

12 | Serialism in Western Europe

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Preliminaries

In 1924, one year after Arnold Schoenberg finished composing his first work entirely based on twelve-tone technique (*Suite for Piano* op. 25, 1921–3), Erwin Stein presented the main principles of this method in an article for the leading avant-garde periodical *Musikblätter des Anbruch*, in an issue celebrating the fiftieth birthday of his former teacher (Stein 1924). Following Schoenberg's and his circle's claim that the newly invented method reduced free atonality to a mere transitional phenomenon, critics and composers alike started to equate atonality with dodecaphony from that moment onwards. Whereas Schoenberg believed that his invention would ensure the predominance of German music for the next fifty years, in practice he lost a great deal of external support for atonality now understood as 'constructivist' dodecaphony. Béla Bartók, not the least of his fellow modernist composers, is a case in point. In an essay written in 1920, Bartók begins with the statement that the music of our time has resolutely moved in the direction of atonality; by 1927, he rejects the now contaminated concept of atonality (Bartók 1920; Becker 1927). For composers undeterred by twelve-tone works and their critical reception, getting to know the intricacies and aesthetic potential of the method was not that easy. Schoenberg had moved to the United States after Hitler's rise to power in 1933, hardly a decade after Stein's article. Alban Berg had died in 1935, another protagonist of serial music Ernst Krenek had fled to America in 1938, and the cultural and political climate leading to the Second World War, the hardships of that war, and its aftermath turned the period between 1933 and 1947 into a time during which it was difficult to get first-hand knowledge of serialism and sometimes even dangerous to put it into practice.

In view of this, it comes as no surprise that twenty or more years had to pass before twelve-tone techniques were adopted in Western Europe outside of the Viennese circle. Examples from Italy, Belgium, and the United Kingdom suffice to make the point. The very first Italian dodecaphonic

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piece was the *Serenata* (1941–2) by Camillo Togni (Rizzardi 2011, 46), soon to be followed by Luigi Dallapiccola's *Cinque Frammenti di Saffo* (1942–3) and the penetrating opera *Il prigioniero* (1944–8). In Belgium, Louis De Meester's *Variations for 2 Pianos* (1947) and Pierre Froidebise's chamber cantata *Amercoeur* (1948) were the earliest examples, before Norbert Rosseau would create a more substantial body of twelve-tone works between 1949 and 1975 (Delaere 1998: 15–22). Elisabeth Lutyens is considered to be the first composer of serial music in the United Kingdom, exploring its techniques progressively from the *Chamber Concerto* op. 8.1 in 1939 to the *Motet*, based on Ludwig Wittgenstein's *Tractatus Logico-Philosophicus*, in 1953 (Rupprecht 2017: 39–47). Philip Rupprecht recalls Lutyens's self-analysis of her historical position: '[I had an] odd experience in the late 1950s: until then I was regarded as too modern to be played, then overnight I was an old "fuddy-duddy"' (Rupprecht 2017: 39). She was not the only composer to fall victim of such criticism. By the early 1950s, Schoenberg was proclaimed dead as a role model for the younger generation, and his opera *Moses und Aron* (1932) was decried as 'serial Verdi' (Boulez 1966a; Goeyvaerts 1994: 46). These and similar descriptions can be partly explained by the generation gap, but they assuredly also stem from young composers' disappointment that Schoenberg had failed to develop serial technique since he left Europe in 1933. They perceived Schoenberg's intention to base thematic-motivic development and traditional musical forms on the tone row as a misjudgement of the row's potential to create emphatically new music. From that moment around 1950 onwards, 'serialism' came to be understood as 'multiple serialism', as distinct from more traditional dodecaphonic procedures.

This chapter offers a broad and necessarily incomplete overview of serialism thus redefined and practised in Western Europe between 1950 and 1975, specifically excluding those protagonists who have separate chapters in this volume devoted to their individual practices. The end date is motivated by the development of spectral music in France, the widespread reception of minimal music in Europe – both events challenging serialism as the only avant-garde musical movement up to then in Europe – and the emergence of postmodernism – challenging the very idea of an avant-garde – around that time.

Origins

Any account of the history of European serial music focuses on a twofold origin: the (dodecaphonic) music of Anton Webern and the teaching and compositions of Olivier Messiaen. Key themes in the narrative around

Webern's twin role as a source of inspiration and as the historical legitimisation of serialism include a structuralist instead of thematic approach to the tone row, the creation of (unique) musical forms derived from the row, the importance of symmetry and reduction, the first attempts at extending the serial principle to other sound dimensions, and more generally an emphasis on sonority, all of which are opposed to Schoenberg's dodecaphonic practice. The 1953 New Music Courses in Darmstadt offered Karlheinz Stockhausen, Pierre Boulez, Karel Goeyvaerts, and Luigi Nono the opportunity to pointedly discuss Webern's importance for their own work. Their statements and analyses were presented in radio programmes and published in journals such as *Die Reihe*, all contributing to the establishment of the image of Webern as the forefather of serial music.

The second origin invariably invoked is Messiaen's analysis class at the Paris Conservatoire. The list of enrolled students includes protagonists of the earliest generation of serialists such as Boulez, Michel Fano, Jean Barraqué, Goeyvaerts, and Stockhausen. Messiaen explained to them that music could be conceived starting from parameters of sound other than pitch, such as rhythm or tone colour (see Delaere 2002). The creative leap realised by these youngsters was, then, to combine Webern's serial techniques and aesthetics with Messiaen's parametric thinking, so the story goes. In spite of rebuttals, such as Richard Toop's, made as early as 1974 (Toop 1974), histories of twentieth-century music continue to mention Messiaen's 'Mode de valeurs et d'intensités' (1949) from the *Quatre Études de rythme* for piano as a catalyst or even first example of serial music, even though it is obviously a work based on a modal scale with tones empirically selected, rather than a series with a fixed order of non-repeated tones. It is remarkable that the final movement 'Île de feu 2' (1950) from the same collection has hitherto gone unnoticed as a better candidate to fulfil the historical position ascribed to 'Mode' (Figures 12.1a and b).

Messiaen starts from an ascending chromatic scale from C to B and a descending durational scale from ♩ to ♩ . Each pitch-rhythm combination has a fixed articulation and intensity, as was the case in 'Mode'. By contrast with the latter, however, 'Île de feu 2' has sections in which the scale is systematically permuted, following a matrix that starts from the middle and moves to the outer values: 7 - 6 - 8 - 5 - 9 - 4 - 10 - 3 - 11 - 2 - 12 - 1. This matrix yields ten different permutations, in the end returning to the original order, hence a cyclical permutation process (Messiaen 1994–2004, III, 165–7). Five sections in the piano work entirely consist of a combination of two permutations, one in each hand. The layout of the scale and matrix results in distinctive patterns, with permutation 1

presenting an all-interval series in open fan form, permutation 2 a succession of augmented fourths, permutation 3 a succession of minor thirds, with permutations 2 and 3 having increasing intervals linking the main interval.

Stockhausen and Goeyvaerts were particularly struck by the 'punctual' style of the 'Mode' when they first heard a recording of the piece in Darmstadt in 1951 (Goeyvaerts 1994: 45–6). They would soon develop strategies comparable to those Messiaen applied to the 'Mode': precomposition (drawing up an inventory of the musical material); starting from absolute values (rather than, for instance in the domain of rhythm, from the subdivision of a metrical unit); and involving four parameters in the set-up. Unlike the 'Mode', however, the five permutation sections from 'Île de feu 2' present an equal distribution of the absolute values and have a matrix which regulates their order. Why then did the young serialists and subsequent literature fail to appreciate the eminently serial nature of this work and mistakenly invoke the 'Mode' as precursor or first example of European serial music? The answer to that question lies in the other sections of 'Île de feu 2', which are inspired by Messiaen's notion of Papua New Guinea's folk music (see the tempo indication 'Vif et féroce'). These other sections gain in importance, increasingly flooding the abstract serial islets with wild, virtuosic, hammered, ostinato-based Bartókian waves.

It is often overlooked that other, arguably less decisive but certainly more surprising, sources of inspiration than Webern and Messiaen had an impact on the establishment of serialism. Paul Hindemith's 'Reihe 2' from his textbook *Unterweisung im Tonsatz* served as a model for Bruno Maderna's and Luigi Nono's attempt to determine the degree of relative tension (and thus the expressive value) of the intervals defined in the series. Once again, a productive misunderstanding steers the course of music history: Hindemith's diatonicised chromaticism signals a return to tonal principles rather than the foundation stone of twelve-tone music it was mistaken for by the Italian composers. Moreover, Nono did not share the disrespect for Schoenberg's dodecaphonic music expressed by his fellow serialists. Even before marrying Schoenberg's daughter Nuria in 1955, Nono had based his *Variatione canoniche* for orchestra (1950) on the series of the *Ode to Napoleon* op. 41. Likewise, the composers of *A Survivor from Warsaw* op. 46 and *Il canto sospeso* can certainly be considered kindred spirits. Finally, Nono made an in-depth analysis of his father-in-law's dodecaphonic masterpiece, the *Variations for Orchestra* op. 31 in 1956 (Emmery 2019). Boulez had declared Schoenberg dead, but Stravinsky was there to stay for him, at least Stravinsky up until 1920. A comparison of Boulez's and Messiaen's analyses

of *The Rite of Spring* (1913) shows to what extent Boulez interpreted Stravinsky through his teacher's lens, but also how foundational the Russian composer was for the emergence of the serial idea (Boulez 1966b; Messiaen 1994–2004, II, 91–147). Also, one should not forget the importance of Claude Debussy's music for conceptions of form developed within serialism. Stockhausen significantly entitled his essay on statistical form and group composition 'From Webern to Debussy', including analytical observations on *Jeux*, the cult work in these circles (Stockhausen 1963f). Barraqué's keen analytical studies on Debussy say as much about his own composition of musical form as a ceaseless becoming ('devenir') as they do about his predecessor (Barraqué 1962; Barraqué 2001). Both the Italian serialists and Goeyvaerts had intimate knowledge of medieval and Renaissance music, in which they either uncovered or projected parallels with serial practice (Drees 2003; Goeyvaerts 2010a). Finally, Pascal Decroupet has convincingly shown that the self-declared distance of serial composers from *musique concrète* can hardly obliterate the common ground they share with Pierre Schaeffer's method of transforming and layering acoustic data, in addition to providing composers such as Boulez, Messiaen, Michel Philippot, Barraqué, Fano, and Stockhausen their first hands-on practical experiences in an electro-acoustic music studio (Decroupet 2011).

Geographies

In presenting some of the main composers by country, this chapter follows the geographical perspective on the history of serial music taken within this part of the volume. In doing so, one has nevertheless to keep in mind that European serial music as defined in this chapter was arguably the most *international* movement there has ever been in music. The Darmstadt New Music Courses were the most important international gathering place (see Borio and Danuser 1997 and Iddon 2013), but serialists also met at music festivals such as Donaueschingen and at radio stations, especially when they hosted an electro-acoustic music studio, as in Paris, Cologne, or Milan. Composers showed and discussed their scores with colleagues from abroad during these gatherings, and the main protagonists engaged in intensive correspondence with their peers. The dedicated periodical *Die Reihe* had an international authorship (see Grant 2001). Building a new language and aesthetics from scratch necessitated extensive international contacts, which were undoubtedly also fuelled by the post-war aversion to the nationalist ideologies that had led to the catastrophe of the Second World War.

France, and more specifically Paris, proved to be once again the birthplace of an *ars nova*, that of European serialism. In addition to Messiaen's analysis class, the teachings of René Leibowitz during the mid-1940s and his subsequent publications were influential in this respect. Leibowitz initiated the new generation of French composers into dodecaphonic techniques, while at the same time unintentionally creating considerable distance from the aesthetics of the Second Viennese School. Boulez undoubtedly was the strongest artistic personality among the youngsters, but it would be a mistake to narrow serialism in France to his oeuvre. Many other composers, such as Barraqué, Fano, Philippot, Gilbert Amy, or Jean-Claude Éloy, used serial techniques as well and added practices and expressivities of their own to the general picture of serialism. This is certainly true for Barraqué, who, in addition to numerous incomplete or unacknowledged scores, produced six very substantial works during his short life (see Henrich 1997). In spite of serialism's inherent tendency towards fragmentation, Barraqué sought to overcome the short, Webern-like condensed formal types to create vast architectural forms of considerable duration. His Piano Sonata (1950–2) is a case in point. The score mentions a duration of approximately forty minutes, but performances aiming to realise the desired clarity and expressivity generally run to fifty minutes or more. Two sections follow each other without interruption, the first alternating four fast, the second four slow tempi. Metronome markings are lacking altogether, indicating that the eight degrees of speed are merely relative to another (which explains the divergent performance timings). In addition, Barraqué distinguishes between a 'free style' at the beginning of the work and a more 'rigid style' later on, in which tempi and dynamics are to be observed strictly, yielding (mostly two-part) contrapuntal textures of points and lines. Beethoven and Debussy are often invoked when dealing with Barraqué's concept of musical form. In principle, these two formal models seem incompatible, but Barraqué succeeds in combining large-scale dimensions with flexible formal functions resulting from the interpenetration of loose and tight textures. In other words, Barraqué creates a compelling musical form of vast dimensions through a succession of unstable and highly contrasting fragments. Paul Griffiths speaks, in an imagined conversation with the deceased composer, as follows:

Your aim, though, was not anarchy but a higher, more truthful complexity, and the Sonata is music of chords and arpeggiations in conditions of turmoil and strain, creating possibilities of development, of flow, of progression (and of frustration) that have rarely been found in post-tonal music. (Griffiths 2003: 42)

Together with this specific formal concept (and in a way resulting from it), the dramatic intensity created by the rapid alternation of short rhythmic cells and extreme registers and dynamics constitutes Barraqué's individual contribution to the history of serial music. From 1956 onwards, he directed this artistic programme towards the realisation of a 'super-work' based on Hermann Broch's *The Death of Virgil* (1945). Some parts of this envisaged *magnum opus* such as the cantatas *Le Temps Restitué* (1956–68) and *... au delà du hasard* (1958–9) were completed. Others were left unfinished.

After having attended Messiaen's analysis class and established a personal and musical relationship with Barraqué and Boulez, Fano rejected his juvenilia and participated in the development of multiple serialism. This resulted in two works only, but their sheer quality and early historic position justify Fano's place in the canon of European serialism. His Sonata for 2 Pianos (1952) was first discussed by Richard Toop, who interpreted this work as the missing link between Messiaen's 'Mode' and Boulez's *Structures I* (Toop 1974). More recently, a detailed analysis of the Sonata's serial organisation of pitch, register, duration, and dynamics has demonstrated that in spite of some technical resemblances, Fano's two-piano work distinguishes itself from Boulez's 'automatic writing' in creating musical phrases that allow for the perception of a distinct musical form (Leleu and Decroupet 2011). Fano's *Étude for 15 Instruments* (1952) was long considered lost until, in 2019, Max Erwin produced a transcript of this seminal work. The opening page shown in Figure 12.2, which I reproduce with gratitude to both Fano and Erwin, shows the 'punctual style' typical of the earliest phase in serial composition. There is a strong tendency towards Webernian 'organic chromaticism' (Pousseur 1955), the simultaneous or successive sounding of a pitch with one of its chromatic neighbours. The careful elaboration of the tone and rest durations is obvious, as is the punctual characterisation of degrees of loudness. Compared to the Sonata, modes of attack and sound colour are now included in the serial organisation as well. It is obvious from the large number of works for solo or two pianos that serial composers initially eschewed the serial manipulation of the least controllable sound parameter. Indeed, the composition of timbre is arguably the most remarkable aspect from the *Étude*. As can be seen from its opening page, this work is not 'for 15 instruments' at all but rather 'for 15 families of timbres'. Most of the string and brass instruments have muted and unmuted family members. Instrumental timbres are subtly modified either during the attack or sustain phase (see for instance the viola and violin entries, respectively the piccolo clarinet and saxophone, or the horns–clarinet–trumpet timbre shifts), thus betraying an acquaintance with technical procedures from Pierre Schaeffer's electro-acoustic music studio.

Étude pour 15 instruments

Michel Fano

Lent $\text{♩} = 52$

Piccolo
 Flute
 Oboe
 Cor Anglais
 Clarinet in Eb
 Clarinet in Bb
 Bass Clarinet in Bb
 Horn in F (sempre con sord.)
 Horn in F (sempre senza sord.)
 Piccolo Trumpet in Bb
 Trumpet in C (sempre con sord.)
 Trumpet in C (sempre senza sord.)
 Alto Saxophone
 Trombone
 Violin (sempre con sord.)
 Viola (sempre con sord.)
 Violoncello (sempre con sord.)
 Contrabass

Figure 12.2 Michel Fano, *Étude for 15 instruments*, bb. 1–10 (sounds as written)

What if you just missed the pioneering years of serialism because you were born ten years later than the main protagonists? Gilbert Amy confirms the recurrent music historical phenomenon that priority is not the main issue, even in a period obsessed with ideas of progress and anxiety of influence. In works such as *Antiphonies* (1960–3) and *Diaphonies* (1962), his experience as orchestral conductor allowed him to elaborate upon the writing for spatially distributed orchestral groups explored in Stockhausen's *Gruppen* (1955–7). During the 1960s and 1970s, Amy produced a number of works that are closely related to Boulez's mobile form (and his Third Piano Sonata from 1955–7 in particular), but which add distinctive characteristics of his own. *Jeux* for one to four oboists (1970) is a good example. Its main title refers to a proclaimed forefather of serialism (Debussy), and its subtitles reflect ('Trope') or seemingly anticipate ('Répons') works by Boulez. Compared to Boulez, Amy leaves slightly more options for the interpreters to assemble the different components of the piece (see Michel 2011).

Both in time and in place, Belgium acted as a pivot in the history of Western European serialism. Together with Boulez – albeit completely differently – Goeyvaerts was the first to combine Messiaen's teachings with Webern's serial procedures in the middle movements of his *Nr. 1 Sonata for Two Pianos* (1950–1). He presented the results during the 1951 Darmstadt New Music Courses to the participants of a seminar conducted by a perplexed Theodor W. Adorno. Stockhausen was intrigued by the Belgian's musical ideas, to the extent that he too wanted to move immediately to Paris in order to attend Messiaen's analysis class. The ensuing extensive correspondence between the two young composers displays a bewildering mixture of topics including compositional procedures, issues with performances, electro-acoustic music technology, Neoplatonic aesthetics, dogmatic Catholic faith, and personal emotional outbursts (Misch and Delaere 2017). An occasional slip of the pen notwithstanding, Goeyvaerts put his concept of the 'synthetic number', the addition of four parametrical values yielding the 'perfect number seven' for each and every sound, into practice in the Sonata's middle movements. While the Sonata's outer movements have a less strict organisation and contain hints of traditional harmonic and expressive gestures, Goeyvaerts's *Nr. 2 for 13 Instruments*, composed between August and September 1951, has a strong case for being said to be the first entirely serial work in Europe. Symmetry is a guiding principle in these and the following serial works, together with equal distribution of the musical material. By contrast, serial *order* is not important to him. The consistent use of octave doublings to mark the symmetry axis of *Nr. 2* is another example of the idiosyncrasies of his mode

of approaching serialism. In the ensuing works, the musical texture is reduced to a bare minimum. In *Nr. 3 with bowed and struck tones* (1952) each sound is followed by a pause, and in *Nr. 4 with dead tones* from the same year, four electronic sound complexes are invariably repeated, and the duration of the pauses between them are varied according to a serial scheme, creating a 'phase-shifting' process *avant la lettre*. From this moment onwards, electro-acoustic music was the only true form of serialism for Goeyvaerts. His *Nr. 5 with pure tones* (1953) attempts to include timbre in the serial fabric. On the whole, Goeyvaerts is arguably the most radical serialist, less inclined to compromise in his relentless effort to create 'pure' music, as he wrote to Stockhausen on 4 August 1953:

While you could change all of your works even after they were finished, I was not permitted to. So your music will always sound sweeter, and also more human. It also belongs to you more. Nothing belongs to me. . . . You were then able to write *Kontra-Punkte*. For me it became *Nr. 4 with dead tones*, an inhuman, relentless piece, but it fascinates me in all its purity. Then you said that I was retreating from the human world more and more, and that I was losing all contact with people. I cannot help that. But I feel very afraid in the process. (Misch and Delaere 2017: 339–40)

While Goeyvaerts would eventually acknowledge the discrepancy between conceived and perceived musical structures after hearing the, to him disappointing, results of the studio production of *Nr. 5*, such a discrepancy was no concern at all for Herman Van San. Based on the first complete study of the archival material, Max Erwin (2019) arrives at a work list of fourteen extant compositions from the period 1948 to 1958. The succession shows a development from mainstream dodecaphonic techniques to the serialisation of – ultimately – all parameters by way of an identical mathematical formula, a principle called 'isomorphy' by Van San. The electro-acoustic music *Geometrische Patterns* (1956), alternatively entitled 'Secundum Opus Electronicum Mathematicum' is his last completed score. After that and until 1972, he conceived other electro-acoustic works, apparently without the intention to complete or to realise them. The sketches consist of mathematical equations, algorithms and theories from physics, chemistry and cybernetics only: 'Yet the fact that Van San did not even care to pursue a realisation, however unlikely, of such theories, suggests that he intended his work to exist in a theoretical form, and that these compositions – if compositions they are – will remain in their current state as nearly indecipherable equations' (Erwin 2019: 199). In a series of articles, Van San construed a teleological historical narrative from Schoenberg's atonality to 'mathematic serialism' and 'cybernetic music'.

His self-construction as a pioneering composer at the culminating point of this development is not only misleading because of the consistent backdating of all of his manuscripts. By being the only serial composer not interested in how his music sounds, Van San simply finds himself outside of this development.

In contrast to Van San, Henri Pousseur is at the centre of serialism as a musical movement with clear artistic ambitions. In general, one could describe his trajectory as starting from the narrowest to the broadest position within the serial project. At the start of his career, Pousseur took Webern as the exclusive model for the development of serialism, resulting in compositions such as the *Quintette à la mémoire de Webern* (1955), displaying a high degree of organic chromaticism. In response to Stockhausen and Boulez, Pousseur became aware quite early that indeterminacy is not necessarily the opposite of serialism but that it could be one of its operational strategies. It is nevertheless remarkable that his first use of aleatoric procedures occurred in the context of a tape composition, considering that electro-acoustic music came into being to gain full control over the sound material and the resulting musical form. *Scambi* (1957) consists of thirty-two sequences – all derived from white noise – with different speed and register characteristics and degrees of continuity, to be assembled anew for each performance (Sabbe 1977: 172–6). Later on, *Paraboles-Mix* (1972) was from the outset more radically conceived as multichannel improvisations based upon previous tape compositions. From the 1960s onwards, Pousseur became increasingly concerned with the harmonic restrictions of serialism. In keeping with one of the fundamental ideas of the serial project, he aimed to include different harmonic states between extreme values, or in his words: ‘how can we rhyme Monteverdi with Webern?’ He created two-dimensional networks of cyclic intervals in which the changing of an interval axis brings about a shift in harmonic region. This ‘apotheosis’ of (tonal) harmony allows for integrating pentatonic, modal, tonal, whole-tone or atonal pitch collections in one and the same work (Pousseur 1968). Particularly impressive examples are the orchestral work *Couleurs croisées* (1967) in which the human-rights protest song ‘We Shall Overcome’ is harmonically transformed, and the opera *Votre Faust* (1961–8) in which musical quotations from the past are integrated in the all-embracing, inclusive harmonic system. For the last part of the opera, Pousseur composed several alternative scenes, allowing the public democratically to decide how the opera should end. A work such as *Modèle réduit* (1975) also shows his desire to prefigure an anti-authoritarian society through musical practice.

The combination of musical and political activism is of course also of the essence for Luigi Nono, without any doubt the key figure of serial music in Italy. But other Italian composers participated in serial adventures at a relatively early stage as well. Bruno Maderna was for a long time primarily known for his activities as a conductor and teacher, but thanks to recent publications we also begin to understand the quality and specificity of his serial compositions (see Mathon, Feneyrou, and Ferrari 2007). Maderna led a 'workshop' in Venice modelled after Renaissance studios in which artists elaborated projects collectively. He shared the shifting technique developed by him with brothers-in-arms such as Nono and Luciano Berio; Franco Donatoni and Aldo Clementi count among later composers influenced by him. The technique is based on magic squares that generate complexes of derived series in which vertical groups and 'voids' (that is, pauses) also result from the shifting process (see Rizzardi 2011). This was to remain the principal working method of the Italian serialists throughout the 1950s. Maderna first used the technique in *Improvvisazione per orchestra no. 1* (1951) and used it until his Piano Concerto (1959), including the very first work for mixed media, *Musica su due dimensioni* (1952) for flute and tape. Nono applied it from his *Composizione per orchestra no. 1* (1951) until *La terra e la compagna* (1957), and Berio also composed works such as *Nones* (1954), the String Quartet (1956), and *Alleluja* (1956–8) with this technique (Neidhöfer 2009). Other dimensions than pitch are derived from the squares as well: pitch and duration patterns in Maderna's *First Improvisation* have different lengths, thus mimicking the *color* and *talea* of isorhythmic procedures from the *ars nova*. This leads Veniero Rizzardi to the following conclusion:

Compared to his fellow composers in the rest of Europe, Maderna had a less problematic connection with the modernism of the preceding generation. Furthermore, his claim to belong to the tradition of the St Mark's *cappella* is clearly a long-established myth – but of course a productive one; his work is undeniably rooted in his studies of the ancient masters. In this respect, one can even consider his tools, his serial 'machines', not just as functional objects; they may well appear as attractive intellectual constructions, and there is always a playful side in the way they are designed and operated. (Rizzardi 2011: 65)

This 'playful side' would increase in importance in Maderna's works from the 1960s and early 1970s, as testified by his delight in experimental and aleatoric techniques, gradual shift to more empirical methods, and fragmented textures that enable extensive reuse in satellite compositions, in addition to sometimes being just funny (*Le Rire* for tape, 1962). Berio, with

whom Maderna had intensively worked at the electro-acoustic Studio di Fonologia in Milan between 1954 and 1960, similarly held on to some elements of serialism whilst abandoning its specific composition techniques. In his fourteen *Sequenze* for solo instruments (1958–2002), for instance, the incessant repetition and transformation of harmonic aggregates is not unlike the persistent use of row forms. Before founding the avant-garde free improvisation group ‘Nuova Consonanza’ in Rome in 1964, Franco Evangelisti had been living in Germany, attending the Darmstadt courses each year and working at the Cologne studio for electro-acoustic music. And yet Evangelisti adds other aspects to the serial music then in vogue in Germany and Italy. The ‘ordered forms’ of *Ordini* for sixteen instruments (1955) are, for instance, perceived as individual pitched sounds opposed to unpitched percussion in part 1 and silences opposed to refined sound complexes (including noise sounds produced by extended instrumental techniques) in part 2, leading Gianmario Borio to the conclusion that the ‘Nuova Consonanza’ is a continuation rather than an interruption of Evangelisti’s compositional activity (Borio 2013b).

In addition to Stockhausen, other composers were more or less involved in the serial movement in Germany. After he fled from Hungary in 1956, György Ligeti rapidly acquainted himself with Western European serialism as testified by his article on Boulez’s *Structure Ia* published in 1958 in *Die Reihe*. Ligeti’s own works from *Atmosphères* (1960) onwards are certainly inspired by his experiences in the Cologne electro-acoustic music studio and the research into sound conducted by composers of serial music, but it would stretch the concept of serialism too far to include his ‘Klangkompositionen’ in the serial canon. Bernd Alois Zimmermann’s serial works recently obtained the attention they deserve (Korte 2012; Rathert 2012). Dieter Schnebel edited the first three volumes of Stockhausen’s theoretical texts. His intimate knowledge of the techniques and aesthetics of serialism is already apparent in the concise early works from 1953–6 published in the *Versuche* anthology. But their multi-parametric layout serves other purposes than serial consistency. By differentiating timbre and, above all, separating the musicians in the performance space, Schnebel directs the listener’s attention to the quality of the individual sounds rather than to their structural coherence (Nauck 1997: 131–54). It comes as no surprise that he considered John Cage a kindred spirit after the latter’s 1958 appearance in Darmstadt. Mauricio Kagel is another composer primarily known for his contributions to experimental music whose career was firmly footed in serialism, as in, for instance, *Anagramma* (1957–8) (see Heile 2006 and Holtsträter 2010). The vocabulary of his works from the late 1950s and the

1960s is as refined and complex as that of the serialists, but he too pursued other aesthetic goals such as the blurring of concert and theatre performances. The anti-opera *Staatstheater* (1971) could not have been written without the systematic approach to dissolution of sound material and anti-hierarchical stance he was familiar with from serial music.

Gottfried Michael Koenig was less interested in broadening than in deepening serial practice. He worked as an assistant at the electro-acoustic music studio of the West German radio station in Cologne from 1954 to 1964, after which he directed the studio at the Institute for Sonology in Utrecht (1964–86). For Koenig, serialism was the starting point for composing music based on rational principles, and electronic sound production the best possible way to attain this ideal. Even his instrumental works are deeply affected by the working methods of the studio. To give but one example, the method of superimposing successively composed layers and a temporal layout based on measurements of clock time in the *Zwei Klavierstücke* (1959) clearly stem from the practice of tape composition (see Quanten 2011; Quanten 2009). The row, whether as an ordered succession of sound elements or as equal distribution thereof, is approached by Koenig as an algorithm or simple mathematical formula on which all parameters and their combinations are based. Striving for utmost formal unity and using a serial programme to produce musical works in an automated way are Koenig's personal contributions to the history of serial music in Western Europe. Starting with *Projekt 1* (1964–6), serialism, electro-acoustic music production, and computer technology are in a direct line for him. Together with Lejaren Hiller and Iannis Xenakis, but working from a different perspective, Koenig is one of the founding fathers of computer-assisted composition. The contribution of serialism to this vital aspect of contemporary musical culture should not be underestimated.

Is the music historical gap between Lutyens and Brian Ferneyhough bridged by multiple serialism in the United Kingdom? The firm answer to that question is negative, although traces of it can be found in the amalgam of modernist techniques explored since the mid-1950s by the Manchester Group of composers: Peter Maxwell Davies, Alexander Goehr, and Harrison Birtwistle. In an environment in which Benjamin Britten or Ralph Vaughan Williams were considered contemporary music composers, a lot of the Continental European pre-war developments had yet to be discovered, discussed, and processed. With the Manchester Group, 'signs of that most rare thing in British life, an artistic avant-garde' began to emerge (Rupprecht 2017: 110). The models for the artistic avant-garde represented by the Manchester Group included Schoenberg, Messiaen,

Stravinsky, Ernst Krenek, and medieval music, rather than the young serialists they met during the Darmstadt New Music Courses between 1954 and 1957. Others fostered a more intense relationship with the Darmstadt composers. Richard Rodney Bennett studied with Boulez (1957–9) and Cornelius Cardew with Stockhausen, before becoming his assistant (1957–60). Soon afterwards, they moved away from the aesthetic concerns of the serial movement towards mainstream musical culture and an acute awareness of the political and social aspects of music making, respectively. The title of Cardew's book of essays, *Stockhausen Serves Imperialism* (1974), shows the degree to which he had distanced himself from his former teacher.

Bill Hopkins was a British composer and critic whose relationship with European serialism was more focused and longer-lasting, in spite of his short life – he died at the age of thirty-seven – and a work list of eight (admittedly, extensive) composition projects only. He studied with Nono in Dartington (1960–1) and went to Paris to work with Barraqué (1965), whose Piano Sonata had impressed him very much. Hopkins published on Nono and Barraqué, translated and expanded Karl H. Wörner's monograph on Stockhausen's life and works, and authored the Boulez entry for the 1980 edition of the *New Grove Dictionary of Music and Musicians* that is still available in updated form in its online edition: the degree to which Hopkins was immersed in the European serial movement is evident. Nicolas Hodges has provided an introduction to Hopkins's own compositions as well as having recorded Hopkins's complete piano music (Hodges 1993). Describing the early piano work *Sous-structures* (1964), Hodges sums up the composer's models, but also indicates the striking originality of Hopkins's music: 'While still bearing a relation to Boulez in particular, *Sous-structures* has more of Barraqué's dramatic power, and more of Hopkins's own rhythmic and gestural richness. Movement which on all levels is flexible and spasmodic is held together by a dramatic sense of great precision' (Hodges 1993: 4–5). Listening to later works such as the violin solo piece *Pendant* (1968–9), it is indeed remarkable how compellingly the highly fragmented texture presents itself. *Sensation* (1965) for soprano, tenor saxophone, trumpet, viola, and harp seems to combine the sound worlds of Webern and Debussy, yet the credit for the conciliation of serial precision and great poetic force in this work and in his last completed composition, *En attendant* (1976–7), goes to Hopkins alone. One realises there is much more under the serial sun than, for instance, *Le Marteau sans maître* (1952–5). Along the same lines, Hopkins's three masterful books for piano solo, *Études en série* (1965–72), broaden the serial spectrum beyond Boulez's two books

of *Structures* (1952–61), which have been a constant point of reference. Finally, the gestural richness invoked by Hodges above may well confirm that Hopkins can be historically thought of as at least a missing link between Lutyens and Ferneyhough, after all.

From the 1960s onwards, Danish composer Per Nørgård combined serial techniques with collage and improvisation. His ‘infinity series’ is based on the iteration and expansion of a single interval, yielding not only a rich field of diverse harmonic contexts but also a system of durational proportions. Within Scandinavia, however, it is Sweden that became primarily known for its contribution to serialism. Bengt Hambraeus introduced the use of pitch and duration rows in Swedish music but, during a relatively short period (principally 1956–62), Bo Nilsson had a greater impact on mainstream serialism. In his piano solo *Quantitäten* (1958), the performer is faced with a complex notational system in which pitch, octave registers, and durations are to be derived from each other, based on two logarithmical scales. Another ‘quantity’ to be realised by the pianist is a dynamic range consisting of eighteen values numbered in the score from 1.0 (the softest, barely audible sound) to 10.5 (the maximum volume) (Aerts 2000). This dynamic scale and its notation are also used in the *Mädchentotenlieder* for soprano and chamber orchestra from the same year. *Zwanzig Gruppen*, also from 1958, refers not so much to Stockhausen’s work for three orchestral groups as to his Klavierstück XI (1956). The score shows twenty groups distributed over the double page, but the expansion pertains more to the participation of three musicians than to the additional group (compared to the nineteen groups of Klavierstück XI). Each musician has her own score with twenty groups to be played as fast as possible, but the density varies between 140 (clarinet), 160 (oboe), and 180 (piccolo flute) crotchets in total (Figure 12.3). Performers decide the succession of groups, but no group can be repeated before the other nineteen have been played. A performance can consist of one (roughly three minutes) to twenty (roughly one hour) group complexes presenting the total number of twenty groups. Nilsson’s composition is a prime example of what Stockhausen described as ‘vieldeutige Form’, an open form type in which the composer fixes the details but not the overall form (Stockhausen 1963b). Since it is a chamber music piece for three players, it may well be the first instance of ‘plural form’ in which the synchronicity is unpredictable as well, though a comparison might be made with John Cage’s *Concert for Piano and Orchestra* (1957–8). Above all, *Zwanzig Gruppen* is an exciting virtuosic work full of energy.

Conclusions

This chapter contains a limited number of examples, but even then it is clear that given the huge diversity of serial practices, all attempts to pin down what constitutes the essence of post-war Western European serial music are doomed to fail. Surely, a desire to include sound aspects other than pitch into the structural framework can be generally observed. Some composers aimed at deriving all parameters from a common principle (for example, Maderna's magic squares, Van San's isomorphy, or Koenig's algorithms). Most composers selected a number of steps between a minimum and maximum value for each parameter; initially, this number was twelve (betraying the historical origin of multiple serialism in dodecaphony), but smaller and larger numbers would soon be used as well. From the very beginning, serial order – the fixed succession of elements as defined by the row – was abandoned in favour of the equal distribution of the elements: an equally effective procedure to avoid the emphatic hierarchy expressed in tonal music. Other parameters than pitch, duration, articulation, and loudness were soon integrated in the serial practice. Timbre was initially considered difficult to manage, until sound spectra could be composed through synthesis of sine tones in the electro-acoustic music studio. However, limiting the serial project to 'pure sounds' has been but one of the many aesthetic choices. More inclusive approaches would soon emerge, Pousseur's serial use of harmonic systems from the past arguably being the most extreme example. Another noticeable development in Western European serial music is the gradual absorption of chance elements. Finally, much attention goes to the perception of musical form, in particular to the construction of compelling large-scale forms out of unstable and fragmented musical material, as in the cases of Barraqué or Hopkins.

Although the composers benefiting from an individual chapter in this volume undoubtedly were the driving forces, serial music in Western European cannot possibly be limited to Boulez, Nono, or Stockhausen. This chapter has aimed at broadening the perspective not merely by introducing further protagonists who wrote aesthetically appealing works, but more importantly, other interpretations of what constitutes serialism. In light of this, narrowing serial music to Boulez's *Structure Ia* is – to put it mildly – an oversimplification. And yet Ligeti's 1958 article all too often serves, even today, as a convenient didactic tool to give students a basic introduction to serialism. However, Ligeti cannot be held

responsible for equating Boulez's music or indeed serialism as a whole with this early uncharacteristic composition.

Whereas cultural institutions and politics might have construed the avant-garde and serial music as a weapon against the Soviet Union in the context of the Cold War, there is no historical evidence that the serial composers themselves aimed at criticising the lack of (artistic) freedom in Eastern Europe with their work (though see Borio 2006, 45–46). They were struggling with the past rather than with the present, trying to come to terms with Nazism by rejecting all aspects that had led to this devastating ideology. Hence the eagerness to oppose the pre-war musical developments tooth and nail and the desire to start from scratch. And yet their relationship with the past was ambiguous, shaking off musical Romanticism (and expressionism as a continuation thereof) because of its excessive celebration of the self, but at the same time embracing and productively misunderstanding Ockeghem, Monteverdi, Mozart, Debussy, or Webern as historical legitimisation for their own radical proposal. They might have aimed to reset the clock from the catastrophic five to twelve to the zero hour, but they did not forget how time had passed before that.

Arnold Whittall's assessment of serialism's many-sidedness offers the best possible final word for this chapter:

There was never much chance that serialism would be permanently identified with one compositional style, one neatly packaged set of technical principles and aesthetic criteria. Even if, from time to time, small groups of composers appeared to achieve the utopian ideal of such collective commitment to principle, their distinctive stylistic predispositions would soon erode that unity. As one of the few named techniques of composition to emerge in the post-tonal era, serialism has evolved and survived precisely because it brings with it few if any stylistic imperatives to restrict the composer's imagination. (Whittall 2008: 151)

Whittall is speaking about twelve-tone music, but it fits *multiple* serialism like a glove as well. Despite the fact that serialism in post-war Western Europe had a common drive, the actual products of this movement could not be more different from one another, as this chapter has argued. The joys of serial music are wide ranging, for those who care to listen.