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Brave new worlds: experimentalism between the wars

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> Rich with a wealth of harmonics, the tremulous chorus mounted towards a climax, louder and ever louder – until at last, with a wave of his hand, the conductor let loose the final shattering note of ether-music and blew the sixteen merely human blowers clean out of existence. Thunder in A flat major. And then, in all but silence, in all but darkness, there followed a gradual deturgescence, a *diminuendo* sliding gradually, through quarter tones, down, down to a faintly whispered dominant chord that lingered on (while the five-four rhythms still pulsed below) charging the darkened seconds with an intense expectancy. And at last expectancy was fulfilled. There was a sudden explosive sunrise, and simultaneously, the Sixteen burst into song . . .
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> Aldous Huxley, *Brave New World* (1932)[1]

> The sound of a truck at fifty miles per hour. Static between the stations. Rain. We want to capture and control these sounds, to use them not as sound effects but as musical instruments . . . it is now possible to control the amplitude and frequency of any one of these sounds and to give it a rhythm within or beyond the reach of the imagination . . . we can compose and perform a quartet for explosive motor, wind, heartbeat, and landslide . . .
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> John Cage, 'The Future of Music: Credo' (?1940)[2]

Prologue: Brave New Worlds

If one major facet of nineteenth-century music was its obsession with the subjective Romantic legacy of E. T. A. Hoffmann (1776–1822) – of the 'sublime master' whose 'high self-possession [is] inseparable from true genius', who 'leads the listener imperiously forward into the spirit world of the infinite' and seals into his work 'wonderful enchanting pictures and apparitions . . . with magic power'[3] – then its antithesis is found in the increasingly objective

1 London, 1994, Chapter V/1. Further references to *Brave New World* will be to this Flamingo edition and will be given in parentheses in the text.

2 In John Cage, *Silence*, London, 1968, pp. 3–6.

3 Extracted from E. T. A. Hoffmann, 'Beethoven's Instrumental Music' [1813], in Oliver Strunk (ed.), *Source Readings in Music History*, rev. edn, New York, 1998, pp. 1193–8.

scientific scrutiny to which music was subsequently subjected. The best-known example of such scrutiny is *The Sensations of Tone* by Hermann von Helmholtz (1821–94), first published in German in 1863 and in English translation in 1875; the dissemination period of Helmholtz's work thus rather amusingly coincides with that of Wagner's later operas, including *Tristan und Isolde* (first performed 1865), *Siegfried*, and *Götterdämmerung* (both 1876). Helmholtz was a scientific polymath: his principal contributions to the study of music lay in such areas as the anatomy of the ear, the physiology of hearing, wave patterns, tuning systems, and especially the analysis of overtones in relation to timbre and such acoustic phenomena as combination tones. When first published, *The Sensations of Tone* provoked controversy (especially in its English translation, which was not always true to the original) but overall it provided a very solid base for later developments.

Among the more iconoclastic statements made by Helmholtz in his book – one that was particularly prophetic of a major area of twentieth-century musical exploration – was that

> the construction of scales and of harmonic tissue is a product of artistic invention, and by no means furnished by the natural formation or natural function of our ear, as it has been hitherto most generally asserted . . .
>
> just as people with differently directed tastes can erect extremely different kinds of buildings with the same stones, so also the history of music shews us that the same properties of the human ear could serve as the foundation of very different musical systems.[4]

Other, equally prophetic, aspects of scientific progress – in the broadest sense of that phrase – also had an impact in other musical spheres during the second half of the nineteenth century: for instance, by 1850 Theobald Boehm (1794–1881) had radically redesigned the flute, Adolphe Sax (1814–94) had patented the saxhorn and saxophone, and metal-framed pianos were the norm. The phonograph was invented in 1876, the microphone in 1878, the telegraphone (forerunner of the tape recorder) in 1898, and wireless transmission in 1900; the same period saw the erection of such acoustically influential buildings as the Boston Music Hall (1863), the Paris Opéra (1869–75), the Grosser Musikvereinssaal of Vienna (1870), and the Bayreuth Festspielhaus (1876). Subsequently, between 1895 and 1915, W. C. Sabine published a series of important papers on the scientific study of room acoustics, dealing principally with such matters as sound decay and the prediction of reverberation time.

All of these developments were symptomatic of the spirit of positivism that swept through society during this period. Unsurprisingly, this spirit served

4 Hermann von Helmholtz, *The Sensations of Tone* (tr. Alexander J. Ellis), 3rd edn, London, 1895, pp. 365–6.

as an inspiration to several generations of music theorists and explorers on both sides of the Atlantic, and was presumably a major factor in the tendency for creative artists increasingly to define their aesthetic standards via the manifesto: from Busoni and Debussy through to Cage and Partch, composers sought to expand on what Bojan Bujić has termed 'the "progressive" implications of Helmholtz's observation of the nature of our tonal system' and accordingly to define a number of brave new musical worlds.[5] What distinguishes these artists from the majority of their predecessors is the aesthetic stance they adopted. Most artists find an individual aesthetic locus through personal negotiation of three contrary cultural forces: the burden of tradition (retrospection), the temptations of other traditions (extraspection), and an image of the future (prospection). Thus the prospective vision of modernist composer Arnold Schoenberg was very much rooted in the Austro-German tradition in which he matured; extraspective influences were minimal. Maurice Ravel, meanwhile, though having a clear attachment to French tradition, formed his image of the future through such extraspective influences as contemporary popular music and the folk music of Spain. Composers more keenly affected by positivism, however, leaned heavily towards empirical prospection, largely shunning the immediate past and present; extraspective influences – if they occurred at all – were likely to be from more distant places and times. One of the more paradoxical results of such tendencies is the not infrequent juxtaposition in radical music of determinism and aleatoricism, formalism and primitivism.

Before the crash: 'ending is better than mending'

Aldous Huxley (1894–1963) wrote *Brave New World* in 1932, as a direct result of his first visit to America, six years earlier. During his voyage across the Atlantic, Huxley had read Henry Ford's book *My Life and Work*; much of what he experienced in California following disembarkation seemed, in David Bradshaw's words, 'perfectly in tune with Fordian principles' of mass production, conveyor-belt assembly lines, and job demarcation.[6] Huxley – apparently thrilled (and also presumably fascinated) by the vulgarity he discovered in America – described California as 'Materially, the nearest approach to Utopia

5 Bojan Bujić, 'Introduction' [to] '3.1[:] Psychology of Music and the Theory of *Einfühlung* (Empathy)', in Bojan Bujić (ed.), *Music in European Thought, 1851–1912*, Cambridge, 1988, p. 277.

6 David Bradshaw, 'Introduction' to Aldous Huxley, *Brave New World*, [p. vii]. Bradshaw's essay – on pp. [v]–[xiv] of the Flamingo edition – and the quotations it cites provide the basis of this paragraph. The quasi-Keynesian catchphrase 'Ending is better than mending' is part of a hypnopaedic text used to indoctrinate children in Huxley's dystopian World State: see, for instance, *Brave New World*, pp. 43ff. Incidentally, one of the principal (anti-establishment) characters in the novel is named Helmholtz Watson

yet seen on our planet', and prophesied that 'the future of America is the future of the world'. As has been generally recognized – not least by the author himself in *Brave New World Revisited* (1958) – Huxley's 'satire on the global diffusion of the American way of life' is a worryingly accurate vision not so much of 'this year of stability, A. F. 632' (i.e. 2495, 632 years after the birth of Henry Ford) but rather of the second half of the twentieth century.

However, in one area – that of culture – Huxley's predictions were not entirely accurate. True, it has recently been suggested that the compulsory study of Shakespeare be dropped from the Cambridge English Tripos, reminding us of the Savage's remark – apropos *Othello* – 'Have you read it too? . . . I thought nobody knew about that book here, in England' (*Brave New World*, p. 199). Furthermore, the amusing description of 'the newly opened Westminster Abbey Cabaret' (ibid., p. 67), cited in part at the head of this chapter, can easily be likened to 1990s youth culture: Huxley's *soma* equates to ecstasy, while the synaesthetic experience of 'London's finest scent and colour organ' accompanying Calvin Stopes and his Sixteen Sexophonists, as 'four hundred couples . . . five-[step] round the polished floor' (ibid.) of a recently liberated performance space, is remarkably redolent of a rave. But Huxley assumed that high culture would be completely obliterated in the World State: on the one hand, His Fordship Mustapha Mond, Controller of the Western European Zone, defends the prohibition of Shakespeare on the basis that 'it's old [and w]e haven't any use for old things here . . . Particularly when they're beautiful' (pp. 199–200). On the other, his subsequent comment that 'we don't want people to be attracted by old things. We want them to like the new ones' is rooted in the premiss that there is a price to be paid for the stability of the World State. 'You've got to choose between happiness and what people used to call high art'; 'our world is not the same as Othello's world. You can't make flivvers without steel – and you can't make tragedies without social instability' (pp. 201, 200).

Rather surprisingly for someone so erudite and sophisticated, Huxley – either involuntarily or deliberately – apparently saw and heard in California in 1926 only the most superficial and banal manifestations of contemporary culture: the 'sea of melodic treacle' performed in motion-picture studios 'to play the actors into an appropriate state of soul'; the 'thousands of feet of art and culture' [*sic*] turned out each day by the studio labs; the 'announcements of rival religious sects, advertising the spiritual wares that they would give away or sell on the Sabbath'; and 'The Charleston, the fox-trot . . . the jazz bands, the movie palaces, [and] the muffins at breakfast'.[7] Although Huxley

7 Quotations extracted from the section titled 'Los Angeles. A Rhapsody', in Aldous Huxley, *Jesting Pilate: The Diary of a Journey*, London, 1940, pp. 229–37.

also mentions 'the joy . . . of trooping out on summer evenings with fifty thousand others to listen to concerts in the open air',[8] he would unfortunately have been unable to encounter the activities of Henry Cowell's New Music Society of California. Cowell (1897–1965) had founded the society in 1925, but was concertizing in Europe during Huxley's sojourn in California: thus Huxley missed both of the society's first two concerts. The programme of 22 October 1925 included 'ultra-modern' music by Dane Rudhyar (1895–1985), Edgard Varèse, Carl Ruggles, and Schoenberg; its successor – on 20 November 1926 – again featured works by Rudhyar, Ruggles, and Schoenberg, as well as pieces by Darius Milhaud, Alfredo Casella, and Cowell himself.

Despite the non-meeting, there is however one tiny but significant connection between Huxley and Cowell. In *Jesting Pilate*, Huxley describes an actress in the film studio he was visiting: she 'walked back to her chair. Reopening her book, she went on quietly reading about Theosophy.'[9] In the earlier part of the twentieth century, Theosophy was as ubiquitously trendy as is feng shui nowadays, and since around 1913, Cowell had been involved with both Theosophy and Theosophists. His first contact was through John O. Varian, a charismatic mystic, poet, and inventor, who became a kind of surrogate father to him. In 1914, Varian settled in a Theosophical colony at Halcyon, situated on the California coast; during the next ten or so years, Cowell visited Halcyon on many occasions, and although he never became a Theosophist *per se*, he was actively involved in the life of the community, collaborating frequently with Varian, setting his poetry and drawing influence from his Irish mythological tales. Indeed, some of Cowell's best-known pieces – including the tone-cluster piano piece *The Tides of Manaunaun* (*c.*1917) – resulted from this collaboration.[10] Subsequently, in 1925, Cowell visited the Chicago studio of Theosophist Djane Herz, whose circle included Cowell's (Theosophist) friend Dane Rudhyar, as well as Ruth Crawford who was later to marry Cowell's teacher Charles Seeger. Herz, Rudhyar, and Crawford were all devotees of the music of Alexander Skryabin, and herein lies a further (presumably accidental) connection with Huxley and Brave New World. For if Calvin Stopes, the Sixteen Sexophonists, and the Westminster Abbey Cabaret's scent and colour organ resemble anything – real or imagined – in the first (rather than the last) quarter of the twentieth century, it would be Skryabin's unfinished and sensorially overloaded *Mysterium*, which was intended to include 'colored lights, processions, and scents' and would culminate in an 'ecstatic abyss of sunshine'.[11]

8 Ibid., p. 234. 9 Ibid., p. 230.

10 For further details see Steven Johnson, 'Henry Cowell, John Varian, and Halcyon', *American Music* 11/1 (1993), pp. 1–27.

11 See Faubion Bowers, *The New Scriabin*, London, 1974, pp. 94–100, 124–6.

Mysterium is about as distant from positivism as could be imagined; it does serve to remind us, though – *contra* Huxley – that many of the more advanced musical developments of the twentieth century had their origins in Europe. Following the publication of *The Sensations of Tone*, one of the first to realise that 'ending [was] better than mending' was Ferruccio Busoni, whose *Sketch of a New Esthetic of Music* appeared in English translation in 1911. Although Busoni followed through few if any of the treatise's ideas in his own music, he advocated a number of radical alternatives to traditional tonality and temperament. He stated that he had established '113 [different] scales (within the octave C–C)' (though he fails to list them) and notes that 'the gradation of the octave is *infinite*', specifically mentioning the 'tripartite tone (third of a tone)'. Additionally, he drew attention to Thaddeus Cahill's dynamophone (*recte* telharmonium), 'a comprehensive apparatus which makes it possible to transform an electric current into a fixed and mathematically exact number of vibrations'.[12] The telharmonium, first exhibited in New York in 1906, was one of the earliest – and conceptually one of the most fantastic – examples of the synthetic music machines imagined in Huxley's *Brave New World*, and provided solutions to many of the problems inherent in the electrical generation of sound. Rather oddly, though, given that it weighed two hundred tons, it disappeared before the First World War and has subsequently been known only by reputation.

Busoni was of partly Italian extraction, and his *Sketch of a New Esthetic of Music* was first published in Trieste (though in German). Clearly, turn-of-the-century Italian music was not limited exclusively to *verismo*, but also contained a boldly radical prospective strain, of which Futurism – which emerged in 1909 – is the best-known and most prominent element. Although it began as a purely literary movement, with the publication in *Le Figaro* of Marinetti's 'Futurist Manifesto', it soon spread to the other arts, notably painting.[13] In music, the results were mixed: Balilla Pratella's 'Manifesto of Futurist Musicians' (1910) is little more than a rant against the musical establishment; Bruno Corra's 'Abstract Cinema – Chromatic Music' (1912) – though concerned mainly with visual effect – contains some Skryabinesque suggestions regarding a 'music of colours'. Paradoxically it was a non-musician, Luigi Russolo, who wrote the highly influential manifesto *The Art of Noises* in 1913 (substantially expanded in 1916), and went on to create both an orchestra of noise instruments – *intonarmori* – and a selection of pieces using them. Sadly, like

12 The quotations appear respectively on pp. 92, 93, and 95 of Ferruccio Busoni, 'Sketch of a New Esthetic of Music', in *Three Classics in the Aesthetic of Music*, New York, 1962, pp 73–102.

13 The various texts cited here appear in Umbro Apollonio (ed.), *Futurist Manifestos*, London, 1973; see also the complete text of Luigi Russolo, *The Art of Noises* (tr and ed. Barclay Brown), New York, 1986. Reconstructions and recordings of Futurist and Dada music have been issued on *Futurism and Dada Reviewed* (Sub Rosa Records, 1988).

Cahill's telharmonium, the *ululatori* (howlers), *rombatori* (roarers), *stropicciatori* (rubbers), *gorgoliatori* (gurglers), and other *esotici* have not survived; tantalizingly, they maintain a virtual existence through Russolo's detailed writings, a fragment of the score for *Risveglio di una città* (*The Awakening of a City*, 1913), contemporary concert reports, and even a few photographs. Their impact, though, has been huge: as Barclay Brown notes, 'Russolo anticipated – indeed, he may have precipitated – a whole range of musical and aesthetic notions that formed the basis of much . . . avant-garde thought', including the so-called machine music of the 1920s, the all-sound works of John Cage, the *musique concrète* of Pierre Schaeffer, and graphic notation. Even the frog chorus towards the close of Ravel's *L'enfant et les sortilèges* (1925) was inspired by one of Russolo's instruments.

When Russolo declared that 'We must break out of this limited circle of sounds [i.e. those of conventional music] and conquer the infinite variety of noise-sounds'[14] among those listening attentively were the Dadaists. Although music was not an integral part of Dadaism, the activities of its constituents certainly contributed to the general prospectivist thrust. Noise-music was part of Dada's crazy cabarets; in 1913, Marcel Duchamp had created his *Musical Erratum* by randomly drawing notes from a hat; and in 1924, Tristan Tzara advocated that 'musicians smash [their] instruments'. In the 1917 Erik Satie–Jean Cocteau ballet *Parade*, meanwhile, the original score – in addition to the standard wind, brass, and strings – called for typewriters, sirens, aeroplane propellers, lottery wheels, and other 'noise-instruments', though not all made it into performance. According to Roger Shattuck, 'It was probably Diaghilev himself, then living in Rome and hobnobbing with the futurists, who tossed in the idea of sound effects.'[15]

All of these influences converge in the person of Edgard Varèse, a friend of Russolo, Satie, Picasso, and Cocteau (among a cornucopia of others), and also fully versed in the theories of Futurism, Dadaism, and every other -ism present in pre-war Europe (though he was careful to distance himself from any 'school', especially Futurism). Along with Dane Rudhyar and Leo Ornstein (1892 or 93–2002), Varèse – who travelled to America in late 1915 – was among the first to transmit the latest radical European ideas to the New World. Only three months after he had arrived in New York, Varèse told the *New York Telegraph* and *Morning Telegraph* that 'Our musical alphabet must be enriched . . . We also need new instruments very badly . . . I refuse to submit myself only to sounds that have already been heard. What I am looking for are new technical mediums

14 *The Art of Noises*, p. 25.

15 Roger Shattuck, *The Banquet Years: The Origins of the Avant Garde in France, 1885 to World War I*, rev. edn, New York, 1968, p. 153.

which can lend themselves to every expression of thought."[16] Although it would be almost half a lifetime before Varèse was able – in *Déserts* (1950–4), *La Procession de Vergès* (1955), and *Le Poème électronique* (1958) – to explore fully the electronic resources he so clearly desired, his works of the 1920s (all of which were premiered in the United States) show him pushing existing acoustic resources to their limits. *Amériques* (1920–1), *Offrandes* (1921), *Hyperprism* (1922–3), *Octandre* (1923), *Intégrales* (1923–5), and *Arcana* (1926–7) are all, to some extent, redolent of the music by Debussy and especially Stravinsky that Varèse had encountered before leaving Europe. But in their titles – which often evoke the world of scientific exploration rather than artistic creation – and more particularly in the degree to which they exploit the noise-world of percussion instruments (*Octandre* is the exception), they mark out new and unique musical territory, suggesting both Russolo's 'Art of Noises' and Cage's later vision of 'the all-sound music of the future'.[17] The opening of *Hyperprism*, though extreme, is not exceptional: trombones and horns – five of the meagre nine wind instruments constituting the work's conventional line-up – gradually elaborate a single melodic line, against a boisterous backcloth of drums, tambourine, cymbals, tamtam, triangle, anvil, slap stick, Chinese blocks, Lion Roar, rattles, sleigh bells, and siren. Varèse – as Morton Feldman memorably put it – 'was one of the legendary performers. His instrument was sonority.'[18]

Varèse's achievement in the 1920s was not limited solely to composition, however. Painfully (and personally) aware of the difficulties faced by composers of new music, he instigated two organizations devoted to the performance of contemporary work: the International Composers' Guild (1921–7) and the Pan American Association of Composers (1928–34). The former – very much under his control – oversaw the premieres of pieces by the Second Viennese School, as well as Americans including Cowell and Ruggles, and Varèse himself. The latter organization – in effect run in Varèse's absence by Cowell, and substantially bankrolled by Charles Ives – introduced to venues throughout the Americas and Europe a complementary roster of works by composers from North, Central, and South America. Cowell's promotional and entrepreneurial activities during this period were by no means restricted to the PAAC: his involvement in the New Music Society of California has already been noted, and this was complemented by his founding in 1927 of *New Music Quarterly* (again supported financially by Ives), whose earliest editions saw into print such

16 Quoted in Fernand Ouellette, *Edgard Varèse*, London, 1973, pp. 46–7.

17 From John Cage, 'The Future of Music: Credo', pp. 3–6.

18 Morton Feldman, 'Predeterminate/Indeterminate', in *Essays* (ed. Walter Zimmermann), Kerpen, 1985, pp. 47–9.

pieces as Ruggles's *Men and Mountains*, Rudhyar's *Paeans*, four of Crawford's Preludes for piano, and the second movement of Ives's Fourth Symphony.

Cowell's own work of the 1910s and 20s was at times remarkably radical. His sometime teacher, Charles Seeger, had encouraged him to examine systematically his use of innovatory compositional techniques, as well as to compose a repertory of works that would explore those selfsame innovations. Among the products of this project were the treatise *New Musical Resources* and the Rhythm-Harmony Quartets (1917–19). *New Musical Resources*, though only published in 1930, had been substantially completed over a decade earlier, and became a fertile source of ideas for such later composers as Conlon Nancarrow (1912–97) and Karlheinz Stockhausen (born 1928).[19] In the Rhythm-Harmony Quartets, meanwhile, Cowell's Helmholtz- and Seeger-inspired identification of the relationship between frequency and rhythm led to some extremely complex cross-rhythms and, accordingly, notation. At its simplest, Cowell's system for the *Quartet Romantic* saw a plain major triad, consisting of the fourth, fifth, and sixth partials of a given fundamental, generate cross-rhythms of 4:5:6; higher partials generated accordingly more complex rhythmic relationships, including – for instance – $1\frac{1}{2}:3:3\frac{3}{4}:5\frac{1}{3}$ and $1\frac{1}{2}:3:4\frac{1}{2}:7\frac{1}{2}$ in bars 162 and 163.

Cowell's achievements were not wholly *ab origine*, however: *New Musical Resources* was heavily influenced by Seeger's ideas (a comparison with Seeger's posthumously published 'Tradition and Experiment in [the New] Music'[20] is instructive) and also drew in its final form on the work of, among others, the Russian experimental musicologists Georgy Rimsky-Korsakov, Nikolai Garbuzov, and Georgii Konius. Cowell's development of tone clusters, meanwhile, was – as Michael Hicks has convincingly demonstrated – heavily indebted to the example of Ornstein.[21] Incidentally, mention of Rimsky-Korsakov, Garbuzov, and Konius serves to remind us that before Stalin's brutal suppression of artistic prospection in the emerging Soviet Union, Russian musicians were as much at the forefront of musical modernism as were their European and American contemporaries, as the music of Nikolay Roslavets and the extraordinary example of *The Foundry* (*Zavod*) (1926–8) by Alexandr Mosolov conclusively demonstrate.

As might be inferred from the preceding paragraph, one dimension of 1920s radicalism not often emphasized is its internationalism: Ornstein, Varèse,

19 Henry Cowell, *New Musical Resources*, with notes and an accompanying essay by David Nicholls, Cambridge, 1996. The Rhythm-Harmony Quartets are published by C. F. Peters Corporation. On Cowell's influence on Nancarrow and Stockhausen, among others, see Kyle Gann, 'Subversive Prophet: Henry Cowell as Theorist and Critic', in David Nicholls (ed.), *The Whole World of Music. A Henry Cowell Symposium*, Amsterdam, 1997, pp. 172–90.

20 Included in Charles Seeger, *Studies in Musicology II. 1929–1979* (ed. Ann M. Pescatello), Berkeley, 1994, pp. 39–266.

21 Michael Hicks, 'Cowell's Clusters', *Musical Quarterly* 77 (1993), pp. 428–58.

theorist Joseph Schillinger (1895–1943), and electronics wizard Lev Termen (Léon Thérémin) (1896–1993), among many others, were temporary or permanent immigrants to America at this time, while Europe was in turn startled in the earlier 1920s by the music of the young American George Antheil. Notable *succès de scandale* of his included the *Airplane Sonata* (1921) and especially the *Ballet mécanique* (1923–5), one version of which – in post-*Parade* fashion – called for anvils, saws, car horns, and aircraft propellers. Another remarkable émigré was the Australian Percy Grainger, whose well-known, tuneful folksong arrangements conceal a wealth of innovative practices, such as his elastic scorings (which must surely have influenced Cowell). Later in his career, Grainger advocated and experimented with what he termed 'free music', which – in Cagean fashion – sought to create music released from 'the tyranny of the performer'. The machines Grainger and his assistant Burnett Cross constructed 'were remarkable devices and would have made Heath Robinson and Roland Emmett envious'; among the names he devised for his creations were 'The Inflated Frog Blower', 'The Crumb-catcher and Drain Protector Disc', and 'The Cross-Grainger Double-decker Kangaroo-pouch Flying Disc Paper Graph Model for Synchronizing and Playing 8 Oscillators'.[22] Clearly, Grainger does not fit comfortably into any of the radical groups outlined above; in this (though for rather different reasons) he resembles another gloriously loose cannon, Charles Ives, most of whose radical ideas were conceived in complete isolation from the cultural world at large. Unencumbered by the restrictions of conventional performers and performance practices – 'My God! What has sound got to do with music!' he once remarked[23] – he could imagine, on the one hand, such systematically formulated works as the *Tone Roads* (1911–15), *Largo Risolutos* (1906), *In Re Con Moto et al.* (1913), and – ultimately – the gigantic Fourth Symphony (*c.*1910–16). On the other hand, there is the protean, protoplasmic, musical substance which (at various times) became temporarily fixed as the notation of parts of the 'Concord' Sonata (1904–15, rev. 1919), *Emerson Transcriptions* (?1917–22), *The Celestial Railroad* (?1925), and – for the last forty or so years of his life – the *Universe Symphony* (principally 1911–28). The grand vision of this last work links it with such other unfinished monuments as Skryabin's *Mysterium*, Schoenberg's *Die Jakobsleiter* (1917–22), and Varèse's *Espace* (*c.*1929–40).[24] A further link between the works by Ives, Skryabin, and Varèse is that, in different ways, they attempted

22 On Grainger and his Free Music, see John Bird, *Percy Grainger*, London, 1982, pp. 230–7, from which the quotations are drawn.

23 Charles Ives, *Essays Before a Sonata and Other Writings* (ed. Howard Boatwright), London, 1969, p. 84.

24 On the connections between these (and some other) works, see Philip Lambert, 'Ives's *Universe*', in Philip Lambert (ed.), *Ives Studies*, Cambridge, 1997, pp. 248–59.

to escape from the spatial and social confines of the conventional concert hall, thus anticipating other developments in the music of the later twentieth century.

After the crash: 'the more stitches, the less riches'

Notwithstanding the temporary retreat to the ivory tower attempted – at Hoffmann's suggestion – by some artists during the nineteenth and early twentieth centuries, music and Mammon have always been uncomfortably but inextricably linked. Consequently, one may easily point to the parallel expansion of musical radicalism and capitalist exploitation during the 1920s, as well as to the perhaps inevitable result of the latter. the worldwide financial collapse of the late 1920s and early 1930s, with all it implied for artistic innovation. Huxley's hypnopaedic aphorism, quoted above, was intended to argue in favour of Fordian wealth creation via the production of new goods (rather than the repair of existing goods)· 'Every man, woman and child compelled to consume so much a year. In the interests of industry' (*Brave New World*, p 44) But the aphorism can also be interpreted in opposite fashion the more goods are created, the greater the likelihood of over-production and thence economic recession.

Despite this, the effects of the Wall Street Crash were not immediately obvi ous in the brave new musical worlds that had been created during the 1920s The PAAC and *New Music* – to name but two organizations – continued to expand their roster of activities during the early 1930s The former's most impressive achievement was probably the concert given in Paris on 6 June 1931, which included Cowell's *Synchrony*, Ives's new chamber-orchestra version of the *First Orchestral Set*, Ruggles's *Men and Mountains*, and pieces by Amadeo Roldan (1900–39) and Adolph Weiss (1891–1971) *New Music*, meanwhile, prior to Cowell's arrest and imprisonment in 1936, grew from a quarterly edition of new scores to embrace an orchestra series, rental library, and a number of recordings.

The effect of recession was, though, felt more keenly at an individual level Some composers turned their efforts towards humanitarian issues: Ruth Crawford, for instance, while sustaining the dissonant, heterophonic, ultra-modern facets of her compositional language until 1933 (in such works as the String Quartet (1931) and Three Songs (1930–2)), set two overtly political texts in the *Ricercari* of 1932–3, before moving on to folksong arrangement. Varèse, after composing the highly influential, all-percussion piece *Ionisation* (1931) and the partly electronic *Ecuatorial* (1934), retreated between 1935 and 1947 to a desert both metaphorical and, in part, literal, his only new pieces being *Densite 21.5* for

solo flute (1936) and the aforementioned, unfinished *Espace*.[25] Cowell, despite his prospective experiments in the early 1930s with the electronic rhythmicon, devised in collaboration with Lev Termen, turned increasingly to transcultural extraspection. In Europe, meanwhile, Messiaen temporarily rejected the futuristic swoopings of the six ondes martenot he had employed in *Fête des belles eaux* (1937), and returned instead to the comparative safety of voice and piano in *Chants de terre et de ciel* (1938), and organ in *Les Corps Glorieux* (1939). Most tragically of all, back in America, Harry Partch – unable to find institutional or other support for his experiments in monophony and temperament – became between 1935 and 1939 a hobo, an experience detailed in the journal 'Bitter Music'.[26]

Such brave new musical worlds as managed to struggle into existence during the remaining years before the Second World War also tended to subsist on an individual, rather than collective, basis. And significantly, perhaps – *contra* Huxley in *Jesting Pilate* – prospective artistic activity increasingly occurred on America's West Coast, rather than on the East Coast or in Europe. Despite the limitations of his peripatetic lifestyle, Partch – who had returned to the United States in 1935 after spending a period in Europe financed by the Carnegie Corporation – managed to build on his earlier work (not least in the notations included in 'Bitter Music'), and to experience much that would prove useful in later years (notably the material for *Barstow: Eight Hitchhikers' Inscriptions* (first version, 1941) and *U.S. Highball: A Musical Account of Slim's Transcontinental Hobo Trip* (first version, 1943)). Having at the start of the 1930s largely codified the intonational system that underpinned all of his subsequent music – a system that goes way beyond the experiments in microtones found in the works of Alois Hába (1893–1973) and Julián Carrillo (1875–1965) – he could also start to build instruments. These included, before 1940, an adapted viola, an adapted guitar, a kithara, and the Ptolemy – this last a keyboard instrument that one Carnegie Corporation official caricatured as 'not only resembl[ing] an adding machine, but . . . seem[ing also] to be a combination of a typewriter, checkerboard, Mah Jong and chocolate fudge'.[27] (The description is reminiscent of some of Grainger's more elaborate names for his free-music machines – except that it was the instruments' inventor, rather than an unsympathetic bureaucrat,

25 Varèse's literal desert was that of New Mexico. By a curious parallel, New Mexico served as the location of the Savage Reservation to which Bernard Marx takes Lenina Crowne in chapters VI to IX of *Brave New World*. Huxley's knowledge of New Mexico came from his friendship with D. H. Lawrence, who spent his last years there; Huxley himself lived in California's Mojave Desert during much of the Second World War. On Varese during this period, and *Espace* in particular, see a further literary source: Henry Miller's 'With Edgar [*sic*] Varèse in the Gobi Desert', in *The Air-Conditioned Nightmare*, London, 1973, pp. 109–19.

26 See Harry Partch, *Bitter Music: Collected Journals, Essays, Introductions, and Librettos*, Urbana, 1991, pp. 3–132.

27 See Bob Gilmore, *Harry Partch: A Biography*, New Haven, 1998, p. 114.

who coined the latter.) A further achievement of these years was a sixth version of 'Monophony is Expounded', an early incarnation of the text that eventually became Partch's literary magnum opus, *Genesis of a Music*.[28]

Two of Partch's friends and contemporaries, John Cage and Lou Harrison, meanwhile, relied principally on an amalgam of modern dance and invented instruments to further their prospects. Each had studied with both Henry Cowell and Arnold Schoenberg (the latter having taken up residence on the West Coast in 1934); and each profited in different ways from the unlikely combination of freedom and stricture learnt as a consequence. Cage was the more overtly bold of the two. Impressed by Varèse's *Ionisation* and intrigued by Oskar Fischinger's suggestion that every object possesses an audible spirit waiting to be freed, he experimented with a plethora of percussive forces, variously drawn from the orchestral battery, the household, the junkyard, and from other cultures. Having realized early on in his studies with Schoenberg that he had no feeling for harmony, Cage sought a method of structuring music based instead on duration. In this he was aided by his work with dancers (who used 'counts' to measure out their movements) and by his knowledge of Cowell's recent music (in which – notably in the *United Quartet* of 1936 and *Pulse* of 1939 – Cowell had built extended forms from simple mathematical formulae).

These tendencies coalesced in the 1939 *First Construction (in Metal)*, which sports a durational micro-/macrocosmic 'square-root form', based in the proportions 4:3:2:3:4, and whose six percussionists play such instruments as orchestral bells, Turkish cymbals, anvils, oxen bells, cowbells, thundersheets, brake drums, water gong, Japanese temple gongs, and Chinese cymbals. Cage's personal vision of a brave new world – in many ways an accurate prophecy of his future direction as a composer – is elegantly summarized in 'The Future of Music: Credo', probably written in 1940, quoted in part at the head of this chapter, and as different as could be imagined from Huxley's populist, mass-consumption vision of 'the latest synthetic music' (*Brave New World*, p. 67). Drawing heavily on both Russolo's *The Art of Noises* and the recently published book *Toward a New Music* by Mexican composer Carlos Chávez, Cage's manifesto proposed, *inter alia*, a desire to use all available sounds in musical composition, the anticipation of – and search for – electronic instruments and music, and the establishing of new methods of notation and of organizing sounds.

Cage's other main innovation of this period lay in his development – again much influenced by Cowell's work, notably in such pieces as *A Composition* and

28 Harry Partch, *Genesis of a Music*, 1st edn, Madison, 1949; 2nd edn, enlarged, New York, 1974

The Banshee (both 1925) – of the prepared piano, in which mutes of various kinds are placed between the strings of the piano, fundamentally altering its timbres. Among his better-known prepared-piano works are the short dance score *Bacchanale* (1940) and the extended concert work *Sonatas and Interludes* (1946–8). Cage also employed proto-electronic sounds, in an attempt to create 'a music produced through the aid of electrical instruments'.[29] For instance, he uses variable-speed turntables and frequency-tone recordings in *Imaginary Landscape no. 1* (1939), and oscillators, a recording of a generator, a buzzer, an amplified coil of wire, and other paraphernalia in *Imaginary Landscape no. 3* (1942), as well as radios in *Credo in Us* (1942). One consequence (possibly unforeseen, but nonetheless profound) of Cage's writing for such unconventional forces as percussion, prepared piano, and proto-electronic instruments was a loosening of the traditional ties between notation, execution, and perception: the sound produced by – say – a middle C prepared with a bolt or eraser is quite different to that implied by its notation.

Harrison's work of the 1930s paralleled that of Cage: he wrote for percussion – for instance in the *Fifth Simfony* (1939), *Canticle #1* (1940), and *Song of Quetzalcoatl* (1941) – and later similarly altered the sound of the piano, in his case by inserting thumb tacks into its hammers, creating the 'faux harpsichord' tack piano. Further variation on traditional keyboard practice is found in the work of Conlon Nancarrow who, catching sight of a throwaway remark in Cowell's *New Musical Resources* – which noted that 'these highly engrossing rhythmical complexes could easily be cut on a player-piano roll'[30] – devoted much of his mature compositional life to an increasingly complex series of studies for that very same instrument.

Epilogue: Brave New Worlds revisited

In *Brave New World Revisited* (1958), Aldous Huxley – in David Bradshaw's words – 'surveyed contemporary society in the light of his earlier predictions' (*Brave New World*, p. xiii). Significantly, although Huxley discusses such issues as overpopulation, propaganda (in both democracies and dictatorships), persuasion (both chemical and subconscious), and brainwashing, he says nothing about culture in general or music in particular. In *Brave New World*, the World Controllers had made the choice between 'happiness and what people used to call high art. We've sacrificed the high art. We have the feelies and the scent organ instead' (p. 201). But by 1958, Huxley must have realised that his vision of a culture reduced to the lowest common denominator – the 'all-super-singing,

29 'The Future of Music: Credo', lines 17–18 30 Cowell, *New Musical Resources*, pp. 64–5.

synthetic-talking, coloured, stereoscopic feely. With synchronized scent-organ accompaniment' (*Brave New World*, p. 151) – had been unequivocally refuted by reality. Indeed, far from high-art music having been sacrificed for the common good, Cage and his colleagues in the so-called New York School had moved firmly in the direction of indeterminacy, and the international avant-garde was alive and kicking quite viciously.

However, the legacy of prospective radicalism was by no means completely incompatible with Huxley's original dystopian vision. Towards the conclusion of *Brave New World*, Huxley's anti-hero, Helmholtz Watson, is voluntarily exiled to the Falkland Islands, believing that 'one would write better if the climate were bad. If there were a lot of wind and storms, for example . . .' (p. 209). Differences in climate and location notwithstanding, Watson's Falklands might well be equated with the New Mexico desert of Lawrence, Varèse, and *Brave New World*'s Savage, as well as with Huxley's own Mojave Desert and Pala – the fictional Pacific utopia which is the subject of his last novel, *Island* (1962). For all of these remote places stand, with marvellous irony, as metaphors for the 'unknown land, more glorious and more beautiful than . . . our constricted world' of which E. T. A. Hoffmann wrote in 1813.[31] Radical prospection may have been born in the objective scientific scrutiny of Hermann von Helmholtz, but it seemed able to flourish only in the isolated, Romantic, utopian self-indulgence craved by his fictional namesake, Helmholtz Watson.

Thus the grand vision of Ives's *Universe Symphony* is rooted in cyclic pitch structures, chord-scale systems, and durational counterpoint, yet was composed in complete isolation, and intended for performance 'in valleys, on hillsides, and on mountain tops'.[32] In *Espace*, Varèse wished to compose 'rhythms in space as well as rhythms in time' and to break 'our present chromatic scale of halftones . . . into almost infinite gradations of vibration'. The project was largely conceived during the composer's 'desert' period, yet he 'imagined a performance of the work being broadcast simultaneously in and from all the capitals of the world . . . All men could have listened simultaneously to this song of brotherhood and liberation.'[33] Harry Partch's Helmholtz-inspired study of temperament led to him devising a tuning system based on a forty-three-fold division of the octave, and to him creating instruments capable of playing in such a system. But his Beethovenian cussedness and stubbornness were major factors in his inability to attract institutional support; and in his final vision

31 Hoffmann, 'Beethoven's Instrumental Music', p. 1198

32 For details of the sketches of the *Universe Symphony*, and their realisation, see Larry Austin, 'The Realization and First Complete Performances of Ives's *Universe Symphony*', in Lambert (ed.), *Ives Studies*, pp. 179–232. For its intended performance venue, see Henry Cowell and Sydney Cowell, *Charles Ives and his Music*, New York, 1955, p. 201.

33 Quotations extracted from Ouellette, *Edgard Varese*, pp. 132–3.

of corporeality – a performance practice in which 'sight and sound, the visually dynamic and dramatic, [are] all channelled into a single, wholly fused, and purposeful direction' – Partch created not only a hermetically sealed aesthetic world (a kind of Pala) inaccessible to any but its initiates and inhabitants but also, rather curiously, a synæsthetic experience not dissimilar to that of Huxley's Sixteen Sexophonists. More recently, a parallel to Partch's situation is found in the work of La Monte Young, with its just intonation, its specialized performers (The Theatre of Eternal Music), and its specially created utopian performance spaces, the Dream Houses.[34]

Huxley took the title of his most famous book from a line spoken towards the end of Shakespeare's most dazzling and magical play, *The Tempest* (1611). The enchanted island on which *The Tempest* is set 'lies literally in the Mediterranean between Tunis and Naples'[35] but has often been equated with the New World that, in the early seventeenth century, was being explored and colonized by both England and several other European powers. The Neapolitan travellers who are shipwrecked on Shakespeare's 'desert' island, 'Uninhabitable and almost inaccessible –'[36] encounter its current inhabitants: 'two Milanese castaways (Prospero and Miranda), two remarkable natives (Caliban and Ariel) and assorted spirits unlike anything [they] . . . have ever seen'.[37] Prospero, the deposed Duke of Milan, is a magician; indeed, the storm that opens the play is one of his illusions, and it is his magic that controls much of the subsequent action. One of the travellers, Gonzalo, later asserts that all of the Neapolitans have 'found' themselves during their time on the island;[38] and while this may seem 'overtly optimistic . . . he correctly judges that most of them [have been] radically changed by the experience'.[39] Prospero himself, meanwhile, finally vows to relinquish his magical powers, in order that he may better manage his imminent role as restored Duke of Milan.

So, perhaps, it may be that the ultimate fate of artistic visionaries such as Luigi Russolo, Charles Ives, Edgard Varèse, and Harry Partch, is temporary or permanent exile to some barren place, some *Island*, either literal or metaphorical, in the Old World or the New, where – like Prospero – they can practise in splendid isolation their particular form of magic. We, like the Neapolitan

34 For a summary of these aspects of the work of Partch and Young, see David Nicholls, 'Transethnicism and the American Experimental Tradition', *Musical Quarterly* 80/4 (1996), pp. 569–94. The Partch quotation is drawn from 'Statement' (regarding *And on the Seventh Day Petals Fell in Petaluma*), reproduced in Thomas McGeary, *The Music of Harry Partch: A Descriptive Catalog*, Brooklyn, 1991, pp. 17–18.

35 For extensive commentary on this and other aspects of the play, see Virginia Mason Vaughan and Alden T. Vaughan, 'Introduction' to William Shakespeare, *The Tempest* [The Arden Shakespeare, Third Series], Walton-on-Thames, 1999, pp. 1–138. The present quotation appears on p. 4.

36 *The Tempest*, II.i. 37. 37 *The Tempest*, 'Introduction', p. 5.

38 *The Tempest*, V.i. 208–13. 39 *The Tempest*, 'Introduction', p. 5.

travellers, come by chance (or is it design?) into contact with their work, and – both individually and collectively – are changed as a result. Whether (and in what circumstances) our latter-day Prosperos choose to relinquish their powers, and forgo their exile, in exchange for worldly success is, of course, another matter entirely. But regardless of the length of the exile, we can still marvel at its results, and – like Prospero's daughter Miranda – proclaim

> O wonder!
> How many goodly creatures are there here!
> How beauteous mankind is! O brave new world
> That has such people in't.
> (*The Tempest*, V.i.181–4)

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