2 Music theory and analysis

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Chapter preview

This chapter introduces music theory as a practice that has been undertaken in Europe and Asia for many centuries, and defines it as a set of generalizations about musical sound, works, and (occasionally) composition or performance practice. The focus of the chapter is on the theories that have been applied to Western classical music in the twentieth century and beyond, and the way in which they interact with methods of analysis. It shows that a theory may provide a secure framework for analysis, but also that analysis may also be used to test (and ultimately disprove) a theory. This process may lead to the creation of a new theory, and new analytical methods. Both analysis and theory are subject to change, then, and each is further influenced by the purposes for which it is designed. The chapter places theory and analysis within the triangle of composer, performer, and listener, in order to illuminate their flexible practical existence in a range of different contexts.

Key issues

What is analysis for?

- Analysis and the composer.
- Analysis and the performer.
- Analysis and the listener.

What is theory for?

- Theory for analysis.
- Analysis to test theory.
- New theory and new analysis.

Introduction

Music theory tries to tell us what music is by providing a generalized representation of it. But there are a lot of musics, so there are a lot of theories. They

vary according to the music they are addressing, who is doing the addressing (and where), and what the theories are for.

Music's most frequently theorized elements are pitch (tuning systems, intervals, and **modes**) and rhythm (in terms of time units and cycles). This has been the case throughout Europe and Asia since the sixth century BCE. But making general statements about even these basic elements has always involved reference to other phenomena. Theories about pitch have referred to entities as diverse as mathematical proportions (as did Plato, drawing on Pythagoras), nature and God (this was typical of German Romantic thought), and the cosmos (a frequent component of Arabic theory, among many others). Also, pitch theories depend on the instruments producing the pitches: early Arabic pitch systems were described with reference to the frets on the lute (*ūd*), for instance. Pitch theories are often interlocked with other systems: in India, for example, art music has long been theorized in the context of theatrical dramaturgy, physical gesture, poetics, and metrics.

This should indicate that theory, however abstract it may seem, is a product of a society, and that social change and patterns of travel may influence it profoundly. When a short-necked Persian lute (*pipa*) was brought into China around the third century, it brought with it a theory according to which there were eighty-four musical modes. Moreover, music theory also tends to absorb and represent the hierarchies in society. The Chinese philosopher Confucius (551–479 BCE) was one of the first to define "proper music" against "vernacular music" and assert the ethical superiority of the former. Imperial China preserved this distinction for centuries, so that theories in the Confucian tradition served to perpetuate the supremacy of the "art" music. This legitimizing role of theory has been important to Indian art music too, just as it has for the separation of "art" and "popular" music in modern Europe and America.

If you look back over this introduction so far, you may already be able to work out one of the relationships between theory and analysis, namely that in order for a theory to come into being, someone has to do a lot of study and – most likely – analysis. That way, analysis helps to generate theory. Theory does not always merely represent music that exists, however. Sometimes it is more speculative, attempting to enlarge the field of possibilities for creative musical practice (this was the case with some early Arabic pitch theorists). It has sometimes attempted to provide practical instruction (the ninth-century *Musica enchiriadis*, for instance, is a manual about how to improvise medieval organum; and C. P. E. Bach wrote a treatise about how to realize figured bass (*Essay on the True Art of Playing Keyboard Instruments*, Part Two, 1762)). Furthermore, theory, as a set of generalizations, can be the basis for further learning: the study of music is based on various general rules or principles (theories). Some of these are used for musical analysis, helping us to separate out various elements of music and consider how those elements work together. This way, theory helps generate analysis.

This chapter focuses on the theories we use for analysis of the Western art-music tradition, which cannot tell us much about what music is in general, though some people combine analysis with philosophy in order to do so (see chapter 5). But these theories try to tell us what musical works are. In other words, they are not concerned with the medium so much as with specific creations using that medium. That is partly because the medium was normalized in the tuning system known as "equal temperament" during the nineteenth century; partly because of the way the Western art tradition is formed around musical works notated in scores; and partly because of our interest in history. There are a lot of different musics in the Western art-music tradition, so there are a lot of different theories through which to analyze them.

What is analysis for?

Analysis and the composer

As you will know from chapter 1, the study of Western art music is very concerned with composers, who have frequently been thought of as the ultimate source of knowledge about their compositions. As a result, many writers have justified their analyses on the grounds that they will demonstrate how a great composer wrote. The theory of Heinrich Schenker (1868–1935), for example, demonstrates how the ornamental aspects of music can be carefully peeled away by an analyst to reveal a basic architectural structure supporting them: he understood the compositional process as being the reverse of this peeling away. In other words, he conceived composers such as Beethoven starting with a basic, universal structure and elaborating it progressively. Another writer, Rudolph Réti (1885–1957), was concerned with small building blocks of a composition, which he called **motifs**. Identifying one or more significant motifs in works by Beethoven (among others), he demonstrated how all (or most) parts of the piece were imbued with their transformations. He argued that the composer himself must have written music with the aim of unifying his pieces architecturally through just this motivic development.

But Schenker and Réti cannot both be right about how Beethoven worked! In fact, they each reveal less about the time of Beethoven than about the preoccupations of their own times (this should remind you of chapter 1 again). Schenker wrote in an era when the construction of critical editions and affirming a canon of "masterworks" was high on the musicological agenda. Establishing criteria for these "great" works with reference to tonality's reflection of nature and the spirit was a way of affirming their value (and dismissing the works that did not conform to his criteria as inferior – notice the parallel with Confucius). Réti's work, on the other hand, is more in line with the early

compositional theories and freely developing motivic music of Arnold Schoenberg. Schenker had particular historical grounds for his theories, because he developed them from species counterpoint, which Beethoven and many other composers studied as a compositional principle. But there are distinct limitations to how much score-based analysis can reveal past compositional practice.

There are two other main ways in which we can approach it analytically, although each has its own limitations. One way is through comparison with contemporary theoretical writings. But theoretical writings rarely develop in parallel with compositional practice, because theory is usually based on music that has already been written. Also, composers rarely follow theory and are often determinedly individualistic, which suggests we should look at another way of investigating their processes – analyzing their manuscripts. These might suggest how a composition developed over a period of time. In some cases, alternative versions may have been set aside by the composer, and comparative work can show how the structure of a given piece could have turned out very differently. But much of the compositional process cannot be traced in the manuscript sources, and even what *is* available can only rarely tell us much about a finished piece.

Some composers have been theorists themselves. Jean-Philippe Rameau (1683–1764) is one of the most famous. Since the latter half of the nineteenth century, certain composers have attempted to explain or analyze their own works. This certainly tells us something about how a composer viewed his or her own music, and how they wanted us to view them. In the twentieth century there were composers who constructed extensive theories about their methods. Olivier Messiaen (1908–92) is one example: he published descriptions of the various modes he had used, and what they symbolized for him. These descriptions may have stimulated other composers to write in related ways. But Messiaen's own music does not depend on his descriptions (it would be a very limited music if it did!) and they can only explain some aspects of it. That is almost always true, even in the rather special case of Schoenberg (about whom more below). So it is always a good idea to look beyond a composer's self-analyses. Fundamentally, our analyses are for *our* activities as composers, performers, listeners, or researchers; and, although they can, our analyses *need not* involve the composer of the works we analyze very much at all.

Analysis and the performer

While analysis does not necessarily bring us close to what a composer did, it is often understood as being in the service of the performer. The work of Donald Tovey (1875–1940) is an obvious case, because Tovey wrote descriptions of themes and significant events in pieces in a measure-by-measure narrative that can be followed a bit like a travel guide. His approach was pragmatic, engaging

with the aspects of a piece that could be identified readily either by reading the score, while playing, or while listening to a recording. You should find doing this sort of analysis a good way to gain basic familiarity with a piece. But there are more theoretical writers who also considered their work crucial for performers. Schenker was one of them: he thought his theories were ideal pedagogical tools.

You might think that the basic architecture of a piece is too abstract to help at all with the practical business of learning music for performance. But if you analyze a tonal work following his principles, you will gain insights that can help you play it. Inevitably you will know the piece much better by the end of the process; also, you should have a clear sense of a piece's proportions through having grasped the main harmonic shifts, the underlying structures of phrases and movements, and the relative structural significance of passage-work. Just as interesting, and most important to the Schenkerian approach, you will also have analyzed the piece as unfolding in time. You will be able to think of it not just as a collection of "vertical" chords, but as a "horizontal" set of lines, because Schenker encourages us to explore part-writing, or "voice-leading." This temporal dimension of his analysis has led some performer-analysts to combine Schenkerian approaches with commentaries about performance activities, as performers necessarily experience music in a linear way.

Réti, Schenker, and Tovey all analyzed scores, but while they were doing that, un-notated (and un-notatable) musics from other traditions were being collected by ethnomusicologists in sound recordings, and some of these were analyzed as musical sounds. This sort of approach has emerged much later in analysis of the Western art music tradition, because the score was broadly understood to hold all the composer's secrets, and analysis was supposed to lead us to the composer, and to the most authentic performance of the composer's ideas. But the proliferation of recordings can now reveal that performances based on the same score can differ a great deal. Consequently, these days the performer is less often the person for whom analysis is done than the producer of some of the objects that are actually analyzed. This sort of analysis is often comparative: a number of recordings of the same piece can be compared in terms of their use of factors such as time, pitch variation, dynamics, and articulation, for example. And this leads us towards the relationship between analysis and the listener.

Analysis and the listener

You might think that unless analysis tells us about things we *can* hear, then it is not relevant to our understanding of music. On the other hand, you might think that unless it tells us things we *cannot* hear, then it is entirely redundant. Most analysis works between these two positions, modifying each of them in

the process. Analysis may offer you ways of conceptualizing what you can already hear. Or it may tell you things you did not hear first of all, but on being told about them you begin to hear them. This second aspect is very important, because it shows that we can hear music in lots of different ways. Analysis can both refine our listening, and provide ways in which we can talk to one another about what we hear and do not hear.

This sort of sharing has often been dogmatic in the past. For Schenker, for example, there was a right way to hear music, and his analyses were intended to propagate that. In a related way, Schoenberg strove to write music that was "comprehensible," and he explained it according to complex pitch structures that listeners should be able to hear. Many later writers were influenced by **structuralism**, which led to the belief that the structures identifiable in the score should be the basis for the listening experience. People are often trained to listen to music in terms of these structures, which can indeed be useful reference points in listening. (You have probably done listening exercises in identifying themes, sections, and harmonic modulations yourself.) At best, listening to structures can guide our hearing and teach us something specific to a piece which will also enable us to compare it with other pieces. But this only represents one way of hearing and comparing. And as studies on large groups of people have shown, many of us do not experience music in these terms. This is the case generally, but is particularly true for non-tonal music, which listeners will rarely understand in terms of its intricate pitch constructions.

There is, after all, much more to music than its structures. It is also about communication. Consequently, some writers have argued that music is better understood as a system of signs and have drawn on **semiotics** to analyze it as such. Just think of "descriptive" music. It can be similar to fog (obscure and cloudy) or sound like a train (imitating the sounds a train makes); it can also symbolize entities such as countries (through a national anthem or folk music, for instance). Some types of music have been associated with something for so long that they carry their own sort of signifying system. These are generally called "topics": marches, dance movements (minuet, sarabande), and fanfares are good examples. One type of semiotic analysis would identify these signs and topics and explore their interaction as part of music's communicative process. Topics also interact with more obviously "structural" music: the music of Haydn, Mozart, and Beethoven in particular rewards study of the interplay between structure and topic; and the ways in which the topics are treated (innocently, ironically, or humorously, for instance), will also tell us things about the piece. The work of Kofi Agawu provides a good example of this approach.

You may be thinking that all this is only available to listeners aware of musical conventions and you will not be far from the truth. That really should not matter too much: after all, nobody is saying that we *must* listen in this way. Other writers have looked beyond musical scores and drawn on psychology to make broader generalizations about how Western art music is heard, however. Leonard Meyer's *Emotion and Meaning in Music* argued that people respond to

basic feelings of tension and release in music, and that these feelings are triggered by rising and falling melodies, as well as melodic gaps that – for the listener – "need to be" filled. Fred Lerdahl and Ray Jackendoff's *A Generative Theory of Tonal Music* pushed this sort of approach further by comparing more theoretical analyses of musical scores with listeners' musical intuitions, aiming to provide a sensitive bridge between the two. The problem with both Meyer's and Lerdahl and Jackendoff's approaches was that they never really experimented to see whether people *did* hear the musical structures they identified as important in quite the ways they thought. In other words, they used *structuralist* music theory and theories about psychology to argue about our hearing.

What is theory for?

You might be thinking now that theory has caused a great deal more trouble than it is worth, and that analysis *without* theory would be the safest way forward. Perhaps Tovey's practical approach appeals to you, because it is apparently unburdened with theory. If we look a bit more closely at Tovey, however, we notice he cannot do without the theory about the medium of music. He uses terms such as "tonic" and "dominant," for instance, that stem from the theory of Hugo Riemann (1849–1919) according to which harmony has "function." And he also uses concepts such as "theme" that belong to the basic theoretical vocabulary of musicology. Also, it turns out that he has a very fixed idea that an analysis should be a "story" that unfolds in parallel to the piece of music. That is another covert theory, namely that music is understood as a single line extending in time.

If we look back to the introduction of this chapter and recall that analysis takes music apart and shows how its constituent elements work together, then we will realize that Tovey did not get us very far. He did not break the music down into very small elements, he did not explain why he has written about certain elements and not others, and he did not show us distinctive ways in which his chosen elements interact. He drew on theory without thinking much about it and ended up with a description. Actively thinking about theory can sometimes make us more analytical; and it can also lead us to refine theories. We may even create new ones.

Theory for analysis

Music's apparent affinity with language has influenced theory profoundly. Music can imitate language, has structures that are comparable with those of language, and is a medium of communication. Several of the analytical practices described below are indebted to these thoughts.

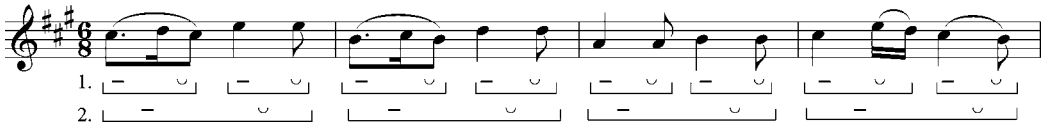


Fig. 2.1 Meter in Mozart: Piano Sonata in A K331, first movement, Meyer 1973: 31.

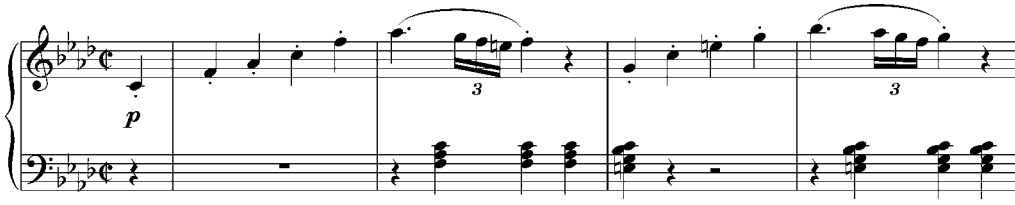


Fig. 2.2 Classical sentence structure. Beethoven, Piano Sonata in F minor, Op. 2 No. 1, first movement

Cooper and Meyer's *The Rhythmic Structure of Music*, for example, drew on analytical techniques applied to poetry and prose since ancient Greece to classify various types of rhythmic pattern encountered in classical music. The theory shows how pulse, meter (number and type of beats in the measure), accent, and duration can be analyzed to identify groupings of notes that are similar to poetic feet known as *iamb*, *anapaest*, and *dactyl*, for instance. Fig. 2.1 shows how the relative emphases of notes in a phrase of Mozart can be grouped into such poetic feet; and how, depending how closely we look at the score, we can regard larger or smaller sections as representing such groupings.

Schoenberg's *Fundamentals of Musical Composition* also drew on linguistic analogy by referring to sections of music with concepts such as "phrase," "theme," and "sentence." Schoenberg's loose definition of a musical "phrase" was a unit of music that could be sung in one breath and implied that a comma should follow it. A "sentence" was a type of theme in which the first part was the same as the second part (although the latter might be in a different key). Fig. 2.2 shows a sentence; each of its two parts could be categorized as a phrase. He contrasted the "sentence" with the "period," which was a theme in which the second part was different from the first. He argued that the vast majority of classical themes were sentences, rather than periods. Schoenberg also drew on traditional theories about how themes were built up into sections, how sections were built up into forms to provide a means through which we can categorize movements into "binary form," "rondo form," and "sonata form," among others. These theoretical representations lead us to analyze music in specified terms.

The semiotic theory discussed above is also indebted to music's linguistic qualities, and specifically to the analysis of language as a communicative sign system. Where Schoenberg's theory teaches us to analyze a theme as a sentence or a period, that of Kofi Agawu might lead us to recognize it as a dance type or a musical "sign" for a fanfare. Semiotic theory does not stop at these

identifications, however. It also looks at how units of music can generally be regarded as signs, and how they are distributed in pieces of music. This brings semiotics quite close to motivic analysis and back to thematic analysis, because it involves extracting small sections of music on the basis of their similarities, and identifying how their recurrences shape the music and how they are part of a larger system.

While rhythm and melody can be illuminated with reference to language, harmony has more often been explained with reference to nature. Theorists as recently as the early twentieth century inaccurately claimed that tonal harmony is natural. In fact tuning systems devised by humans divide up the acoustic range in various ways, and tonal music is only one product of such divisions. But even if this sort of theory has lost part of its plausibility today, it retains useful elements. Identifying the relationship between consonance and dissonance (without asserting that one is natural and the other is not) is an important part of tonal analysis, for instance. It enables us to see the basic structures of tonal relations, the way certain harmonies help to articulate musical beginnings, endings, and the time in between.

It is Schenker's tonal theory that has most influenced musical thought in the twentieth and early twenty-first centuries, after it was transformed into an analytical method for university study in the 1950s. At the heart of the theory is the idea that the temporal aspect of tonal music is the "prolongation" of triadic harmony. Fig. 2.3 should give you an idea of how Schenkerian analyses (a) reduce what seems to be complex music to simple two-part counterpoint (which is understood as the skeleton of the harmonies), and (b) suggest that the other notes "prolong" this (they elaborate it, and extend it through time).

Schenkerian thought is most readily conceived as a sort of theme-and-variations idea: just as variations can be "analyzed down" (reduced) to a theme, much tonal music can be reduced to a contrapuntal framework. The point is not so much the reduction itself as the insight we gain when we identify the way the framework supports the elaborations around it. Schenker referred to the framework as "background," and the various degrees of elaborations on it as "middleground" and "foreground." The idea that music is built up in such layers of relative structural significance is a helpful one.

For theorists, one of the most attractive things about Schenkerian analysis is that it seems to represent a complete system, and it can be a useful point of reference between people examining different musics. (This is the value of structuralism: the formal elements of something can be discussed without their specific context.) There is only one equivalent to such a totalizing system for non-tonal music, and rather than being grounded in language or an idea of nature, its closest relative is mathematics.

Bearing this in mind, you may be amused to hear that one of its forerunners, Schoenberg's writings on non-tonal music, justified itself in no other way than

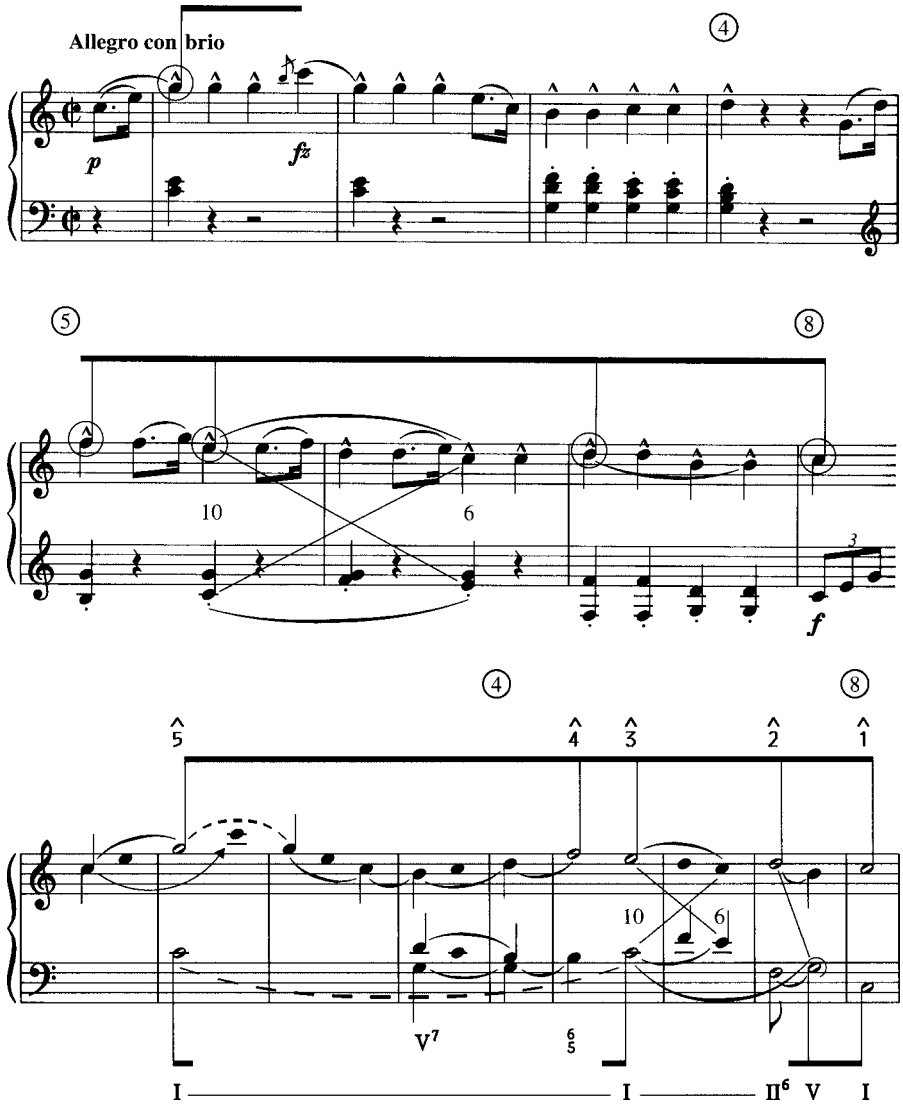


Fig. 2.3 Analysis of Haydn, Piano Sonata Hob. XVI/35, I, mm. 1–8 (from Cadwallader and Gagné, 1998: 112–13)

by making claims for the "naturalness" of dissonances. Once the structuring function of consonance and dissonance was removed from music, then new theories were needed to account for how it worked. Some of these were provided by the music that was constructed according to Schoenberg's method of composing with rows of twelve notes. Although Schoenberg himself did not call his method a "theory," it was adopted by composers and writers who often treated it as one. The pitch organization of a composition was determined by:

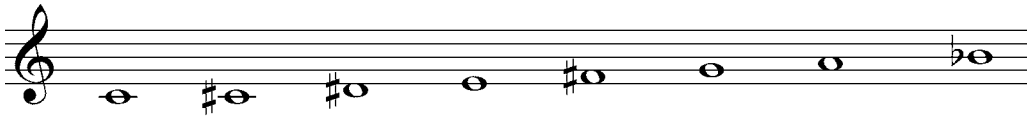
(a) the arrangement of the twelve notes into a "row"
(b) generating forty-eight versions of the row through inversion (turning it upside down), retrograde (reversing its order), retrograde inversion, and multiple transpositions
(c) using these rows as building blocks of a composition.

Analysis of its pitch structure could amount to identifying the rows and their arrangements in the piece.

But – remember the section above on "analysis and the composer" – this could only tell us about certain aspects of a composition. Moreover, it could only work for twelve-tone compositions, whereas there were lots of types of non-tonal compositions. So new vocabulary was needed. This grew up in the post-war period, drawing on a cross-fertilization between science and arts, the rise of computer technology, and the prevailing belief that music could be best be explained as a set of abstract relations. The new theory was based around two concepts, "pitch class" and "set."

"C," "C♯," and "D" are all pitch classes. "Class" refers to the type of pitch, without indicating what register it is in. That means that all Cs belong to the same pitch class: the interval of the octave between them does not change their class. Pitch-class "sets" are groups of pitch classes; unlike modes, their order is never specified. As Allen Forte's *The Structure of Atonal Music* demonstrated, there are 220 pitch-class sets (containing from three to nine pitch classes) within the twelve-tone system. Each has its own structure of intervals. Pitch-class set theory enables analysts to find similarities between seemingly diverse sections of music, because once notes are reduced to their pitch class and positioned in groups, they may turn out to be closely related. The groups can be subjected to mathematical operations to discover new relations between them.

Such relationships can be identified most readily when pitch classes and sets are expressed numerically. According to this system, C is 0, C♯ is 1, and B is 11. Fig. 2.4 shows three representations of the same group of notes. A further way of representing it would be to call it the "octatonic scale" or "octatonic collection." This is a name often used for this rather special set. Notice that essentially it divides up the octave space into alternating tones and semitones.



(0, 1, 3, 4, 6, 7, 9, 10)

8-28

Fig. 2.4 The octatonic scale

Other sets that deserve special notice are those that divide up the octave range symmetrically. 4–28 (0, 3, 6, 9) is another example. Can you work out what notes can be in it?

Pitch-class set theory has been criticized from two sides. On the one hand, many find it wildly abstracted from our responses to music. On the other, many people argue that its claims to objectivity collapse when it is used for analysis, because the analyst has to make subjective decisions about which notes to group together into sets. This tension between objectivity and subjectivity is actually at the heart of all music analysis. The best way to work with the tension is to regard analysis as a sort of interpretation. If the interpretation draws intelligently and interestingly on clearly presented principles or established theory, it will be comprehensible – and even plausible – to a significant number of people. It may succeed in persuading them that it is a good analysis.

Analysis to test theory

In the last section we encountered several theories that were invented as tools for analysis. That means that they are less "right" or "wrong," and more "useful" or "useless," depending on what music they are applied to. However, some of them set themselves up as comprehensive, or as "norms" for a particular style of music. If you try to use them to investigate music of that style, but find that the music does not fit, you may start to wonder who is right and who is wrong. Is the piece abnormal within the style? Or is the theory wrong about the style?

One way to resolve these questions is to look closely at the theory's claims. For example, Schoenberg made generalizations about the structures of themes in Classical music. If you encountered a piece that did not begin with a Schoenbergian "sentence" or a "period," you could (1) list which pieces of music he used as examples; (2) ask yourself whether or not these were a representative selection of Classical music; (3) analyze themes from another selection of pieces that you identified as more representative. Your analysis would test his theory. It might also test a new hypothesis, such as:

> If Schoenberg had considered more of Haydn's and Chopin's music when he theorized the thematic structure of Classical music, he would have been led to dramatically different conclusions.

If you discovered that Schoenberg's emphasis on the music of Beethoven had skewed his results, you might end up by proposing a new set of norms for Classical music.

In doing that, you would be using analysis to test (and disprove) theory, and also to create new theory – and possibly even history. For the categorization of styles and historical periods depends on analysis of different works and subsequent generalizations about the analyses. This sort of work is known as style analysis, and Jan LaRue's *Guidelines for Style Analysis* is a sophisticated

representative of it, in which complex and nuanced data related to a large number of categories and sub-categories of musical elements are presented in a tabulated form. These days there are computer software packages that can analyze a huge amount of data in this way. This is an excellent way of testing theories, because so much music can be compared (from so many perspectives).

To return to the idea at the beginning of this section, that many theories aren't right or wrong, but useful or useless, one further point to realize is that their usefulness is closely related to their plausibility. By this I mean that Schenker's theory will seem very useful indeed if we believe that it tells us what the composer did, teaches us to perform well, refines our hearing, and reveals the mysterious essence of music's natural, organic processes. Most people do not believe all that nowadays. But that does not mean that Schenker is useless to everyone! Many still find his graphs, and his insight into phrase structure, helpful in learning about a piece, preparing for performance, and thinking about, or imagining, music. Others, however, find their experience of music fundamentally different from Schenkerian ideas, and some of these seek new analytical methods in which they can actually believe. Some of them think the theories described above have become implausible, and that it is time to start asking analytical questions in new ways.

New theory and new analysis

These new analytical approaches can be divided into two broad types, both of which are related to **post-structuralism**. One type has reacted to the elitism of past theory and to the pseudo-scientific quality of past analysis. As a result, there are now approaches (some of them analytical) to musics that were excluded from theoretical scrutiny for a long time (see chapter 10 on jazz, chapter 11 on popular music, and chapter 12 on music in film and television, for instance). Also, there is an interest in incorporating subjectivity in theoretical writing (see chapter 5 on aesthetics and critical theory, in particular the part on post-modernism). So this type is to do with the integration of theory and analysis into related areas.

The other type has responded to some of theory's assumptions about musical structures and the listening experience. As I hinted above, we can learn to listen to music in certain ways, and theory can teach us to do that. But the new approaches are less interested in contributing to that didactic activity than in discovering about listening and sound itself. In other words, they are not so interested in representing what happens in the score as what happens perceptually. They analyze and theorize perception (from a range of perspectives, some psychological (see chapter 4), some neurological); and they also investigate the properties of sound in music.

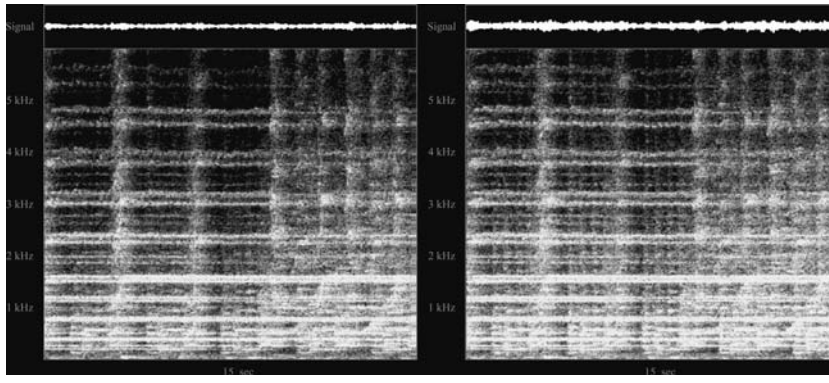


Fig. 2.5 A moment from Wagner's "Ride of the Valkyries"

These analyses of sound do not use the score as their primary basis, so they address the aspects of music that depend on performance: dynamics, vibrato, intonation, and timbre (including the non-pitched aspects of instrumental sound, as well as vocal sounds such as vowels, consonants, and whispering), for example. They can also address density of sonority and how notes are shaped individually. Such analysis can represent, for instance, the fact that we hear a certain piece of music as an increasingly complex textural and dynamic crescendo. Going beyond a verbal description, this analysis can be represented on a computer-generated spectrogram, which captures all the various sonic vibrations graphically. See Fig. 2.5.

As you will notice, in order to connect your hearing mentally with the visual representation that the spectrogram offers, you will need to practice reading spectrograms. This will certainly affect your hearing – in fact, it should refine it. But if this reminds you of Schenker, then remember that this analysis is intended as an open-ended diagnostic tool, not as evidence of the "greatness" of a musical work. Also, the process of generating the spectrogram is merely a first step (unlike a Schenker graph): it enables you to examine certain aspects of music in sound (and in a visual representation of the sound), analyze them, and finally draw an interpretation, or conclusions, from them.

The interpretation might take evidence from the spectrogram about how a singer's manipulation of vowels affected the expressive quality of a performance. Or it might take evidence from the spectrogram to discuss how fluctuations in intonation, as well as instrumentation, explained the ways that very different performances of the same piece functioned. Or it might attempt something more ambitious, such as comparing the following three areas:

(a) psycho-acoustical research into how sound waves enter the ear
(b) compositional principles (such as those related to counterpoint)
(c) musical works (listened to and represented on a spectrogram).

At best, this sort of research combines established research with inventive and open-eared thinking. It may well lead to an enrichment of existing theories of music, as well as new ideas for music analysis.

Chapter summary

In this chapter we clarified that analysis

- can provide a mental representation of music.
- rarely leads us to what composers did in the past.
- may be helpful to performers.
- can develop our listening.

We also established that theory

- is a set of generalizations.
- can provide a framework for analysis.
- can be revised through analysis.

Finally we looked at some types of analysis that aim to make discoveries about music without drawing on conventional theory.

Discussion topics

1. Take a short piece of tonal music you know and try to prove (a) that it is held together by harmony, and then, (b) that it is held together by thematic or motivic repetition. Consider which is the better argument, and ask yourself what it tells you about two different approaches to music.
2. Listen to a piece of music by Steve Reich, such as *Six Pianos*, or *Music for 18 Musicians*. Consider using the analytical methods outlined in the chapter above as a way of learning more about it. Would they be helpful? In what ways? What aspects of the music would they not be able to grasp? Can you think of other analytical ways of approaching this sort of music?
3. "Undergraduate composition students in the UK today write their music without tonality." This is a theory about a certain group of works (it is comparable with any theory generalizing compositional style among composers living in the same place and time). Do you think it is accurate? Think of ways that you might test it using analysis. Consider how you would define "tonality" while you do that. Do you need to replace the theory with another one? What determines the accuracy of a theory like this?

Further reading

Cook, Nicholas (1987), *A Guide to Musical Analysis* (London: Dent).
A lively introduction to the main methods of tonal and post-tonal analysis, with detailed discussion about their relative strengths with reference to case studies.

Dunsby, Jonathan and Whittall, Arnold (1988), *Music Analysis in Theory and Practice* (London: Faber).
A book for the advanced student, with more challenging theoretical discussion.

Cadwallader, Alan and Gagné, David (1998), *Analysis of Tonal Music: A Schenkerian Approach* (New York and Oxford: Oxford University Press).
A very clear step-by-step guide for learning how to do Schenkerian analysis. Includes examples for you to work through yourself.

Straus, Joseph N. (1990), *Introduction to Post-Tonal Theory* (Englewood Cliffs, NJ and London: Prentice Hall).
A clear textbook with chapters dedicated to different approaches to non-tonal music and theories developed for particular types of music. This book also has analysis exercises for the student.

Clarke, Eric and Cook, Nicholas (2004) (eds.), *Empirical Musicology: Aims, Methods, Prospects* (New York and Oxford: Oxford University Press).
A collection of essays on recent approaches to music, including the analysis of performance, and using computers for music analysis.

References

Agawu, V. Kofi (1991), *Playing with Signs: A Semiotic Interpretation of Classic Music* (Princeton, NJ: Princeton University Press).

Cooper, Grosvenor W. and Meyer, Leonard B. (1960), *The Rhythmic Structure of Music* (Chicago: University of Chicago Press).

Forte, Allen (1973), *The Structure of Atonal Music* (New Haven and London: Yale University Press).

LaRue, Jan (1970), *Guidelines for Style Analysis* (New York: Norton).

Lerdahl, Fred and Jackendoff, Ray (1983), *A Generative Theory of Tonal Music* (Cambridge, MA: MIT Press).

Meyer, Leonard B. (1956), *Emotion and Meaning in Music* (Chicago: University of Chicago Press).

Schoenberg, Arnold, ed. Gerald Strang (1967), *Fundamentals of Musical Composition* (London and Boston: Faber).

Glossary

Mode	The term has been used in a variety of different contexts, the common core of which is the relationship between notes, whether in terms of duration or pitch. In the context of its discussion in chapter 2, mode refers to a collection of notes with a particular hierarchy of pitch relationships: it can be a scale (i.e., ordered) or a melodic type (i.e., not ordered). The former is used most often for classifying pitch systems; the latter, as a basis for improvisation or composition. Mode is a descriptive term that serves as a translation of non-Western concepts understood to be similar or identical (the *pathet* of Javanese gamelan music, for instance).
Motif	In general terms, a motif is a short musical idea, defined by melody, rhythm, harmony or a combination of all three. Rudolph Réti, whose analyses were based around motifs, defined it as "any musical element, be it a melodic phrase or fragment or even only a rhythmical or dynamic feature which, by being constantly repeated and varied throughout a work or a section, assumes a role in the compositional design somewhat similar to that of a motif in the fine arts."
Structuralism	According to structuralist theory, human culture is based on systems that can be analyzed as such. First outlined by Swiss linguist Ferdinand de Saussure (1857–1913) in the early twentieth century, structuralism was a reaction against nineteenth-century historical research and an attempt to make the study of language more scientific. It has been influential in the social sciences (anthropology for instance) as well as in humanities (literature and music, among others), and although its applications vary, the structuralist analytical process is always marked by an attempt to make visible a structure that can be discussed without its particular context or content.
Semiotics	Semiotics is concerned with the study of signification, that is, the recognition that entities such as language, images, and music can be "signs" for meaning. Ferdinand de Saussure argued that these signs were arbitrary – the word "cat" bears no direct link to an actual cat – and that the structures around and between the various signs generated meaning. In other words, it is only through the system of language that the individual collection of letters C, A, and T, have the meaning of "cat." Another approach to the study of signs was taken by Charles S. Peirce (pronounced "purse"; 1839–1914), who differentiated between three types of sign, "icon," "index," and "symbol."

Post-structuralism	Closely associated with the work of Michel Foucault (1926–84), post-structuralist thought acknowledges that human culture is underpinned by structures, but argues that these both vary across time and space and are inseparable from the things that are said about them. For post-structuralists, "reality" cannot be grasped objectively as a totality, because it is constructed by individuals who are themselves parts of it. Post-structuralist analysis is very varied, but is united in opposition to structuralism: it rejects totalizing structures and resists privileging one analysis over another.