they sought to discredit, unseat or make obsolete music in a more reactive vein.[2] But how 'reactive' was this music really? Many musical figures of this time, including the

Email: forkera@hope.ac.uk
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[1] John Foulds, *Music To-day: Its Heritage from the Past, and Legacy to the Future* (London: Nicholson & Watson, 1934), 167.
[2] Albrecht Riethmüller, *Ferruccio Busonis Poetik* (Mainz and London: Schott, 1988), 173.

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pianist-composer Busoni (1866–1924) and the cellist-composer John Foulds (1880–1939), were more 'janus-faced' (*janusköpfig*) modernists than we usually give them credit for.[3] They had individualized methods both to promote musical progress and to rein in their own technical or material innovations. Foulds, for example, regularly employed all the additional 'technical equipment' whose use he appears to be doubting in the above epigraph. Busoni promoted third-tones in writing, but never composed with them.[4] Compared with Arnold Schoenberg, Anton Webern and, as Riethmüller maintains, Claude Debussy, Gustav Mahler and Richard Strauss, Busoni and Foulds appear to be somewhat reactive, or restrained, modernists. Both composers possessed a deep insight into their colleagues' developments and took a keen interest in contemporary critique of the diatonic and chromatic systems (in short, of tonality, which, they might have argued, is the necessary condition for microtonality). They promoted microtonal scales, post-tonal systems and new instruments and timbres, but they were quick to deploy defensive strategies, both in their writing on music and in composition. Similar approaches were taken by Charles Ives (1874–1954) and Alois Hába (1893–1973), and by lesser-known composers contributing to this debate, such as Richard Stein (1882–1942), Julián Carrillo (1875–1965) and Ivan Vyschnegradsky (1893–1979). Through their music and writings they constitute a loose international network and present a wide range of twentieth-century tonal strategies.[5] In this article they are therefore grouped as restrained microtonalists with a common, tonally rooted agenda.

[3] Riethmüller, *Ferruccio Busonis Poetik*, 7.

[4] Ferruccio Busoni, *Entwurf einer neuen Ästhetik der Tonkunst* (Triest: C. Schmidl & Co., 1907), trans. Theodore Baker as *Sketch of a New Esthetic of Music* (New York: G. Schirmer, 1911), <https://babel.hathitrust.org/cgi/pt?id=nyp.33433011349440;view=2up;seq=1> (accessed 17 August 2017).

[5] There exists a sizeable body of early twentieth-century literature on microtones in Western music. This includes (chronologically) Busoni, *Entwurf einer neuen Ästhetik der Tonkunst*; Willy von Möllendorff, *Musik mit Vierteltönen* (Leipzig: Leuckart, 1917); Jörg Mager, *Vierteltonmusik* (Aschaffenburg: Verlag Mager, [?1918]); Richard Stein, 'Vierteltonmusik', *Die Musik*, 15 (1923), 510–16, 741–6; Charles Ives, 'Some "Quarter-Tone" Impressions', *Franco-American Music Society Bulletin*, 25 March 1925, repr. in *Essays before a Sonata and Other Writings*, ed. Howard Boatwright (New York: Norton, 1962), 107–19; Georgy Mikhaylovich Rimsky-Korsakov, 'Obosnovaniye chetvyortitonovoy muzïkal′noy sistemï' ('Basis of the Quarter-Tone Musical System'), *De musica*, 1 (1925), 52–78; Lotte Kallenbach-Greller, 'Die historischen Grundlagen der Vierteltöne', *Archiv für Musikwissenschaft*, 8/4 (September 1927), 473–85; Leonid Sabaneev, 'The Possibility of Quarter-Tone and Other New Scales', trans. S. W. Pring, *Musical Times*, 70/1036 (June 1929), 501–4; Joseph Yasser, *A Theory of Evolving Tonality* (New York: American Library of Musicology, 1932); Foulds, *Music To-day*; Ivan Vyschnegradsky, 'La musique à quarts de ton et sa réalisation pratique', *Revue musicale*, 171 (1937), 26–33; Artur Holde, 'Is There a Future for Quarter-Tone Music?', *Musical Quarterly*, 24 (1938), 528–33; Julián Carrillo, *'Sonido 13': Fundamento científico e histórico* (Mexico City: Talleres Gráficos de la Nación, 1948), trans. as 'The Thirteenth Sound' in Sister Laurette Bellamy, 'The Sonido Trece Theoretical Works of Julián Carrillo: A Translation with Commentary' (Ph.D. dissertation, Indiana University; Ann Arbor, MI: University Microfilms, 1973), 171–217; Harry Partch, *Genesis of a Music: Monophony, the Relation of its Music to Historic and Contemporary Trends; its Philosophy, Concepts, and Principles; its Relation to Historic and Proposed Intonations; and its Application to Musical Instruments* (Madison, WI: Wisconsin University Press, 1949); Alois Hába, *Mein Weg zur Viertel- und Sechsteltonmusik* (Düsseldorf: Verlag der Gesellschaft zur Förderung der systematischen Musikwissenschaft, 1971); and Partch, 'Patterns of Music', *Bitter Music: Collected Journals, Essays, Introductions, and Librettos*, ed. Thomas McGreary (Urbana and Chicago, IL: University of Illinois Press, 1991), 159–61.

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This view of early twentieth-century microtonal aesthetics and technique breaks with recent traditions of writing on microtones, which is mostly concerned with individual composers' work, microtonal techniques, notation, performance, teaching and definitions, as well as later microtonal innovations as part of the post-war avant-gardes, or descriptive histories of national microtonal schools or developments, in which these composers play only minor roles.[6]

But why microtones, of all the exciting new techniques, materials and perspectives the early twentieth century produced? After all, even in the early decades of the twentieth century microtones were not exactly new. In a retrospective overview of the technique, history and structure of these intervals, the microtone pioneer Rolf Maedel sought to remind his readers of this fact by quoting Schoenberg's assertion in *Harmonielehre* that 'equal temperament was only ever a ceasefire'.[7] Generally, 'microtones' are really intervals (rather than pitch classes) that are smaller than the semitone, and as such they feature not only in musics and music-theoretical works of ancient Greek and of Indian, Arab and Turkish origin, but also in sixteenth- and seventeenth-century theoretical works by Marin Mersenne, Francisco de Salinas and Gioseffo Zarlino. Even later, there are occasional interventions in the early nineteenth century, such as Johanna Kinkel's observations on Chopin's struggle 'to free the quarter-tones which flit between the enharmonics like ghostly shadows'.[8] The late nineteenth and early twentieth centuries, however, ushered in unprecedented interest in these ultra-chromatic intervals throughout the West, resulting in a growing number of designs for microtonal keyboard instruments such as harmoniums and pianos, new scales and

[6] Later textbooks and secondary literature include Don Ellis, *Quarter Tones: A Text with Musical Examples, Exercises and Etudes* (Plainview, NY: Harold Branch, 1975); Sigrun Schneider, *Mikrotöne in der Musik des 20. Jahrhunderts: Untersuchungen zu Theorie und Gestaltungsprinzipien moderner Kompositionen mit Mikrotönen* (Bonn-Bad Godesberg: Verlag für systematische Musikwissenschaft, 1975); Easley Blackwood, 'Discovering the Microtonal Resources of the Synthesizer', *Keyboard*, 8/5 (1982), 26–38; James Wood, 'Microtonality: Aesthetics and Practicality', *Musical Times*, 127 (1986), 328–30; Douglas Keislar, 'History and Principles of Microtonal Keyboards', *Computer Music Journal*, 11/1 (1987), 18–28; Scott R. Wilkinson, *Tuning In: Microtonality in Electronic Music: A Basic Guide to Alternate Scales, Temperaments and Microtuning Using Synthesizers* (Milwaukee, WI: Hal Leonard, 1988); Gardner Read, *20th-Century Microtonal Notation* (New York: Greenwood Press, 1990); 'Forum: Microtonality Today', *Perspectives of New Music*, 29/1 (winter 1991), 172–262; Brian McLaren, 'A Brief History of Microtonality in the Twentieth Century', *Xenharmonikon*, 17 (spring 1998), 57–110; *Musik der anderen Tradition: Mikrotonale Tonwelten*, ed. Heinz-Klaus Metzger and Rainer Riehn (Munich: Text & Kritik, 2003); *Microtones and Microtonalities*, ed. Christopher Fox, special issue, *Contemporary Music Review*, 22/1–2 (2003); Luca Conti, *Suoni di una terra incognita: Il microtonalismo in Nord America (1900–1940)* (Lucca: Libreria musicale italiana, 2005); Lidia Ader, 'Microtonal Storm and Stress: Georgy Rimsky-Korsakov and Quarter-Tone Music in 1920s Soviet Russia', *Tempo*, 63/250 (October 2009), 27–44; and Franck Jedrzejewski, *Dictionnaire des musiques microtonales (1892–2013)* (Paris: L'Harmattan, 2014).

[7] 'Das temperierte System nur ein Waffenstillstand war.' Arnold Schoenberg, *Harmonielehre*, quoted in Rolf Maedel, *Mikrotöne: Aufbau, Klangwert, Beziehungen* (Innsbruck: Edition Helbling, 1983), 6.

[8] Johanna Kinkel, quoted in Linda Siegel, 'Johanna Kinkel's "Chopin als Komponist" and Other Musical Writings: Untapped Source Readings in the History of Romantic Music', *College Music Symposium*, 43 (2003), 105–25 (p. 111); cf. Julian Rushton, 'Quarter-tone', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 5 March 2018).

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chords, and ideas for notation.[9] Although the interval of the quarter-tone is probably the most common of Western microtonal intervals, many different suggestions for divisions smaller than the semitone were considered and tried out in the early twentieth century. Together, they were used to promote, and to experiment with, microtonal intervals even before more systemic questions of temperament or spectral music arose.[10]

Early twentieth-century cross-fertilizing strands in acoustics, aesthetics, instrument-building and criticism abound, and more often than not they are distinctly international.[11] The Russian futurist Nikolay Kul′bin (1868–1917), for example, published his manifesto 'Die freie Musik' in Vassily Kandinsky and Franz Marc's German-based almanach *Der blaue Reiter* in 1912.[12] At this point, Busoni's *Sketch of a New Esthetic of Music* had just been translated into English after he had experienced Thaddeus Cahill's microtonal telharmonium in New York. Ives had been inspired for his far-reaching experiments by the German physician-physicist Hermann von Helmholtz's *Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik* (as had Harry Partch, who drew from this book his interest in just intonation).[13] The Czech composer Hába, a pupil of Busoni, read about a lecture by the German composer and instrument-builder Willy von Möllendorff in Vienna in the 1920s, shortly after which he attended Stein's first international quarter-tone congress in Stein's Berlin flat (joining forces with the Russian emigré Vyschnegradsky and the Germans Jörg Mager and von Möllendorff, and possibly even meeting the Mexican Carrillo and the Russian Artur Lourié).[14] While the source of Foulds's initial interest in microtones is unknown, it was subsequently fuelled by his interest in Indian music and music theory, by theosophy and by the specific influence of his wife, Maud MacCarthy (1882–1967), a violinist, singer, poet, ethnographer and

[9] Even some early twentieth-century composers who did not use microtones felt the need to critique them. See, for example, Béla Bartók, 'Das Problem der neuen Musik', *Melos* (1920), 107–10. Hans Rudolf Zeller, 'Ferruccio Busoni und die musikalische Avantgarde um 1920', *Musik der anderen Tradition: Mikrotonale Tonwelten*, ed. Metzger and Riehn, 9–18. Zeller understands this criticism of microtones as confirmation of their importance in 1910s and 1920s aesthetics; cf. Kallenbach-Greller, 'Die historischen Grundlagen der Vierteltöne'.

[10] Cf. Read, 'Prelude', *20th-Century Microtonal Notation*, 1–12. Other composers interested in microtones include (in the order of their date of birth) Ernest Bloch (1880–1959), Ernst Krenek (1900–91), Eivind Groven (1901–77), Harry Partch (1901–74), Giacinto Scelsi (1905–88), Lou Harrison (1917–2003), Jean-Étienne Marie (1917–89), Iannis Xenakis (1922–2001), György Ligeti (1923–2006), Klaus Huber (1924–2017), Pierre Boulez (1925–2016), Hans-Werner Henze (1926–2012), Ben Johnston (1926–2019), Ezra Sims (1928–2015), Karlheinz Stockhausen (1928–2007), Henri Pousseur (1929–2009), George Crumb (b. 1929), Easley Blackwood (b. 1933), Krzysztof Penderecki (1933–2020), Terry Riley (b. 1935), La Monte Young (b. 1935), Peter Eötvös (b. 1944), Rudolf Rasch (b. 1945) and James Wood (b. 1953). Many became interested in microtones in combination with new possibilities provided by electronic music and instruments.

[11] For a few such strands, see Conti, *Suoni di una terra incognita.*

[12] Nikolay Kul′bin, 'Die freie Musik', *Der blaue Reiter*, ed. Vassily Kandinsky and Franz Marc (Munich: Piper & Co., 1912), 69–73.

[13] Hermann von Helmholtz, *Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik* (Braunschweig: Vieweg, 1863). Thomas McGreary, 'Introduction', in Partch, *Bitter Music*, ed. McGreary, xv–xxx (p. xviii).

[14] Ader, 'Microtonal Storm and Stress'.

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esoteric teacher, who had studied Indian classical music in depth, and whose (partly microtonal) *rāgas* Foulds had listened to and transcribed.[15]

Despite the considerable differences that might be expected in each composer's individual approach to microtones, their notation and the extent of the use of microtonality in this music, these composers were also united in their creation of personal origin myths. It is likely that the first modern European microtonal piece was Lubet d'Albiz's *Création harmonique: Étoile musicale composée pour piano ou orgue à quarts de ton* for a quarter-tone instrument built by Alexandre-Joseph Vincent and Bottée de Toulmon (*c.*1858), but both Foulds and Carrillo asserted independent discovery of microtonal intervals in the late nineteenth century.[16] The fact that their alleged earliest microtonal pieces, as well as those of other composers, are lost, confuses attempts to establish firm fixed points in the early years of modernist microtonality. Yet most microtonal composers of the early twentieth century wove stories of discovery into their theorization of microtonal composition. Carrillo, for example, claimed to have discovered sixteenth-tone intervals in 1895 by dividing his violin strings with a pocketknife instead of a finger.[17] (Partch similarly marked a cello fingerboard with 29 steps within the octave and then had this fingerboard fitted onto a viola corpus.[18]) By comparison, Foulds's own microtonal origin myth has two sources. In the race for the 'earliest' quarter-tones, he claimed pride of place for a lost string quartet of 1898. In *Music To-day*, this piece served as his proof of the technical feasibility of quarter-tones and their 'capability of expressing certain psychological states in a manner incommunicable by any other means known to musicians'.[19] He distinguished these purely Western and experimental quarter-tones from his second, separate, influence, the Indian microtones (*srutis*) that he encountered through MacCarthy's work in 1915. MacCarthy (then still Mrs Mann), meanwhile, had begun to give sold-out demonstrations of Indian classical and folk-music traditions in British universities and town halls.[20] These either purely experimental or non-Western origins contrast with more homely myths spun by Ives and Hába. Their myths do not involve a claim of discovery, but one of rediscovery or cultivation: Hába's initial inspiration came from the quarter- and eighth-tones he had heard in the Moravian folk songs of his childhood,[21] while Ives remembered his father building his first microtonal instrument after listening to the local church bells in a thunderstorm.[22]

[15] Nalini Ghuman, *Resonances of the Raj: India in the English Musical Imagination, 1897–1947* (New York and Oxford: Oxford University Press, 2014), 21.
[16] Hugh Davies, 'Microtonal Instruments', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 8 March 2018); cf. Jedrzejewski, 'Chronology', *Dictionnaire des musiques microtonales*, 305–51.
[17] Alejandro L. Madrid, *In Search of Julián Carrillo and Sonido 13* (Oxford and New York: Oxford University Press, 2015), 126.
[18] Bob Gilmore, *Harry Partch* (New Haven, CT, and London: Yale University Press, 1998), 65.
[19] Foulds, *Music To-day*, 59.
[20] Ghuman, *Resonances of the Raj*, chapter 1.
[21] Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 14.
[22] Ives, 'Some "Quarter-Tone" Impressions', 111.

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Most microtonalists also shared a belief that microtones enrich, but never replace, a more or less stable diatonic foundation for music, or at least certain central principles of tonality, such as tonal centres or triads. This gap between highly innovative 'ultra-chromatic' systems on the one hand and a suggested diatonic basis on the other needs to be bridged, and most early twentieth-century microtonal composers attempted to do so with aesthetic operations that involve microtones as one option among many in their 'material toolbox'. Consequently, they felt they were assembling music from two distinct worlds, one diatonic, the other microtonal, with microtones achieving different degrees of presence in their diatonic environment. The result is often colouristic (especially in Foulds's and Stein's music, but also in Hába's), and the thinking behind these colouristic strategies can perhaps best be compared with that of their contemporaries who embedded octatonic collections within tonal surroundings.[23] (Examples of similarly assembled octatonic–tonal effects appear in Igor Stravinsky's *Symphonies d'instruments à vent* (1920) and *Svadebka* (*Les noces*, 1923), where Richard Taruskin finds colouristic 'octatonic-specific' '*Rite* [*of Spring*] chords'. Similar 'ferocious' elements can be found in Nikolay Rimsky-Korsakov's earlier opera *Sadko* (1895–6).[24]) More broadly, this idea of assembling music with different materials and different tools also resembles the process of Claude Lévi-Strauss's concept of *bricolage*,[25] which is commonly encountered but seldom remarked upon in musical composition. In *The Savage Mind*, Lévi-Strauss defined this process in similar terms of restraint: 'The elements which the "bricoleur" collects and uses are "pre-constrained" like the constitutive units of myth […] And the decision as to what to put in each place also depends on the possibility of putting a different element there instead.'[26]

This early twentieth-century 'pre-constraint' of the microtonal elements in a composer's toolbox, the tentative or sometimes even only theoretical thinking, and the case-to-case decision of how to use them within tonal frameworks provide a curiously reactive backdrop to the more systematic microtonal thinking of composers after 1945. Busoni, for example, theorized microtones, but never followed this up with compositions, much to the frustration of Hába, his mentee. Foulds, by comparison, composed with quarter-tones, but was very suspicious of anything that would resemble a theory or systematic application. By contrast, Ives, Hába and Carrillo both composed and theorized, and the last two even established two of the three pre-war microtonal 'schools': Hába's department of microtonal music at the Prague Conservatoire, 1924–49 (interrupted during Nazi occupation and the Second World War), and Carrillo's

[23] For these effects in Hába's opera *Die Mutter*, see the section below entitled 'Refinement: "bastard C-sharps"'; in Foulds's music, the section 'Preservation: "If I'm not land, I'm sea"'; and in Stein's music, the section 'Restraint: "satisfy even the worst sticklers"'.

[24] Richard Taruskin, 'Chernomor to Kashchei: Harmonic Sorcery; or, Stravinsky's "Angle"', *Journal of the American Musicological Society*, 38 (1985), 72–142 (pp. 94–5); Taruskin, *Stravinsky and the Russian Traditions: A Biography of the Works through Mavra*, 2 vols. (Berkeley, CA: University of California Press, 1996), ii, 1499.

[25] Claude Lévi-Strauss, *The Savage Mind* (London: Weidenfeld & Nicolson, 1966); cf. Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia*, trans. Robert Hurley, Mark Seem and Helen R. Lane (London: Bloomsbury Academic, 2013).

[26] Lévi-Strauss, *The Savage Mind*, 19.

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Grupo 13 from 1925 onwards.[27] All these composers (and others, such as Vyschnegradsky, Georgy Mikhaylovich Rimsky-Korsakov, Partch, von Möllendorff, Maedel and Mager) worked with microtones as if from scratch, in what Georg Friedrich Haas called a 'confusing […] multiplicity of starting points', to differing degrees and with varying success.[28]

Yet their microtonal thinking is strikingly similar with regard to their musical background and microtonal aesthetics. This article's first main section, 'Moth to the flame', introduces the main protagonists – Stein, Hába, Busoni, Ives, Foulds, Kul′bin, Vyshnegradsky and Carrillo; and it mines their writings for common concerns and tropes. These tropes of microtonal aesthetics and theory are: (1) rediscovery (the idea that microtones have always existed, whether in nature, in European folk music or in non-European musics; that they can evoke nostalgia), (2) the refinement of tonality (the idea that microtonal music does not replace, but extends tonal possibilities), (3) the preservation of tonality (the closely connected idea that the restrained use of microtones can actually help tonality survive, and that the preservation of tonality is more important than microtonal experiments) and (4) the exercise of restraint (the broader idea that microtones can be theorized, but not yet used in compositions, or that they may only be tried out and are merely optional). These four tropes not only rear their heads in most early twentieth-century microtonal composers' aesthetics, but dominate these composers' music, as the second main section, 'Practice and preaching', argues.

Moth to the flame: microtonal aesthetics

To what extent can we allow material progress in music to dictate to our ears what they should like? Can our ears even get used to something like quarter-tone intervals? These and other questions were common in the reception, criticism and composition of early twentieth-century microtonal music. They (and their answers) take different forms and guises depending on who is writing. Pre-First World War England, for example, was experiencing an Indian boom, which increased interest in theosophy (with its foundation in Hinduism), as well as in Indian art, architecture and music practices.[29] At the forefront were MacCarthy's unique demonstrations of instruments, of performing and improvisation techniques and traditions, and of microtonal scales.[30] She appears to have sung these scales with great precision (which excited Donald Francis Tovey) and invited English composers to consider Indian solutions for their compositional

[27] Cf. Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*; Madrid, *In Search of Julián Carrillo and Sonido 13*. A third school was Georgy Rimsky-Korsakov's Circle of Quarter-Tone Music at the Petrograd/Leningrad Conservatoire from 1923 (transformed into a seminar in 1927; cf. Ader, 'Microtonal Storm and Stress').

[28] 'Eine unübersichtliche […] Vielfalt von Ansatzpunkten'. Georg Friedrich Haas, 'Mikrotonalitäten', *Musik der anderen Tradition*, ed. Metzger and Riehn, 59–65 (p. 59). For a general overview of theories and the history of microtones, see Schneider, *Mikrotöne in der Musik des 20. Jahrhunderts.*

[29] Ghuman, *Resonances of the Raj*, 11.

[30] *Ibid.*, 32.

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problems.[31] At around the same time, the building of microtonal instruments increased rapidly on the Continent, often but not always through collaborations between composers and instrument-makers looking to refine common listening habits.[32]

Nevertheless, microtones, with their seeming rejection of the common diatonic and chromatic paradigm, were under fire from the beginning. The influential German writer and critic Paul Bekker (a strong advocate of Franz Schreker and Schoenberg), for example, held an ambivalent opinion about the chances of a microtonal future for music. 'The "cry for the quarter-tone" is a few years old already,' he remarked in his 1923 booklet *Neue Musik.* Despite their relative age, Bekker found that microtones were utopian, claiming that Busoni's previous writings had 'an aftertaste of Jules Verne'.[33] Bekker's main critique was that quarter-tones (probably the most popular microtonal interval) dilute the tonal system and accelerate a degeneration of listening habits begun in chromatic music: 'Evaluated psychologically, the introduction of quarter-tones means a sharpening, but at the same time effeminacy of our sensation of tone.' According to Bekker, we end up with a microtonal scale that, 'without doubt, is a gain on the surface, but actually means a degeneration of aesthetic character and effect'.[34] This connection of microtones with a feminizing and thus degenerating effect upon a threatened masculine tonality aligns with contemporaneous broader concerns about the gendering of chromatic and atonal music. An example is Ives, whose masculinist-rationalist strategies to disguise his boyhood shame about liking 'decadent' music were justified in retrospect as the search for 'that self-restraint […] which can control the emotional & intellectual impulses, as a "man" not a degenerate'.[35] Faced with this fear of ultra-chromatic feminizing microtones, Bekker offered a compromise that suggests the restriction of quarter-tones 'to colouristic purposes […] within the orchestra'.[36] Without doubt, this position best supports Bekker's overall concern for the development of a new form of melodic linear expression and the preservation of the primacy of melody more broadly. Had Bekker known Foulds, he would have realized that this was already being practised.

[31] Ghuman, *Resonances of the Raj*, 32–3.

[32] Hugh Davies, 'Microtonal Instruments', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 17 March 2018), '1900–30'.

[33] 'Der "Schrei nach dem Viertelton" ist schon eine Reihe von Jahren alt'; 'einen kleinen Beiklang von Jules Verne'. Paul Bekker, *Neue Musik*, Gesammelte Schriften, 3 (Stuttgart and Berlin: Deutsche Verlagsanstalt, 1923), 89, 91.

[34] 'Psychologisch gewertet, bedeutet die Einführung der Vierteltöne zunächst eine Schärfung, gleichzeitig aber eine Verweichlichung unseres Tonempfindens'; 'eine Tonskala, die äußerlich genommen zweifellos einen Gewinn, ihrem ästhetischen Charakter und ihrer Wirkung nach ebenso zweifellos eine Degenerationserscheinung bedeutet'. *Ibid.*, 90. Effeminacy here means degeneration in so far as anything feminine (here microtones) would erode an imagined masculine nineteenth-century German music tradition.

[35] Charles Ives in a rejected passage for *Essays before a Sonata*, quoted in Maynard Solomon, 'Charles Ives: Some Questions of Veracity', *Journal of the American Musicological Society*, 40 (1987), 443–70 (p. 467). Cf. Susan McClary's use of Solomon's article for the purpose of extrapolating the challenges of music as a gendered discourse: McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis, MN, and London: University of Minnesota Press, 1991), 17.

[36] 'Zu rein koloristischen Zwecken […] innerhalb des Orchesters'. Bekker, *Neue Musik*, 90.

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Bekker's unease is already present in the earliest published microtonal score, Stein's *Zwei Konzertstücke* for cello and piano, op. 26 (1906), and its associated writing on quarter tones. Stein was a German composer and music critic who spent the duration of the First World War in Spain and later retired to the Canary Islands. As a well-travelled 20-year-old, he had published a collection of Icelandic Inuit songs in 1902, probably discovering microtones in the process.[37] He came to write music in most standard genres, including a short opera.[38] In his Preface to the *Konzertstücke*, Stein sought to excuse the use of quarter-tones in these short pieces, anticipating that his 'attempt will – probably – merely draw derision and disconcertment'.[39] Yet composers' complaints about the lack of genuinely new music, Stein mused, could not be blamed on the diatonic system. Rather, the lack of true genius and a discerning audience prevented a leap forward. Stein therefore classified his own quarter-tone innovations as a '*suggestion* – no more and no less' for the 'reintroduction' (*Wiedereinführung*) of microtones into Western music.[40] According to Stein, 'As we cannot be too careful with the introduction of new things, I have no intention for now to use quarter-tones more extensively.'[41] Stein's microtonal musings already included the four defensive manoeuvres: rediscovery, refinement, preservation and restraint. He thus foreshadowed many elements that later microtonalists stressed in their respective origin myths. For Stein, quarter-tones were a 'found' tool, rediscovered in order to serve the heightened sensitivity of the twentieth-century listener. Yet they needed to be applied sparingly within the diatonic system in order to serve our tonal drives. As such, they could refine and preserve tonality until such a time when a true genius would free music of any such restraints.

Stein introduced two quarter-tonal features in order to attain his goals: first, a third, 'neutral' triad (*neutrale*[*r*] *Dreiklang*) type (or gender, in Stein's thinking), with its major third a quarter-tone lowered, thus extending the diatonic duality of major and minor;[42] and second, leading notes a quarter-tone sharpened, regaining the thrill – or 'satisfaction' (*Befriedigung*) – of our 'leading-note urge' (*Leittonbedürfnis*).[43] Stein thus implied a basic listening psychology of an audience dominated by primeval drives. In a later report on quarter-tones, he sought to justify both a guilty listening pleasure and the – seemingly contradictory – historical necessity of cleansing a 'hysterically exalted' (*hysterisch-exaltiert*) Western music by refining the 'barbarian' (*Barbaren*) parts of our musical senses.[44] This took the form of the ability to hear microtonal intervals. In the

[37] Matthias Schmidt, 'Stein, Richard Heinrich', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 19 March 2018).
[38] *Ibid.*
[39] 'Ich bin mir wohl bewusst, dass mein Versuch zunächst – wahrscheinlich – nicht viel mehr als Spott und Befremden erregen wird.' Richard H. Stein, 'Vorwort', *Zwei Konzertstücke für Violoncello und Klavier op. 26* (Berlin and Leipzig: Mitteldeutscher Musikverlag, [*c.*1906]), 2–3 (p. 2).
[40] 'Eine weitere "Anregung" – nicht mehr und nicht weniger'. *Ibid.*
[41] 'Da man mit der Einführung von Neuem sowieso nicht vorsichtig genug sein kann, lag mir jetzt vorläufig an einer ausgiebigeren Verwendung von Vierteltönen nichts.' *Ibid.*, 3.
[42] *Ibid.*
[43] *Ibid.*
[44] Stein, 'Vierteltonmusik', 516.

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wake of his research among the Inuit and their microtonal music, Stein must have felt that he was returning to Western civilization a tool which musical barbarians still possessed and which Westerners needed to retrain in order to appreciate.[45] The curious undercurrent of race and exoticism, coupled with the feeling of unveiling one's own cultural prehistory through foreign civilization, here supports the notion that we all follow a basic tonal drive, whose fulfilment the 'children of the twentieth century' seek with ever subtler means (in this case, the sharpened leading note).[46] We can read in this vein his manifesto, in which he assumed the role of spokesperson of microtonal composers:

> We quarter-tone composers do not at all want to introduce a new system of composition, like other modernists. We do not fight anyone. And we do not understand why we are being fought so bitterly from so many sides. For in our opinion any new artwork is all about whether it is viable and vital […] We use quarter-tones because we cannot do without them, because we need them in order to express our musical ideas; but we don't all compose similar kinds of music […] What unites us in the great difference between our artistic goals is perhaps just this: artistic honesty and a strong intensity of musical sensitivity.[47]

The Czech composer, teacher and theorist Hába grew up with the microtonal music of his native Moravia, and seems to have found his later use of microtones less awkward to justify than Stein. Hába's own microtonal story is built around the omnipresent microtones in the songs his mother sang and the music of folk singers whom he accompanied as a violinist in the band of his home town, Vizovice.[48] According to his musical autobiography *Mein Weg zur Viertel- und Sechsteltonmusik*, he quickly picked up the fine differences as a teenager and sought to harmonize the folk singers' melodies with microtonal chords on his violin.[49] In a differing memory, recalled in the Preface to his *Neue Harmonielehre des diatonischen, chromatischen, Viertel-, Drittel-, Sechstel- und Zwölftel-Tonsystems*, his playful intoning of 'wrong notes' with his two brothers Josef and Vincenz is credited as the foundation for his aural concept of microtones (for the lack of which he criticized his mentor Busoni, explaining that the latter's longing for third- and sixth-tones had to remain unfulfilled because he [Busoni] failed to develop an ability to imagine the results – or to build an instrument that simply would have

[45] Schmidt, 'Stein'.
[46] 'Wir Kinder des 20. Jahrhunderts'. Stein, 'Vorwort', 3.
[47] 'Wir Vierteltonkomponisten wollen nun keineswegs ein neues Komponiersystem einführen, wie gewisse andere Gruppen von Neutönern. Wir bekämpfen niemanden. Und wir begreifen nicht, warum wir von vielen Seiten so erbittert bekämpft werden. Denn unserer Meinung nach kann es sich bei jedem neuen Kunstwerk immer nur darum handeln, ob es lebensfähig und lebenskräftig ist oder nicht […] Wir verwenden Vierteltöne, weil wir ohne sie nicht auskommen, weil wir sie brauchen, um unsere musikalischen Ideen aussprechen zu können; aber wir schreiben keineswegs allesamt eine gleichartige Musik […] Was uns bei der großen Verschiedenheit unserer künstlerischen Ziele verbindet, ist vielleicht nur das eine: künstlerische Ehrlichkeit und starke Intensität des musikalischen Empfindens.' Stein, 'Vierteltonmusik', 511.
[48] Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 14.
[49] *Ibid.*, 14–15.

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made the microtones audible').[50] Hába sought to invoke the idea that microtonal intervals came to him naturally, and he perceived them as an authentic and artless practice, which he only refined in his own system. At a later point, his interest was additionally fuelled by his discovery at a symposium that microtones were also used in Arabic and Turkish music. However, it was Rudolf Steiner's theosophically inspired anthroposophy that provided Hába with the concept of the 'free act' that enabled him to defend his quarter- and sixth-tones retrospectively from accusations of being 'formalist' or even 'degenerate', and to position them as a creative act of the mind without formal restrictions.[51] Building on this idea of microtonality as something both natural and spiritual, Hába kept abreast of the most recent microtonal developments by Stein and others, which he found mentioned in a progressive handbook on music history that he studied while working as a young schoolteacher.[52] Hába also developed his own accidentals for the microtonal intervals in the various systems – accidentals for raising and lowering third-tones, quarter-tones, sixth-tones and specific twelfth-tones.[53] He was certainly lucky in being able to contribute to the building of microtonal instruments and in having as his mentors Schreker, Hermann Scherchen and Busoni. (Later, the Czech Ministry of Culture itself became Hába's patron.) In addition to these influences, he situated himself in the line of the progressive Czech composer-theorists František Skuherský, Karl Stecker and Vítězslav Novák, microtonally extending their liberating rule of unlimited combinations of chords of different keys without prior modulation: 'Every tone can be connected [*in Beziehung bringen*] to any other tone from any tonal system. Every interval and chord can be connected to any other interval or chord from any tonal system.'[54]

Yet despite this progressive outlook (additional factors certainly being his connection with Schoenberg's Verein für Musikalische Privataufführungen and his work for Universal Edition Vienna as a proofreader), diatonic thinking remained central in the form of a fundamental major–minor distinction. Although more confident than his mentor Busoni in composing with microtones, Hába took care not to lose sight of semitonal 'landmarks' in his music. When asked by Alban Berg about his idea of a tonal centre in his quarter-tone music, Hába allegedly explained: 'I want to know where I am tonally, not unlike a pilot up high who is interested in which cities he is flying over. Of course, it doesn't need to interest him all the time.'[55] Hába continued to stress the need to combine semitonal and microtonal worlds in order to achieve 'natural' music. In his account of the Munich première of his quarter-tone opera *Die Mutter* in 1931, for example, he claimed

[50] Alois Hába, *Neue Harmonielehre des diatonischen, chromatischen, Viertel-, Drittel-, Sechstel- und Zwölftel-Tonsystems* (1927) (Munich: Musikedition Nymphenburg, 2001), XIII–XIV.
[51] Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 83.
[52] *Ibid.*, 30.
[53] Hába, *Neue Harmonielehre*, 140, 200.
[54] 'Jeden Ton kann man mit jedem anderen Ton jedes Tonsystems verbinden (in Beziehung bringen). Jeden Zweiklang oder Mehrklang kann man mit jedem anderen Zweiklang und Mehrklang jedes beliebigen Tonsystems verbinden (in Beziehung bringen).' *Ibid.*, VI–VII.
[55] 'Ich will wissen, wo ich mich klanglich befinde, ähnlich wie es einen Flieger in der Höhe interessieren kann, über welche Städte er fliegt. Natürlich, es braucht ihn nicht ständig zu interessieren.' Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 46.

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that the work presents a drama following the established principle of *per aspera ad astra* or, as Hába phrased it, '"from minor to major" – put musically; "from Good Friday to the Resurrection", in the sense of the Christian life-affirming paradigm (not the antique tragic one)'.[56] Throughout *Mein Weg zur Viertel- und Sechsteltonmusik*, Hába made use of the major–minor paradigm as the defining principle of his microtonal music. There, he ordered intervals and chords by how 'dur' or 'moll' they sounded and explained that while Schoenberg and Berg 'wanted to break out of traditional listening', he 'wanted to differentiate it further' (that is to say, he wanted to refine tonality through the use of microtones).[57] In his *Neue Harmonielehre*, finally, he explicated this pervasiveness of the new microtonality in terms of the old tonality: 'The principle of tonality and polytonality remains in existence in the quarter-tone system […] Likewise, the principle of tonicity [*Tonzentralität*] remains valid, but in an extended sense' (guaranteeing the preservation of tonal principles).[58]

Hába met Busoni in 1922, by which time the latter had been theorizing microtones and struggling with the sounding results for a good 16 years. While Hába was full of enthusiasm for the possibilities of his tonal microtonality, he painted a depressing portrait of his mentor Busoni. In 1907, mere months after the publication of Stein's *Konzertstücke*, Busoni had weighed into the debate with his *Entwurf einer neuen Ästhetik der Tonkunst*, the first published theoretical piece of writing to demand a microtonal revolution.[59] In this booklet, Busoni argued that third-tones (divisions of the whole tone into three equal parts, and of the whole-tone scale into 18 such third-tones) were a step towards 'eternal harmony'.[60] In passing, he also nodded to the trope of rediscovery in crediting Debussy, Liszt and Strauss with developing a feeling for 'how the intervals of the Series of Seven might be differently arranged (graduated)'.[61] Adequate training, Busoni hoped, would enable listeners to distinguish the sound of microtonal intervals from that of badly tuned instruments.[62] As a consequence of his tripartite division of the whole tone, Busoni was in effect calling for the partial retraction of equal temperament. Instead of the outdated 'series of seven', he suggested two whole-tone scales a semitone apart (one starting on C, the other on C♯), with each whole tone of each scale divided into three (for example, labelling the third-tone steps from C to D: C, C♯, D♭, D). The two basic scales with their 18 divisions each form two

[56] '"Von Dur zu Moll" – musikalisch gesagt –, "vom Karfreitag zur Auferstehung" im Sinne der christlichen lebensbejahenden und nicht der antiken Weltanschauung.' Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 55.

[57] 'Sie wollten aus dem traditionellen Hören heraus'; 'Ich wollte es noch weiter "differenzieren".' *Ibid.*, 70ff., 66.

[58] 'Das Prinzip der Tonalität und Polytonalität bleibt im Vierteltonsystem auch bestehen […] Auch das Prinzip der Tonzentralität behält seine Gültigkeit, aber in einem erweiterten Sinne.' Hába, *Neue Harmonielehre*, 156.

[59] Hardly coincidentally, Busoni is also the dedicatee of Augusto Novaro's treatise on microtones and harmonic revolutions: Novaro, *Teoría de la música: Sistema natural, base del natural-aproximado* (Mexico City: Augusto Novaro, 1927).

[60] Busoni, *Sketch of a New Esthetic of Music*, trans. Baker, 30.

[61] *Ibid.*, 29.

[62] *Ibid.*, 31.

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third-tone chromatic scales. Overlaying them creates an ultrachromatic scale with 36 sixth-tone intervals. More curious than his subsequent suggestion to overthrow standard notation and branch out into sixth-tones is the way in which Busoni then restrained this system with reference to the imperative of preserving tonality: 'Were we to adopt [third-tones] without further preparation, we should have to give up the semi-tones and lose our "minor third" and "perfect fifth"; and this loss would be felt more keenly than the relative gain of a system of eighteen one-third tones.'[63] Like Stein, even the progressive Busoni believed that the time was not yet ripe.

Busoni's *Entwurf* drew energetic opposition, not just from Schoenberg in the well-known dismissal in his *Harmonielehre* of contemporary microtonal experiments as 'senseless',[64] but also from Hans Pfitzner. In order to reckon with Busoni, Pfitzner had put on his 'heavy armour of the honourable German defender of the arts' ('schwere[s] Rüstzeug des ehrbaren deutschen Kunstverteidigers'), as Bekker described it in an ironic understatement.[65] Pfitzner's goal was to reject what he exaggeratedly described as Busoni's attempt to overthrow the entire Western musical tradition with the help of some American modernist microtone machine (Cahill's harmonium).[66] Although Pfitzner's nationalist game is easy to see through (in his view, German music of the 'great masters' constituted a rich fount of melodic development and could supply Western art music for the foreseeable future without the need to resort to microtones), his outright rejection of microtonal experiments chimes with Bekker's more cautious dismissal.

But in 1922, Busoni himself turned against his previous microtonal aesthetics. In 'Bericht über Dritteltöne' he retracted his previous enthusiasm – much to Hába's frustration.[67] The reasons for his change of mind are conjecture, but Hába reports a telling conversation with Busoni around the time of writing. When asked by the younger Hába (gently nicknamed 'Ali Baba' by Busoni) why he had not executed his third-tone theory in composition, Busoni replied evasively (for example, he claimed that he 'had too much to do in the semitonal system so far' to turn to microtones).[68] Busoni also complained that he had been unable to obtain a harmonium or piano in sixth-tones to help him hear those intervals; this in turn had hindered composition. In his later account of this conversation, Hába suspected that Busoni actually had no notion of the harmonic possibilities of this system.

Busoni's statement in the 'Bericht' that he had too much to compose diatonically is used as an excuse for more fundamental doubts. Busoni admitted that he had been able to conduct only limited experiments with third-tones among friends, and on

63 *Ibid.*
64 Arnold Schoenberg, *Theory of Harmony*, trans. Roy E. Carter (Berkeley and Los Angeles, CA: University of California Press, 1978), 25.
65 Bekker, *Neue Musik*, 91.
66 Hans Pfitzner, *Futuristengefahr: Bei Gelegenheit von Busoni's Ästhetik* (Leipzig and Munich: Süddeutsche Monatshefte, 1917), 17.
67 Ferruccio Busoni, 'Bericht über Dritteltöne', in Busoni, *Von der Macht der Töne: Ausgewählte Schriften*, ed. Siegfried Bimberg (Leipzig: Reclam, 1983), 100–2.
68 'Ich hatte eigentlich im Halbtonsystem bisher noch zu viel zu tun gehabt.' Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 42–3.

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insufficiently prepared instruments, so that it was difficult to establish whether a third-tone chromatic scale was perceived as 'out-of-tune semitones' (*verstimmte Halbtöne*) or as an orderly ultrachromatic scale. While this scale enriches the potential for melodic expression, Busoni reasoned that there was no harmonic system to control this potential – and such a system would have had to be dictated by the ear. This, in turn, was impossible without the envisaged sixth-tone harmonium. One may only wonder what, if anything, would have happened had Busoni not died shortly before Hába had the first such instrument built in 1924, inspired by his conversations with the supportive Busoni. But in the absence of microtonal instruments, Busoni's final stance towards microtonal possibilities took on the guise of universal ambivalence about progress in music: 'If there is anything as bad as trying to inhibit progress, it is forcing progress rashly.' And: 'I stick with my maxim that progress must be an enriching of means, not their displacement. Rash innovators begin by negating and erasing the existing.'[69] Although intended as a refinement of tonality as defined in his earlier *Fundamentaltheorie*, Busoni's fascination with microtones thus ended as a wary rejection of modernism.

Ives's opinion on quarter-tones resembles that of Hába. Neither of the two had Busoni's doubts about the feasibility of microtones, and both experimented pragmatically with quarter-tones, with which Ives had been familiar since his father, George, had discovered that the local church bells rang in microtonal intervals.[70] In 'Some "Quarter-Tone" Impressions' (1925), Ives remembered how his father had built a microtonal instrument shortly after the church-bell incident and had begun teasing his family and the neighbours with its unfamiliar sounds. Eventually, his father decided that microtones made sense only as passing notes or ornamentation in piano music. Although Ives felt that microtones were a natural and welcome source for renewal, he followed the general tendency in microtonal aesthetics of his time in refusing to see them as a magic bullet. Instead, he suggested a steady and slow transfusion of microtonal thinking into Western music, by helping listeners hear the advantages of ultrachromatic colour. A piano piece, for example, that had once been heard ornamented microtonally would afterwards sound 'like something wanted but missing – a kind of sensation one has upon hearing a piano after a harpsichord' (a notion similar to Stein's 'leading-note urge', perhaps).[71] Nevertheless, a form of aural pessimism led Ives to believe that 'it will probably be centuries, at least generations, before man will discover all or even most of the value in a quarter-tone extension. And when he does, nature has plenty of other things up her sleeve.'[72]

[69] 'Wenn es etwas gibt, das ebenso schlimm ist, als wie den Fortschritt hemmen zu wollen, so ist es dieses: ihn kopflos zu forcieren'; 'Es bleibt aber bei meinem Grundsatz, daß der Fortschritt eine Bereicherung und nicht eine Verschiebung der Mittel bedeuten soll. Die kopflosen Neuerer beginnen mit der Verleugnung und Ausstreichung des Bestehenden.' Busoni, 'Bericht', 100–1.

[70] Ives, 'Some "Quarter-Tone" Impressions', 111.

[71] *Ibid.* This feeling is confirmed nearly word for word in Mager's booklet *Vierteltonmusik* (?1918), where Mager reports interested visitors' reactions to his quarter-tone harmonium. He also relates the story of his discovery of quarter-tones on his out-of-tune church organ – perhaps a similar coincidence to George Ives's church-bell revelation. Mager, *Vierteltonmusik*, 8.

[72] Ives, 'Some "Quarter-Tone" Impressions', 109.

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In 'Some "Quarter-Tone" Impressions', Ives proceeded to give advice on how to write and listen to quarter-tonal music. Suggesting that readers try out quarter-tones on a two-keyboard piano (where the upper keyboard is tuned a quarter-tone higher than normal temperament), he discussed his concerns about finding a long-term purpose for quarter-tones, rather than writing music that merely sounds out of tune. A melody using quarter-tones as passing notes, he mused in this context, 'is agreeable and has its uses, but broadly speaking it seems to me a kind of begging the question'.[73] If, however, such 'quarter-tone melodies' were harmonized not with diatonic triads but with mixed diatonic/quarter-tone tetrachords, Ives saw a real use in 'their ability to relieve the monotony of literal repetition'.[74] This manifests itself in two parameters: (1) harmonically (quarter-tonal chords, Ives suggested, do not 'hold up […] that organic flow' when repeated, whereas diatonic chords do), and (2) rhythmically (when grafted onto 'definite tonality', a phrase in quarter-tone intervals in alternation with its diatonic twin clarifies the rhythmic scheme).[75] As such, quarter-tones could extend the harmonic language and assist composers in solving contemporary problems. But even here the trope of restraint broke into modernist utopia in Ives's famous claim:

> Quarter-tones or no quarter-tones, why tonality as such should be thrown out for good, I can't see. Why it should be always present, I can't see. It depends, it seems to me, a good deal – as clothes depend on the thermometer – on what one is trying to do, and on the state of mind, the time of day or other accidents of life.[76]

Ives's unprejudiced approach and trust in his musical instincts is mirrored in Foulds's approach to quarter-tones. Suspicious of systematization (of which Busoni and Hába may stand as representatives), Foulds believed that the composer's choice of musical materials is dictated by the piece at hand and that one particular pitch-organizational system has no priority over a collage of techniques and materials. Foulds had begun his musical career as a self-taught cellist, composer and conductor affiliated to Manchester's Hallé Orchestra under Hans Richter. When he turned to composition as his main occupation, his light and incidental music brought him modest financial success, whereas his concert and stage works had a mixed reception. Interested in spiritualism and theosophy, he and MacCarthy had struck the nerve of their time with the large-scale *World Requiem* (1919–21) commemorating the dead of the First World War. But success was fickle and Foulds sought his luck in Paris and later in India, where he assembled a European–Indian orchestral ensemble at All-India Radio before dying suddenly from cholera after having been transferred to Calcutta.

Foulds had set down his rudimentary quarter-tone aesthetics in his op. 92, the polemic survey *Music To-day* (1934). The severe criticism of Hába's quarter-tonal system is at the heart of Foulds's claim to independence from contemporary European

[73] *Ibid.*, 112–13.
[74] *Ibid.*, 116.
[75] *Ibid.*, 115–16.
[76] *Ibid.*, 117.

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microtonalists. Foulds had studied Hába's Second String Quartet, op. 7 (1921), and had come to the conclusion that it seemed too artificially modern.[77] He scolded Hába's quarter-tone accidentals as 'unnecessarily confusing to the eye, even after prolonged acquaintance with them'.[78] Of the music, Foulds complained that the quartet used quarter-tones excessively, but that it failed to offer any 'new ideations'. Its effect was 'as if a poet should retell the old, old story of Cinderella in words every one of which should contain a "th"'.[79] The criticism echoes Busoni's resigned verdict that quarter-tones alone are not a sufficient condition for a good piece of new music. Elsewhere in *Music To-day*, however, Foulds declared that quarter-tones are necessary conditions of good new music: '[Atonal, polytonal, modal, quarter-tonal] devices are needed by the adventurous spirit whose wings can bear him to the enchanted land of Hy Brāsil.'[80] Busoni (nicknamed 'Faithful Failure' in *Music To-day*), for example, is criticized for his music's lack of polytonality or atonality.[81]

Imagining himself firmly on the side of musical progress by writing about new scales, tuning systems and even atonality in *Music To-day*, Foulds still couched his remarks on progressive materials and tools in a defensive language. He thus sought to distinguish his quarter-tones from what the critical English layman might disregard as either a violin playing out of tune or the latest Continental fashion. Foulds's stance on quarter-tones (as well as on other modernist techniques) was that they could be deployed only in rare moments in his music; namely when no Western technique was able to convey a comparable 'psychological state', or when they were firmly embedded in a traditional structure or form. As his criticism of Hába shows, Foulds was suspicious of any one progressive tool used systematically, for fear of the impression of amateurish excess this might produce: 'Again it seems necessary to repeat that […] any demi-semi composer might seize upon this device of quarter-tones and exploit it for the sake of any cheap notoriety he might obtain because of its superficial newness. No real artist would countenance such a procedure.'[82] It is clear that by 'real artist' Foulds meant himself, as opposed to Hába and Busoni, who for his taste either overused or underused microtones. His suggestion that quarter-tones be reserved for special moments in order to avoid 'cheap notoriety' echoes Stein and Ives and their belief that the introduction of quarter-tones into Western music would proceed slowly and cautiously.

This being said, Foulds's individual stance deserves qualification. His was an isolated microtonal voice in Britain, itself a musical scene not only somewhat lagging behind the Continent in this area, but also obsessing over musical professionalism.[83] No

[77] This quartet may have been the only microtonal score Foulds was able to access. The piece had received much international attention, since it had been showcased as an example of quarter-tone composition in Franz Schreker's composition class at the Berlin Conservatoire in 1922.
[78] Foulds, *Music To-day*, 63.
[79] *Ibid.*
[80] *Ibid.*, 245.
[81] *Ibid.*, 246.
[82] *Ibid.*, 63–4.
[83] Despite this isolation, Foulds had at least heard of Carrillo, mentioning in *Music To-day* that 'there are rumours also of a Mexican composer' (p. 63).

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microtonal congresses, concerts, custom-built instruments or scores were available in Britain until the 1930s. And even once (Western) microtones surfaced there in the 1930s, generally progressively minded composers such as Constant Lambert or Christian Darnton were damning in their criticism. The former launched an attack on Hába not unlike Foulds's own Cinderella accusation. Lambert made the point that 'the quarter-tone quartets of Aloys Haba [*sic*], for example, differ from the quartets of Brahms only through being written in the quarter-tone scale. Once we have assimilated their somewhat uninviting sounds, we find ourselves back in the old world of thought and form.'[84] Darnton, a composer who regularly took part in the activities of the International Society for Contemporary Music, also rejected microtones. On the basis of his participation at a London demonstration of a microtonal harmonium built by a Dr Sandberg, he observed in 1940 'that the interval that produced the greatest sensation of physical pain was the Third of a Tone' and, somewhat contradictorily, that 'no one in the audience was able to tell which of any two adjacent microtones was the higher in pitch'.[85] An extension of the chromatic scale that would cause both physical pain and tonal confusion was to be rejected, of course. If Lambert's and Darnton's dismissals may stand as a mere skimming of the British musical surface, Foulds's caution can perhaps be read as a sensible response, if anything, to a comparatively restrictive national discourse.

The common ideas (derived from the rediscovery trope) that microtones are something natural or that they refine tonality in crisis pervade even more experimental approaches, two of which may stand as representatives here. The futurist, composer and medical doctor Kul′bin was among the earliest representatives spearheading a broader reception of microtones within modernist circles in central and eastern Europe (among them the Russians Mikhail Matyushin, Lourié and Vyschnegradsky). Kul′bin wrote a manifesto on microtones for Kandinsky and Marc's collection of modernist painting and writings *Der blaue Reiter*, in which he articulated the idea of 'free music' (*freie Musik*).[86] This free music not only was modelled on the sounds of nature – 'light, thunder, wind rushing, water rippling, birds singing' – but also followed nature's laws.[87] Quarter-tones – and later smaller intervals – represented this free music (he wrote), and would permit new forms of aural enjoyment through the host of new microtonal melodies, chords, dissonances and their respective resolutions (rather as Stein and Busoni held). For example, Kul′bin suggested that a microtonal enrichment of the diatonic system would result in 'natural' elevated levels of jouissance that would grip listeners. He suggested that microtones should be able to imitate birdsong (an idea he shared with fellow futurist Matyushin, a member of Georgy Rimsky-Korsakov's experimental Petrograd/Leningrad Circle of Quarter-Tone Music).[88]

[84] Constant Lambert, *Music Ho!* (London: Faber & Faber, 1934), 263.
[85] Christian Darnton, *You and Music* (Harmondsworth and New York: Penguin Books, 1940), 40–1 n.
[86] Kul′bin, 'Die freie Musik', 69.
[87] *Ibid*.
[88] Ader, 'Microtonal Storm and Stress', 34.

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Vyschnegradsky, a Russian emigré microtonalist in Paris, had similarly radical ideas, culminating in a postulated crisis of tonality. He had derived his microtonal ideas from Western music's historical tendency to divide the whole tone into ever smaller divisions, and Vyschnegradsky's own music came to feature third-, quarter-, sixth- and eighth-tones. His 'ultrachromaticism' or 'diatonicized chromaticism' is spelt out in the *24 Préludes* for two pianos, op. 22 (1934, rev. 1957–61 and 1974–5). These run through a cycle of 'major fourths' (the fourth one raised by a quarter-tone, which is the middle of Vyschnegradsky's 13-tone scale).[89] But Vyschnegradsky's crisis was not merely one of tonality, but a Riethmüllerian 'deep musical and psychological crisis that crosses all our culture today: from this crisis, a new musical language must be born'.[90] This new microtonal language, Vyschnegradsky's ultrachromaticism, did not stem from a 'return to the primitive', but was based on the romanticist refining 'tendency towards chromaticism, to the dissonance, and finally, to the quarter-tone'.[91]

Vyschnegradsky not only was at the centre of a middle-European microtonal group, but also corresponded with the Mexican composer Carrillo, who represents a notable exception in tone and theory to the tropes present in most early twentieth-century microtonal thinking. Like Foulds, Carrillo had entered the race for the earliest microtones and confidently laid claim to getting there first. Carrillo's origin myth, involving a pocketknife and a violin string, led to the fully fledged microtonal system he called 'el sonido trece' ('the 13th sound').[92] Alejandro L. Madrid rightly warns that this version needs to be taken with a pinch of salt, since we have only the composer's word for it (and a composer who, by the time he promoted this myth of origin, was under pressure to defend his originality against a growing number of critics).[93] Although it is likely that Carrillo did experiment with microtones very early, it seems strange that he should have completely neglected the potential consequences of his discovery in writing and in composition until 1922, when he became aware that there was already a lively European microtone scene and upon this discovery started a prolific series of compositions and writings heralding his 'Revolución del sonido 13'.[94]

In the years between 1895 and 1922, Carrillo led an unsteady life between revolution-torn Mexico, Europe and New York. His early compositions, Madrid has argued, are those of an early modernist in the broadest sense. He absorbs, plays

[89] Ivan Vyschnegradsky, Preface to *24 Préludes im Vierteltonsystem* (Frankfurt am Main: Belaieff, 1979).
[90] 'La profonde crise musicale et psychologique que traverse aujourd'hui toute notre culture: de cette crise même, doit naître un nouveau langage dans la musique'. Ivan Vyschnegradsky, 'La musique à quarts de ton', *La revue musicale*, 5/11 (1924), 231–4 (p. 233).
[91] 'Retour au primitif'; 'la tendance au chromatisme, à la dissonance et, finalement, au quart de ton'. *Ibid.*
[92] Gerald R. Benjamin, 'Carrillo(-Trujillo), Julián', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 21 March 2018).
[93] Madrid, *In Search of Julián Carrillo and Sonido 13*, 126.
[94] *Ibid.*, 108, 141–3. Cf. Julián Carrillo, *Génesis de la revolución musical del sonido 13* (San Luis Potosí: Julián Carrillo, 1940), trans. as 'Genesis of the Thirteenth Sound Revolution' in Bellamy, 'The Sonido Trece Theoretical Works of Julián Carrillo', 218–358 (p. 222).

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with and twists European nineteenth-century models (for example in his First Symphony).[95] Nevertheless, Carrillo's origin myth is important as a retrospective self-fashioning as a radical modernist. Claiming inspiration neither from folk music nor from non-Western music or sounds of nature (and thus rejecting the trope of rediscovery), Carrillo simply stated, 'In 1895 I succeeded in dividing the whole tone into sixteen equal intervals. This accomplishment expanded the possible contents of an octave far beyond the twelve tones which had imprisoned music for centuries.'[96] He named the new-found system Sonido 13, first after the pitch one sixteenth above the lowest G on the violin, and later as a symbol of his breaking through the 12 semitones in the octave – a name wisely chosen to cover his later far-reaching divisions of the octave not only into quarter-tones, but also into third-, fifth-, seventh-, eighth-, ninth-, eleventh-, thirteenth-, fifteenth- and sixteenth-tones.[97] Carrillo claimed this achievement not just for himself, but for his nation, and thus for the Americas as opposed to Europe: 'Humanity is indebted to Mexico for discovering tones 13 to 96 in the nineteenth century and tones 97 to infinity in the twentieth century.'[98] The entangled claim of his nation's historic rights with his personal accomplishment is further coupled with Carrillo's denial of Hellenic and medieval Western microtone explorations.[99] Consequently, he did not see his microtones as a continuation of a common tradition like most European microtonalists, but emphasized his system's disruptive force: 'The thirteenth sound will be the cataclysm that will destroy everything, it will put the finish on music as it exists at present.'[100]

Following his invention, Carrillo did not seek to relate his microtonal intervals to the diatonic or chromatic system in order to justify their existence. According to Madrid, the full unfolding of his system took shape as Sonido 13 grew, and as part of a contemporary discourse of European influence on Mexico, during which 'Carrillo refashioned his Sonido 13 revolution from the source of enrichment of the Western music tradition – with the addition of new pitches into the E[qual] T[emperament] system – into a project to cleanse the system from its historical "errors"'.[101] In 1924, for example, he had still maintained that his microtonal system stood in the 'glorious

[95] Madrid, *In Search of Julián Carrillo and Sonido 13*, 50.
[96] Carrillo, '*Sonido 13*', 180. Cf. Carrillo, *El infinito en las escalas y en los acordes* (Mexico City: Sonido, 1957), quoted in Madrid, *In Search of Julián Carrillo and Sonido 13*, 128: 'On July 13, 1895, I made an experiment in Mexico City where I achieved the 1/16 of a tone, and with that, the sounds in music grew 800%. Since that date, the conquests of the Sonido 13 revolution have increased in such a way that there is no possibility that more sounds will be achieved in the future, since the only limitations to my revolution are the possibilities of the human ear's perception. When the interplanetary connection is achieved, it will be possible to find new timbres; but no new sounds.'
[97] Carrillo, *Génesis de la revolución musical*, 230; Madrid, *In Search of Julián Carrillo and Sonido 13*, 12.
[98] Carrillo, *'Sonido 13'*, 183.
[99] Carrillo quotes Guido of Arezzo and Aristoxenos to prove that neither possessed the idea of microtonal intervals. *Ibid*., 184.
[100] Carrillo, quoted in Madrid, *In Search of Julián Carrillo and Sonido 13*, 147.
[101] Madrid, *In Search of Julián Carrillo and Sonido 13*, 162.

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German music tradition', but that it was still a genuinely Mexican invention.[102] Both non-Western music and the past of Western music came to be excluded from this imagined march towards an ideal future shaped by Sonido 13 as a system, which was being established alongside Carrillo's discovery of acoustic 'truths' in the harmonic series. Owing to the contemporary opposition from other Mexican composers and theorists (the so-called Grupo 9) and also to the all-encompassing nature of Sonido 13, Carrillo theorized his microtones to a degree unmatched by contemporary writing. A body of books, booklets, articles and written battles fought mostly in the newspaper *El universal* serves as evidence of Carrillo's repartee. His arguments are laid out in a sometimes aggressive tone, but they are also substantiated by extended tuning experiments with harps (according to Carrillo up to 128th-tones) and, by proxy, far-reaching conclusions for the harmonic series and acoustics, both of which are foreign to his European contemporaries.[103] Whether the resulting calculations – of numbers of possible pitches within the octave, or ratios within the harmonic series – are correct is less important here than Carrillo's claim to total dominance of the material, which led him to a system 'absolutely free of whole tones and semitones'.[104] This hermetic microtonal system is worlds away from Busoni, and even from more synthetic approaches such as Vyschnegradsky's crisis myth. In theory, Carrillo's system rejects all four common European microtonal tropes while it attempts to break music history in half.

Carrillo apart, the similarities between early twentieth-century microtonal thinkers outweigh the differences between them. Many microtonal composers of that time curbed their enthusiasm in relation to the possible infusion of Western music with microtones. It seemed logical to most of them to suggest a step-by-step introduction of microtones in order to give the ear the opportunity to develop alongside the evolution of the microtone (as in Stein's, Ives's or Foulds's writings). Others even suggested 'taming' microtones in a major–minor duality (Hába), or merely theorizing them (Busoni). But crucially, all shied away from the atonal taboo, whether driven by systematic experimentation, ethnomusicological research, childhood reminiscences or modernist ideology. Therefore, the tropes of tonal refinement and the preservation of tonality gained importance in their writings, and were accompanied by advice on notation and on the avoidance of the dreaded 'out-of-tune' performance scenario. The common concern about the viability of microtones is tempered, however, by their justifying reminders of structural models and natural sounds, or of the history of European as well as non-European musics, psychology or combinations of these. Physics, acoustics and indeed tuning systems played a small part in their exploration of microtones (in contrast with that of later microtonalists, and albeit that Carrillo's engagement with the harmonic series is an exception). For the time being, the diatonic system remained the foundation of microtonal music.

[102] Madrid, *In Search of Julián Carrillo and Sonido 13*, 103.
[103] Carrillo, *Génesis de la revolución musical*, 230.
[104] *Ibid.*, 231.

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Practice and preaching: microtonal composition

Most microtonal compositions of the early twentieth century sit on a continuum between two extremes: at one end of the scale lie Stein's minimally invasive microtonal procedures, at the other Carrillo's dense level of microtonal surface imposition on diatonic or whole-tone structures. In between, composers deploy microtones in surprisingly different scenarios, which map onto, expand and sometimes even destabilize the four tropes of rediscovery, refinement, preservation and restraint.

Rediscovery: nymphs, Celts and church bells

The trope of rediscovery plays a less explicit role in early twentieth-century microtonal composition than it does in the writings prefacing or accompanying this music. Nevertheless, there are several cases of nostalgic or reminiscent quarter-tones. These are all attempts to evoke an atmosphere of remote places, times and moods, and are therefore explicitly colouristic effects. They extend tonal or near-atonal frameworks at specific moments and then disappear again.

A prominent example of this procedure can be found in Karol Szymanowski's 'Driady i Pan' ('Dryads and Pan'), the third piece of *Mity* (*Myths*) for violin and piano, op. 30 (1915). The piece draws on extended techniques to imitate the arcadian creatures described in its title: fleeting glissandos and harmonics to imitate Pan's flute, and quarter-tones to represent the appearance of the tree nymphs in its introduction and coda. Although its only quarter-tone, D–, penetrates no deeper than the mere surface of a few bars, this pitch powerfully announces a piece whose Hellenistic arcadian music comes from a time and place beyond our own.[105]

A degree of stasis also characterizes most of Foulds's quarter-tone music. The unfinished *Lyra celtica* for wordless contralto and orchestra, op. 50 (mid-1920s), is a rarity in his quarter-tonal catalogue: it prescribes microtones in the voice part's cadenza at the beginning of the first movement, 'Lento', and anchors them in a highly colouristic 'Celtic' atmosphere, a blend of what Malcolm MacDonald characterized as Foulds's 'customary pentatonically and modally-inflected melodic lines with sophisticated whole-tone and "pan-diatonic" harmonies in an evocative, iridescent sound-fabric'.[106] *Lyra celtica*'s quarter-tones satisfy a strong nostalgic–exoticist urge in Foulds's oeuvre (as opposed to the more modernist urge carefully unfolded in this article's epigraph). In this concert piece, microtones therefore appear as rediscovered objects from an imagined Celtic arcadia, rather than as avant-garde tools. MacDonald has found the idea of microtones in a vocal score 'bizarre, to say the least – till one remembers that Foulds was married to a woman who could sing the Hindu scale of 22 tones to the octave with flawless accuracy'.[107] Although it is not clear that *Lyra*

[105] The sign '+' henceforth denotes the raising of the pitch class by a quarter-tone interval, the sign '–' the lowering by one quarter-tone. For example, C+ is the pitch class one quarter-tone above C♮.
[106] Malcolm MacDonald, *John Foulds: His Life in Music* (Rickmansworth: Triad Press, 1975), 34.
[107] *Ibid.*, 33.

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celtica was written for MacCarthy as the vocalist, her influence on the conception may be assumed, locating the work closer to their Indian musical explorations.

A stronger example of rediscovery is the first of Ives's *Three Quarter-Tone Pieces for Two Pianos* (1923–4), which triggered his 1925 essay 'Some "Quarter-Tone" Impressions'. By the time these pieces had come into existence, the majority of his less theoretical quarter-tone music had already been written: *Tone Roads* no. 3 (1911, 1913–14), the second movement of the Symphony no. 4 (1912–18, 1921–5) and 'Like a Sick Eagle' from the *Set for Chamber Orchestra* no. 1 (1915–16) precede not only Ives's own theory, but also the European microtonal boom of the 1920s. The *Three Quarter-Tone Pieces* are Ives's most thorough exploration of quarter-tones and best show his priorities and pragmatism. This pragmatism sits in the notation, above all, with its aim of keeping visual challenges to a minimum. This comes at the cost of indeterminacy: of the two pianos, both of which are notated normally, either Piano 1 needs to be tuned a quarter-tone higher, or Piano 2 a quarter-tone lower than equal temperament, so that Piano 1 is always a quarter-tone higher than Piano 2. In the essay, Ives gave a short explanation of the pieces, pointing to each of their different aims, construction and rising quarter-tonal engagement. The first, 'Largo', had originally been written for one quarter-tone piano and explores quarter-tones merely as enriching elements for the augmented triads that make up the piece's extended tonal framework. Quarter-tone intervals occur both simultaneously between chords in the two parts, and within melodic lines involving the two pianos. But they do not yet penetrate the bitonal structure on a deeper level (as they do in the following two pieces). Rather, the Largo's quarter-tones function as embellishments, and they send their listener back to Ives's origin myth. The opening bitonal augmented triads at quarter-tonal distance are reminiscent of George Ives's church bells, while the 'false octave' in bar 6 cuts to the chase of the quarter-tonal issue – the play surrounding what is notated identically (the printed C) but sounds different (C♮ versus C+ or C–, depending on how the pianos are tuned (see Example 1). Ives's quarter-tonal invasion in 'Largo' is thorough (in so far as quarter-tone intervals are omnipresent), but at the same time mild (in so far as it sits statically in relation to the bitonality).
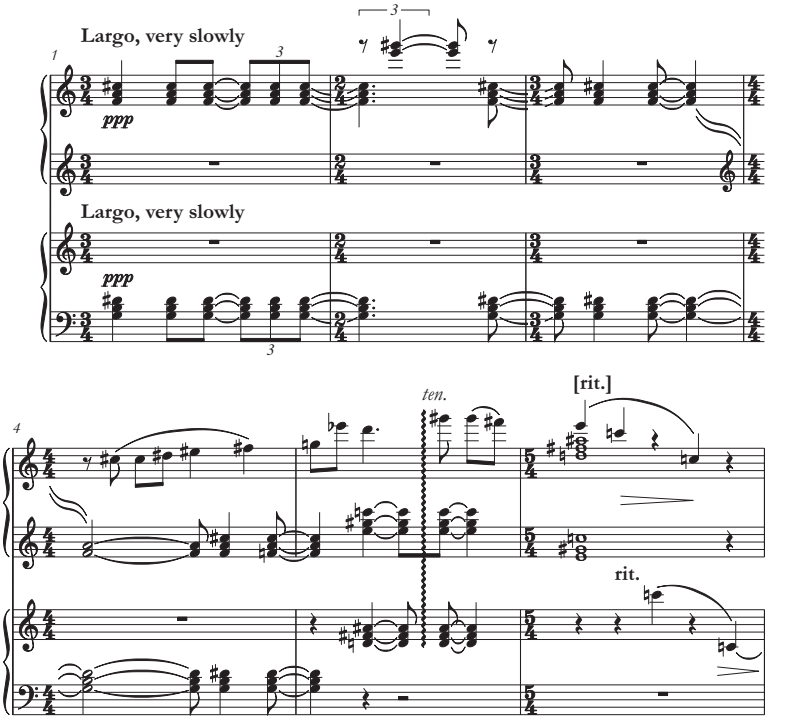
Refinement: 'bastard C-sharps'

The last two of Ives's *Three Quarter-Tone Pieces* are more daring than the first. The second piece, 'Allegro', is virtuosic (it had originally been conceived in this final form as a two-player piece). Repetitions of various small motifs in the two parts a quarter-tone apart resume the previous play with the idea of 'same but different' (see, for example, bars 3, 11–12, 29 and 31). But for Ives, the basic function of quarter-tones here lies mostly in their ability to 'relieve the monotony of literal repetition', and so to refine and extend the possibilities offered by non-microtonal bitonality.[108] The effect of this newly conceived repetition is tried out on the small motivic snippets themselves and on pre-existing rhythms (which are reminiscent of his own *Ragtime Dances*). According to

[108] Ives, 'Some "Quarter-Tone" Impressions', 116.

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Example 1: Ives, 'Largo' from *Three Quarter-Tone Pieces for Two Pianos*, bars 1–6. Piano 1 sounds one quarter-tone higher than Piano 2. Extracts from Three Quarter-Tone Pieces by Charles Ives (EP66285). © Copyright C. F. Peters Corporation, New York for all countries of the world. All rights reserved. Reproduced by kind permission of Peters Edition Limited, London.



Ives, both these motifs and the rhythms profit from their quarter-tonal refinement (see Example 2).
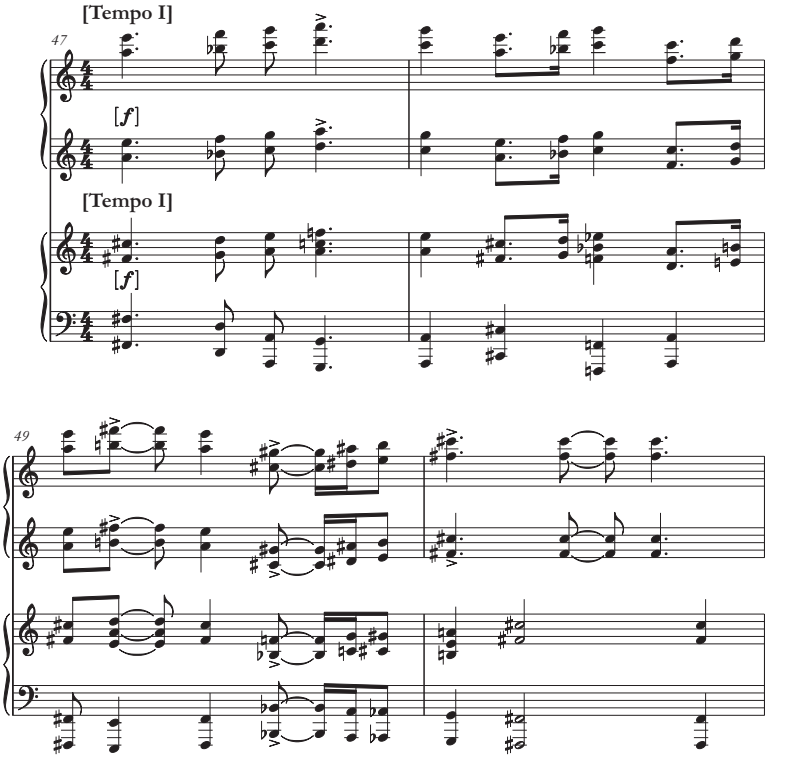
Ives was somewhat dismissive of this piece, despite its complexity: as a study of rhythm, he decided, its use of quarter-tones 'doesn't amount to much'.[109] It is the last piece, 'Chorale', that fully brings to fruition Ives's thoughts on quarter-tone intervals. Like the first piece, 'Chorale' was originally conceived for one player only, but it succeeds in bringing his more intricate ideas to bear. It is based on a genuine quarter-tone chord (rather than the previous bitonality a quarter-tone apart) and closes with a tune resembling a quarter-tonally refined *God Save the King*. This primary quarter-tone chord C♮/D♯+/G♮/A♯+ is the one Ives theorized *post factum* as the best compromise of all possible quarter-tone tetrads:

> Strike C and G on the lower keyboard and D sharp on the upper […] This chord to most ears, I imagine, sounds like a C major or C minor chord [triad], out of tune. Add A sharp

[109] *Ibid.*, 119.

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Example 2: Ives, 'Allegro' from *Three Quarter-Tone Pieces for Two Pianos*, bars 47–50. Piano 1 sounds one quarter-tone higher than Piano 2. Extracts from Three Quarter-Tone Pieces by Charles Ives (EP66285). © Copyright C. F. Peters Corporation, New York for all countries of the world. All rights reserved. Reproduced by kind permission of Peters Edition Limited, London.
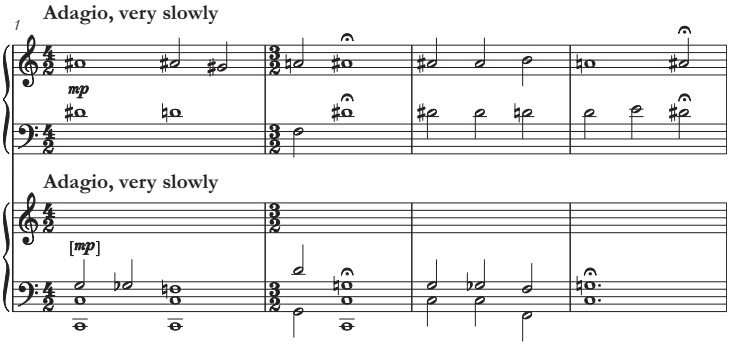


> on the upper keyboard and that impression disappears […] If listened to several times in succession, it gathers a kind of character of its own – neither major, minor, nor even diminished.[110]

In this passage, Ives permitted himself a gaze into a post-tonal abyss (with the departure from the diatonic system and its familiar major–minor modes and sounds), and in 'Chorale' he put these thoughts into practice. In order to allow the ear to get used to it, he repeated this chord several times, sometimes inverted and enriched by versions of a secondary fundamental chord (see Example 3). This secondary chord, he decided, should 'give a feeling of less finality than the first, […] have lesser intervals, and, in general, a contrasting character, and a note in common [with the primary chord]'.[111]

[110] Ives, 'Some "Quarter-Tone" Impressions', 112 (second pair of brackets original).
[111] *Ibid.* (final brackets original); cf. Howard Boatwright, 'Ives' Quarter-Tone Impressions', *Perspectives of New Music*, 3/2 (spring–summer 1965), 22–31 (p. 27).

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Example 3: Ives, 'Chorale' from *Three Quarter-Tone Pieces for Two Pianos*, bars 1–4. Piano 1 sounds one quarter-tone higher than Piano 2. Extracts from Three Quarter-Tone Pieces by Charles Ives (EP66285). © Copyright C. F. Peters Corporation, New York for all countries of the world. All rights reserved. Reproduced by kind permission of Peters Edition Limited, London.
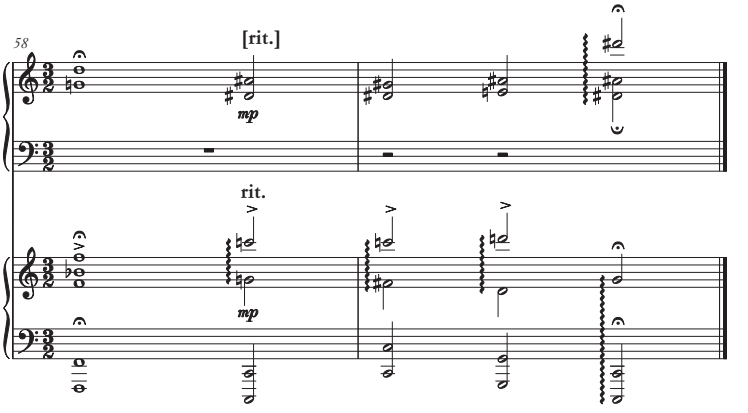


This chord may pan out as C𝄲/D+/F𝄲(/G♯+), thus a construction mirroring the primary chord's intervals.

On the basis of his first integrally quarter-tonal chord, Ives then established his 'cantus firmus', a motif reminiscent of the melody of *God Save the King*, which first appears tentatively in bars 3–4 (shown in Example 3). Here, this cantus firmus is still in a foetal form, internally chromatic with an accompaniment using quarter-tone intervals. Over the course of 'Chorale' it lengthens, becomes more recognizable, adopts quarter-tones and finally reappears in a comic, fully quarter-tonal form in the coda (bars 48ff.; it has to be spread through both parts in order to achieve this feat). Ives's carefully engineered fundamental quarter-tone chord aside, the ear latches on to the well-known melody. This is not so much because the original tune itself is tonal, but because by building the entire piece on this pre-used tonal tune, Ives made his audience listen continuously for tonal gist (major–minor relationships in the ubiquitous melody snippets). Once this has happened, even the fundamental chord can tantalize its listeners with its 'neutral' element, D♯+, especially when the chord is inverted so that this pitch is the highest note (right at the end; see Example 4). It is this feature that marks even this more structurally microtonal piece as a refinement of tonality, rather than a departure from it. Together, Ives's *Three Quarter-Tone Pieces* establish an ascent of quarter-tone integration from melodic ('Largo') through rhythmic ('Allegro') into harmonic space ('Chorale'). His experiments are tongue-in-cheek, driven by his characteristic enjoyment of experimentation, collage and (ultra)chromatic refinement.

By comparison, Carrillo's approach to microtones is more comprehensive, but the musical execution does not represent his system in its most extreme form. Far from deploying his theorized 128th-tones, for example, he contented himself in the five *Primeras composiciones a base de 16avos de tono y sus compuestos* (1922–5) with sixteenth-tones; the rest are quarter-, eighth-, third- and occasional fifth-tones. Throughout his

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Example 4: Ives, 'Chorale' from *Three Quarter-Tone Pieces for Two Pianos*, bars 58–9. Piano 1 sounds one quarter-tone higher than Piano 2. Extracts from Three Quarter-Tone Pieces by Charles Ives (EP66285). © Copyright C. F. Peters Corporation, New York for all countries of the world. All rights reserved. Reproduced by kind permission of Peters Edition Limited, London.



career, Carrillo also wrote music without microtones, thereby somewhat diminishing the esoteric aura surrounding his microtonal aesthetics. But the underfoot invasion of *bricolage* and collage in his oeuvre is not limited to this implicit division in his catalogue. A real break with tonality through microtones, one could argue, might require not only that these microtones be ubiquitous, but also that they emancipate themselves in order to occupy a harmonic function in addition to a melodic one – the same task that occupied Ives in his 'Chorale'. The first criterion (intense microtonal surface use) Carrillo challenged head on; the second (harmonic function) he evaded. As Madrid has demonstrated by means of Schenkerian analysis, the relationship between Carrillo's microtonal foreground and (a)tonal middleground and background underwent a development from organic/romanticist/German to fractured/modernist thinking during the 1920s.[112] At the end of this development (for example in 'En secreto', the second movement of the Third String Quartet, *Dos bosquejos*, *c.*1928), Carrillo deployed quarter-tones on the surface, while his middleground and background did not necessarily build on diatonic or chromatic relationships any more. In a broad sense, this development is modernist, since it breaks with the German nineteenth-century ideal of organicism, opting instead for a fractured and static impression. But at the same time this procedure restricts the impact of microtones on the deeper layers of the composition. And this, paradoxically, makes it seem less modernist – if microtones are taken to represent modernist signifiers.

There is (as yet) no equivalent to Schenkerian analysis or Fortean set theory in the analysis of Carrillo's type of microtonal music, which borders on the atonal. Madrid's analysis of foreground, middleground and background pitch-class collections in

[112] Madrid, *In Search of Julián Carrillo and Sonido 13*, chapter 4.

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TABLE 1
CARRILLO, 'EN SECRETO', SECTION OVERVIEW

	Section A				*Section B*	*Section A'*		*Coda*		
musical elements	a	b	a	b'	cf. Table 2	a	b'	C1	a'	C2
material (pitch-class sets)	6-35	4-28	6-35	4-28	4-28, 6-35	6-35	4-28	4-28, C^7	6-35	$G^{7, 9}$
bar structures	4 + 4	4 + 4	4 + 4	4	9	4 + 4	4	11	6	6
rehearsal figures	A					C		D	E	

Note: Rehearsal figure B is missing from the score.

'En secreto' must therefore remain to a degree limited.[113] This piece has a structure which leads its listener from quarter-tones as passing notes (section A) to a juxtaposition of symmetrical microtonal scales and diminished chords (section B) to a shortened recapitulation of sorts (section A') through to Carrillo's typical use of harmonics in an extended coda (see Table 1). Although the piece ends in an enriched G major, it is based on two main types of material: the whole-tone scale or collection 6-35 and the diminished-seventh chord or collection 4-28. In the governing section A, Carrillo uses quarter-tones to shuffle downwards and upwards through a chromatic field, with the four parts moving in parallel, first a whole tone apart from each other (a), then minor thirds apart (the interval of the diminished-seventh chord, b). This procedure represents the simplest way to refine tonal fields by means of microtones. In 'En secreto', Carrillo's quarter-tones do not yet exceed the establishment of what might be called a highly systematized ultrachromatic surface (the score even *looks* tidy). Here, quarter-tones are, as yet, only refining surface effects. It is in section B that Carrillo used the sets 6-35 and 4-28 to develop something new. In the nine bars of this section, he worked with two diminished-seventh chords a semitone apart and two whole-tone scales, also a semitone apart (see Table 2). The diminished chords can appear as simple broken chords (in bars 31–2; see Example 5), in parallel motion in two parts, and in a more complex setting where the interval of the minor third is divided in two with the help of quarter-tones, to form a scale of equal steps of three quarter-tones each (in bars 29–30, for example). These two options are complemented by bars using the whole-tone scale (bars 34 and 36, for example). The impression of great variety is helped by the fact that no two neighbouring bars present the same option (bar 29 functions as a scale fragment that is an upbeat to bar 30). 'En secreto' shares these microtonal division blocks with the earlier *Preludio a colón* for soprano and ensemble, where this quarter-tonal scale features several times and is extended to divide the perfect fourth into two equal intervals of five quarter-tones each (see Example 8 below). But section B of 'En secreto' also serves to pinpoint the just-about-tonal basis of Carrillo's microtonality: although the effect of this music is distinctly dissonant, its basis is not freely atonal, but remains restricted to whole-tone and diatonic collections. With its foundation in the 6-35 and 4-28 sets, the piece is the logical development from the preceding movement,

[113] *Ibid.*, 129–33.

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TABLE 2
CARRILLO, 'EN SECRETO',
SECTION B, BAR-BY-BAR OVERVIEW

Bar	*Element*
29	$4\text{-}28_{\text{microtonal scale}}$
30	$4\text{-}28_{\text{microtonal scale}}$
31	4-28
32	4-28 (−1)
33	$4\text{-}28_{\text{microtonal scale}}$
34	6-35
35	$4\text{-}28_{\text{microtonal scale}}$
36	6-35
37	6-35 (+1)

'Meditación', which not only employs quarter-tones in quite a similar way to section A of 'En secreto', but also is established on the basis of small chromatic collections – 4-28 and even C major.

Later orchestral works confirm that Carrillo's microtones often serve to refine, rather than to break, diatonic or chromatic fields. The Concertino for Quarter- and Eighth-Tone Violoncello and Orchestra (*c.*1945), for example, features similar excessive ultra-chromatic figures in the virtuosic, dominant and not very thematic solo part, and regular occurrences of quarter-tones in the string parts of the orchestra. The piece's theme is characteristically chromatic with an octave leap that is typical of Carrillo and reminiscent of his fingerprint harmonics (see Example 6). As in 'En secreto', parts frequently function from the foundation of a diminished chord or chromatic collection.
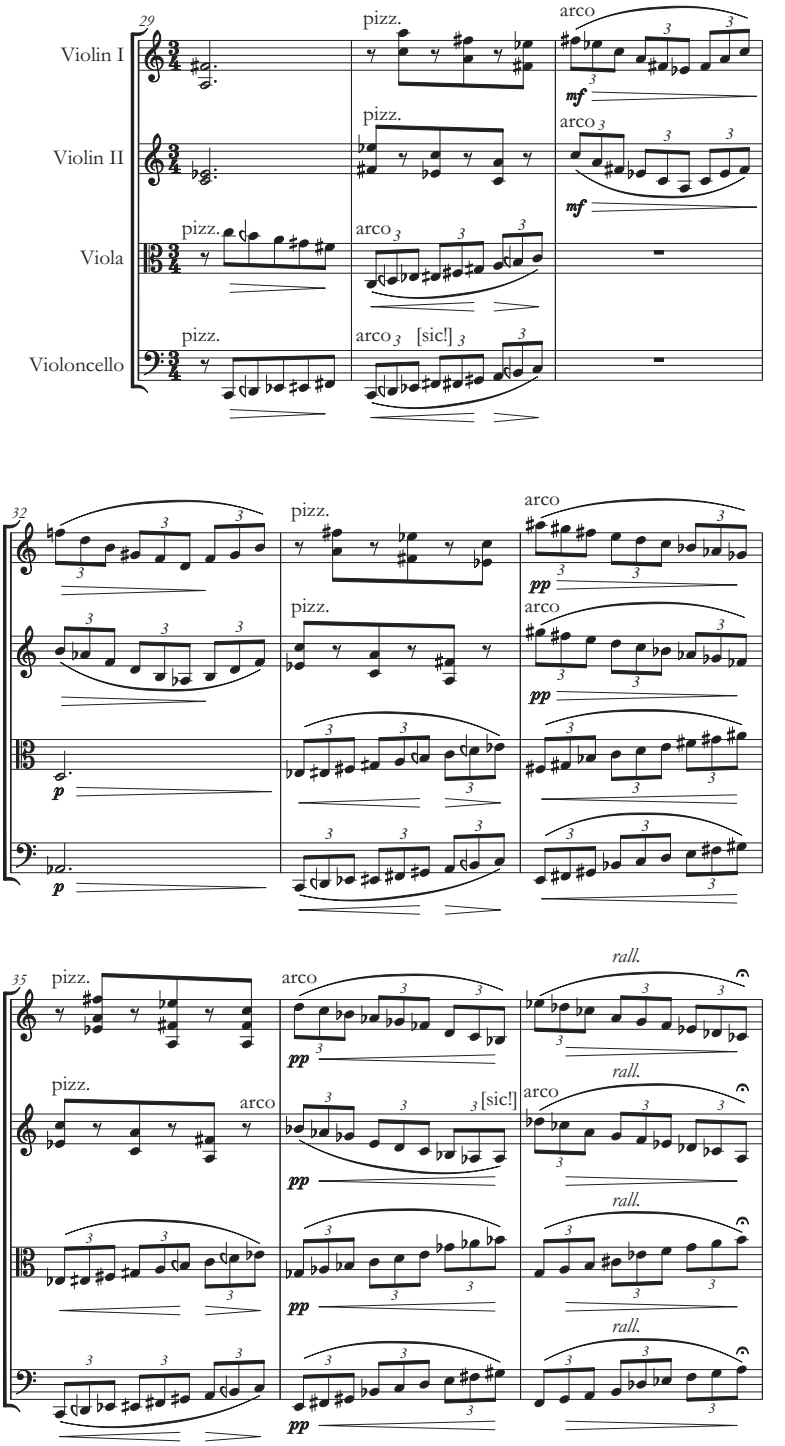
Towards the end of Carrillo's drive towards microtonal predominance, a piece like the First Concerto for Quarter-Tone Violin and Orchestra (1949) leans further towards atonality and is thus less concerned with the refinement of a pre-existing tonal space. Its solo part, like that of the Concertino for Cello and Orchestra, still excels in ultrachromatically enriched virtuosic figures. The harmonic basis still does not consist of microtones themselves, but a variety of collections based on chromatic, whole-tone and octatonic scales and their fragments pushes the piece towards a tonal edge (see Example 7). The price paid for this greater freedom from the restraints of tonal remnants is the overall lack of material capable of supporting a longer melodic development. Small-scale quarter-tone figures are omnipresent in the solo violin, other solos and the orchestra, but wherever a real motif develops, it often lacks these very quarter-tones (cf. bar 56, *tranquillo*).

For Carrillo, this lack was irrelevant, because the ultimate goal of Sonido 13 was to achieve 'compositions absolutely free of whole tones and semitones'.[114] And within the parts, he did attain his goal: *Preludio a colón*, *Dos bosquejos* and the solo parts of the

[114] Carrillo, *Génesis de la revolución musical*, 231.
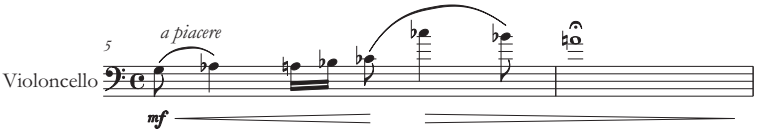
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Example 5: Carrillo, 'En secreto', bars 29–37. © Copyright by Editions Jobert, 27 boulevard Beaumarchais, Paris – France. All rights reserved.
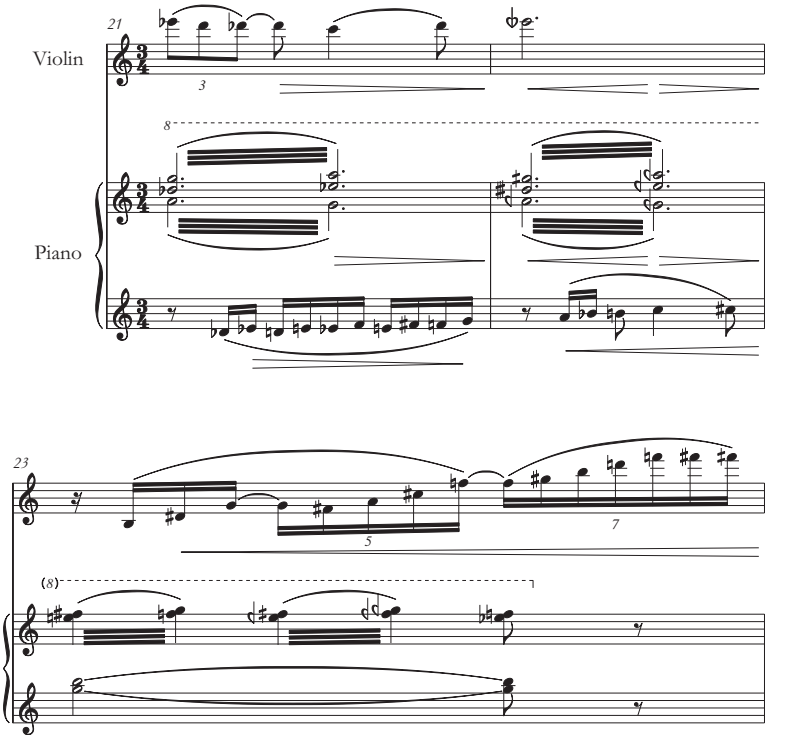


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Example 6: Carrillo, Concertino for Quarter- and Eighth-Tone Violoncello and Orchestra, cello solo, bars 5–6. © Copyright by Editions Jobert, 27 boulevard Beaumarchais, Paris – France. All rights reserved.
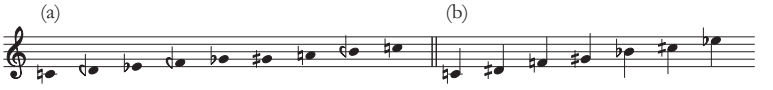


Example 7: Carrillo, First Concerto for Quarter-Tone Violin and Orchestra, reduction for violin and piano, bars 21–3. © Copyright by Editions Jobert, 27 boulevard Beaumarchais, Paris – France. All rights reserved.



Concertino and the Concerto avoid whole-tone or semitone steps within their parts. If steps are not quarter-tonal, they are drawn from artificial microtonal scales, for example where each step is exactly three or five quarter-tones (see Example 8). Again, this type of scale embodies a refining tendency in Carrillo's work. Nevertheless, across parts and in the orchestral accompaniments of the Concertino and the Concerto, whole-tone and semitone intervals abound, somewhat stealing the thunder of Carrillo's proclaimed radicalism and allowing for a much larger excess of tonal remnants than his aesthetics would have us believe: despite its goal of replacing the diatonic and chromatic systems, his music did not fully break with non-microtonal intervals.

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Example 8: Carrillo's quarter-tone scales: (a) ¾-step scale as used in 'En secreto', (b) 5/4-step scale as used in *Preludio a colón.*



Similar layers developed in Hába's microtonal music, for example in the Second String Quartet, op. 7 (1920), and the Fantasy for Violin and Quarter-Tone Piano, op. 21 (1925). It is not surprising that Foulds criticized the score of Hába's Quartet: at first glance, both the Quartet and the Fantasy are riddled with quarter-tone accidentals; and Hába's policy that such accidentals should be valid for only one note increases the score's visual complexity. Hába himself was proud to claim that his Quartet is 'monothematic': its 'leading parts are derived in part from a main melody', as he suggested, but the other parts are 'free' (that is, non-thematic).[115] Its sections – Allegro, Scherzo, Largo, Allegro – show that Hába was already experimenting with his later idea of pitch polarity as opposed to traditional keys.[116] Remotely reminiscent of Stravinsky's tonal polarity, 'pitch polarity' is a useful term to describe the loosening of traditional thematic structures and procedures. For example, Hába's polar pitch in the Quartet is D, while in the Fantasy it is C. These pitch poles are destabilized occasionally through bitonality or even chromatic atonality, but since the poles are not bound to a major or minor key, these interventions do not for Hába require particular preparation.[117] This seems to contradict his writings, which stress the major–minor paradigm. But these post-tonal extensions in his music happen in a controlled environment, which surrounds its microtones with much more complex but less radical music than Carrillo's.

Two observations on Hába's use of quarter-tones can be made. The first of these is that Hába does not experiment with quarter-tone-based scales (cf. Carrillo's 3/4- and 5/4-step scales). Horizontal, scale-based quarter-tone development is less pronounced in the Quartet than the enrichment of post-tonal harmony through quarter-tones, as is true to Hába's stated refining aim: 'It is my concern to permeate the semitone system with more delicate sound nuances, not to abolish it [but] to extend the possibilities of expression already given by the old system.'[118] Consequently, Hába's quarter-tones open up an ultrachromatic space in the Quartet, without falling into a simplistic parallel diatonicism (where C major is replaced by C+ major, and so on). There are

[115] 'Die führenden Stimmen sind zu einem Teil aus einer Hauptmelodie abgeleitet'; 'Die anderen Stimmen sind frei.' Hába, *Mein Weg zur Viertel- und Sechsteltonmusik*, 102.

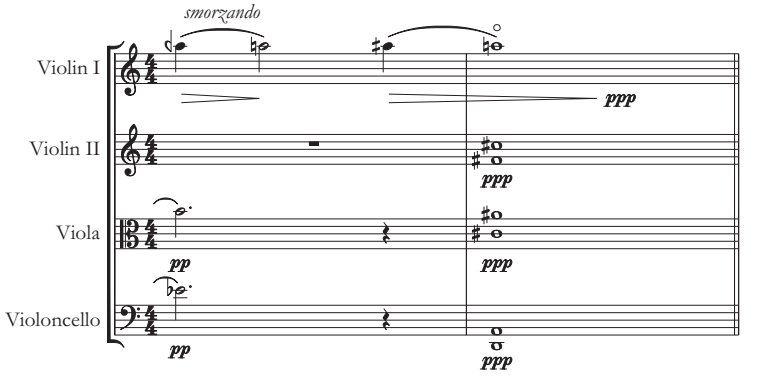
[116] George Whitman, 'Seminal Works of Quartertone Music', *Tempo*, 80 (spring 1967), 11–15 (p. 13); Jiří Vysloužil, 'Hába, Alois', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 17 August 2017).

[117] Having worked as a proofreader for Universal Edition and attended concerts of the Gesellschaft für musikalische Privataufführungen while studying in Vienna with Schreker, Hába knew well the contemporary works by Schoenberg and his former pupils.
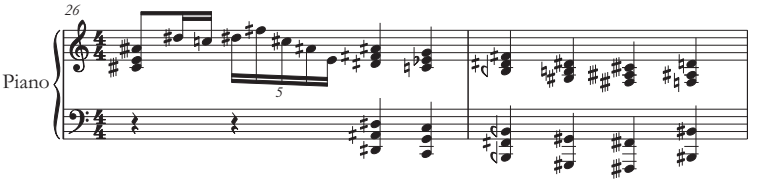
[118] Hába, Preface to Quartet op. 7 (omitted in the 1993 edition by Filmkunst-Musikverlag München; quoted from Vysloužil, 'Hába, Alois').

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Example 9: Hába, Second String Quartet, op. 7, ending of the Largo section (one bar before figure 31). Reproduced with kind permission from the Alois Hába Information Centre, Prague.



Example 10: Hába, Fantasy for Violin and Quarter-Tone Piano, op. 21, piano part, bars 26–7. Reproduced with kind permission from the Alois Hába Information Centre, Prague.



certain limits to this free enrichment, however, and these limits ensure that the diatonic system remains in place as a remote framework. For example, no section of the Quartet (including its ending) closes with a chord featuring quarter-tones. The closing chords at the end of the Largo section and at the end of the piece centre on the pitch polarity D, but they play with other extended possibilities. The Largo ends bitonally with D major/D augmented and F♯ major/minor (or the set 5-21 {0,1,4,5,8}; see Example 9). The piece itself ends with a reduced version of this chord, in effect D augmented with the added fourth G, or set 4-19 {0,1,4,8}. Both chords are prepared through chromatic, sometimes quarter-tonal, suspensions, refining what Stein would have called our 'leading-note urge'.

In the slightly later Fantasy, however, Hába temporarily returned to a more diatonically grounded style. He frequently used 'pure' parallel quarter-tone chords, for example in the falling sequence of D+ minor, C minor, B– major, G♯ minor and F♯+ minor (see Example 10), and ended this more rhythmically driven piece in C major–minor (based on Stein's 'neutral' chord, with E– instead of E or E♭). Hába's opera *Die Mutter* (1927–9) likewise ends on an enriched major tonic chord (this time D major with additional E+).

The second observation is that, while he lacked Carrillo's level of quarter-tonal scale development, Hába was more enterprising with quarter-tonal intervals and leaps. Hába's quarter-tonal space opens new possibilities for advanced microtonal string playing and, in the Fantasy, for pianists experienced in dealing with quarter-tonal

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keyboard instruments. Although actual quarter-tonal intervals occur most frequently within the parts of the Quartet (for example C to C+), there are also frequent 3/4 intervals to be mastered (for example upwards from E to F+ or downwards from B♭ to A–), and occasional leaps, for example upwards from B♮ to G–. The use of these bigger intervals enabled Hába to write lyrical quarter-tone themes – something which Carrillo's scale-focused approach discouraged in favour of virtuosity.

Sometimes, Hába even made use of quarter-tones as a purely colouristic tool, and he thereby allowed quarter-tones to influence the piece in question on a less thematically driven level. An example is the Funeral March closing the first scene of *Die Mutter.* Hába evoked tradition with a C minor piece, which is divided between slow punctuated march interjections in the piano, percussion and initially violins and basses on the one hand, and highly ultrachromatic progressions by step in the violas and cellos on the other. The latter roam widely along the quarter-tone scale over the course of the March, but begin by shuffling around E♭ – the pitch class needed to define this as a piece in a minor key (see Example 11). This conjunct approach is reminiscent of Carrillo's emblematic sliding motions and Foulds's arrested developments (as the following section shows). For Hába, this colouristic approach may have represented a loosening of his usual tight integration of quarter-tones, but it allowed him to hammer home the 'obstacles' of the opera's *per aspera ad astra* principle and send refined but strong diatonic signals. Opera, after all, needs drama and new effects, and a quarter-tonal funeral march provides for all these requirements.
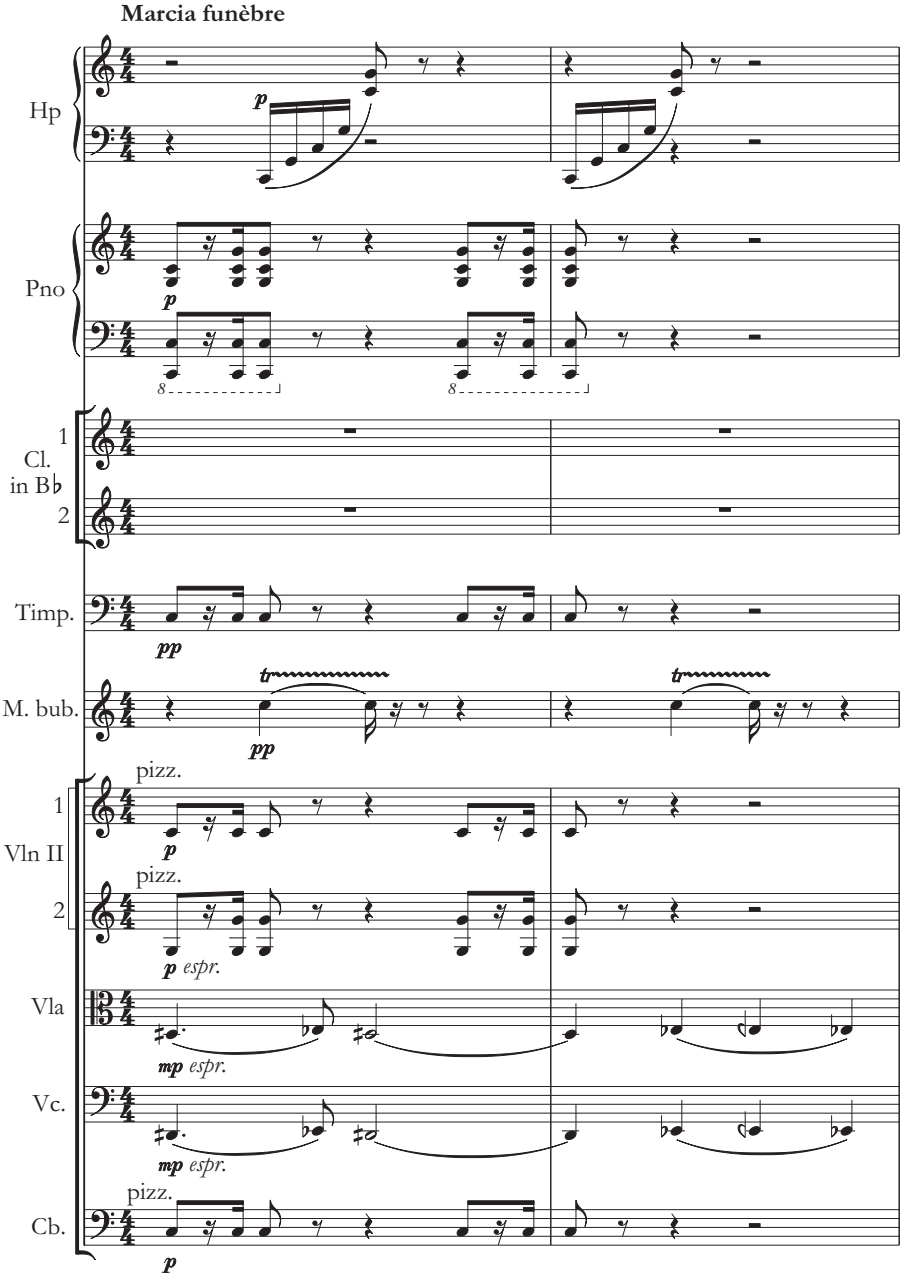
Neither Hába nor Carrillo effectively attempted to destroy tonality completely, although their sometimes precarious refinement and microtonal excess permitted the occasional gaze into the atonal abyss. But their loyalty to extended tonality stood firm, and was a feature they shared with the younger and even more experimental microtonalist Partch, whose work bridged the gap between the early approaches in this article and the European–American post-Second World War scene. Partch's turn to microtones had several sources, among them the diverse musical influences of his childhood in the American Midwest and his discovery of just intonation through Helmholtz's theories.[119] Although he destroyed his earlier European-influenced music and turned towards American and Eastern musical influences, he drew upon the trope of refinement to critique equal temperament and promote microtones. In his essay 'Patterns of Music', he compared the poverty of the composer with their scale of 12 semitones to a painter with a much more fluid palette of microtonal colours able to refine composition and revitalize it:

> Consider the writer of music. Before him is also a scale. […] In his mind he approaches C-sharp, one of the five blacks. He approaches it, and he lands on it. His action is direct, simple, predetermined. There are no shades of C-sharp, no shades of red, for him. The one shade that his gods will allow him to use is before him. He is taught that that is enough; it is good, traditional, and proper, and he feels a vague sense of immorality in even wondering about those possible bastard C-sharps.[120]

[119] McGreary, 'Introduction', xviii.
[120] Harry Partch, 'Patterns of Music', in Partch, *Bitter Music*, ed. McGreary, 159–61 (p. 159).
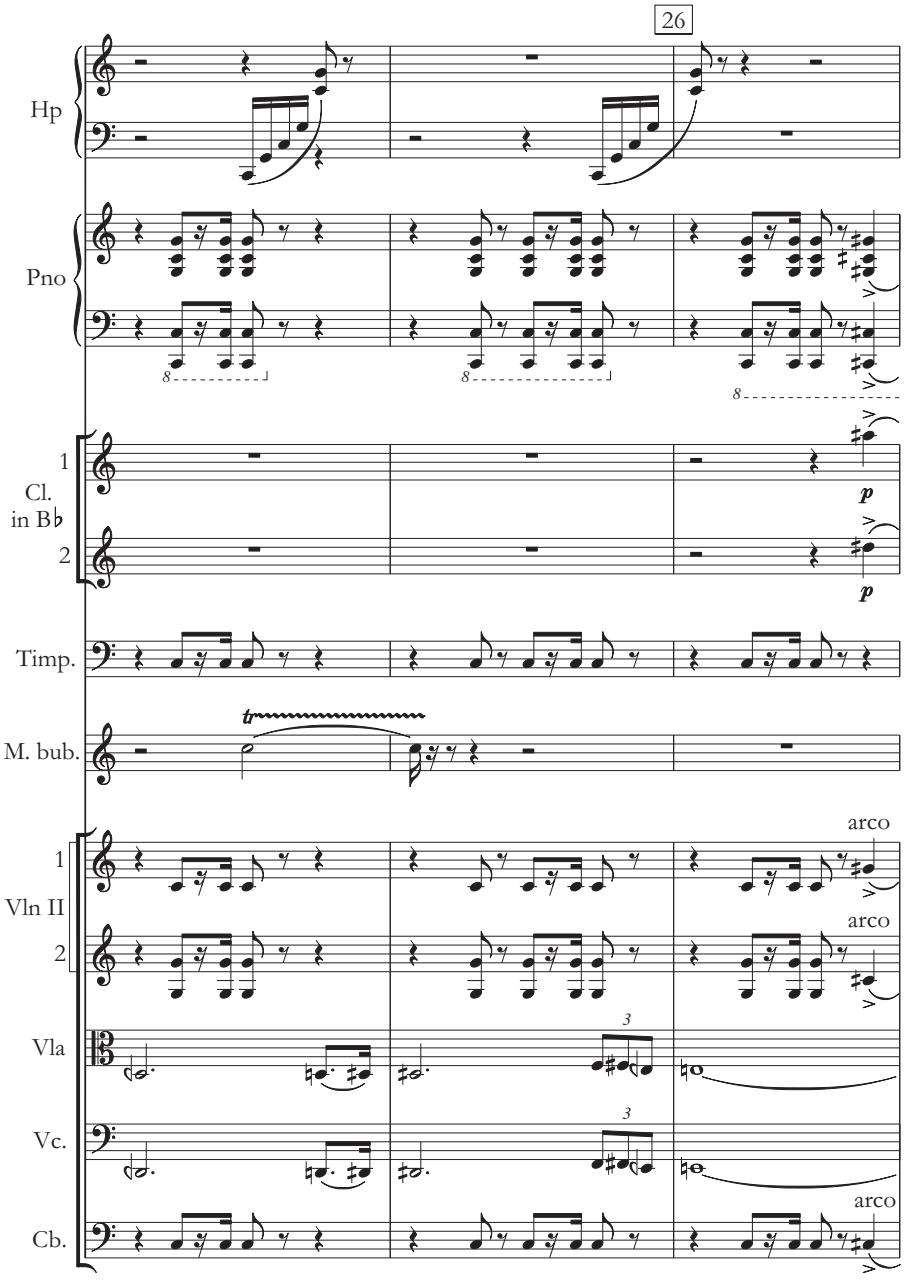
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Example 11: Hába, *Die Mutter*, Funeral March at figure 25/7. Reproduced with kind permission from the Alois Hába Information Centre, Prague.
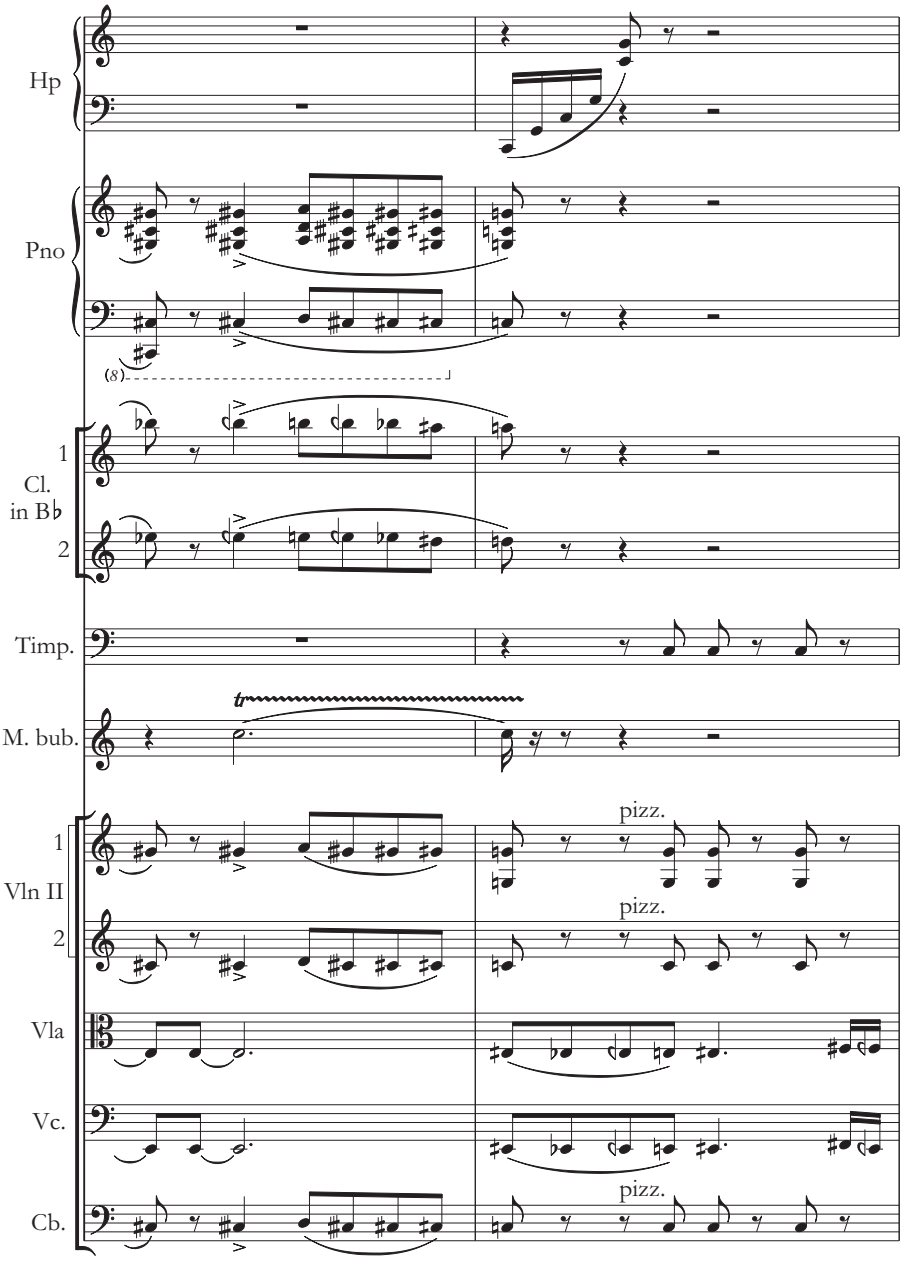


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Example 11 (cont.)



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Example 11 (cont.)



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Preservation: 'If I'm not land, I'm sea'

In 'Some "Quarter-Tone" Impressions', Ives devoted a short but humorous section to the role of the fifth in quarter-tone (indeed, in any) music:

> The fifth seems to say, 'You can't get away from the fact that I am boss of the overtones – the first *real* partial. I have the octaves to walk on. If I'm not land, I'm sea, and you can't travel around the world without me.[121]

This little rhyme indicates that Ives acknowledged a natural acoustic pull of the perfect fifth. And his fundamental quarter-tone chord (made up from two fifths seven quarter-tones apart – for example, C/G and D♯+/A♯+) confirms this impression. Hába likewise obeyed the lure of the perfect fifth in quarter-tone music, and built special effects with it (for example in what sounds like folk-song-inspired piano interludes with parallel fifths in the Fantasy op. 21 (bars 85ff.). But no early twentieth-century quarter-tonal music has a deeper relationship with the fifth than Foulds's. In his music, this interval guarantees the stability and preservation of diatonic tonality faced with potentially destabilizing quarter-tonal interjections.

Foulds's quarter-tones occur only in the strings and only in slow movements, as small-scale events which seek a short-term rupture of their surroundings. The perfect fifth is the only interval to be tasked with these quarter-tone shifts in his music. Within these boundaries, quarter-tones feature in works as varied as the Cello Sonata (1905, rev. 1927), the orchestral pieces *Mirage* (Music Poem no. 5, op. 20, 1910) and 'Colombine' from *Music Pictures Group III*, op. 33 (1912), the *World Requiem*, op. 60 (with Maud MacCarthy, 1919–21), the piano concerto *Dynamic Triptych*, op. 88 (1929) and *Quartetto intimo*, op. 89 (1931–2). The only exception to these rules may be the appearance of 22 irregular microtones in the soprano part of the aforementioned opening Lento of *Lyra celtica.*

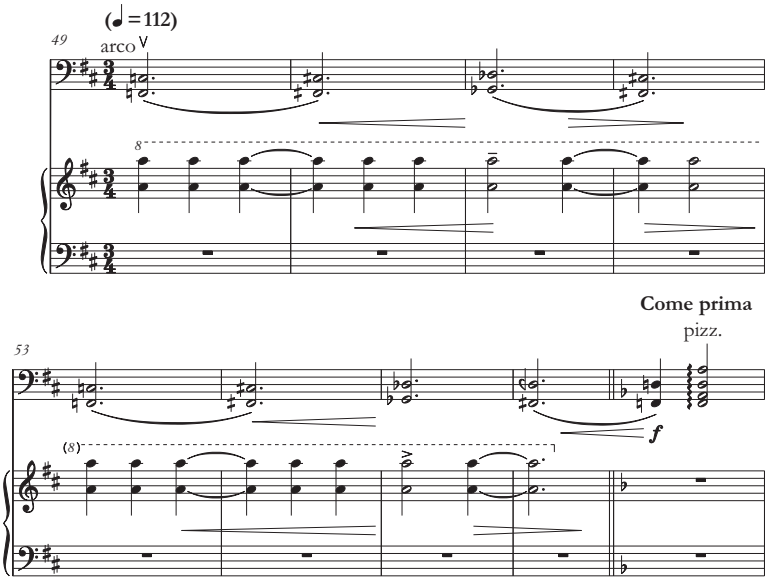
Foulds's simplest standard quarter-tone procedure can be found in the *Quartetto intimo* and in the Cello Sonata, the latter of which represents probably his earliest exploration of quarter-tones.[122] The sonata's quarter-tones appear twice in the middle movement (Lento) in D minor. Since the movement presents a very simple but non-traditional binary form (AA'), these two occurrences are identical apart from their transposition a fourth up the second time. Below a rhythmic A octave pedal in the piano, the cello plays the perfect fifth F/C, which moves upwards to G♭/D♭ via the intermediate quarter-tone interval F+/C+. This miniature movement is repeated downwards and upwards, and finally stretches through contrary motion to a quarter-tonally augmented fifth on its way to the major sixth F/D (see Example 12). The brief episode functions as a coda to the first of the movement's two parallel sections, and as a lead into the beginning of the second section. Harmonically, it sits between a short,

[121] Ives, 'Some "Quarter-Tone" Impressions', 113.

[122] This is based on the assumption that the first version of 1905 already contained the quarter-tones. John Foulds, 'Programme Note', *Cello Sonata*, op. 6 (Paris: Editions Maurice Senart, 1928). In *Music To-day*, by contrast, Foulds claims that his earliest use was in fact in a lost string quartet of 1898 (p. 59; cf. MacDonald, *John Foulds*, 14). As with Carrillo's claim to a similarly early date, this cannot be substantiated.

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Example 12: Foulds, Cello Sonata, second movement, bars 49–57.



meandering 'bell-like' phrase in A major in the piano and the start of the second section in D minor. As such, it ruptures a traditional V–I procedure. The second occurrence somewhat mirrors this with its interruption of the *Leittonwechsel* transformation from B minor to G major.

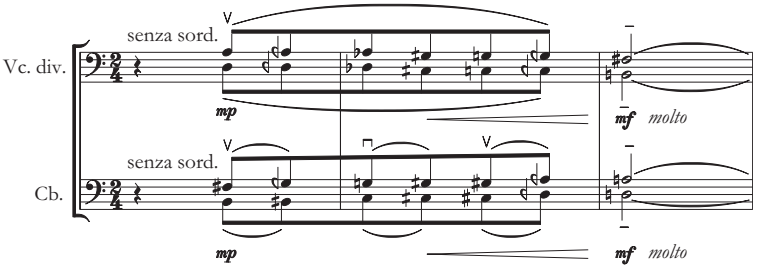
In the quartet, by comparison, quarter-tones appear only once in an even simpler slide in the slow movement in the cello part, here from the fifth C–G through to D♭–A♭. These slides are Foulds's standard quarter-tonal gestures. As destabilizing elements and an unexpected interruption of the surrounding music, they provided a kind of *Verfremdungseffekt.* Their strict limitation to parallel fifths (the backbone of 'normal' music, if Ives is to be believed) guarantees that the quarter-tones are safely contained and the tonal framework is dramatically extended but never endangered.

This function is even more obvious in pieces that apply quarter-tones more daringly. An example is the 'Lento assai' section of the third movement of the Wagnerian tone-poem *Mirage.* Foulds's standard procedure of sliding perfect fifths is applied twice in the strings (rehearsal nos. 31 and 34, distinguished only by transposition), again in order to alienate and interrupt an otherwise chromatic structure. As there are four string parts, the chord A/E/C/G or 4-26 {0,3,5,8} now forms the basis of a downward quarter-tonal slide through to G/D/B♭/F, and finally to F/C/A♭/E♭. Although the principle remains the same as in the previous pieces, the addition of a second fifth created the first quarter-tone chords in Foulds's music (albeit these are still built on the interval of the perfect fifth).

An even greater complication of fifth slides is achieved in Foulds's piano concerto *Dynamic Triptych* and in 'Colombine', a short movement from a series of atmospheric colouristic studies based on paintings Foulds saw at the Paris Salon of 1906. In the

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Example 13: Foulds, *Dynamic Triptych*, second movement, figure 2/2.
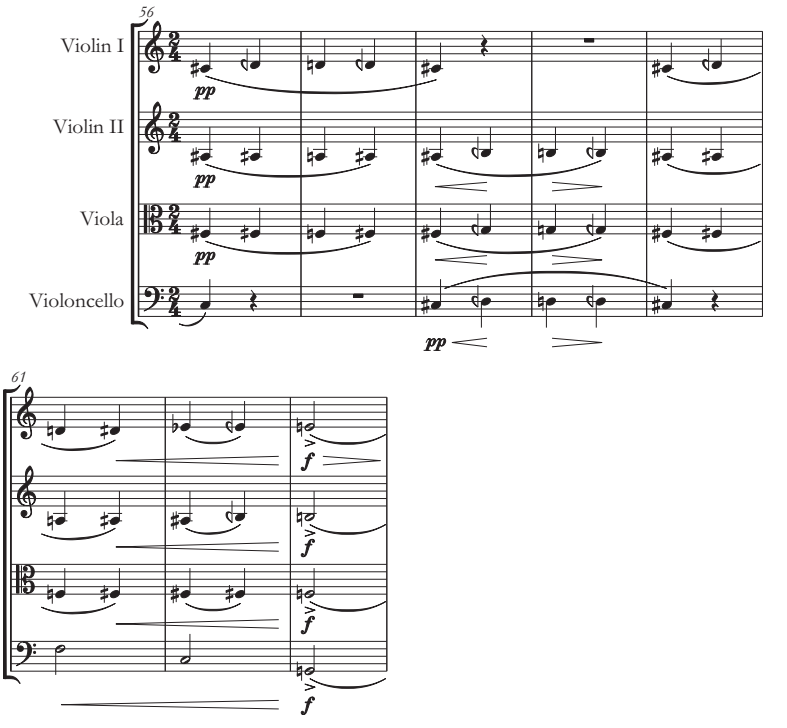


introduction to the Lento movement of *Dynamic Triptych*, two interlocking fifths (B/F♯ in the basses and D/A in the cellos) slide in opposite directions for the first time in Foulds's music (cellos downwards, double basses upwards), so that the respective two strands end on the other's original pitch class (see Example 13). The simultaneous retrograde-scale motion interrupts the previous modal fourth chord steps, and opens the stage for the solo piano's entry on the fundamental fifth D/A. As in the earlier pieces, the quarter-tones' function is *Verfremdung*, and they create a clearing for the entrance of a new tonal element (here, the solo part).

Foulds called 'Colombine' 'a study in full-tones, half-tones and quarter-tones'. The piece was inspired by a painting of the same title by Alfred-Louis Brunet Debaine, and forms a light-hearted scherzo with a prominent part for the glockenspiel (but no deep wind or double basses). Initially, the movement is based on the whole-tone scale, but it also features a theme with semitones, and finally a much slower and shorter quarter-tone episode further on (true to the order announced in the piece's subtitle). Characteristically for Foulds, the movement displays quarter-tones only during two pivotal (and again parallel) moments, and only in the strings. But in an exaggeration of *Dynamic Triptych*, these quarter-tones fall and rise in greater independence over the course of eight bars, and thus create probably the longest microtonal *Verfremdung* in Foulds's music. It renders an expected temporary closing gesture into an F♯ major void, because the parts drift further apart instead of moving in parallel fifths. The result is that the strings emerge from their quarter-tonal episode in a 4-z29 {0,1,3,7} set, instead of the expected major chord (see Example 14).

Here, tonality is in much more immediate danger from the alien quarter-tones than in any other music by Foulds, mostly because the quarter-tones are only loosely confined to their standard interval of the fifth. They start from an F♯ major chord, move quickly to D minor and back, thence to G major, back to F♯ major, D minor and enharmonically interchanged E♭ minor (or half-diminished seventh chord, if the cello's C is taken into account as the root). While the interval of the fifth looms large in the relationships between these chords, it cannot provide the normal tonal guarantee it usually does, and in effect led Foulds into an otherwise alien country. But what is perhaps most surprising about this piece is that the normally conservative British press welcomed what was the first large public performance of microtonal music during the piece's appearance in Henry Wood's 1912 Promenade Concerts season. Unlike many of Foulds's European

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Example 14: Foulds, 'Colombine', bars 56–63 (string parts only).



microtonalist colleagues' performances, this event was not limited to fellow enthusiasts and experts, but featured in a popular series of large-scale concerts. The reception was carefully positive. The critic of *The Referee* mused, for example, that Foulds 'is to be commended for making it short and for the deftness with which he has introduced this novel effect'.[123] Foulds's quarter-tonal excursion was appreciated at least, and he may have had MacCarthy's untiring work to thank for this. Her broadcasts and talks had prepared the public well for this musical adventure, which, above all, was clearly intended to present a specific effect that its composer took pains not to overuse, true to his credo. Even here, Foulds did not stray far from his rigid approach to quarter-tones, which can seem at times like an inflexible alienating formula whose perfect fifths prevent modernist spillage into the surrounding late Romantic language.

Restraint: 'satisfy even the worst sticklers'

Stein's foray into quarter-tones was among the earliest microtonal explorations, but it was also the most restrained. This position of restraint was characterized by a general unwillingness to engage with microtones in practice, since they were seen as too

[123] 'Lancelot', 'Matters Musical', *The Referee*, 8 September 1912, 5.

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advanced to be intelligible for the foreseeable future. Busoni's later stance and his failure to produce microtonal compositions is a case in point, as is that of Joseph Yasser. Yasser (1893–1981), a Russian-trained Polish organist turned musicologist, immigrated to the USA in 1923 and in 1930 began working as an organist for synagogues and writing on various aspects of Jewish music.[124] In one of his most thought-provoking essays, 'The Future of Tonality', he postulated obstacles to his microtonal theory of 'supra-tonality'.[125] According to Yasser, musical scales and modes had developed from a pentatonic division of the octave ('infra-tonality', made up of the five notes of the pentatonic scale, C, D, F, G, A, and two auxiliary notes, E and B – he called this the '5 + 2' scale) through to the seven notes of common-practice equal-temperament music ('tonality', with its five auxiliary semitones, in effect the black keys on the piano keyboard – Yasser's '7 + 5'). From here, they had to progress into supra-tonality, which would synthesize tonality and atonality of the early twentieth century (consequently, a '12 + 7' scale, equalling a 19-step microtonal division of the octave). The richness of Yasser's theory, which he refined in *A Theory of Evolving Tonality* (1932) into one of 'centitones' and finally 'millitones', is striking, and unlike most contemporary quarter-tone theories it draws on just intonation.[126] Yet his call for restraint includes all practical applications of microtones, and seems to be particularly suspicious of a playful approach such as Ives's. Like Busoni and Stein, Yasser was quick to issue a warning:

> The establishment of new and, at least, rudimentary rules of harmony and counterpoint (presupposing, of course, an entirely new classification of consonances and dissonances) would probably represent the next and no less complicated problem to be tackled before any 'supra-tonal' musical compositions could be created at all, before even the simplest class-room harmonization based on the supra-diatonic scale could be properly executed.[127]

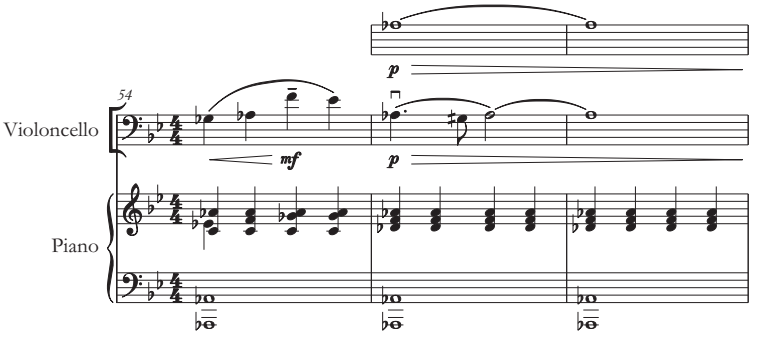
The consequence was to be that any aspiring composer would have to be retrained and should start studying supratonal harmony from scratch. Needless to say, it never came to that.

For Stein, the only composer in this group to present restraint in actual composition, the preservation of tonality was of paramount importance and acted as his justification for using quarter-tones. This urge towards preservation was so strong that it did not lead him just to a very sparing application of quarter-tones, but to their restriction or even erasure in performance. Although interested in quarter-tone instruments and actively involved in the theorization and promotion of microtones, Stein upended Foulds's notion that microtones could be used where the desired effect cannot be achieved in any traditional way: 'I have deliberately used quarter-tones only in those places that can be done without them through paraphrasing – by which I hope to satisfy

[124] Israel J. Katz, 'Yasser, Joseph', *Grove Music Online*, <http://www.oxfordmusiconline.com> (accessed 13 April 2018).
[125] Joseph Yasser, 'The Future of Tonality', *Modern Music*, 8/1 (1930), Supplement, 1–24; Yasser, *A Theory of Evolving Tonality*.
[126] Yasser, *A Theory of Evolving Tonality*, 14; see also his Appendix, 'Centitones and Vibration-Ratios', *ibid.*, 355–62.
[127] Yasser, 'The Future of Tonality', 24.

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Example 15a: Stein, *Zwei Konzertstücke*, no. 1, bars 54–6 (original non-microtonal alternative given above the cello line).



even the worst sticklers.'[128] The statement implied that Stein considered his quarter-tones as somewhat premature experiments whose right to exist had not yet been proved. Consequently, they needed to be restrained, which meant giving the performer of his quarter-tone pieces the option of omitting them altogether.
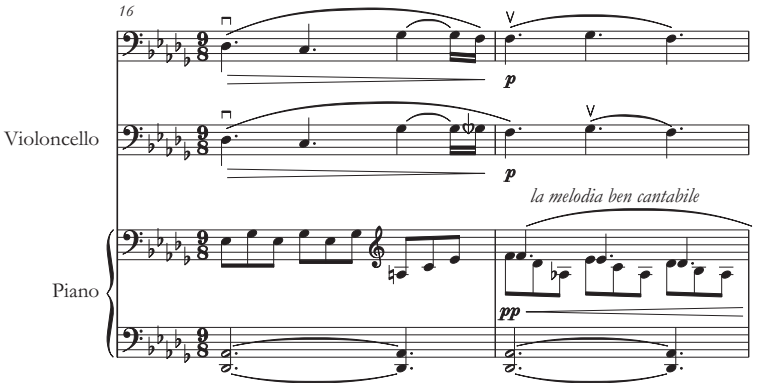
In practice, he believed that the cello was best suited to venture into quarter-tone music, simply because quarter-tones are easier to locate and play on the comparatively widely spaced cello fingerboard (the same thinking influenced Partch's cello fingerboard pasted onto a viola). Stein's only published pieces with quarter-tones are therefore the *Zwei Konzertstücke* for cello and piano. Both are firmly diatonic, the first in G minor and the second in D♭ major. Stein eschewed the introduction of a 'neutral' triad he had announced in his Preface to the *Konzertstücke* (for example C/E–/G) and instead restricted quarter-tones to their function in satisfying the new century's heightened 'leading-note urge'. Therefore, his quarter-tonal interjections in the *Konzertstücke* fulfil two functions: first, as auxiliary notes they serve to stabilize harmonic resting points (for example the fifth A♭ in a D♭ major chord in the first of the *Konzertstücke*; see Example 15a); and second, as passing notes they either create a leading note where the chromatic scale would not offer another intermediate step (see Example 15b), or simply sharpen chromatic ascents or descents (see Example 15c). As basic as these insertions are, they frequently impact on phrasing and rhythm in relation to their chromatic alternatives – a sign perhaps that Stein, like Ives, was aware of the importance of quarter-tones for a rhythmic renewal.

By far the most extensive quarter-tonal feature in the *Konzertstücke* is the fast downward quarter-tonal scale over 38 steps in the cello over an A♭/E♭ pedal in the piano (see again Example 15c). Like all quarter-tonal occurrences in Stein's *Konzertstücke*, the scale is provided with a 19-step chomatic alternative for 'sticklers'. The effect, nearing that of a glissando, is virtuosic rather than adding anything essential. But
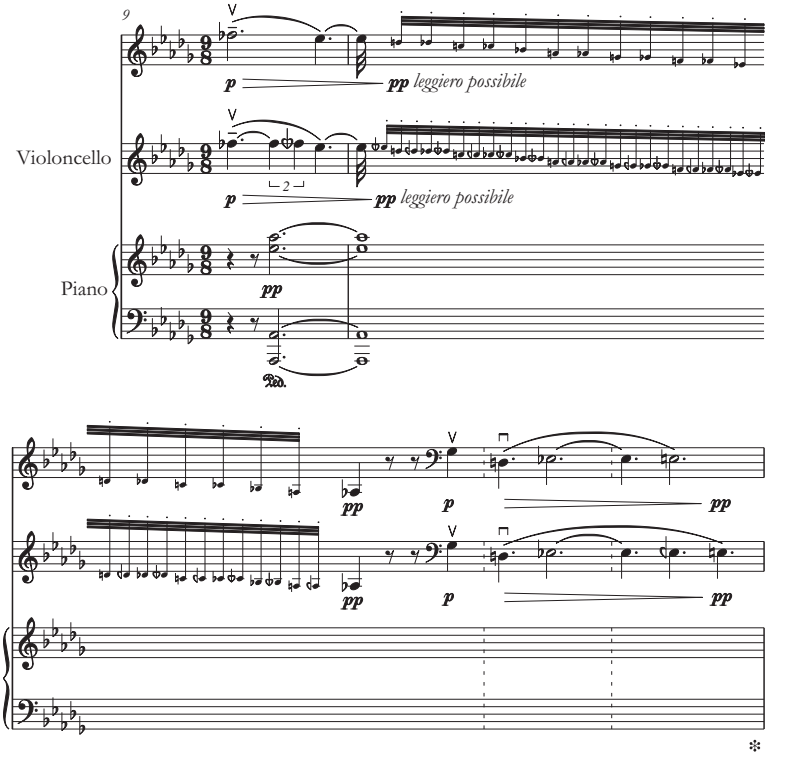
[128] 'Vielmehr habe ich sogar absichtlich nur an solchen Stellen Vierteltöne überhaupt verwandt, die eine Umschreibung ohne diese zuliessen, – wodurch denn hoffentlich auch der ärgste Nörgler zufrieden gestellt sein wird.' Stein, 'Vorwort', 3.

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Example 15b: Stein, *Zwei Konzertstücke*, no. 2, bars 16–17 (original non-microtonal alternative given above the cello line).



Example 15c: Stein, *Zwei Konzertstücke*, no. 2, bars 9–10 (original non-microtonal alternative given above the cello line).



it strengthens Stein's chromatically Romantic conception of the piece's fast-changing dynamics and tuneful melodies in the cello. Played without the quarter-tones, the pieces are quite unremarkable (somewhat confirming Ives's claim that a piece, once microtonally ornamented, sounds boring when these ornaments are removed). Where

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they are taken on board, however, they do succeed somewhat in refining listening habits through their heightened leading-note tension.

Against all odds, some early twentieth-century microtonal pieces elicited positive responses, which was perhaps least expected by their own composers. An example is Foulds's 'Colombine', whose quarter-tones Rosa Newmarch justified by pointing to 'the subtle gradations in tone' in the painting, which had 'forced [Foulds] over the old border-line of semitones in his effort to give an approximate effect'.[129] But 20 years later, even comparatively progressive composers such as Lambert and Darnton still rejected quarter-tones as painful and unintelligible. On the Continent, Bekker's and Pfitzner's aforementioned reservations towards Busoni had damaged not only Busoni's reputation as a composer, but also the viability of microtones before the trend had even fully developed. In 1929, Leonid Sabaneev spoke up against quarter-tones, microtonal instruments, notation and composers in a powerful dismissal of the whole idea in the *Musical Times*: 'The impression conveyed by all these experiments and devices is that they are curiously foreign to the general stream of music, are outside musical territory, so to speak, and hence unnecessary.'[130] His dismissal of Hába and Vyschnegradsky in particular was an attack on these microtonal *bricoleurs* and their ability to modernize music: 'The construction of the musical whole is borrowed from the past, and our mind, in following this music, involuntarily thinks of it in connection with what has gone before. And it cannot be otherwise.'[131]

A more balanced report, Artur Holde's 'Is There a Future for Quarter-Tone Music?', sought to lend some credit to the usefulness of microtones in the face of the twentieth-century angst over diatonic exhaustion: 'The danger of a "played-out" scale seemed banished with one stroke. Connections with distant, unexplored sound worlds seemed to be established. How many new possibilities for expression were now opened up for the composer! Would not a radical expansion of available tonalities represent the beginning of a new era in music?'[132] His further thoughts of quarter-tones as the basis for 'radically different systems of tonality' and a 'new order of intervals' use the familiar words we tend to apply when thinking about the music of the early twentieth century.[133] But as the frequency of notions of restraint in early microtonal compositions and writings shows, Holde's modernist enthusiasm tried to protect composers from charges they had already foreseen and circumvented. By adhering to the tropes of rediscovery, refinement, preservation and restraint, they had sought to provide against admonitions of radicalism. Although the buzz quietly died down and later microtonalists did not particularly seek out Stein, Foulds, Hába, Carrillo, Busoni, Vyschnegradsky or even Ives as their forerunners, this loose group of early twentieth-century composers and theorists deserves credit for its adventurous attempts to save an endangered tonality.

[129] Rosa Newmarch, 'Descriptive Notes to *Music-Pictures Group III*, op. 33, Promenade Concert, Queen's Hall, Thu 5th Sept 1912, 8pm (premiere)'. London, British Library, Add. MS 56474 (1912).
[130] Sabaneev and Pring, 'The Possibility of Quarter-Tone and Other New Scales', 502.
[131] *Ibid.*, 503.
[132] Artur Holde, 'Is There a Future for Quarter-Tone Music?', *Musical Quarterly*, 24 (1938), 528–33 (p. 530).
[133] *Ibid.*, 532.

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