Today most scholars agree that Rameau was the founder of modern harmonic theory. As we have seen in the previous chapter, Rameau attempted to synthesize in his many writings a multiplicity of ideas – both old and new, speculative and practical – into a unified theory of tonal harmony grounded upon a single underlying principle, the *corps sonore* (see Chapter 24, pp. 759–71). If he did not succeed in creating a truly systematic and stable theory of harmony owing to his many differing and often contradictory theoretical arguments and intellectual borrowings, he nonetheless bequeathed to the nineteenth century a number of compelling and richly suggestive ideas that would inspire theorists in their own efforts.

In this chapter, we will look at the evolution of harmonic theory in the nineteenth century. This is of course a vast and complex topic. Given the profound changes in harmonic language between 1800 and 1900 – a period covering the end of Viennese Classicism and closing with Schoenberg’s first tentative steps beyond the tonal system – it is not surprising that theorists expended extraordinary energy and efforts in their attempts to rationalize this shifting practice. As it is impossible here to describe all of these efforts in detail, we will limit our scope to the development of Austro-German harmonic theory, a tradition which arguably encompasses some of the most innovative and influential writings on this topic for the entire century. Within this tradition, three individual trajectories can be traced back by differing routes to Rameau’s own theory: scale-degree (*Stufen*) theory, fundamental-bass theory, and function theory. While all of these trajectories intersect in various ways (as they surely do in Rameau’s own writings), each will be treated individually by focusing on a few representative advocates of each view: Vogler and Weber for scale-degree theory, Sechter and Mayrberger for fundamental-bass theory, and Riemann for function theory. We will then consider several polemics generated by these colliding trajectories in the early twentieth century and conclude with an examination of Schoenberg’s attempt to find a mediation in his own theory of harmony.

**Scale-degree theory**

One of the central tenets of Rameau’s harmonic theory was that every chord was generated from some fundamental sound belonging to a scale degree of a given key. But as
scholars have long reminded us, clear notions of chordal scale degrees can be found in the seventeenth century (see Chapter 13, pp. 441–47; and Chapter 24, pp. 756–57). Thorough-bass pedagogues, for instance, supplied rules for a performer to select harmonies above an unfigured bass. These rules, often based on deciding which harmonies were appropriate for the individual scale degrees in a key, show a growing awareness of tonal relations. Eighteenth-century thorough-bass manuals often included paradigmatic harmonizations of ascending and descending diatonic bass lines, called the règle de l’octave, which assigned specific harmonies to the diatonic scale degrees in major and minor.¹ Rameau, as we have seen, was a significant contributor to the development of scale-degree theory. In his Traité de l’harmonie, for example, he differentiated between seventh chords above the fifth scale degree of a key (called dominante-tonique) and those that would appear above other non-tonic scale degrees (called simply dominante). The added-sixth chord, however, was restricted to the fourth scale degree of a key—a chord he would in later writings christen the sous-dominante (see Chapter 24, p. 768). The designation of a given chord was determined by its structure, i.e., whether it was a simple triad or contained one of Rameau’s two characteristic dissonances. But according to Carl Dahlhaus, such generalized designations do not properly constitute a full theory of chordal scale degrees (Stufentheorie) since they fail to make functional distinctions between all the harmonies built on the tones of the diatonic scale.² Other theorists after Rameau attempted to offer an expanded correlation between chord types and scale degrees, including Georg Andreas Sorge (1703–78) in his Compendium harmonicum (1760), and a lesser known Irish theorist named John Trydell (1715–76) in a treatise entitled Two Essays on the Theory and Practice of Music (1766).³ But the first systematic Stufentheorie came in a series of treatises by an eccentric German musician and teacher named Georg Joseph Vogler.  

Vogler. Abbé Georg Joseph Vogler (1749–1814) studied speculative music theory in Padua with Francesco Antonio Vallotti (1697–1780), through whom he undoubtedly became acquainted with the writings of Rameau and Giuseppe Tartini. Following his studies in Italy, Vogler established a public conservatory in Mannheim in 1776 for which he published several treatises, including his Tonwissenschaft und Tonsekunst (1776).⁴ His activities as a composer, theorist, and organ builder took him to such cities as Stockholm, Copenhagen, Munich, Prague, and Vienna.⁵

Influenced by the same Cartesian rationalism promulgated by Rameau, Vogler maintained that the science of music was drawn from a single principle. All necessary musical proportions, Vogler argued, could be derived from the resonance of the vibrating string. But unlike Rameau, Vogler exceeded Zarlino’s senario of six partials and reached up to the sixteenth partial. In order to make these higher partials audible and

¹ See Example 24.1, p. 757 and Chapter 13, p. 443.  
³ Lester, Compositional Theory, pp. 207–08.  
⁵ Ibid., pp. 5ff.
comprehensible, Vogler devised an instrument called the *Tonmaass*, consisting of eight strings with up to sixteen fixed bridges. By plotting out the various ratios engendered by these higher partials, Vogler was able to derive the “natural” major scale from the eighth through sixteenth partials, containing both a raised fourth and a natural seventh: f, g, a, b(s), c, d, e(s), e5, and f. The natural scale served as a model for the “artificial” major and minor scales, which Vogler derived from triads one and two fifths above “fundamental” triads on F and D (F–A–C, C–E–G, G–B–D and D–F–A, A–C–E and E–G–B).

Vogler’s next step was to form triads on the remaining degrees of these “artificial” scales. Every major, minor, and diminished triad that could be placed over a scale degree in a major or minor scale was considered by Vogler to be fundamental. (Unlike Rameau, he did not concern himself with an acoustical generative explanation for minor or diminished triads.) To designate the scale-degree placement of these chords, Vogler introduced roman numeral designations. Although earlier theorists had proposed analogous notations and terminologies for identifying chordal scale degrees, Vogler was the first theorist to use roman numerals consistently.6

The primacy of the triad is reinforced by Vogler’s system of “reduction” through which even the most complex simultaneity may be explained as a simple triad (*Wohlklang*) by virtue of several categories of displacement: suspension, anticipation, appoggiatura, etc.7 Vogler’s system of reduction, which he applied in analyses of his own works,8 is noteworthy for its strong demarcation between harmony and voice-leading. In fact, several scholars have suggested that his theory of reduction anticipates Heinrich Schenker’s notion of structural levels.9

Vogler analyzed his chords according to their behaviour in a series of archetypal cadential formulations called *Schlussfälle*. Critical for Vogler was the chromatic leading tone in helping to define a cadence. In his *Handbuch zur Harmonielehre* (1802), Vogler lists ten such cadences possessing various degrees of closure: I–V, V–I, IV–I, VII–I, and $\#IV$–V in major; V–I, I–V, $\#VII$–I, $\#IV$–V, and II–V in minor.10 The diminished chord on $\#IV$ in major ($\#IV$–A–C in C major) and the irregular triad on $\#IV$ in minor ($D\#$–F–A in A minor) are both derived from Vogler’s “natural” scale, and are analogously cadential (Schlussfallmässig) to the dominant as the leading-tone chord is to the tonic.

In his *Tonwissenschaft und Tonsezkunst*, Vogler claimed that modulations are best limited to keys with only one additional sharp or flat if a work is to maintain its tonal unity. Thus, from C major, one may modulate to five keys: A minor, G major, E minor,
D minor, and F major. However, as a church organist well versed in the art of improvisation, he understood the need to consider modulation to keys beyond this restriction. Thus, Vogler admitted the possibility of modulation to the major and minor keys on every degree in the chromatic scale. And in an essay entitled “Summe der Harmonik” (1778–81) as well as in his *Handbuch zur Harmonielehre*, we find exhaustive lists of modulations to chromatically related keys. These discussions of chromatic relations were forward-looking; they established an avenue of research that was continued at mid-century by such “progressive” theorists as Carl Friedrich Weitzman (1808–80) and H. J. Vincent (1819–1901).

Modulation, in Vogler’s system, may exploit the “multiple meaning” (*Mehrdeutigkeit*) of chords. He described two types of multiple meaning. The first occurs when a chord on a given scale degree is reinterpreted as belonging to a different degree of a new key. The second takes place by means of enharmonic reinterpretation; a diminished seventh chord, for example, may be enharmonically respelled, thus resolving in four different keys.

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11. Ibid., p. 84. 12. Ibid., p. 84. 13. See, for example, Vogler, *Handbuch*, Tables IX-XI. 14. For further discussion of Weitzmann and Vincent, see Wason, “Progressive Harmonic Theory.” Also see Chapter 10, p. 286.
keys (see Example 25.1a). Similarly, a chord built on the raised fourth degree of his “natural” scale with an added seventh (e.g., $G\#–B_b–D–F$ in D minor) may be respelled as a dominant seventh chord ($A_b–B_b–D–F$ in $E_b$ major)\(^{15}\) (see Example 25.1b).

Vogler’s awkward system of harmonic theory suffered from numerous logical and empirical problems, and it cannot be said to have enjoyed any subsequent support by theorists. However, a few practical elements of his theory did have a more lasting influence: roman numeral notation was adopted by subsequent generations of theorists; and his ideas concerning modulation and multiple meaning supplied them with a strategy to explain increasingly intractable chromatic progressions.

Weber. Most music theorists in the early nineteenth century tended to eschew the speculative side of harmonic theory in favor of more practical considerations. Typical was the German theorist and composer Gottfried Weber (1779–1839). In his three-volume Versuch einer geordneten Theorie der Tonsetzkunst \(1817–21\), Weber criticized music theorists for lagging miserably behind musical practice. He believed that theory depends on practice for its very substance. Weber’s model was the music of the Viennese Classical tradition, his theory was guided by standards that he derived from careful examination of this repertory as well as from his own taste and aesthetic judgment. The predominant method he employed was thus descriptive and empirical rather than deductive as was the case for theorists in the more speculative tradition of harmonic theory exemplified by Rameau.\(^{16}\)

The use of the word “systematic” (geordneten) in the title of Weber’s Versuch is somewhat misleading, for, as stated in his preface, a scientifically grounded systematic theory of music is not possible, since musical theory cannot be reduced to a single first principle. The “systematic” aspect of the Versuch lies more in its organization, the natural order and unencumbered presentation of its contents. Weber was among the most adamant critics of those theorists who rely upon acoustics for their systems. He rejected both mathematical and physical explanations for musical relations as useless pedantry. Composers such as Mozart, Haydn, Bach, or Palestrina, Weber declared, had little use for the knowledge that a perfect fifth is in the ratio of $2:3$.\(^{17}\) The scale is obviously not derived from the overtone series, pace Vogler, since it cannot produce all the notes of the diatonic scale in tune. He also chided theorists such as Rameau, Marpurg, and d’Alembert for attempting to derive the minor triad from nature.

Weber was particularly critical of Vogler’s student Justin Heinrich Knecht (1752–1817)\(^ {18}\) for his large and unwieldy number of chords and complicated notational system.\(^ {19}\) Instead, Weber posited only seven fundamental chord types: three

\(^{15}\) Vogler, Handbuch, Tables VII and VIII. Vogler supplied the chordal roots in the lowest staff when they do not appear in the bass. Note that Vogler’s natural seventh chord built on IV\# in Example 25.1b would be described by later theorists as an inversion of a (“German”) augmented sixth chord built on 6.


triads (minor, major, and diminished) and four seventh chords (dominant, minor, major, and half-diminished). As did several eighteenth-century theorists, Weber considered the diminished seventh to be a minor ninth chord with a missing root and not a true fundamental chord. Most other chords, according to Weber, are derived from those seven fundamental harmonies through chromatic alteration, linear embellishment, or the addition of tones. But not all harmony is reducible to these seven chords. Weber acknowledged more complex, yet independent harmonies, such as major and minor ninth chords. Their existence was based upon examples from the literature in which the dissonant ninth, in his view, is not treated as a suspension.

Weber presented his theory of chordal scale degrees following his discussion of the fundamental harmonies and their transformations. In Weber’s judgment, the tonic, dominant, dominant seventh, and subdominant chords express a key in its simplest form. These harmonies, as well as the remaining diatonic chords, are built upon the degrees of the major and minor scales. Weber utilized Vogler’s roman numeral notation, but he refined it by using upper and lower cases so as to be able to distinguish the qualities of triads. The result is fourteen fundamental harmonies (triads and seventh chords) in the major mode and ten in minor. (A listing of Weber’s fundamental harmonies along with their roman numeral symbols may be found in Example 23.3, p. 735.)

Weber’s next concern was – like Rameau’s – how these harmonies may progress from one to another. He calculated that there exist more than six thousand possible progressions. Many of these progressions are unusual or harsh-sounding. However, Weber was reluctant to provide the reader with rules for determining acceptable and unacceptable progressions, since some of the less agreeable-sounding progressions might be usable within a specific musical context. He criticized fundamental-bass theory for its focus on generalized prescriptions for harmonic succession as doomed to failure. Theory should never set arbitrary limitations for art, he argued; it is through the analysis of works of art that theory should deduce its rules. For example, Weber cited the rule, dictated by fundamental-bass theory, prohibiting the descent of the fundamental bass by step. He offered a counterexample with a passage from Mozart’s Requiem where the fundamental bass descends from IV to iii to ii to I (albeit as parallel 6/3 chords).

Weber invoked the empirical judgment of the ear to define a key in terms of relationships around the tonic:

When our ear perceives a succession of tones and harmonies, it naturally endeavours to find, amidst this multiplicity and variety, an internal connection – a relationship to a common central point. For, as in every art, the mind spontaneously desires to find a certain unity in the multiplicity – a centrality of the manifold parts – so it does here. The

20 Ibid., vol. ii, p. 173. 21 Ibid., p. 204.
22 Ibid., p. 204. The example in question is the “Domine Jesu” movement. A similar progression of step-wise fundamental-bass motion (in this case ascending) can be seen in m. 3 of Example 25.2 below.
ear everywhere longs to perceive some tone as a principal and central tone, some harmony as a principal harmony, around which the others revolve as accessories around their principal, that is, around the predominant harmony.23

The tonic, conceived in this manner, is the central point, an axis in relation to which the remaining harmonies are disposed. A key exerts its identity through the presence of chords built upon its scale degrees, and it continues to exert this identity by a kind of inertia (Trägheit) until a new chord not belonging to the original key is heard and establishes a new tonal center. Thus, unlike Rameau, Weber never held a unifying conception of tonality in which various modulations could be subsumed within a single governing key. For Weber, each modulation constituted a real change of key. Example 25.2 illustrates this approach in an analysis of a march from Mozart’s *Die Zauberflöte*. The letters identify the chord tones: R = root, T = third, and F = fifth; the solid slashes indicate non-harmonic tones. There are modulations from F major to C major (mm. 5–8), and back to F major (m. 9), which is then interrupted by “slight digressions” (not shown) into G minor (m. 11) and D minor (m. 13). The excerpt concludes with a “digression” to C major (which proceeds immediately back to F major).

During the eighteenth century, German theorists sometimes referred to relationships between keys using the term *Verwandtschaft*. Keys were typically classified according to similarities in pitch content between diatonic collections.24 Such discussions found their way into nineteenth-century treatises, including Weber’s *Versuch*. His graphic illustration of key relations (*Tonartenverwandtschaften*) is shown in Plate 25.1.25

Weber classified keys according to their *Verwandtschaftsgrade* or degrees of relationship with the tonic: first-degree relationships occur between adjacent keys on the horizontal and vertical axes of Weber’s chart. For example, G major, F major, A minor, and C minor are related to C major in the first degree. Keys immediately adjacent to those related to the tonic in the first degree stand in a second-degree relationship to the tonic. Thus, D major, G minor, E♭ major, A major, F minor, D minor, E minor, and B♭ major are all related to C major in the second degree. Third-degree relationships occur between the tonic and keys adjacent to those keys related to the tonic in the second degree. B minor, E major, F♯ minor, B♭ minor, A♭ major, and E♭ minor all stand in a third-degree relationship to C major.

Weber’s tonal grid exhaustively measures all key relationships according to their proximity to any tonic key, and thus supplants the more limited conceptual mapping of key relations afforded by the eighteenth-century musical circle (see Plate 13.1, p. 445). It is one of the first of many such tonal charts (or *Tonnetze*) conceived by theorists, including Arthur von Oettingen (Figure 14.3, p. 463), Ottokar Hostinský (Plate 23.1, p. 737) and Arnold Schoenberg (see below, Plate 25.2). Like Schoenberg, Weber takes

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24 For example, see Kirnberger, *The Art of Strict Musical Composition*, pp. 123–27. For a survey of eighteenth- and nineteenth-century discussion of *Verwandtschaft* and particularly several interesting circular models depicting degrees of relationships in all twenty-four major and minor keys, see Werts, “The Musical Circle of Johannes Mattheson.”
into account both similarities in pitch content and parallelisms in scalar structure. The keys on the vertical axes relate by the cycle of fifths, and thus according to their scalar pitch content. The keys on horizontal axes are organized by parallel and relative major/minor relationships; they are grouped by their structural similarities (such as a common dominant and root of the tonic triad, as in the case with C major and C minor). The scale, however, retains its organizing role in Weber’s theory. His discussion of key relationships remains consistent with the orientation of his approach to harmony as a theory of chordal scale degrees.

Vogler’s concept of “multiple meaning” (Mehrdeutigkeit) becomes a critical component in Weber’s analytical theory; he applied the notion far beyond the more limited domain envisioned by Vogler to model the cognitive choices an ideal listener faces when closely attending to any given musical progression.\(^{26}\) Weber’s approach to multiple

\(^{26}\) For a detailed discussion of these applications, see Saslaw, “Gottfried Weber and Multiple Meaning.”
meaning is clearly to be seen in his celebrated analysis of the introduction of Mozart’s “Dissonance” Quartet (K. 465), a passage whose clashing dissonances and meandering modulations confounded contemporary critics. The first four measures of the quartet are shown in a reduction in Example 25.3.

The opening C in the cello is ambiguous, according to Weber, and shows the multiple meaning a single pitch may project. The listener, upon hearing the solitary C, does not

know whether the key is C major or C minor. The A♭ played by the viola on the last beat creates yet another ambiguity; Weber claimed that it is unclear whether the interval formed with the C is an augmented fifth (C–G♯) or a minor sixth (C–A♭). In the former interpretation, G♯ is an incomplete neighbor of A. The latter may be construed as part of an A♭ major triad (I in A♭ major or VI in C minor) or an F minor triad (iv in C minor or i in F minor). The entrance of the Eb by the second violin in m. 2 narrows down the possibilities to the first set of interpretations. But Weber notes that it remains to be seen whether the A♭ is in fact a chord tone or an embellishment of the following G. When the A♭ does in fact proceed to G, the first violin sounds at the same time an A♭, thus creating a “startling” cross relation with the A♭. The resultant harmony itself possesses multiple meanings; as a half-diminished seventh chord (A–C–E♭–G) it may be registered either as vii♭7 in B♭ major or ii♭7 in G minor. When the G in the viola part moves to F♯ and the Eb moves to D in the second violin, this ambiguity is temporarily resolved; the ear realizes that G was in fact not a chord tone. The harmony in m. 2 is actually a D♭ chord, the dominant of the dominant in C minor to which it resolves in m. 3. Weber’s harmonic analysis, which extends through m. 8, continues to track an idealized listener’s perception of the passage chord by chord. The result is an analysis that is historically noteworthy for its elegant descriptive language and its quasi-phenomenological awareness of musical harmony as it unfolds in time.²⁸

Weber’s roman numeral notation system achieved widespread popularity in the second half of the nineteenth century, appearing in treatises, for example, by Ernst Friedrich Richter, Salomon Jadassohn, and Simon Sechter.²⁹ His ideas also migrated to France, where they were incorporated first by Daniel Jelensperger (1830), and then later in Gustave Lefèvre’s Traité d’harmonie (1889). An English translation by James Warner in 1842 introduced Weber’s practical approach to harmony to British readers. (His influence is particularly evident in the writings of the most important Victorian theorist, Ebenezer Prout.) And a subsequent reissue of Warner’s translation in Boston helped to establish a roman numeral style of harmonic analysis in America during the

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²⁸ Ian Bent provides a most illuminating discussion of this famous analysis by Weber as an introduction to his translation of this excerpt in MANG, vol. 1, pp. 157–60.
²⁹ Richter, Lehrbuch; Sechter, Grundsätze; Jadassohn, Melodik und Harmonik. See also Chapter 2, p. 64.
nineteenth century (especially in the writings of Percy Goetschius and George W. Chadwick).30

Viennese fundamental-bass theory

Rameau’s primary legacy to the nineteenth century, as already suggested, lay not so much in the specifics of his theory of the fundamental bass as in the more expansive notions of harmonic tonality he bequeathed, well exemplified in the Stufentheorie of Weber. Nonetheless, aspects of Rameau’s fundamental bass survived well into the nineteenth century. This was especially so in Vienna, where arguably the most full-blown theory of the fundamental bass ever conceived was taught by Simon Sechter.

Sechter. A respected church organist and renowned contrapuntist, Simon Sechter (1788–1867) became perhaps the most influential teacher of music theory in Vienna during the nineteenth century, eventually earning a prestigious appointment at the Vienna Conservatory, where he taught, among others, the young composer Anton Bruckner. (See also Chapter 2, p. 62.) His theoretical works, most notably his Grundsätze der musikalischen Komposition (1853–54), helped to revitalize Viennese harmonic theory, which had hitherto been dominated by a rather regressive reliance upon classical figured-bass pedagogy. Disseminated by his many students, Sechter’s teachings eventually found their way into twentieth-century treatises on harmony by Schoenberg and Schenker.31

Sechter brought to the thorough-bass teachings of his contemporaries an infusion of both fundamental-bass theory and chordal scale-degree theory.32 Not unlike Weber, Sechter begins his Grundsätze with the scale, and he proceeds to an examination of the chords formed on each of its degrees. Sechter lists both triads and seventh chords as fundamental harmonies. (And as with most other Stufentheorie pedagogues, Sechter does not try to justify the generation of these chords in any scientific way.) Since he conflates the three traditional forms of the minor scale into one, he arrives at thirteen diatonic triads in a minor key and seven in a major. To label these harmonies, Sechter utilizes both letter notation and the roman numerals popularized by Vogler and Weber. A key, according to Sechter, is articulated by the presence of a scale’s diatonic degrees. This is most clearly seen in the “Sechterian Chain” (Sechtersche Kette) of descending fifths shown in Example 25.4a, which represents for Sechter the paradigmatic and ideal harmonic motion of tonal music. In Example 25.4b, the paradigmatic

30 For a survey of late nineteenth-century American harmonic theory see Thompson, History of Harmonic Theory in the United States; Baron, “At the Cutting Edge: Three American Theorists” examines another, more “radical” tradition during the same period.
31 A story comprehensively narrated by Robert Wason in Viennese Harmonic Theory.
32 Dahlhaus, Studies, p. 33; Wason, Viennese Harmonic Theory, p. 33.
falling fifth fundamental-bass motion appears with its reversal, i.e., an ascending fifth progression, yielding what Sechter termed a *Wechselwirkung* – a “reciprocal effect.”

As mentioned above, Sechter does not try to justify the generation of harmonies through recourse to the harmonic overtone series, as would Rameau, although ironically, he authored a treatise on acoustics. 33 Sechter’s debt to Rameau, however, is clear. As did Rameau, Sechter attributes a fundamental tone to every chord. The progression of these tones by the fundamental bass was limited to the intervallic structure of Rameau’s *l’accord parfait*, that is, by ascending or descending fifths and thirds. Fundamental-bass movement by a diminished fifth or the “impure” fifth between the second and sixth degrees are prohibited. (Sechter was a staunch advocate of just tuning, and the fifth between ⁷ and ⁶ in a justly tuned major scale is unusably narrow.) In cases where the fundamental bass ascends or descends by a step, Sechter adopts a technique that Rameau had occasionally used by interpolating a concealed fundamental (*Zwischenfundament*) between the two bass tones (see Chapter 24, pp. 765–66). As illustrated in Example 25.5a, an interpolated fundamental D mediates between F and G. In Example 25.5b, a descending fundamental-bass progression from G to F is explained as an elided sequence of fifths, with an interpolated fundamental of C implied. In both cases, the “impermissible” fundamental-bass progression of a major second is shown in fact to proceed by the permissible intervals of a perfect fifth or imperfect third. 34

Example 25.6 shows the elaboration of a simple descending fifth fundamental bass; first with a passing seventh, then with a voice exchange between the bass and tenor, and finally with passing harmonies. 35 Example 25.7 is a more complicated chromatic

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33 Sechter, *Abhandlungen über die musikalischen akustischen Tonverhältnisse*.
34 We should note here, as Wason points out (*Viennese Harmonic Theory*, p. 39), that Sechter probably was exposed to Rameau’s theories through the writings of Johann Philipp Kirnberger and J. A. P. Schulz. Both Kirnberger and Schulz employed varieties of “passing harmonies” and interpolated basses far more extravagantly than did Rameau. 35 Sechter, *Grundsätze*, p. 38.
elaboration of a descending fifth fundamental-bass progression. The D and E major triads in m. 1 (as well as the G and A major triads in m. 2, and the C and D major triads in m. 3) are “subsidiary” harmonies (Nebenharmonien), not part of the authentic fundamental bass.

Scale-degree thinking likewise permeates Sechter’s approach to chromaticism. Sechter considered chromatic chords to be essentially diatonic in nature, viewing

\[ \text{Example 25.5} \]
(a) Ascending fundamental bass progression by step with “concealed” fundamental

\[ \text{(b) Descending fundamental bass progression by step with “concealed” fundamental} \]

\[ \text{Example 25.6 Diatonic elaboration of a fundamental bass progression from Sechter’s} \text{Grundsätze, p. 38} \]

\[ \text{Example 25.7 Chromatic elaboration of a fundamental-bass progression progression from Sechter’s} \text{Grundsätze, p. 200} \]

\[ \text{elaboration of a descending fifth fundamental-bass progression.} \]

\[ \text{36 Ibid., p. 200.} \]
them not—like Weber—as some kind of altered diatonic prototype, but rather as containing notes belonging to some neighboring key. Chromatic chords were consequently “hybrid chords” (Zwitterakkorde) made up of notes derived from multiple keys, an example being the augmented sixth chord. (We will see below an application of Sechter’s notion of hybrid chords when considering the theories of Karl Mayrberger.)

Despite his extensive discussion of chromaticism, Sechter does not cite any contemporary music involving advanced chromaticism in his Grundsätze; his treatise is essentially anachronistic, a fusion of thorough-bass theory with Rameau’s fundamental bass. As a result of his insistence upon just intonation, his views concerning modulation are also conservative. Published during a decade which would include the composition of Wagner’s Tristan, the blinkered explanations of chromatic harmony in Sechter’s Grundsätze proved to be of little help in deciphering the complexities increasingly to be heard in nineteenth-century harmony. This treatise espoused an essentially eighteenth-century view at a time when musical language was expanding in new directions. But, as recent scholarship has shown, by developing the implications of the concealed fundamental and possible extensions of fundamental-bass progressions (such as those given in Examples 25.6 and 25.7), Sechter opened up the possibility of conceiving scale degree in terms of broader spans.37 In so doing, he can be said to have paved the way for the discussion of Stufen in Heinrich Schenker’s Harmonielehre (1906) and his later theories of prolongation and structural levels.38

Sechter’s influence continued after his death through the teachings of his student Anton Bruckner (1824–96). Bruckner, who also would hold a teaching position at the Vienna Conservatory and lectured at the University of Vienna,39 promoted the conservative theories of his mentor despite his own compositional innovations. He did, however, introduce several new ideas into Sechterian theory, most notably his treatment of the ninth chord, which he considered a fundamental harmony rather than the result of a suspension.40 The task of reconciling the growing rift between Viennese musical theory and contemporary musical practice, however, was left to several other theorists, among whom was Karl Mayrberger.

Mayrberger. Karl Mayrberger (1828–81) can be credited as the first music theorist to attempt a comprehensive analysis of the harmonic techniques employed by Wagner, and one approved, no less, by the composer himself. His analysis of selected leitmotives from Tristan und Isolde first appeared in the Bayreuther Blätter and was later expanded and published in monograph form.41 Keenly aware of the radical developments in harmonic language taking place in the nineteenth century, Mayrberger

37 Wason, Viennese Harmonic Theory, pp. 45ff.
38 See Wason, “Schenker’s Notion of Scale-Step in Historical Perspective.”
39 Bruckner, Vorlesungen über Harmonie und Kontrapunkt an der Universität Wien.
40 Wason, Viennese Harmonic Theory, pp. 71ff. 41 Mayrberger, Die Harmonik Richard Wagners.
attempted to adapt Sechterian fundamental-bass theory to contemporary practice. In
the foreword of his monograph on *Tristan*, he presents a view of harmonic evolution
that might have come from Fétis:

The harmonic language of the present day is on a footing essentially different from that
of the past. Richard Wagner has pointed the musical world along the path that it must
henceforth travel. The sixteenth century knew only the realm of the diatonic. In the
eighteenth century, the diatonic and the chromatic existed side by side, equal in status.
The nineteenth century, in the work of Beethoven, Schubert, Weber, and Spohr, gravi-
tated more and more towards chromaticism. But with Richard Wagner an altogether
new era begins: major and minor intermingle, and the realm of the diatonic gives way
to that of the chromatic and the enharmonic.42

Like Sechter, Mayrberger considered all three forms of the minor scale when laying
out the available diatonic triads and seventh chords in the minor mode. So, for
example, all of the following chords could be attributed to “D minor” by using its
raised and lowered sixth and seventh scale degrees: B♭–D–F–A, B–D–F–A, C–E–G–B♭,
C♯–E–G–B♭, and F–A–C♯–E. Following the tenets of Sechterian theory, Meyrberger
considered chromatic chords as composite diatonic chords or “hybrid chords”
(Zwitterakkorde) whose chromatically inflected pitches stem from keys other than the
tonic. B–D♯–F–A, in A minor, for example, is an altered seventh chord on the second
degree whose D♯ is borrowed from E minor.

The same harmony occurs most notably in Mayrberger’s analysis of the opening of
the *Tristan Prelude* (see Example 25.8). His interpretation reveals that the entire
opening section conforms to fundamental bass progressions sanctioned by Sechterian
theory. In the first phrase (mm. 1–3), the opening leap from A to F occurs over a fund-
damental bass which ascends a fourth from A to D. The E in the first measure is a
passing tone and the G♯ in m. 2 is a lower neighbor, derived diatonically from A

42 Mayrberger, “The Harmonic Style of Richard Wagner,” p. 226. For Fétis’s views on the evolution of
harmony, see Chapter 23, pp. 748–49.
minor. The harmony in m. 2 is thus, as noted above, a “hybrid” chord (B–D♯–F–A) and is registered in two keys: the second scale-degree in A minor and the fifth scale-degree in E minor/major. The fundamental bass thus moves down a third to B and up a fourth to E. The A♯ in measure three is a chromatic embellishment, which he terms “melodic chromatic” as opposed to the “harmonic chromatic” of D♯ in m. 2 (chromatic pitches which are members of a given harmony).

In the second phrase (Example 25.9), Mayrberger interprets the G♮ in m. 5 as a chord tone, the seventh of a tonic harmony in A minor or of a dominant in D. He cannot treat the note as a passing tone as he did with the E♮ in m. 1, since this would result in the “illegitimate” fundamental-bass progression of a descending second from E to D in mm. 5 and 6. He thus likens the entire progression in the second phrase to a succession of dominant seventh chords with a fundamental bass proceeding from B to E, A, D, and ending on G. As in the initial phrase, the first note in the upper voice in m. 6 is a chromatic embellishment; here the Tristan chord is a doubly hybrid chord, borrowing its chromatic pitches from three keys: A minor, C major/minor, and G major/minor.

Mayrberger did not label the opening of the third phrase (Example 25.10), no doubt because he viewed it as a continuation of the G fundamental at the end of the second phrase. (This interpretation would thence require a “concealed” fundamental bass E in order to avoid the fundamental-bass progression of an ascending second from G to the A in m. 10.) His rendering of the third appearance of the Tristan chord reduces this

43 Many analysts today would argue that the G♯ rather than the A is the true chord tone. (This view is supported by the voice exchange between the soprano and tenor in mm. 2 through 3.) In fact, several of Mayrberger’s contemporaries favored the latter interpretation. Cyrill Kistler (1848–1907), known for his adaptation of Moritz Hauptmann’s theories to Wagner’s music, analyzed the Tristan chord as a minor triad with a diminished seventh (G♯–B–D♯–F). See Kistler, Harmonielehre, p. 82. See also Jadassohn, Melodik und Harmonik bei Richard Wagner, p. 27; Arend, “Harmonische Analyse des Tristanvorspiels,” pp. 160–69; Schreyer, Harmonielehre, pp. 223ff.
harmony to an A minor triad despite the similarities with the first and second phrases; the D is a freely suspended eleventh which resolves upwards through a chromatic passing tone D♭ to E; the G♯ and F are also suspensions. The phrase concludes with a progression from A to B through a “hidden” fundamental F♯.

Mayrberger’s Tristan analysis demonstrates that the rigid limitations of fundamental-bass theory were not easily adaptable to the complexities of Wagnerian harmony. This is especially apparent in his interpretations of passages with ascending chromatic bass progressions. For example, on the progression from an F major to an F♯ minor triad (as occurs in for example in the “Motive of the ailing Tristan”), Mayrberger applied the notion of a “harmonic ellipsis,” a theoretical concept which he added to the panoply of Sechterian analytical tools. Just as in rhetoric where a word or phrase can be omitted without altering the meaning of a passage, this phenomenon can occur in music, according to Mayrberger, when the resolution of a dissonance is elided, yet at the same time its resolution is fully understood by the listener. This principle also applies to chords which, as Mayrberger explains, “function in a purely mediating capacity between two harmonies.” Mayrberger claimed that the progression from F major to F♯ minor could then be understood by virtue of an interpolated diminished seventh chord (B–D–F–A♭). The “insertion” of this harmony allows for an acceptable diatonic fundamental-bass progression from F to B. The interpolated chord then can be enharmonically reinterpreted as an E♯ diminished seventh chord (E♯–G♯–B–D) allowing a fundamental-bass interpretation of E♯–C♯ that finally resolves to the F♯ minor chord. Such theoretical hypotheses seem to stretch aural credulity and exemplify the growing crisis faced by music theorists in the second half of the nineteenth century as they sought to reconcile theoretical traditions rooted in the eighteenth century with the increasingly complex harmonic practices of composers like Wagner.

German function theory

Rameau first employed the term subdominant (sous-dominante) for the chord built on the fourth scale degree in his *Nouveau système* (1726) (see Chapter 24, p. 768). But it was only in his *Génération harmonique* of 1737 that Rameau fully explored the functional importance of the subdominant, treating it as an equal and symmetrical counterpart to the dominante (having dropped the earlier and more cumbersome appellation dominante-tonique as a descriptive for the fifth scale degree). Each of these chords has its own characteristic dissonance: a seventh for the dominant, and an added sixth for the subdominant. Each may also form a cadence with the tonic: the subdominant ascends a perfect fifth (or descends a perfect fourth) in an imperfect cadence (cadence imparfaite); the dominant descends a perfect fifth (or ascends a perfect fourth) in a perfect cadence (cadence parfaite). In his *Nouveau système*, Rameau represented this symmetrical relationship by the geometric proportion 1:3:9. The tonic (3) is flanked on opposite sides by its subdominant (1) and dominant (9) (see Example 23.2, p. 734 and Figure 24.1, p. 769).

Perhaps the most significant implication of Rameau’s new theory of three primary harmonies is seen in his reconceptualization of tonality; he now began to conceive of a key in terms of harmonic relationships around a tonal center. With his *Génération harmonique*, he moved away from a Cartesian mechanistic explanation of tonality based on the linking of dissonant and consonant chords to an entelechial model inspired by Newtonian gravitational theory.47 In this latter sense, tonality results from the forces of attraction between the tonic and its dominant and subdominant harmonies.

Rameau’s hypostatization of the tonic, dominant, and subdominant as fundamental harmonic functions had a significant impact upon a number of subsequent German music theorists, including Johann Friedrich Daube (*General-Bass in drey Accorden*, 1756), Christoph Gottlieb Schröter (*Deutliche Anweisung zum General-Bass*, 1772), and Heinrich Christoph Koch (*Versuch einer Anleitung zur Composition*, 1782–93).48 For Daube and Schröter, as the titles of their treatises would suggest, Rameau’s reduction of all chordal harmonies to three fundamental prototypes was primarily of utilitarian value for the learning of the thorough bass. (Essentially, any signature could be “realized” by playing one of these three fundamental chord types, albeit with occasional necessary modifications.) For Koch, the value of Rameau’s theory lay more in its compositional implications. The writing of harmony was immensely simplified by thinking of the three primary functions as “essential” (wesentlich), while chords on the second, third, and sixth degrees were “incidental” (zufällig).

48 Georg Andreas Sorge (1703–78) also adumbrated a version of harmonic functionalism influenced by Rameau in his *Vorgemach* (1745), although it was not one he ever developed systematically.
But despite its widespread adoption by German theorists in the later eighteenth century, Rameau’s theory of three primary harmonies did not seem to inspire any theorist to consider more deeply the tonal, functional problems with which Rameau wrestled in his *Génération harmonique*. Rameau’s ideas here would remain largely dormant until resurrected almost a century later by a remarkable group of German speculative theorists, led by Hugo Riemann (1849–1919).

**Riemann.** Properly speaking, “functionality” in tonal music concerns the behavior of chords in relation to the tonic. A function theory differs from a theory of chordal scale degrees (*Stufentheorie*) in that the former goes beyond the description of chords according to their position within the scale and constitutes a systematic ratiocination of chordal relationships around a tonal center. The theoretical underpinning for Riemann’s theory of function, what he referred to as its “musical logic,” lies in the dualistic interpretation of the *Klang*: the harmonic entities that may be derived – either acoustically or psychologically – from the resonance of a fundamental sound. Riemann postulated a “dual” basis for harmony by claiming that the *Klang* generates – as Rameau claimed in the *Génération harmonique* – both a major and a minor harmony. The minor harmony is a symmetrical inversion of the major harmony in that the major triad consists of a fifth and a major third above the principal tone, while the minor triad is formed by the same intervals below. (Riemann’s dualism is discussed in more detail in Chapter 14, pp. 465ff.) Dualism becomes entangled with functional theory in that dominant and subdominant harmonies become reciprocally generated from the tonic *Klang*: the dominant as based upon the “over” fifth, and the subdominant based upon the “under” fifth.

In an intellectual evolution that is comparable again only to Rameau’s, Riemann’s theory of tonal functions emerged laboriously over a career that lasted more than forty years.49 In his earliest writings, beginning with his dissertation, “Über das musikalische Hören” (1873), later published as a monograph entitled *Musikalische Logik* (1874), the influence of Moritz Hauptmann looms conspicuously. Like Hauptmann, Riemann was concerned with the logic of chordal relationships, and he developed the dialectical model of harmonic functions that Hauptmann had earlier outlined in which a “thetic” tonic is contrasted with an “antithetic” subdominant leading to a “synthetic” dominant.50 Riemann described the remaining, “secondary” harmonies in terms of their

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50 Riemann, *Musikalische Logik*, pp. 52–53. Further discussion of Hauptmann’s theories may be found in Chapter 14, pp. 759–62.
association with one (and in some cases two) of these three primary chords, an approach which foreshadows his later classification of tonal harmonies according to three functional categories. In another early treatise, entitled Musikalische Syntaxis (1877), Riemann abandoned much of Hauptmann’s dialectical terminology; instead, he centered the unity of a harmonic progression around the tonic or “thesis” which may combine with chords from two “sides.” A one-sided thesis consists of either all major or all minor harmonies; a two-sided thesis combines both major and minor chords.

Riemann’s mature theory of tonal functions appeared first in his Vereinfachte Harmonielehre (1893; translated as “Harmony Simplified”) and then in the third edition of his Handbuch der Harmonielehre (1898). As in his early writings, he continued to utilize a notational system that described the acoustical derivation of chords based upon dualist premises. For example, “+” denotes a major or Oberklang; “o” stands for a minor or Unterklang. C major represents a major triad generated above a C fundamental; °C is a minor triad generated downward from its “prime,” C (C–A♭–F). But now he grouped all harmonic possibilities within a key into three functional prototypes based on the dualistic model of the Klang: tonic (T), dominant (D), and subdominant (S). He then developed an analytical nomenclature to show the relationships of any chord to one of the three functional categories that, if at times pushing aural credulity in its audacious reductionist sweep, is also impressive in its appealing symmetries and undeniable logical unity. (Riemann’s function symbols are summarized in the window on p. 798).

The tonic, dominant, and subdominant harmonies are shown to constitute the three pillars of the tonal system; all the remaining harmonies are derivatives of these three primary chords. (Even a single note should suggest affiliation to one of these three functions through the principle of Klangvertretung or “chord representation.”) The association of the primary and secondary chords within a key depends upon Riemann’s concept of “apparent consonance” (Scheinkonsonanz). For example, the Subdominantparallel (“Sp” or A–F–D in C major) results from an added sixth (D) and omitted fifth of the subdominant harmony (F–A–C). The D is a dissonance, according to Riemann, since it is contingent on the fifth, C. Although the D sounds as if it were a consonance, it is actually an “apparent consonance” because it is not a member of the Klang (F–A–C). In the same manner, the mediant (B–G–E) or Dp (Dominantparallel) is derived from the dominant (the D is displaced by the E) and the submediant orTp (Tonikparallel) (E–C–A) is derived from the tonic (the G is displaced by the A). Similarly, “leading-tone-change” chords (Leittonwechselklänge) are alterations of the three primary harmonies. The tonic “leading-tone-change” chord (B–G–E) or T is an altered tonic in which the “leading tone” B substitutes for the C as the generative root of the chord; the subdominant “leading-tone-change” chord (E–C–A) or S is likewise an altered subdominant in which the E replaces the F as root, while the dominant “leading-tone-change” chord (F♯–D–B) or D is an altered dominant in which an F♯
substitutes for the G. (The resulting chain of interlocking triads is illustrated in Example 23.4, p. 738, transposed to G major.) In addition, Riemann outlines a systematic network of chordal transformations by which all the various functions could be connected, constituting a kind of functional harmonic syntax. (See Table 14.1, p. 471 for an itemization of these transformations.)
Riemann’s analysis of the introduction from the slow movement of Beethoven’s “Waldstein” sonata illustrates an application of his functional theory and its attendant notational system (see Example 21.17, pp. 689–90). The introduction is divided into three periods (as indicated by roman numerals above the stave). The first period, constituting mm. 1 through 9, contains four cadences. The first ends on the dominant (D) of A minor (m. 2). The opening tonic is repeated (the notated ellipse indicates a repeated function) and re-interpreted as the “minor” subdominant parallel of A minor (“Sp” in m. 1 indicates this change in function) which moves to an augmented-sixth chord functioning as a secondary dominant in that key (DD). The next cadence proceeds to the dominant of E minor (m. 4). In m. 3, the third of the dominant in m. 2 is lowered (3>), and this harmony is reinterpreted as the minor subdominant of B minor which moves to a secondary dominant in E minor. The third cadence ends on the dominant of F major (m. 6). This progression begins in m. 5 by repeating the dominant from the previous measure with a lowered fifth and third (3> – the root, G, is implied), which then becomes a secondary dominant in F major. The secondary dominant is chromatically altered to become an augmented-sixth chord by lowering its fifth and omitting its root (DD7), and moves to a dominant and then a dominant seventh in m. 6. The fourth cadence ends on the tonic of F major (m. 9), approached from its subdominant parallel and dominant harmonies.

In the commentary accompanying his analysis, Riemann notes that the four progressions in the first period look back to the opening movement which begins with a phrase (mm. 1–4) also employing a secondary dominant. In this case, the secondary dominant in m. 2 resolves on the dominant of C major in m. 3 (T–DD–D). The second phrase (mm. 5–8) transposes the progression so that it concludes on the subdominant. Riemann claims that the two phrases may also be interpreted in the keys of G and F major. Similarly in the second movement the four cadences in the first period imply the keys of E major, B major, and F major (Figure 25.1).

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51 Riemann, Ludwig van Beethoven sämtliche Klavier-Solosonaten, vol. iii, pp. 32–3. Another example of Riemann’s Beethoven analyses is shown in Examples 28.1–2, pp. 894–97.
52 The arabic numbers in parentheses below the stave refer to the phrase structure. For more on this notation, see Chapter 21, p. 688.
The second period, m. 9 through 17, largely consists of a repeated tonic in F major according to Riemann’s analysis. Reference to the actual score shows that his interpretation takes into account the chromatic and diatonic embellishment of tonic harmony in this passage (see, for example, m. 10 in the score). Despite the obvious harmonic orientation of his theory, Riemann was not willing to label every simultaneity as a chord. He also observed the similarities between the first and third periods (mm. 17–28). Noteworthy departures from the opening period include the dominant chord with a lowered ninth and omitted root (D/9) in m. 21, the extended minor sub-dominant (9S) in mm. 22 through 24 (with an added raised “under” ninth [9SIX] in m. 22), and the dominant seventh in mm. 24 and 25 (which is chromatically altered in m. 26 and becomes a dominant seventh with a raised root [D7], reinterpreted as a dominant with a lowered ninth and omitted root [D9] of the A minor triad or tonic parallel (Tp) in m. 27).

Riemann’s harmonic theory gained unprecedented influence during his lifetime. To be sure, there was considerable resistance to the more dogmatic aspects of his dualistic premises. (As discussed in Chapter 14, Riemann was eventually compelled to move away from a purely acoustical argument on behalf of his theory of dualism to a more psychological, almost idealist justification.) Yet his theory of functionality became widely adopted throughout Europe and, indeed, is still clearly to be seen in harmony textbooks in Germany, Scandinavia, and Russia today. No theorist since Rameau had offered a more compelling, comprehensive, and ultimately influential body of theoretical writings. Still, Riemann’s theory was not without its critics.

Fin-de-siècle polemics and synthesis

The crucial stylistic changes taking place in music at the turn of the century presented a formidable challenge to harmonic theorists, as the received models of functionalism, scale-degree theory, and fundamental-bass theory seemed ill suited for the new music. The writings of two theorists – Georg Capellen and Arnold Schoenberg – well illustrate some of these challenges.

Capellen. As we have seen in Chapter 14, harmonic dualism was a dominating idea in German music theory during the last half of the nineteenth century. Beginning with mid-century treatises by Hauptmann and Oettingen, dualism later became the focus of Riemann’s exhaustive theoretical work. At the turn of the century, the dualist school was sustained by theorists such as Herman Schröder, the author of an ambitious treat-
tise on symmetrical inversion. But dualism was not without its critics. Georg Capellen (1869–1934), a theorist as well as a composer, authored several treatises and articles criticizing the dualist element of early twentieth-century music theory. One of Capellen’s targets was naturally the leading proponent of harmonic dualism, Hugo Riemann. Capellen proposed a “monistic” theory of harmony, thereby using a terminology that directly challenged the harmonic dualism of his opponent. His theory began with the overtone series, a single underlying principle which accounted for major and minor as well as all other harmonic phenomena. He maintained that the symmetrical relationship between major and minor triads is imperceptible and therefore invalid, explaining that the ear rejects the inversion that is noticeable by the eye, since it hears all the tones in a simultaneity from the bottom up (in terms of the fundamental) according to the law of gravity, which is also valid in music. The external difference in direction entails a more profound difference in type.

Riemann replied with an article in his own defense, but Capellen’s criticism of harmonic dualism was reflected in the next generation’s dissatisfaction with both the over-complexity of Riemann’s theory and his failure to provide a sound explanation for the dualistic representation of the Klang. In Europe, aside from the dualistic systems of Hermann Erpf (1891–1969) and Sigfried Karg-Elert (1877–1933), harmonic dualism ended with Riemann.

In another series of polemical exchanges, Capellen questioned the basic assumptions of Sechter’s fundamental-bass theory and its suitability to Wagnerian analysis. He considered the Sechterian approach to chromaticism too conservative; its emphasis on the diatonic scale resulted in theoretical contrivances such as “hybrid chords” with notes derivable from three and more scales (see above, p. 791). In contrast, Capellen represents the more “German” stem of nineteenth-century harmonic theory with its ontological roots in the generative Klang to account for all harmonies. In a treatise entitled Fortschrittliche Harmonie- und Melodielehre (1908), Capellen outlined a theory of

57 Schröder, Die symmetrische Umkehrung in der Musik. For a discussion of Schröder’s treatise as well as writings on symmetrical inversion by Georg Capellen and Bernhard Ziehn, see Bernstein, “Symmetry and Symmetrical Inversion.”
58 Capellen, Die Zukunft der Musiktheorie; “Die Unmöglichkeit und Überflussigkeit der dualistischen Molltheorie Riemanns.”
59 Capellen, Die Zukunft der Musiktheorie, p. 72.
60 Ibid., p. 74.
61 Riemann, “Das Problem des harmonischen Dualismus.”
63 Erpf, Studien zur Harmonie und Klangtechnik der neueren Musik; Karg-Elert, Polaristische Klang- und Tonalitätslehre.
64 As we have seen in Chapter 14, pp. 473–74, however, revised theories of harmonic dualism have received some advocacy recently by a few American music theorists.
65 Capellen, “Harmonik und Melodik bei Richard Wagner”; Ist das System S. Sechters. For an essay examining Capellen’s critique, see Bernstein, “Georg Capellen on Tristan und Isolde.”
harmony based upon the first nine partials of the overtone series. As with Catel some one hundred years earlier, an acoustically verifiable major ninth chord provided the raw material for a multiplicity of chordal types and relations.\(^{67}\) Capellen even went as far as to claim that harmonies larger than a ninth chord (which he called *Doppelklänge*) may be generated by two concurrent fundamentals.

**Schoenberg.** As we have just seen, Capellen represented a tradition of monistic *Klang* theory that can be traced at least back to Vogler (and ultimately, as we have seen earlier, to Rameau). Although he did not rely upon acoustics, the monistic approach to harmonic generation was also taken up by Arnold Schoenberg (1874–1951). In a chapter on non-harmonic tones in his *Harmonielehre* (1911), Schoenberg rejected the distinction between harmony and figurative dissonance, claiming that there are no non-harmonic tones, no tones foreign to harmony, but merely tones foreign to the harmonic system. Passing tones, changing tones, suspensions, etc. are, like sevenths and ninths, nothing else but attempts to include in the possibilities of tones sounding together – these are of course, by definition, harmonies – something that sounds similar to the more remote overtones.\(^{68}\)

Thus, according to Schoenberg, we can hear virtually any simultaneity as a chord. This theoretical assumption was consistent with his notion concerning the “emancipation of dissonance.”\(^{69}\) By challenging traditional distinctions between consonance and dissonance, a myriad of new harmonic configurations was thereby sanctioned, both tonal and nontonal, including chromatically altered chords, chords based on the whole-tone scale, fourth chords, and chords with six or more tones. Schoenberg examines these materials in his *Harmonielehre*, a treatise which demonstrates links between late nineteenth-century chromaticism and nontonal music. He saw the evolution of harmonic language as a process by which dissonant harmonies were gradually discovered, the figurative dissonances of one era becoming the harmonic dissonances of the future.\(^{70}\) He supported this claim with examples from the music of Bach and Mozart in which several of his own nontonal harmonies appear as embellishing dissonances.\(^{71}\)

Schoenberg’s progressive approach to harmonic theory, as may be expected, aroused considerable opposition. This was particularly to be seen in the writings of a fellow Viennese theorist, his contemporary Heinrich Schenker. Unlike Schoenberg, Schenker was not concerned with the harmonic practice of his own time; he rejected Wagnerian harmony and blamed contemporary composers for the downfall of musical culture, describing its present catastrophic state as a veritable “Herculanenum and Pompeii of

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\(^{67}\) For an overview of Capellen’s theory of harmony, see Bernstein, “Georg Capellen’s Theory of Reduction,” pp. 86–92. For more on Catel, see Chapter 2, pp. 60–61.

\(^{68}\) Schoenberg, *Theory of Harmony*, p. 321. This statement and the commentary associated with it provoked one of Schenker’s strongest critiques of Schoenberg. \(^{69}\) Ibid., p. 21. \(^{70}\) Ibid., p. 320. \(^{71}\) Ibid., p. 324. See also Bernstein, “Georg Capellen’s Theory of Reduction,” pp. 108–09.
music.” Schenker was equally displeased with the development of harmonic theory. In a scathing attack on Rameau and his successors (among whom he would have included Schoenberg), he criticized theorists for overemphasizing vertical structure rather than voice leading. The resultant de-emphasis of what Schenker called “the temporal-horizontal axis of musical motion” contributed to a “creeping paralysis in music” and to the demise of musical art.

If Schoenberg’s *Harmonielehre* has a clear affiliation with the tradition of “monistic” harmonic theory traceable to Vogler, there are also other aspects of his theory that suggest a more synthetic approach in which the composer appears to be reconciling various strands of Viennese fundamental-bass theory and scale-degree theory. It appears, for instance, that Schoenberg may have studied Sechterian fundamental-bass theory at the University of Vienna with Bruckner in the mid-1890s, and his approach to harmonic progression points to Bruckner’s influence. In his *Harmonielehre*, Schoenberg’s discussion of modulation includes a reference to Sechter’s concept of “turning points” (*Wendepunkte*) in the minor mode. Both Sechter and Schoenberg considered the minor mode in terms of its three forms: harmonic, melodic, and natural minor. As a result, the minor mode includes cross-related pitches on its sixth and seventh degrees (for example, F# and F in A minor). According to Sechter’s voice-leading rules, the lower member of each cross-related pair must descend, the higher member must ascend. Schoenberg applied Sechter’s notion of *Wendepunkte* to the entire scale, thus allowing for the possibility of cross-related pairs on every diatonic degree. In modulating smoothly, a nondiatonic pitch, or “substitute,” may occur only if its cross-related diatonic counterpart is “neutralized” by resolving stepwise in its proper melodic direction. For example, in a modulation from D major to A major, the G must proceed to F before the introduction of a G#.

Schoenberg considered modulation as a movement from one diatonic collection to another. This emphasis on the scale is evident in his discussion of tonality in his *Structural Functions of Harmony* (1948), a pedagogical text written after Schoenberg had emigrated to California in 1934. There he explains that “a tonality is expressed by the exclusive use of all of its tones. A scale (or part of one) and a certain ordering of its harmonies affirm it most definitely.” In a manner reminiscent of Sechter’s “hybrid


73 Schenker, “Rameau or Beethoven,” p. 2.


78 Dineen, “Schoenberg’s Concept of Neutralization,” discusses this topic in detail.

79 Schoenberg, *Structural Functions of Harmony*, p. 11.
Chromatic harmonies, which Schoenberg terms "transformations," result from replacing diatonic pitches with tones borrowed from another key. Thus a chord such as D–F♯–A♭–C in C major obtains its chromatic pitches, F♯ and A♭, from respectively, G major and C minor (or F minor).

Schoenberg did not conceive of modulation as motion from one key to another. Rather, he considered every digression away from the tonic to still be within the original tonality. In a given tonal work there exists only a single tonality; movement away from the tonic constitutes motion to one of its "regions" rather than a modulation to different key.80 Schoenberg called this approach to tonality "monotonality," which he represented by a chart of the regions (Plate 25.2).

In an earlier sketch of this chart, Schoenberg organized the regions according to the diatonic scale degrees, which he designated with roman numerals.81 Although the later version of his chart omits the roman numerals and replaces it with nomenclature that

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Plate 25.2 Schoenberg's “Chart of the Regions” from Structural Functions of Harmony, p. 20.

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80 Ibid., p. 18.
suggests a functional orientation, the scale remains its organizing principle. Regions on the vertical axes are arranged according to fifth relations; their proximity results from minimal changes in pitch content from one region to another. The horizontal axes are organized according to relative major–minor and parallel major–minor relationships and thus are grouped according to similarities in pitch content and parallelisms in scalar structure. Schoenberg’s chart is thus in agreement with Gottfried Weber’s table of key relationships (see Plate 25.1, p. 786).

Although Schoenberg criticized Riemann’s theory of tonal functions,82 it would be a mistake to overlook his ties to this theoretical tradition. Schoenberg described the I–IV–V–I cadence dialectically, in a manner reminiscent of Hauptmann. The tonic, according to Schoenberg, “asserts” the tonality, which is “challenged” by the subdominant, which in turn is “refuted” by the dominant and “confirmed” by the final tonic.83 Such tonal dialectics are consistent with other binary oppositions found elsewhere in Schoenberg’s writings, such as balance and imbalance, or centripetal and centrifugal tendencies. Even the disputed theory of harmonic dualism seems to be given some voice in Schoenberg’s writings, as in the following description of dominant and subdominant functions in C major:

Here the dependence of C on G, with which, strictly speaking, the force of the C is exerted in the same direction as that of the F, may be considered like the force of a man hanging by his hands from a beam and exerting his own force against the force of gravity. He pulls on the beam just as gravity pulls him, and in the same direction. But the effect is that his force works against the force of gravity, and so in this way one is justified in speaking of two opposing forces.84

Both Schoenberg and Riemann defined tonality in terms of a network of functional relationships around a tonal center; Riemann’s Tonnetz and Schoenberg’s chart of the regions are schematic representations of axially organized tonal space.85 Schoenberg described his notion of tonal space in a lecture presented at Princeton University in 1934:

In formulating the notion concerning the unity of musical space I relied on the assertion that had already been made by previous theoreticians, namely: chords are the vertical product of the overtones, but the scale is the horizontal product. I carried this thought to its conclusion and consequently arrived at the concept whereby the vertical and the horizontal, harmonic and melodic, the simultaneous and the successive were in reality comprised within one unified space.

Thus, for Schoenberg, tonal space is multi-dimensional. Not unlike Riemann, who in a principle of Klangvertretung, suggested the unity of pitch, harmony and tonality, Schoenberg’s concept of musical space extends from scale degree and chordal roots to tonal regions.

82 See Bernstein, “Schoenberg Contra Riemann.”
84 Schoenberg, Theory of Harmony, pp. 23–24.
85 For a discussion of the Tonnetz, see Chapter 10, pp. 283–84.
As a result of Schoenberg’s unified view of musical space, harmonic motion constitutes not so much a calculus of quantifiable steps away from some defined tonic center as a more dynamic notion of tension and release. On reading the following passage, full of energeticist rhetoric, one might imagine it to be by Ernst Kurth:

The paths of harmony are tortuous; leading in all directions, approaching a starting point and leaving it again and again, leading astray, as they lend to a different point a momentary meaning that they soon take back again and again, producing climaxes that they know how to exceed, calling forth gigantic waves which ebb without coming to a standstill.86

For Schoenberg, a pitch, chord, or region represents a tonal function which can create a state of rest or unrest, by either establishing or undermining the tonic, a property which he defined in terms of centripetal and centrifugal tendencies.

While not properly a consequence of harmonic theory, Schoenberg’s original ideas concerning motivic and thematic development must be seen in the context of his broader notions of musical space and unity. Like a harmonic progression, motives and themes for Schoenberg can create states of rest and unrest. The juxtaposition of dissimilar motivic or thematic materials creates imbalance and a potential for change in the same manner as the introduction of foreign elements within a tonal region creates unrest. Using a terminology similar to his centrifugal and centripetal tendencies, Schoenberg explained that thematic materials which are stable have “concentric” tendencies; unstable themes or “loose formations” have “eccentric” tendencies. The latter contain phrases which lack obvious motivic associations and, as a result, exhibit a strong propensity for subsequent motivic development. Motive and harmony are thus both elements of Schoenberg’s unified tonal space; they work in tandem to present what he termed a composition’s “musical idea.”87 His synthesis of Austrian and German harmonic theory with this sophisticated approach to thematic development and motivic unity was a culminating point in the history of the Austro-German theoretical tradition.

86 Schoenberg, The Musical Idea, p. 309. For more on “energeticist” theories of tonality in the twentieth century, see Chapter 30, p. 927.
87 For a useful introduction to this concept, see Schoenberg, The Musical Idea, pp. 15–21 (the translator’s introduction). Also see Chapter 29, pp. 912–13 for more on Schoenberg’s concept of motive.

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