Chapter 1

Introducing the *Introduction*

Some initial questions

• *What is serialism?*

A way of writing music.

• *When did serialism first appear?*

During the 1920s: but preliminary forms of serialism can be traced back for several years before that. Those anticipations came about as Arnold Schoenberg and other composers increasingly turned away from the conventions of tonal composition, using major and minor keys, which had dominated its evolution since the seventeenth century. Serialism is therefore part of what has become known as **post-tonal** musical thinking.

• *Who invented serialism?*

Arnold Schoenberg (1874–1951) was the composer most decisively involved in devising and demonstrating the fundamentals of serialism. But other contemporaries were working along comparable lines, and it is clear that the establishment of serialism, as an instance of post-tonal thinking, was not the work of just one musician.

• *How many composers have adopted serialism?*

This book aims to introduce the music of all the principal serial composers, starting with Schoenberg and his pupils Alban Berg and Anton Webern. From the 1920s onwards serialism has been adopted and adapted by many different kinds of composer. Some, like Milton Babbitt and Pierre Boulez, have stressed its radical potential. Others, like Dmitri Shostakovich and Benjamin Britten, have used only those aspects of it which could enrich their much more traditional ways of

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composing. I am not aiming to provide a 'complete' history of the phenomenon: however, some indication of the range and flexibility of serial thinking can be given. I will also discuss the extent to which it remains a force within compositional thinking today.

• *What is serial music like?*

An initial indication of what serial music is like can be found in Arnold Schoenberg's reference to 'when I used for the first time rows of twelve tones in the fall of 1921'.[1] By 'rows of twelve tones' Schoenberg was referring to a linear ordering of the complete chromatic scale, an ordering which served as the source of all the pitch materials of the composition in question. This 'row' ('Reihe' in German) became known in English as a **series** – an ordered sequence of notes, as opposed to the raw, unordered material of the chromatic scale in its pure ascending or descending form (Ex. 1.1a). Ex. 1.1b shows the series for Schoenberg's Suite for Piano, Op. 25 (1921–3) in abstract form, written on a single stave and without any rhythmic values. Ex. 1.1c shows its use as the theme of the Trio section from Op. 25's Minuet.

Ex. 1.1a Chromatic scale

Ex. 1.1b Schoenberg, Suite Op. 25, twelve-tone series (P-0)

Ex. 1.1c Schoenberg, Suite Op. 25, opening of Trio section of Minuet

A series can therefore be thought of as a theme. Nevertheless, in generating all the melodic and harmonic materials of a twelve-tone serial composition, it represents an expansion of the function of a theme in earlier music. That more comprehensive quality is underlined by the convention of showing a twelve-tone pitch series as a notated sequence without rhythms, and with the assumption that the registers of the individual pitches are variable. For this reason, the notes shown in Ex. 1.1b are often termed **pitch classes**. This means that each such pitch class stands for every possible octave position of the pitch in question. It will be obvious that composers will not normally wish to confine themselves to the actual registers of a series notated as in Ex. 1.1b. Nor does Schoenberg do so in Op. 25, as Ex. 1.1c shows, and the analysis in chapter 3 will demonstrate in detail.

• *How does serial composition differ from tonal composition?*

Tonal compositions tend to rely more on the **functional** harmonic relations of tonality to provide structural principles than on the sequence of pitches and intervals present in any particular theme. As such, serial composition represents an alternative to tonal composition. Nevertheless, as the history of music since 1920 shows, serialism has not replaced tonality, but coexists and interacts with it.

• *Twelve-tone or twelve-note?*

As the basic terminology applicable to serialism migrated from German to English a certain diversity became apparent, especially between those two cultures divided by a common language, British and American. The British preference for 'twelve-note' persists, as the most recent edition of *The New Grove* (2001) confirms. Nevertheless, the professional consensus has moved fairly decisively in the direction of the American preference for 'tone' as general and 'note' as specific. 'Tone' seems closer to pitch class, and will therefore be used as the normal term in this book – except where quotations determine otherwise.

• *Are all serial compositions twelve-tone compositions?*

'Serial' is a much more general and comprehensive term than 'twelve-tone'. As this *Introduction* will show, a series of pitches can comprise fewer than twelve tones or, with repetitions, more than twelve tones. Similarly, a series can be devised for other musical elements, or **parameters**, such as rhythmic durations, dynamic levels and modes of articulation. Sometimes, as in Ex. 1.2a, these simply translate the

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Ex. 1.2a Series of twelve dynamic levels

Ex. 1.2b Series of twelve durations

sequence 1 to 12 literally, moving from extremely soft to extremely loud in the case of dynamics, or from very short to relatively long in the case of durational values (Ex. 1.2.b).

If used in actual compositions, such manipulations can give the impression of mathematical, mechanical routines seriously at odds with the inspiration and spontaneity usually seen as vital for valid works of art. In addition, attempts to work with series of twelve different dynamic or durational values have created immense problems for live performers. For this reason, composers have often used series of fewer than twelve elements for these secondary parameters, as well as, in many cases, for pitch itself.

● *Is it true that serial composition has little or nothing in common with tonal composition?*

As Schoenberg's preferred procedures for serial composition evolved and became more widely known, it was clear that the initial ordering of the twelve different pitches was only the starting point. With the conviction that any serious compositional process should be able to match the work of the great masters of the past in length as well as technical skill and artistic sophistication, Schoenberg recognised that only very rarely would it be sufficient simply to repeat or vary the single version of the twelve-tone series with which he had started. He therefore derived new versions of a single series from the original version, and the three basic ways in which he did this stem from techniques found in traditional harmony and counterpoint: **transposition**, **inversion** and reversion (retrogression).

The original version of the series is now generally known as the untransposed **Prime** (Principal) **form**: P-0 for short. Transposing this Prime successively onto the remaining eleven pitches of the chromatic scale creates twelve versions in total. Ex. 1.3a shows the P-6 version used by Schoenberg in the Trio section of Op. 25's Minuet: the first note is now B flat, six semitones above the '0', E. Turning all twelve

Ex. 1.3a Schoenberg, Suite Op. 25, P-6 form of series, and its use in Trio section of Minuet

Ex. 1.3b Schoenberg, Suite Op. 25, I-0 form of series, and its use in Trio section of Minuet

of those Prime forms backwards creates another twelve versions: the retrograde of P-0 is usually identified as R-0 or P-0^R, of P-6 as R-6 or P-6^R, etc.

Inverting the intervals of the Prime forms – that is, mirroring of the kind where an ascending interval of five semitones becomes a descending five semitones, and so on – creates a further twelve versions. Ex. 1.3b shows the inversion of P-0 – I-0 – as used in Schoenberg's Trio section, and the first tone is now written as F flat, rather than E natural: such enharmonic changes, for ease of reading, are common in post-tonal music. Again, retrograding the twelve inversions generates another twelve RI forms, shown for I-0 as RI-0 or I-0^R, for I-6 as RI-6 or I-6^R.

There are therefore forty-eight versions of Op. 25's series in all. What the consequences of this are for the composer will be considered in due course. But it will be clear at this stage that serial thinking is quite distinct from tonal thinking, even if the serial composer finds ways of responding positively to the challenge of building bridges between the new and the old (for example, the use of inversion and retrogression in tonal fugues and canons).

History and hindsight: an overview

One way for composers to seek to justify a move to serialism, and to persuade listeners that the results need not be impossibly difficult to follow, is to underline the similarities between old and new: for example, pointing out that thematic manipulations in tonal music from (at least) Bach to Brahms could well involve inverting or retrograding motives, as well as transposing them into different keys, or to different pitch-levels within the same key. It was no less important to demonstrate a degree of inevitability in the way twelve-tone serialism was felt to have evolved out of the freer and more flexible situation that existed early in the twentieth century as the old tonal certainties began to break down. For a disarmingly simple statement claiming a degree of such evolutionary awareness, we can refer to comments by Schoenberg's disciple Anton Webern, made during a lecture in Vienna in 1932, which were noted down by students at the time.

> About 1911 I wrote the *Bagatelles for String Quartet*, Op. 9, all very short pieces, lasting a couple of minutes – perhaps the shortest music so far – here I had the feeling, 'When all twelve notes have gone by, the piece is over' . . . In short, a rule of law emerged; until all twelve notes have occurred, none of them may occur again. The most important thing is that each 'run' of twelve notes marked a division within the piece, idea or theme.[2]

In these remarks, Webern moved quickly from the idea of form defined by a single traversal of the twelve tones to one in which larger forms would be governed by multiple twelve-tone sequences. After all, by 1932 he had written some of his most sophisticated serial works, and was also familiar with some of Schoenberg's much larger and longer twelve-tone compositions. But Webern did not claim that his 1911 *Bagatelles* were serial, or twelve-tone, in this way. At most, in their concern to keep all twelve tones in circulation, and to unfold them in a relatively systematic manner, they were groping their way towards a basic principle, sometimes known as 'total chromaticism', whose full theoretical and practical consequences would be worked out over the next decade.

A Webern analysis

The fifth of Webern's *Bagatelles* Op. 9 (Ex. 1.4) is in most respects the simplest in rhythm and texture, and we can soon see how what happens in it relates to the composer's comments. Starting with four different pitches in bar 1 (C, C sharp, D sharp, E), Webern adds D in bar 2, B and F in bar 3, G flat and B flat in bar 4, G

Ex. 1.4 Webern, *Bagatelle* for string quartet, Op. 9 No. 5

natural and A flat in bar 6, and finally A natural in bar 7. Even here, then, there is more going on than is accounted for by the claim that 'When all twelve notes have gone by, the piece is over'. So it is not too surprising that scholars have looked more closely at the music, the better to understand the composer's most basic point, which was to argue that 'new laws' had come into force that had made it 'impossible to describe a piece as in one key or another'.

This was clearly the case in Op. 9 No. 5, even though the gradual unfolding of the twelve different tones between bars 1 and 7 involves a certain amount of repetition of those tones – sometimes in different registers. The extreme economy of the music excludes thematic elements of the traditional melodic kind: and even pared-down motives or thematic cells are not allowed to make their presence felt, not least

because the extremely faint sounds required – very soft pizzicatos, playing on the bridge – ensure that actual pitches are barely audible at any point. Webern appears to be employing a degree of logic and consistency, as in the gradual opening out of notated pitch and register, a process begun when the first violin in bar 2 fills in the gap left by the other three instruments in bar 1. But he then does his utmost to ensure that any sense of asserting an inexorable logic should be undermined by the extreme reticence of what is actually heard. It would nevertheless be straining credulity to argue that the pitch formations and combinations in this music are arbitrary – aimed simply to achieve a sonic effect rather than to present a musical argument, however brief and basic. The piece moves in and out of various instrumental combinations, and the vertical alignments of two, three, or four notes are likely to have been as much the focus of the composer's attention as the individual, horizontal lines of the four constituent parts.

Collection, mode, series, set

Certain initiatives which can be viewed retrospectively as anticipations of serial thinking in music written well before 1920 have been identified by music historians. For example, the article on 'Twelve-note composition' in *The New Grove* begins with a reference to Skryabin's Piano Sonata No. 7 (1911–12) and the seven-note pitch **collection** (C, D flat, E, F sharp, G, A, B flat) on which it is based. This collection, or **mode**, can be deemed an anticipation of a twelve-tone series.[3] Yet in itself it has more of the aspect of a conjunct scale or mode than of an intervallically diverse series, ordered to highlight particular generative motivic or melodic materials. For this reason, music theorists have established a distinction between **set** and series, in which the defining characteristic of a set is its total content, without regard to order within the set, whereas a series is always ordered. As Joseph Straus has framed the distinction: 'a series is a line, not a set, of pitch-classes. A pitch-class set retains its identity no matter how its pitch-classes are ordered. In a series, however, the pitch classes occur in a particular [usually non-scalar] order; the identity of the series changes if the order changes.'[4] This interplay between series, where linear order is crucial, and set, where the total content is more basic, is one of the most significant features in many technical analyses of serial music. Perhaps the most spectacular consequence of the contrast between series and set is that, while there are many millions of ordered series possible – 479,001,600 twelve-tone series, for example – the total number of **normal order** pitch-class sets ranging in size from one to twelve pitch classes is a mere 224.[5]

Another respect in which the series/set distinction breaks down is that a set, like a series, can be transposed, inverted and reversed without changing its fundamental

identity. In addition, not only can sets, of however many pitch classes, become series, but the compositional manipulation of a series tends to draw attention to the various **sub-sets** which can be derived from it. As will be seen in later chapters, there is evidence that during and after the 1960s composing systematically with all twelve tones, disposed in various modal or scalar formations, though not consistently ordered in true serial fashion, became a more attractive and widely adopted compositional technique than consistent, strictly ordered serialism. After 1950 the perception emerged – stemming mainly from the theoretical work of Milton Babbitt[6] – that twelve-tone series could usefully be thought of as ordered versions of a much smaller number of **source sets**. This has tended to reinforce the distinction between an attitude which regards the pre-compositional progress to ordering as primary, and the attitude that prefers to avoid such specific and consistently deployed orderings of source sets altogether.

Some detailed analysis of Schoenberg's Piano Suite Op. 25 in chapter 3 will show that, even in a composition based on an ordered twelve-tone series, textural and other considerations mean that in practice the fixed ordering of the series as a single line is compromised as often as it is confirmed. If, as most do, a serial composition involves the interaction of vertical and horizontal factors – harmony and counterpoint – then alignments between pitches will occur which are not the result of their immediate adjacency in the particular form of the twelve-tone series in use.

The *New Grove* example from Skryabin shows that, as scholars became more familiar with the exploratory works of the decade or so after 1908, they were increasingly inclined to interpret them in terms of characteristics shared with an overall development from tonal thematicism to post-tonal, motivically suffused serialism. In any case, from an early stage many twelve-tone works can be shown to have derived their twelve-tone resources from smaller groupings – collections of three, four, or six tones which tend to be related, as in the case of Webern's Concerto for Nine Instruments, Op. 24 (1934). Here the four clearly differentiated three-note groups, or **trichords**, with which the work begins (Ex. 1.5) all employ the intervals of the major third and minor ninth/augmented octave.

Notes and numbers

With the initiatives taken after 1945, particularly in America, by mathematically expert serial composers and theorists such as Milton Babbitt and David Lewin, the tendency to identify notes as numbers increased by leaps and bounds. After 1950 the study of serial composition often proceeded on the basis of **integer notation**, translating classes of pitch names and intervals into whole numbers, then arranging the resulting integers into consistently ordered sequences to facilitate the

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Ex. 1.5 Webern, opening of Concerto Op. 24

identification of relationships within the various motivic and harmonic materials drawn from the twelve-tone series itself.

Writing out forty-eight different version of a series on manuscript paper is a time- and space-consuming exercise, prone to error. It is much more economical to translate pitch-class letter names into integers signifying the distance in semitones between the pitch class in question and the initial '0' – especially when Primes and Inversions are then interlaced in the **matrix** form shown in Ex. 1.6 for the series of Schoenberg's Suite Op. 25. Technical writing on twelve-tone compositions may well use two integers to identify the pitch class in question: first, a number indicating the order position of the note in the series, with the first as '0': second a number indicating the distance of that note in semitones from the '0'. So, for the P-6 version of Op. 25 (as shown in Ex. 1.3a), the fourth note, G natural, is '3,3', and the seventh, D natural '6, 10'. (One final notational refinement: in order to avoid the double digits 10 and 11 in series tables and analyses, some writers use 't' for ten and 'e' for eleven.)

Back to Webern

Integer notation was a feature of pitch-class set analysis from the beginning, and this enabled comparison of post-tonal techniques to be made between music like the Webern *Bagatelles* and later, twelve-tone works. The trichord found on the first beat of bar 3 of the Webern *Bagatelle* discussed above – F, E, B – is an instance of