
RAMEAU AS MUSIC THEORIST

The *Traité de l'harmonie* would have been an extraordinary achievement for any music theorist, let alone the inaugural work of an obscure thirty-nine-year-old organist from the provinces. Until its appearance, Rameau's only other publication had been a small *recueil* of harpsichord pieces issued in 1706.¹ There was little to his background that betokened the colossal intellectual accomplishment that was the *Traité*. (But Rameau always seemed to be full of surprises; there was little to presage his triumphant debut as opera composer with the performance of *Hippolyte et Aricie* eleven years later in 1733.) How, then, did Rameau come to write the *Traité*?

Rameau's biographers have been continually vexed at the dearth of information we have concerning his early years.² Michel Chabanon, one of the first to try to compile information on the composer, bemoaned the fact that "The entire first half of his life is completely unknown. He reported no particulars to his friends, or even to Madame Rameau, his wife."³ The little that we can piece together about his first forty years (that is, until the publication of the *Traité*) sheds almost no light on his theoretical background, and leaves many questions unanswered.⁴

We know from Rameau's own testimony that he was not particularly well educated. In the few years or so he spent at the Collège des Gordrans in Dijon (probably from 1695 to 1699), Rameau must have been exposed to the progressive humanist curriculum that was common to Jesuit education at the time. But except for whatever music instruction he may have received there, this education evidently made little impression upon the young musician.⁵ Rameau never evinced any

¹ *Premier livre de pièces de clavecin* (Paris, 1706).

² Cuthbert Girdlestone's study, *Jean-Philippe Rameau: His Life and Work*, 2nd edition (New York, 1969), remains the standard work on Rameau's life and music. Unfortunately, Girdlestone makes short shrift of Rameau's theoretical writings.

³ Michel-Paul-Guy de Chabanon, *Eloge de M. Rameau* (Paris, 1764), 7. A translation of this work by Edward R. Reilly appears in *Studies in Music from the University of Western Ontario* 8 (1983), 1–24.

⁴ Besides the eulogy of Chabanon, there is only one other contemporaneous source of information of any substance concerning Rameau's life: an eulogy written for the Dijon Academy of Science by Hugues Maret: *Eloge historique de M. Rameau* (Dijon, 1766). A helpful inventory of all primary documents pertaining to Rameau's early years has been recently compiled by Neal Zaslaw: "Rameau's Operatic Apprenticeship: The First Fifty Years," *Jean-Philippe Rameau: Colloque International organisé par La Société Rameau*, ed. Jérôme de la Gorce (Paris, 1987), 37–50. (Henceforth cited as *Rameau Colloque International*.)

⁵ According to a story reported by Maret, Rameau so distracted himself in class by singing and writing music that the Jesuit Fathers eventually requested his departure (Maret, *Eloge*, 4).

sophisticated understanding of subjects outside of music. What knowledge of mathematics, physics, and philosophy he did glean seems to have been haphazard and relatively shallow, at least to judge from the desultory citations in his later publications. Perhaps the most conspicuous testament to Rameau's lack of schooling was the constant frustration he experienced in organizing his theoretical ideas clearly and putting them down on paper in good French. His writings were notorious for their prolixity and obscurity. Rousseau complained that he tried to read through the *Traité* once in convalescence, and after only a few pages had to stop for fear of a relapse. In a story reported by Maret, Rameau's earliest amorous pursuits were thwarted by the ridicule he received for his ungrammatical and infelicitous love letters. It should not be surprising, then, that we will so often find Rameau seeking the aid of others to help edit his theoretical writings.

Rameau's musical education was fortunately more thoroughly grounded. He came from a musical family, and learned to read music at an early age under the tutelage of his father, who was organist at Dijon cathedral. By the age of seven, according to Maret, Rameau could play at sight on the harpsichord. His first documented professional activity was in 1702 when he was appointed organist at the cathedral in Clermont-Ferrand – the provincial capital of the Auvergne in south-central France.⁶ He stayed at this post until 1706 when he visited Paris for the first time in order to study under the celebrated organist Louis Marchand and have his first collection of harpsichord pieces published. Despite receiving a prestigious appointment while in Paris at the church of Sainte Madeleine after winning a heavily contested audition, Rameau declined the offer. For reasons we can only guess, he evidently felt unready to make a permanent move to the city. By 1709, we find our twenty-six-year-old organist back in his home town of Dijon in order to succeed his elderly father. Over the following years, Rameau moved several more times to take on a number of different jobs as organist, composer, and teacher. In 1715, he returned to Clermont-Ferrand.⁷ His second Clermont residence lasted until 1722, the year in which he made his final move to Paris, there to remain for the rest of his life.

During all these years as an itinerant musician, there is no evidence that Rameau ever formally studied music theory.⁸ But he always claimed to have had an interest in the subject, “drawn since my youth by a mathematical instinct to the study of an art for which I found myself destined, and which has singularly occupied me my entire life.”⁹ We do indeed have scattered anecdotes that testify to the young Rameau's interest in theoretical matters. For instance, in 1737 he related how “at the age of seven or eight I sensed that the tritone should be resolved by the sixth

6 There were apparently musical activities that preceded Rameau's Clermont appointment, including a short stint as a violinist with a touring theatrical group, as well as a brief visit to Milan sometime in 1701. But the particulars of these travels are lost to us. See Zaslav, “Rameau's Operatic Apprenticeship,” 39.

7 For the itinerary of Rameau during this period, see *ibid.*, 40–42.

8 Although he does admit to having studied a little thorough bass as a youth in Montpellier with an organist named Delacroix. *CTW* VI, 42.

9 *Démonstration du principe de l'harmonie* (Paris, 1750), 110.

and I made this into a rule."¹⁰ But just how familiar Rameau was with the theoretical literature of his day is hard to gauge. He was certainly familiar with a few of the most important published writings of his immediate French predecessors such as Descartes, Masson, Saint-Lambert, and Brossard, all of whom he cites at various points in the *Traité*. He also seems to have read a little of Kircher's *Musurgia universalis* and Zarlino's *Istitutioni harmoniche*.¹¹ But he displayed such a consistent penchant for misreading and selectivity that one gets the impression he did not study these works with much discipline.

For better and for worse, the fundamental bass was worked out largely through Rameau's own imagination, insight, and effort. This is not to say that it was created *ex nihilo*. On the contrary, we will see over the following chapters just how much in Rameau's theory was indeed rooted in the seventeenth century. But his borrowings were always highly selective and syncretic. While many of the individual components that make up the fundamental bass enunciated in the *Traité* can be traced to the seventeenth century, their composite synthesis was hardly envisioned. By not subscribing to any one theoretical paradigm, Rameau felt himself at liberty to draw scattered ideas from disparate sources, and to meld them as he saw fit with his own. To be sure, this eclecticism would often result in confused and even contradictory arguments. But just as often it led Rameau to striking insights. A Cartesian suspicion of authority and a reliance upon his own reason and experience proved in the end to be a highly fruitful epistemology for our music theorist.

THE "CLERMONT NOTES"

We do not know what specific catalyst, if indeed there was one, caused Rameau to undertake the arduous task of writing the *Traité de l'harmonie*. The time and effort involved must have been extraordinary. At 479 dense pages of prose, the work is the longest treatise he would ever write, and incidentally, the longest to have been published in France since Mersenne's *Harmonie Universelle* of 1636. Obviously, Rameau must have spent many years working out his theory and drafting the text of the *Traité* before his arrival in Paris in 1722.¹²

¹⁰ *Génération harmonique* (Paris, 1737), 223. Rameau related another story that took place when he resided in Lyons (1713–15) that suggested he was by then well aware of the fundamental bass ("Réflexions de Monsieur Rameau sur la manière de former la voix et d'apprendre la musique," *Mercure de France* [October, 1752], 87–100; reprinted in Marie-Germaine Moreau, "Jean-Philippe Rameau et la pédagogie," *La Revue Musicale* 260 [1965], 50).

¹¹ Given Rameau's linguistic ineptness, it would be surprising if he had been able to wade all the way through Zarlino's notoriously Baroque prose. Still, he may have picked up some knowledge of Italian during his brief sojourn in Milan in 1701, allowing him at least to peruse the treatise.

¹² Apparently Rameau had sent the text to his publisher Ballard while he was still in Clermont. Rameau later reported that he was unhappy with the page proofs he received while in Clermont, and so hastened to Paris sometime in June 1722 in order to make a number of alterations and additions. These changes were eventually incorporated within a supplement and at least one new page revision that were printed and substituted before the book was bound (Zaslaw, "Rameau's Operatic Apprenticeship," 26). More specific information on the revisions can be found in Gossett's introduction to his translation: "Publication History," vii–xii. In the course of my analysis of the *Traité*, I will be considering a number of these revisions and Rameau's motivations for making them.

We can get an inkling of the intellectual struggle Rameau must have gone through in working out his ideas based upon a collection of manuscript notes, sketches, and student exercises originating from his second Clermont residence. The original manuscripts are unfortunately now lost, and are described only in a monograph by a former professor of music at the Ecole Nationale de Musique in Clermont-Ferrand, René Suaudeau.¹³ From Suaudeau's study, we can follow Rameau's first adumbrations of his theory of the fundamental bass.

One note of caution, however: Suaudeau's scholarship is annoyingly imprecise. It is often impossible to tell from his jumbled and informal narrative whether something he reports is a faithful transcription of Rameau's text, or his own extrapolation. Further, Suaudeau seems to mix in ideas Rameau articulated in writings post-dating the *Traité*, without warning the reader of this fact. This makes the reconstruction of any autonomous "Clermont theory" difficult and perhaps even imprudent, lacking the original documents. Nonetheless, with appropriate circumspection, I think a few observations can be proffered.

The idea for the fundamental bass seems to have originated in Rameau's mind as a pedagogical tool. In the picture drawn for us by Suaudeau, we see Rameau the teacher searching for ways to simplify instruction in composition and thorough bass for his students. What guidelines and descriptions there were are generally ad hoc in nature and unsystematically worked out. According to Suaudeau, the fundamental bass comes across

as a simple means of verifying harmony, a simple tool for instruction. He presented some rules on the subject, rules evidently quite arbitrary, often insufficient, in all ways empiric, and which were not of much more value than the precepts formulated by the ancient contrapuntists.¹⁴

Rameau begins with a well-established axiom of thorough-bass theory: the major and minor triads are the basic consonant structures of music. No theoretical justification or formal derivation is offered on their behalf; they are simply asserted as empirical givens. Rameau then goes on (according to Suaudeau's narrative) to consider the question of mode. If C major is assumed the tonic, F major and G major triads complement and define the tonic C. To distinguish their functions,

¹³ R. Suaudeau, *Introduction à l'harmonie de Rameau* (Clermont-Ferrand, 1960). An earlier draft of this essay exists in a mimeographed form: "Le Premier Système harmonique, dit clermontois, de Jean-Philippe Rameau."

The information Suaudeau provides in his published study concerning the manuscripts is frustratingly vague. It seems that at some point in the early eighteenth century, the native Clermontois composer, George Onslow (1784–1852), acquired theoretical papers stemming from Rameau's second Clermont residence. These papers were passed down to Onslow's descendants, in whose possession they were when Suaudeau studied them. Since that time, however, the Onslow estate has been dispersed among several descendants in England and South America. In the process, the Rameau manuscripts were apparently lost. (See Jacobi's report in *CTW* I, xviii ff.) Despite repeated attempts to trace them by such musicologists as Erwin Jacobi, Neal Zaslaw and myself, as well as officials of the Bibliothèque Nationale, their whereabouts remain unknown. The custodians of the former Onslow château at the *Centre Culturel de Valprivas Haute Loire* have disclaimed any knowledge of the manuscripts.

¹⁴ Suaudeau, *Introduction à l'harmonie de Rameau*, 12.

two characteristic dissonances are needed: an added sixth on F major, and a minor seventh on G major.¹⁵ Together, these chords constitute the mode of C major, as well as representing three fundamental chord types: the consonant triad (*accord parfait*), the added-sixth chord (*accord de grande-sixte*), and the seventh chord (*accord de 7e de dominante*).¹⁶ Several other kinds of dissonant chords such as the diminished-seventh chord are found by altering notes belonging to these three fundamental chord types.¹⁷

What is noteworthy about Rameau's "Clermont theory" up to this point is less the tripartite classification of chords he makes as much as the idea of a "fundamental" sound. The bottom note of each of these chords he calls the *basse fondamentale* – what musicians today refer to as a chord "root." Rameau does not yet speak of this bass as a "generator." He does make the important observation, though, that the fundamental bass grounds and defines these chords by remaining the same no matter in what inversion (*renversement*) the chord appears.¹⁸ This is evidently possible since the octave position of any note in a chord does not alter that chord's identity.

There are apparently a number of additional ad hoc explanations Rameau offers in the Clermont notes concerning various dissonant chords of *supposition* (ninth and eleventh chords), the augmented-sixth chord, and the *double emploi*. (Although, again, it is not clear to me in all cases if Suaudeau's description refers exclusively to explanations drawn from the notes he was studying, or also to Rameau's later published writings.) The important point is that Rameau has radically reduced the plethora of figured-bass signatures to just a few fundamental types. However dubious or inconsistent his reductive procedure may have been, he was able to simplify the tedious process of learning the thorough bass. By further showing how the fundamental basses of his chord types succeed one another in a reduced number of models, Rameau makes the mastery of composition much easier. (These models are summarized by Rameau in ten basic rules of chord succession, and four cadence types.¹⁹)

Such are the principal ideas conveyed in Rameau's "Clermont notes" (assuming Suaudeau's presentation is reliable). We see that the fundamental bass was conceived

¹⁵ *Ibid.*, 14.

¹⁶ *Ibid.*, 16. The inclusion in Suaudeau's narrative of an added-sixth chord as a fundamental harmony above the "sous-dominante" helping to define a mode is curious. Rameau did not formally discuss the subject of the subdominant in the *Traité*. Its presence here suggests either that Rameau had a sudden change of heart in 1722 and entirely abandoned the concept of the subdominant, only to reinstate it in the *Nouveau système* of 1726, or that Suaudeau was intermixing some of Rameau's later (published) ideas in his explication of the Clermont notes. It is not impossible, though, that Rameau may have thought of the notion of the subdominant well before the *Traité* was published, just as described by Suaudeau, but then decided for reasons of consistency and economy to omit it from this latter publication. As we will see in Chapter 7, in introducing the added-sixth chord as an independent fundamental harmony, Rameau contradicts his initial claim that there was only one source of dissonance: the seventh.

¹⁷ This aspect of Rameau's Clermont theory is further analyzed by Jacques Chailley in his article "Rameau et la théorie musicale," *La Revue Musicale* 260 (1964): 77.

¹⁸ Suaudeau, *Introduction à l'harmonie de Rameau*, 37.

¹⁹ *Ibid.*, 29–32.

by Rameau as a practical heuristic device to simplify music pedagogy. There is no indication that Rameau was trying to reduce music to scientific principles or deductive systems. As Jacques Chailley has pointed out, "The fundamental bass, the pivot of the entire Ramist system, appeared essentially as a *practical means* for coordinating and simplifying the rules of succession for the basso continuo, which had until then been taught exclusively by empirical formulas."²⁰ Suaudeau has summarized the practical motivation for Rameau's Clermont notes as follows:

Well before the publication of his first treatise, the organist of Clermont cathedral, through the force of reflection, had already established his doctrine. It is general, and above all practical enough to dispense with the scientific, experimental, and deductive apparatus which encumbered his printed works. . . It was the vicissitudes of pedagogy which guided the musician to reflect, to learn, and finally to build a coherent body of theory.²¹

As subsequent publications would bear out, Rameau manifestly did want to build a theory incorporating some kind of "scientific, experimental, and deductive apparatus" in order to systematize the pedagogical rules and heuristics he had induced through practice. What he needed, though, was some means to generate and coordinate them in a coherent whole. In other words, what he needed to find was some *principle of harmony*. This was the task Rameau set out for himself in the *Traité de l'harmonie*.

THE TRAITE DE L'HARMONIE

The full title of Rameau's treatise is revealing: *Traité de l'harmonie reduite à ses principes naturels*. One word would have immediately struck educated French musicians in 1722: *harmonie*. For the first time in France, "harmony" was treated as a fully-fledged compositional discipline independent of counterpoint. To be sure, the subject of *harmonia* had been a topic of music theory since antiquity. But this was *harmonia* in the general sense of concordance, or as Zarlino defined it, "diversity of moving parts and consonances, brought together with variety."²² So defined, *harmonia* entails any and all pitch relations, whether of intervals, melody, or chords.²³

Rameau suggests a narrower interpretation of harmony in his *Traité* that is restricted to chords and their succession. Of course, the *Traité* was not quite a *Harmonielehre* as understood by nineteenth-century theorists; there is still a sense of the older *harmonia* in Rameau's conception of the *basse fondamentale*.²⁴ Understanding the mix of old and new that is to be found in the *Traité* demands a careful, historically informed exegesis that I shall attempt over the next several chapters. But first, it will be useful to offer a brief overview of the entire text so we may place it within a general theoretical-pedagogical context.

²⁰ Chailley, "Rameau et la théorie musicale," 79.

²¹ Suaudeau, *Introduction à l'harmonie de Rameau*, 8.

²² Gioseffo Zarlino, *Le istituzioni harmoniche* (Venice, 1558); Book 3 translated as *The Art of Counterpoint* by Guy A. Marco and Claude V. Palisca (New Haven, 1968), 52.

²³ Carl Dahlhaus, *Studies on the Origins of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton, 1990), 18 ff.

²⁴ A topic explored by Carl Dahlhaus, "Ist Rameaus 'Traité de l'harmonie' eine Harmonielehre?", *Musiktheorie* 1/2 (1986), 123–27.

T R A I T É D E L'HARMONIE

Reduite à ses Principes naturels;

DIVISÉ EN QUATRE LIVRES.

LIVRE I. Du rapport des Raifons & Proportions Harmoniques.

LIVRE II. De la nature & de la propriété des Accords;
Et de tout ce qui peut servir à rendre une
Musique parfaite.

LIVRE III. Principes de Composition.

LIVRE IV. Principes d'Accompagnement.

*Par Monsieur R A M E A U , Organifte de la Cathedrale
de Clermont en Auvergne.*



DE L'IMPRIMERIE
De JEAN-BAPTISTE-CHRISTOPHE BALLARD, Seul
Imprimeur du Roy pour la Musique. A Paris, rue Saint Jean-
de-Beauvais, au Mont-Parnasse.

M. DCC. XXII.

AVEC PRIVILEGE DU ROY.

The *Traité* is divided into two pairs of “Books” addressing theoretical and practical issues respectively. Book 1, “On the Relationship between Harmonic Ratios and Proportions,” seeks to establish the fundamental structures that Rameau will need for the remaining portions of his text: chords. His essential goal is to validate chords as primary musical constructs. He does this by showing how all chords are generated from a single source. This “source” turns out to be that venerable tool of *musica speculativa*, the monochord. All the ratios Rameau needs to construct any and all chords can be generated directly from the monochord through string divisions that he describes in detail. He then posits two fundamental chord types: the consonant triad and the dissonant seventh chord. All other chords are derivative of these two harmonies through various theses such as inversional identity, supposition, borrowed roots and the like.²⁵ Rameau’s essential point is that the monochord string itself is the “fundamental source” of these chords; it is the natural principle underlying and controlling all harmony, and hence all music.

Rameau’s invocation of the monochord was somewhat unusual for the time. Few theorists of Rameau’s generation employed this ancient instrument of the canonists.²⁶ Two reasons can be cited for its decline. First, in the course of the seventeenth century, the traditional function of the monochord – to plot and to demonstrate the numerical ratios of musical intervals and scales – was increasingly taken over by acoustics. That is, intervals traditionally defined and measured by string length ratios were now being described by the quantity of their individual frequencies.

Secondly, the variety of complex dissonant ratios, tuning systems, and temperaments explored by seventeenth-century theorists exceeded the monochord’s practical capacity for easy presentation. To quantify their various systems of temperament, for example, many theorists found logarithmic computation to be the most effective means. As a tool for *musica theórica*, the monochord had become increasingly anachronistic.

In this sense, then, Rameau’s employment of the monochord appears to be regressive; it hardly seems the mark of a revolutionary iconoclast. But Rameau never intended his use of the monochord to be revolutionary. For all the novel ideas he was to bring to the discipline of music theory, he always believed that these ideas were still grounded in theoretical tradition. It was natural that he would turn to the classical tool of *musica theórica* to demonstrate this. (Nonetheless, when we analyze Rameau’s generation of chords in Chapter 4 in detail, we shall see that his employment of the monochord was unorthodox.)

In Book 2 (“On the Nature and Properties of Chords and on Everything Which May Be Used to Make Music Perfect”), Rameau grapples with the movement of these chords. Here the reader is introduced to the *basse fondamentale*. Rameau uses the fundamental bass to explain the behavior of the various chords he has constructed

²⁵ The added-sixth chord claimed by Suaudeau to be in the Clermont notes is now absent as a fundamental harmony, but will be encountered again in his later publications. (See Chapter 7.)

²⁶ It is in Germany, with its much more resilient scholastic tradition, that we find the monochord most often utilized in music-theoretical literature during the eighteenth century. (See Chapter 4, pp. 87–90 below.)

in Book 1. Of crucial significance in his search for the “natural principle” of harmony is his discovery that the interval ratios outlined by the fundamental bass are largely the same as those ratios by which the chords themselves were generated on the monochord. In this sense, Rameau’s theory is indeed akin to the older tradition of *harmonia* described earlier. The same intervals that govern the construction of chords also turn out to control the succession of these chords.

Books 3 and 4, on composition and accompaniment, respectively, apply in a practical way the material presented in Book 2. Rameau’s intention is to show that when one has mastered the theory of the fundamental bass, the writing and accompanying of music becomes much easier. These are obviously pedagogical sections, and can be read and understood without knowing or agreeing with the theoretical arguments of the first two Books.²⁷ (There is incidentally much material in these two Books that seems to overlap the “Clermont notes” as described by Suaudeau; it may well be that the bulk of the material therein was written at an earlier stage than the first two Books of the *Traité*.) The point is that the fundamental bass can be learned and profitably applied by a student who may not necessarily know the theoretical process by which it was established.

We see from this brief overview that the *Traité* is a syncretic work, encompassing both speculative and practical modes of theory. This juxtaposition of speculative and practical theory – what in Rameau’s day was called *musica theorica* and *musica practica* – constitutes a recurring and essential tension in Rameau’s writings. They represent two distinct traditions in music theory that, until Rameau’s *Traité*, had remained essentially separate from one another. As the dialectic between these two traditions would become a crucial one in Rameau’s formulations, it will be useful to look briefly at their historical background in French musical thought.

THE LEGACY OF *MUSICA THEORICA*

We must not confuse “music theory” as we understand it today with *musica theorica* of the seventeenth century. The latter discipline was much more narrowly defined and, at least until Rameau’s day, concerned itself with speculative matters. The disciplines of counterpoint, harmony, and thorough bass that we today consider a part of music theory were in most cases considered as components of *musica practica*. To put matters simply, in the speculative tradition, the musician was concerned with the ontological nature of musical material, while in the practical tradition, with its application. Expressed in Aristotelian terms, speculative music theory concerned itself with formal causes, while practical music theory concerned itself with efficient causes. Obviously the precise agendas of the two traditions have changed over time so as to reflect the indigenous musical and intellectual climates in which

²⁷ Both of these books were, in fact, independently published in English translation as autonomous composition and accompaniment texts during the eighteenth century. Indeed, they were the *only* theoretical works by Rameau that were ever translated before the twentieth century: *A treatise of music, containing the principles of composition*. . . By Mr. Rameau (London, 1737); *A treatise on harmony, in which the principles of accompaniment are fully explained and illustrated by a variety of examples* (London, 1795).

they have been articulated, thus precluding the drawing of any firm boundaries.²⁸ A few general characterizations can nonetheless be made that are relevant to the state of music theory in France during the generations immediately preceding Rameau.²⁹

During the first half of the seventeenth century, French music theory was dominated by speculative concerns. Most theorists of the time were clerics with strong scholastic educations: Pierre Maillert, Salomon de Caus, Marin Mersenne, René Descartes, and Antoine de Cousu. As heirs of the tradition of *musica theorica*, these men were interested primarily in the origin and nature of all musical material: pitches, intervals, modes, proportions, and tunings. They found answers in a mixture of ancient authority (particularly Salinas and Zarlino), scholastic reasoning, and mathematical tools such as the monochord.³⁰ Among the problems they addressed were the classification of modes, the mathematical generation and hierarchy of intervals, and the evaluation of tuning systems. Occasionally these theorists would turn to more abstract topics such as the harmony of the spheres, modal affections, or the interpretation of ancient Greek music. But their primary focus was upon the *material* of musical practice.

It would be a mistake to believe that all authors of *musica theorica* were conservative. While it is true most speculative theorists employed traditional scholastic language in their analyses of music, it was in speculative theory that some of the most advanced revisions of consonance hierarchy, temperament, and modal theory took place. Further, a number of speculative theorists (notably Mersenne and Descartes) began to apply the fruits of the nascent scientific revolution and consider music in terms of a progressive mechanistic-acoustic model. Their work (to which we shall return in Chapter 4) marked a turning point in music theory in which many of the traditional problems of *musica theorica* began to be subsumed within the discipline of natural philosophy.

²⁸ One example: During the seventeenth century, counterpoint was typically classified as part of *musica practica* by music theorists. It was concerned, as Brossard put it, "with the execution [of music], without concern for its reason, or the cause of the good effect of this execution" (*Dictionnaire de musique* [Paris, 1703], s.v. "musica activa"). By the eighteenth century, though, counterpoint became increasingly displaced by thorough bass as the primary discipline of *musica practica*. The rules of counterpoint seemed to have played less a vital part of a musician's daily practice, and were confined to a very specific and conservative repertoire of liturgical music. Hence, counterpoint came to be seen more and more as a part of *musica theorica*. This was especially true in Italy, as shown by Renate Groth in "Italienische Musiktheorie im 17. Jahrhundert," *Geschichte der Musiktheorie*, vol. VII (Darmstadt, 1989), 324–25. But there was hardly any consensus on such matters; German-speaking theorists such as Fux, Marpurg, and Kirnberger continued to teach counterpoint as a purely practical skill.

²⁹ I shall continue to use the general term "music theory" in the twentieth-century sense (as encompassing both speculative and practical disciplines), and apply the designations "speculative" and "practical" when I wish to make more precise historical distinctions.

³⁰ For a comprehensive history of French music theory in the first half of the seventeenth century, see Herbert Schneider's excellent study, *Die französische Kompositionslehre in der ersten Hälfte des 17. Jahrhunderts* (Tutzing, 1972), a work, as will become clear in the footnotes over the following chapters, upon which I have profitably drawn. A more general survey of seventeenth-century French theory is found in Wilhelm Seidel's essay "Französische Musiktheorie im 16. und 17. Jahrhundert," *Geschichte der Musiktheorie*, vol. ix (Darmstadt, 1986), 1–140.

Independent of the speculative tradition (although not necessarily exclusive to it) stood *musica practica* or *musica attiva*. Within this domain we find works written by musicians who may or may not have been interested in questions of *musica speculativa*. Their dominant concern was pedagogic; they sought to describe and codify empirical practice. Thus, the subjects of their treatises were counterpoint, chant, transposition, singing, and thorough bass. And while, as already noted, *musica practica* and *musica theorica* need not be mutually exclusive – Mersenne and de Cousu, for instance, wrote encyclopedic works in which the two traditions intermingled – they were considered disciplines largely autonomous of one another.

By the second half of the seventeenth century, French music theory had become almost entirely practical in nature, epitomized in composition texts by Mignot de La Voye, Guillaume Nivers, Etienne Loulié, Marc-Antoine Charpentier, Michel L’Affilard, and Charles Masson – each one of these authors, incidentally, a practicing composer.³¹ This is not to mention the dozens of other musical pedagogues who produced practical instrumental instructors, singing treatises, thorough-bass primers, methods for transposition, and dictionaries. Again it must be emphasized that “practical” theorists were by no means necessarily more progressive than speculative theorists. Many practical theorists of the seventeenth century proved to be the most intolerant curmudgeons when it came to accepting revisions of modal theory and temperament.

Rameau’s most consequential intellectual accomplishment lay in the *rapprochement* he was able to effect between these two traditions. The *basse fondamentale* was at once a *theoretical* explanation of the origin of all musical material, as well as a *practical* description of that same material as used by musicians. To a degree not attained since Zarlino’s *Istitutioni harmoniche* of 1573, Rameau was able to integrate practice and theory into a coherent whole. This is not to say, however, that Rameau’s synthesis was accomplished without residual tensions.

THE CARTESIAN DILEMMA

We can detect such tensions quite clearly in Rameau’s many discussions concerning *expérience* and *raison* that run throughout the *Traité*, and indeed, throughout just about all of his publications. Rameau is acutely ambivalent about the amount of emphasis to accord each of these *desiderata* in his theory. At times he insists upon the need to rely upon musical experience and the empirical judgment of one’s ear in formulating any theory, while at other times he emphasizes the absolute necessity of reason and mathematical demonstration.

Reading the Preface to the *Traité de l’harmonie*, the innocent reader could hardly be faulted for assuming that Rameau’s epistemology was purely rationalistic. We have already encountered in the last chapter his famous pronouncement that “music

³¹ Both Schneider and Seidel have noted the bifurcation of seventeenth-century French music theory into speculative and practical halves, respectively: Schneider, *Die französische Kompositionslehre*, 282–85; Seidel, “Französische Musiktheorie,” 40–42, 88–94. Parallel developments in Italy are described by Groth, “Italienische Musiktheorie im 17. Jahrhundert,” 311–18.

is a science which should have definite rules," and how "reason has lost its rights, while experience has acquired a certain authority." Rameau does not entirely depreciate experience, for he admits that it "can enlighten us concerning the different properties of music." But, he continues:

it alone cannot lead us to discover the principle behind these properties with the precision appropriate to reason. Conclusions drawn from experience are often false, or at least leave us with doubts that only reason can dispel.³²

And the means Rameau proposes for finding the true "principle behind these properties" is mathematics. Musicians who remain only at the level of practice without mathematical knowledge can never achieve a true understanding of music:

Notwithstanding all the experience I may have acquired in music from being associated with it for so long, I must confess that only with the aid of mathematics did my ideas become clear and did light replace a certain obscurity of which I was unaware before.³³

Rameau's rhetoric in this Preface, as we have observed earlier, is unabashedly Cartesian. This is most apparent in the general aim of the *Traité*: to demonstrate a single natural ("clear and evident") principle for music from which one can deduce the rules of musical practice with mathematical precision. Once he had discovered his principle, the way was clear:

I then recognized that the consequences it revealed constituted so many rules following from this principle. The true sense of these rules, their proper application, their relationships, their sequence (the simplest always introducing the less simple, and so on by degrees), and finally the choice of terms: all this, I say, of which I was ignorant before, developed in my mind with clarity and precision.³⁴

Now the Cartesian aspirations of Rameau have been no secret to music historians. He has been described with little variation as a "pure Cartesian" and "a true product of the Age of Reason."³⁵ For Charles Lalo, "Everything is there: the methodical, even hyperbolic, doubt; the revelation of a *cogito* which is here an *audio*."³⁶ One French music historian, Catherine Kintzler, has gone so far as to dedicate an entire book to the celebration of Rameau's "delectable" Cartesian rationalism in both his music and theory:

[This Cartesianism] was not a simple manner of being, a figure of style, a fashionable dressing. It was not simply a partial borrowing of a few acoustical propositions and formulas of presentation. It was a complete Cartesianism, dedicated to orderly argumentation, a passion, an unmeasured love for intelligible forms which was applied everywhere.³⁷

³² *Traité*, Preface; Gossett, xxxiii.

³³ *Ibid.*, xxxv.

³⁴ *Ibid.*

³⁵ The citations are from, respectively, Philippe Beaussant, ed., *Rameau de A à Z* (Paris, 1983), 23; and Albert Cohen, *New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie (London, 1980), s.v. "Rameau."

³⁶ Charles Lalo, *Éléments d'une esthétique musicale scientifique* (Paris, 1939), 80.

³⁷ Catherine Kintzler, *Jean-Philippe Rameau: splendeur et naufrage de l'esthétique du plaisir à l'âge classique* (Paris, 1983), 45–46.

As we saw in the quotation cited in Chapter 1 (p. 12), Rameau himself did not disguise his intellectual indebtedness to Descartes. But if we leave our analysis of Rameau's epistemology at that, then we will miss the real richness and complexities to be found in his theory.

We might begin by reconsidering the role of reason in Rameau's theory. Despite the numerous incantations of this Cartesian codeword throughout the *Traité*, Rameau never denies the importance of empiricism in the formation of a credible music theory. Reliance upon a musician's experience and ear, he says frequently, is essential for the discovery and validation of any musical principle. Rameau even opens a chapter entitled "Observations on Establishing Rules" (Chapter 18, Book 2) with this empirical dictum: "We may judge music only through our hearing; and reason has no authority unless it is in agreement with the ear."³⁸ This is an appropriate caveat, since throughout this chapter (as well as the previous chapter "on license") he must continually resort to experience (often under the guise of *bon goût*) to sanction the numerous exceptions that run contrary to his already-established principles.

Much in Rameau's theory, as we know, was validated by musical experience and had little to do with any Cartesian reasoning. Examples are his explanations for the minor triad, octave identity, the function of the subdominant, and the need for temperament. There is nothing inherent in the string divisions of the monochord or resonance of the *corps sonore* that should lead to these formulations. Indeed, Rameau's main theoretical challenge, as we will see in subsequent chapters, was to relate these musical ideas in a non-forced way to his principle of harmony.

In Rameau's judicial system, experience seems to be the ultimate court of appeal, not reason. True, experience may offer us infinite diversity "in which we shall always lose our way," and it may "sow doubts everywhere." Yet, in the final account, reason has authority only "as long as experience does not contradict [it]."³⁹ In later years, Rameau would frequently cite with approval an aphorism of Cicero, "Superbissimum auris iudicium" (The judgment of the ear is superior).⁴⁰

We should hardly be surprised that Rameau paid such careful attention to experience in his theory. After all, he was first and foremost a practicing musician; in an active career spanning over sixty years, he was continually playing, composing, and listening to music, beginning with his humble church job as a youth and ending as the most renowned and prolific opera composer in France at the end of his life. For all his efforts spent on music theory, we must never forget that on an almost daily basis throughout his life he was constantly engaged in matters of practical music. His deep understanding of tonality was gained only through an almost unremitting immersion in practice. There was no aspect of his theory that was not a

³⁸ *Traité*, 125; Gossett, 139.

³⁹ *Ibid.*, 126; Gossett, 140. My emphasis.

⁴⁰ Beginning with the *Nouvelles réflexions* (Paris, 1752), 51; *CTW* IV, xlv. Strictly speaking, Rameau used the aphorism not to elevate experience over reason, but rather to elevate hearing over all the other senses (a topic we will discuss in Chapter 8, pp. 215 ff.). Nonetheless, the increased priority he accorded to the ear is evidence of heightened empirical convictions.

product of – and tested against – this immense wealth of experience. More than once Rameau advised the student seeking to master the art of music to begin by learning to play and improvise at the keyboard.⁴¹ Only in this way (that is, through practice), can one begin to develop one's ear, and thence, an understanding of music. One could never gain such an understanding through abstract theory.

There were other critical qualities essential to the composer that theory could not teach either. These were those quintessential qualities of French classical aesthetics: *bon goût*, *grâce*, and *sentiment*. As a composer of opera, Rameau knew his task was to underscore and express with music the rich gamut of passions suggested by his texts. In his famous letter to Houdar de la Motte of 1727 soliciting a libretto to set, the then-untested composer tried to distance himself from the "savant musicien" who, while skilful in combining notes with one another, is:

so absorbed in these combinations that he sacrifices everything to them, common sense, wit, and feeling (*sentiment*). Such a one is but a school musician, of a school where it is a question of notes and nothing more.⁴²

Rameau quickly added, however, that a more dispassionate understanding of music attained by the careful study of nature is still useful – indeed indispensable – for a composer. Repeating a doctrine made famous by Boileau, Rameau insisted that raw emotions that are the product of unmediated experience need to be filtered through reason in order to be effectively captured and expressed by the artist. Otherwise they will soon become enervated and tedious.

The fact remains, though, that before reason can have any meaningful application, the composer must first possess an abundance of experience, both of the passions he wishes to express and of the musical language by which he wishes to express them. For all of Rameau's emphasis upon reason, over and over again we find him ceding to experience, even when this forces him (as we will see it often will) to loosen the tight theoretical systems that he labored so intently to construct.⁴³

One music historian who has recognized the true empirical character behind Rameau's epistemology is Marie-Elisabeth Duchez. In a number of perspicacious studies, Duchez has argued that the empirical side of Rameau's theory plays a far more critical role than does the deductive-rationalist side:

The coherent system of hypotheses which forms the basis of Rameau's deductions results from an almost subconscious inductive synthesis comprising not only the results of the experience of harmonic resonance emitted by the *corps sonore*, but also the hypotheses with which his previous knowledge furnished him (definitions and properties of sound and its parameters, primary relations between sounds, etc.) . . . placed in connection with his empirical musical experience.⁴⁴

⁴¹ *Nouveau système de musique théorique et pratique* (Paris, 1726), 91.

⁴² Quoted in Girdlestone, *Rameau*, 9.

⁴³ Rameau continued to stress the necessity of experience and taste in the formation of one's musical skills in his later treatises. See, e.g., his remarks in the *Code de musique pratique*, 133.

⁴⁴ Marie-Elisabeth Duchez, "D'Alembert diffuseur de la théorie harmonique de Rameau: déduction scientifique et simplification musicale," *Jean d'Alembert, savant et philosophe: Portrait à plusieurs voix*, ed. Monique Emery and Pierre Monzani (Paris, 1989), 486.

Duchez argues that the real basis of Rameau's theory was his daily experience as a musician, hence her preferred label: "épistémo-musicale."⁴⁵

Was Rameau then being disingenuous by insisting upon the precedence of reason in the *Traité*? Was his Cartesian posturing mere rhetoric, or worse, was it that he was simply a bad Cartesian? For one American historian who has studied Rameau's writings, this is indeed the case. Charles Paul finds the label "Cartesian" to be more obfuscating than enlightening as applied to Rameau.⁴⁶

Yet it is not impossible to reconcile Rameau's impassioned Cartesian professions with his equally impassioned exhortations to experience and practice. For the boundary between any "rationalist" and "empiricist" epistemology is never quite so clearly drawn. All rationalist theories, after all, must intersect at some point with empirical evidence, just as there can be no empirical observation completely devoid of theoretical precepts.⁴⁷ Descartes did not eschew observation or experimentation in his own scientific practice, despite the popular depictions of his commentators. For all his suspicion of the senses and reliance upon "clear and distinct" ideas innate in our minds, recent scholarship has shown beyond a doubt how "experience" actually constitutes a major part of the Cartesian method.⁴⁸ To be sure, in his more celebrated philosophical writings Descartes emphasized a rationalist, deductivist epistemology that appears to discount empiricism. But this can be seen as a rhetorical gambit.⁴⁹ Reason and experience are two essential components of any epistemology, and if either one is more accented than the other, it can hardly be at the complete exclusion of the other. It is thus naive to posit empiricism and rationalism as two opposing and irreconcilable methodologies, with all their related binary oppositions: inductive versus deductive, the "heart" versus the mind, or, ultimately, Newton versus Descartes.

CONDILLAC AND THE "NEWTONIAN METHOD"

One philosopher who was a contemporary of Rameau, the Abbé Condillac, recognized quite clearly the dialectical relation between reason and experience,

⁴⁵ Marie-Elisabeth Duchez, "Valeur épistémologique de la théorie de la basse fondamentale de Jean-Philippe Rameau: connaissance scientifique et représentation de la musique," *Studies on Voltaire and the Eighteenth Century* 254 (1986), 130.

⁴⁶ Charles Paul, "Jean-Philippe Rameau (1683–1764), The Musician as *Philosophe*," *Proceedings of the American Philosophical Society* 114/2 (April, 1970), 141.

⁴⁷ Thomas Kuhn has exposed many of the fallacies inherent in a simplistic rationalist–empiricist bifurcation of scientific practice in his article "Mathematical versus Experimental Traditions in the Development of Physical Science," in *The Essential Tension: Selected Studies in Scientific Traditions and Change* (Chicago, 1977), 31–65.

⁴⁸ For two studies emphasizing the empirical aspects of Cartesian science, see Desmond Clarke, *Descartes' Philosophy of Science* (Manchester, 1982), 24–30; and Géraud Tournadre, *L'Orientation de la science cartésienne* (Paris, 1982), 47–125.

⁴⁹ A theme explored by William R. Shea, "Descartes and the Art of Persuasion," in *Persuading Science: The Art of Scientific Rhetoric*, ed. Marcello Pera and William R. Shea (Canton, Mass., 1991), 125–41; and Andrew E. Benjamin, "Descartes' Fable: the *Discours de la méthode*," in *The Figural and the Literal: Problems of Language in the History of Science and Philosophy*, ed. Andrew E. Benjamin, Geoffrey N. Cantor, and John R. Christie (Manchester, 1987), 10–30.

and offered a program for balancing the two that I believe is highly suggestive of Rameau's music theory. In his widely-read *Traité des systèmes* of 1749, Condillac prescribed a multi-stepped method by which any scientific, philosophical, or aesthetic system could be constructed and verified. His attempt can thus be considered the eighteenth-century equivalent to Descartes's *Discours de la méthode*.

Condillac defines a system as follows:

A system is nothing but the disposition of the different parts of an art or science in an order in which they all mutually sustain one another and where the last are explained by the first. Those parts which give reason to the others are called *principles*, and the system is so much the more perfect as the principles are few in number. It is even to be hoped that they may be reduced to a single one.⁵⁰

A system in Condillac's view could be imaged as a chain in which all elements connect hierarchically, with a single governing principle at the top of the chain. In a well-ordered system, all the elements of a science should be disposed in as rigorous a manner as possible so that one could latch on to any part and descend or ascend the chain to any other point by induction or deduction. The task of all philosophy was to discover the principles that control a system. Condillac distinguished three ways in which this could be done: through (1) philosophical axioms, (2) undemonstrated hypotheses, and (3) facts verified by observation and experimentation.

The first kind of system results from the baleful *esprit de système*. Here the philosopher places his principle first and then tries to deduce its consequences. An example of such a "first principle" is the aphorism "it is impossible for the same thing to be and not to be." By rigorous analysis of the writings of four important seventeenth-century philosophers (Descartes, Spinoza, Malebranche, and Leibniz), Condillac attempted to show how this kind of system-building led to logical circularities and sophistries.⁵¹

The second of Condillac's systems was less invidious, although still prone to error. Here the scientist proposes hypotheses for various phenomena and then seeks to test his hypotheses against the "nature of things" through observation and experimentation. This method is commonly used by scientists, Condillac admits; in many cases it is the only method available. However, it can never lead to certainty. Scientific principles are never "demonstrated"; rather they are merely confirmed and thus given varying degrees of probability.

Condillac reserves only for his third system the title of a true philosophical system. This is the *esprit systématique*. One begins with the empirical data of observation and experimentation and proceeds through precise calculation until one has reached the principles of a science. This is the only certain means of "demonstration." Condillac describes the process as consisting of two steps:

⁵⁰ *Traité des systèmes, où l'on en démêle les inconvéniens et les avantages* in *Oeuvres de Condillac*, 16 vols. (Paris, 1778), II, 1.

⁵¹ For a good discussion of Condillac's analysis of systems, see Ellen McNiven Hine, *A Critical Study of Condillac's "Traité des systèmes"* (The Hague, 1979).

The method I employ to make systems I call "analysis." One sees that it comprises two operations: "decomposition" and "composition." By the first, one separates all the ideas which pertain to a subject and examines them until one has discovered the idea which ought to be the germ of all the others. By the second, one disposes them following the order of their generation.⁵²

Condillac's favorite illustration of this process was a watch. One can understand the inner workings of a watch only by carefully taking apart its pieces, examining and classifying them with meticulous care, and then reassembling them into a whole. In this way, one arrives at a precise understanding of its operations.

The first step, then, is to reduce a science to its simplest elements through empirical analysis. We will recognize that we have arrived at such a point when all the elements are at such an elementary and primitive state that they cannot be further reduced or defined without tautology. The second step after reduction is "composition." We must rebuild our simple elements back into more complex bodies. This is accomplished by assigning a precise "sign" to each component. Using a carefully formulated language appropriate to that science (ideally one that is quantitative), we can then piece together the elements one by one to form a system, and thereby understand the exact workings of that science. Indeed, this is the simplest part of the scientist's task. According to Condillac, with a properly "decomposed" science one need merely make a few simple calculations comparing and combining the various signs in order to discover its true principles.

It is not difficult to discover the source of Condillac's analytic-synthetic method – it is the very method propounded by Isaac Newton.⁵³ The philosophes were unanimous in crediting Newton with the most luminous method of investigating nature. Rather than having recourse to arbitrary hypotheses and *a priori* axioms, Newton used an empirical approach, which, according to d'Alembert, "consisted of deducing his reasonings and conclusions directly from phenomena without any antecedent hypotheses, by commencing with simple principles, deducing the first laws of nature from a small number of chosen phenomena, and using these laws to explain the other effects."⁵⁴ Newton's method was a bold synthesis of observation and mathematics. He introduced "geometry into physics," and "united experience and calculation." Moreover, he displayed judicious philosophical modesty by not seeking to explain phenomena beyond what could be known through empirical demonstration or mathematical calculation. It was enough that the inverse square law of gravitation could be shown to account for planetary orbits without having to explain the cause of attraction.

⁵² *Traité des systèmes*, 296–97.

⁵³ The *locus classicus* of Newton's methodological credo is found in the Queries appended to the revised English edition of his *Opticks*: Isaac Newton, *Opticks*, 4th edition (London, 1730; reprint edition, New York, 1952), 404–05.

⁵⁴ *Encyclopédie*, s.v. "Newtonianisme."

Of course Newton was not the first scientist to describe, let alone employ, the analytic-synthetic method. This procedure may be traced at least to Aristotle.⁵⁵ Throughout the Middle Ages, *resolutio* and *compositio* were standard modes of disputation among scholastic dialecticians. What is noteworthy, though, was that they were considered independent methods. Preference among logicians was given to the method of composition, wherein one begins, as in Euclidean geometry, with something known to deduce an unknown. It was not until the seventeenth century, especially in the writings of Francis Bacon, that a purely (if over-simplified) inductive methodology was articulated.

Newton's greatest accomplishment (so thought the philosophes) was his reconciliation of inductive and deductive strategies, which is to say, the empirical and rational methods.⁵⁶ Through careful empirical analysis of phenomena (the inductive approach), Newton was able to discover a number of regularities which led him to hypothesize several principles of optics and celestial mechanics. Having arrived at this point, Newton was able to generalize mathematically some of these principles into axioms by which other hitherto-unrelated phenomena could be discovered and explained (the deductive approach). Of course, in reality Newton's actual practice was neither as simple nor as consistent as this description implies.

There is no uniform "logic of discovery" or ideal "scientific method" that can be reconstructed in order to account for the complex and unpredictable processes by which scientists assembled theories, let alone one of Newton's stature. We must distinguish the "rhetoric of method" by which scientists and philosophers claim discoveries are made from the reality of the process, which is inevitably far messier, and influenced by a variety of psychological, social, and even political forces.⁵⁷ Nonetheless, the analytic-synthetic method described by Condillac and d'Alembert does at least capture part of the "Newtonian style" in that it offers a means of accommodating both the mathematical and experimental elements so conspicuous in his science.⁵⁸ And with suitable adjustments, it conveys a strong suggestion of Rameau's "style."

55 Henry Guerlac, "Newton and the Method of Analysis," *Dictionary of the History of Ideas*, ed. Philip Wiener, 4 vols. (New York, 1973), III, 380.

56 E. W. Strong, "Newton's Mathematical Way," in *Roots of Scientific Thought*, ed. Philip Wiener and Aaron Noland (New York, 1957), 412-32.

57 The classic study espousing this view, of course, is Thomas Kuhn's *The Structure of Scientific Revolutions* (Chicago, 1962). While it is not possible here to explore any further this important and fascinating question, I will simply offer the titles of three different – and in some ways radically opposing – analyses of scientific practice that nonetheless share the same skepticism as concerns the positivists' claims of objectivity and uniformity in scientific method: Michael Polanyi, *Personal Knowledge* (Chicago, 1958); Paul Feyerabend, *Against Method* (London, 1975); and Bruno Latour, *Science in Action* (Cambridge, Mass., 1987). A number of interesting historical case studies of scientific rhetoric that also serve to disarm the positivists' position are to be found in the two volumes cited in footnote 49 above.

58 For a good analysis of the Newtonian "style," see I. Bernard Cohen, *The Newtonian Revolution* (Cambridge, Mass., 1987), especially 52-154.

THE DIALECTICS OF THEORY AND PRACTICE

If we look from a distance at the content and evolution of Rameau's theory, it appears that the "method" he followed, such as one may call it, was analytic-synthetic. Rameau seemed to treat his own music and that of his contemporaries as a body of empirical evidence. Through astute analysis of this practice, he observed consistencies in its behavior, and posited a number of provisional hypotheses and heuristic arguments to explain it: the generative fundamental, octave identity, the seventh as source of all dissonance, the fundamental progression of the fifth, etc. (Much of this empirical basis is already evident in his Clermont notes as described by Suaudeau.) From this point, Rameau hypothesized a single master-principle to accommodate these observations. In the *Traité*, this principle was the division of a monochord string; in later works it was the resonance of the *corps sonore*.

Now this is obviously an idealized depiction of the development of Rameau's theory, which was in reality far more complicated and eclectic, not to say inconsistent. As we will see over the following chapters, Rameau's principles and theoretical formulations were not the result simply of his acute observational faculties or refined analytic mind. There were a number of *a priori* ideological biases he brought to his theory that delimited the kinds of observations he would make and the conclusions he would draw therefrom. Nonetheless, the analytic-synthetic model is useful in that it highlights the inherent tension between empirical and theoretical systematization that we will find runs constantly through Rameau's writings. And as I have already recorded in Chapter 1, many of the philosophes recognized his success at reconciling these two as a fully Newtonian accomplishment.

Condillac, significantly, singled out Rameau's theory as a model of the *esprit systématique* in his *Traité des systèmes*:

M. Rameau has built upon harmonic generation a system that can serve me as an example. He has reduced everything to the harmony of the *corps sonore*. In effect, it is evident that harmony consists of a single sound which makes heard its harmonics, previously [considered] only noise. Thus, when one observes analytically all the different combinations and movements which this harmony experiences, one will see it transformed into all phenomena, which seem to possess no other rule than the imagination of the musician. If this system suffers from difficulties, it is only that the parts have not all yet been thoroughly analyzed.⁵⁹

Condillac's last point brings up a disturbing problem. Rameau's system, as complete and consistent as it appeared, still suffered from a number of empirical inadequacies. "Having cleared up the beginning of this difficult material in which a large number of questions did not appear susceptible to demonstration," d'Alembert noted, "[Rameau] was often faced, as he recognized himself, with multiplying the *analogies, transformations, and conventions*, in order to satisfy reason *as much as possible*

⁵⁹ *Traité des systèmes*, 296. Similar sentiments were expressed by Condillac in his *Essai sur l'origine des connaissances humaines* (Amsterdam, 1746), 73.

in the explanations of phenomena.”⁶⁰ Does this mean that his principle of harmony is then to be rejected? Not at all, d’Alembert reassures us:

In matters of physical science, where it is impossible to use any other arguments, except such as arise from analogy or convention, it is natural that the analogy should be sometimes more, sometimes less sensible, and we dare say that it is the mark of an unphilosophical mind not to be able to recognize and distinguish this gradation and its different nuances. . . . But in the meantime it would not be less unjust to reject this principle, because certain phenomena appear to be deduced from it with less success than others. It is only necessary to conclude that, by future research, means may be found for reducing these phenomena to this principle, or that harmony has perhaps some other unknown principle more general than the resonance of the *corps sonore*, and of which this is only a branch, or, lastly, that we ought not perhaps to attempt the reduction of the whole science of music to one and the same principle.⁶¹

D’Alembert compared Rameau’s theory of the fundamental bass to Newton’s theory of gravity. Both theories accounted for a wide range of observable phenomena, although a small number of anomalies persisted. “[These anomalies] do not confute the fundamental bass as the *principle of harmony and melody*, just as the system of gravity is the principle of physical astronomy, although this system cannot explain all the phenomena observed in the movement of celestial bodies.”⁶² Rameau’s theory had the preponderance of evidence supporting it, given the wide range of musical practice that it did explain. Rameau’s fundamental bass may thus be accepted provisionally, if not demonstratively, as the principle of harmony, since from it one can deduce “by an easy operation of reason, the chief and most essential laws of harmony.”

Finally, in designating Rameau’s “method” as analytic-synthetic, I want to emphasize again that I do not mean to suggest that this process was in any way uniformly diachronic, as one might infer from Condillac’s narrative. The process was really more of a dialectic in which Rameau was constantly attempting to mediate between the empirical appearances of musical practice and the synthetic demands of theoretical systematization. This fact explains better than any other, I think, why Rameau’s writings display such variety and vacillation. If we take a step back and view the main theoretical oeuvre produced by Rameau over some forty years synoptically, it is possible to see this dialectic process quite clearly by dividing Rameau’s most substantial publications and writings into practical and speculative halves, respectively (see Table 2.1).

⁶⁰ Jean Le Rond d’Alembert, *Elémens de philosophie*, in *Oeuvres philosophiques, historiques, et littéraires de d’Alembert*, 5 vols. (Paris, 1821–22), I, 331.

⁶¹ *Elémens de philosophie*, xiv–xvii.

⁶² *Ibid.*, 222.

Table 2.1 Rameau's theoretical writings

	"Practical" works	"Speculative" works
1716–21	"Clermont Notes"	
1722	<i>Traité de l'harmonie</i> (Books 3 and 4)	<i>Traité de l'harmonie</i> (Books 1 and 2)
1726		<i>Nouveau système de musique théorique</i>
1732	<i>Dissertation sur les différentes méthodes d'accompagnement</i>	
1737		<i>Génération harmonique</i>
1738–45	"L'Art de la basse fondamentale"	
1750		<i>Démonstration du principe de l'harmonie</i>
1760	<i>Code de musique pratique</i>	<i>Nouvelles réflexions sur le principe sonore</i>
1764		"Vérités également ignorées et intéressantes"

Admittedly this bifurcation presents an over-simplified picture. No work was exclusively "practical" in content, just as none was exclusively "theoretical." (The *Génération harmonique*, for instance, includes a practical composition method, while, conversely, the *Code de musique pratique* has sections of quite a speculative nature.) But I think this division does capture the two fundamental epistemological forces that pulled upon Rameau.

In his "practical" works, we hear Rameau the organist, choir director, harpsichord teacher, and composer speaking. Beginning with the Clermont notes described by Suaudeau, and traversing the last two books of the *Traité*, the *Dissertation sur les différentes méthodes d'accompagnement* of 1732, the lengthy manuscript entitled "L'Art de la basse fondamentale" stemming from the early 1740s, and culminating in the *Code de musique pratique* of 1760, Rameau proves himself to be a keen and reliable observer of musical practice. In these practical writings, Rameau comprehensively lays out guidelines for the learning of thorough-bass accompaniment and the skills of composition (two disciplines that for most eighteenth-century musicians were related). All his analyses concerning harmonic "modulation," dissonance treatment, melody, counterpoint, ornamentation, operatic conventions, accompaniment, etc. are the product of a seasoned and perspicacious musical practitioner.

The "speculative" writings that seemed to alternate in regular rhythm with the practical works would always take as a starting point the empirical observations codified in these practical works, and attempt to synthesize and ground them within some coherent theoretical framework. Of course the nature of this framework changed for Rameau over time. The kinds of arguments and evidence he employed in the *Traité* of 1722 were not the same as in the *Démonstration* of 1750. As we will see over the following chapters, Rameau was always testing new scientific evidence, methods, rhetorics, and heuristics on behalf of his theory. As I have already suggested, there is no one uniform scientific model in the

Enlightenment to which Rameau aspired or by which we may judge his work. The various explanations he offered all shared some degree of endorsement in the eighteenth century. The important point is that his theoretical enterprise was an attempt to accommodate and account for the empirical practice of music using scientific models sanctioned in his day.

Rameau may never quite have attained his goal of complete reconciliation. But every work moved him a step closer; each publication built upon material developed in preceding works. From a strictly chronological perspective, the results may appear chaotic and desultory, making the analysis of any one work isolated from the others a precarious enterprise. This is why it is so difficult to derive a picture of Rameau's theory from any single publication, or even worse, to take all his writings and try to reduce them to a single and static form. (This is also surely why all redactors since d'Alembert and Rousseau have had such difficulties in distilling Rameau's ideas in their popularizations.) Rameau's theory is not so much a fixed doctrine as it is a dialectical process. In order to capture the full richness and dynamics of his theory, we must be able to follow the dialogue that he carried on with himself between theorist and composer.

To be sure, tensions between theory and practice are not the unique province of Rameau's writings. In any music theory there is necessarily a process of accommodation between the intractable facts of empirical practice and the synthetic demand of theoretical systematization. But never was this goal so ardently pursued as by Rameau, for never were the roles of composer and theorist more inextricably intertwined within one individual. Both the speculative and practical coexist in Rameau's theoretical universe in precarious balance. Each evolved *pari passu*, feeding off and in return nurturing the other in mutual symbiosis, each distinct from – yet bound to – the other.

PRECURSORS OF HARMONIC THEORY

For such a revolutionary work, the *Traité de l'harmonie* contains surprisingly few individual components that can be said to be original to Rameau. The fundamental bass, as I have suggested earlier, was not so much a discovery as a unification of received theoretical formulations and practical heuristics. Many of the most celebrated hypotheses comprising the fundamental bass – the triadic foundation of harmony, chordal inversion, the concatenation of dissonance, the parsing of music into cadential phrases, and the generative fundamental – are ones that can be found individually in seventeenth-century practical and speculative theory texts. Indeed, the obvious filiation of the fundamental bass to seventeenth-century theory led numerous critics in Rameau's own day to dispute its paternity.

One critic of Rameau's writings, for example, attributed the fundamental bass to Kircher, while another claimed that the fundamental bass was common knowledge in Paris thirty years before Rameau ever published a word about it.¹ The organist Gilbert Trouflaut reported that a "Mr. l'Abbé Dugré Maître de Musique de l'Eglise Cathédrale de Paris" was told by Rameau himself that he (Rameau) was not the true discoverer of the fundamental bass, but learned of it as a child in Clermont from a "very old man who had long contemplated this art."²

While it is not quite true that the fundamental bass was a seventeenth-century invention, there were numerous adumbrations of it by theorists preceding Rameau in their treatises of composition and thorough-bass. If these theorists were not exactly giants upon whose shoulders Rameau stood (to borrow Newton's apt metaphor), they did offer a number of practical heuristics and informal guidelines that Rameau would use as a starting point. In the present chapter we will look at some of these precedents. In the following chapter we shall consider filiations of the fundamental bass to more speculative theoretical literature in the seventeenth century. We shall then be able to determine to what degree Rameau was dependent upon his predecessors, and what exactly was new in his theory.

¹ *CTW VI*, 75, 38. The two critics were, respectively, Castel and Montéclair. We will shortly be looking in some detail at both these men's critique of Rameau's theory.

² *CTW VI*, lii. The musician named was probably the Abbé Jean-Baptiste Guileminot Dugré who was *Maître de Musique* at Notre Dame from 1774 to 1790. While it is hardly likely that Rameau would ever have suggested such a thing to anyone, it does appear that Dugré was well acquainted with Rameau's theory – and possibly the composer himself – given the evidence of a short but faithful résumé of the fundamental bass in his own handwriting: "Principes de Composition de Mr. l'abbé DuGré" (F-Pn Rés F. 1433 fols. 38r-41v).

SEVENTEENTH-CENTURY TRIADIC THEORY

One of the most persistent shibboleths concerning Rameau's *Traité de l'harmonie* is that it was the first real "theory of harmony" ever to be written. Rameau, so the popular depiction goes, broke with the received models of contrapuntal pedagogy by positing harmony at the core of composition instruction.³ Depending upon the historian's particular bias, the accomplishment may be either hailed or decried. For partisans such as Riemann and Fétis, Rameau's discovery of the fundamental bass opened a brilliant and fertile period of harmonic theory (to which they each naturally believed their respective music theory to be the culmination), while in the view of detractors such as Schenker and his followers, Rameau's theory inaugurated a period of darkness.⁴ Neither position, however, can be countenanced by the facts. In both practical and speculative theory texts from the seventeenth century, there is ample evidence of clear "harmonic thinking."

Already in the first decade of the seventeenth century, the triad had assumed a central position in the theories of several pioneering Germans such as Joachim Burmeister, Otto Siegfried Harnisch, and above all, Johannes Lippius.⁵ Music was understood and taught by these theorists not so much according to the intervallic relationship between independent voices but rather according to the articulation and disposition of individual chords. Taking their cue from Zarlino, who had canonized the *harmonia perfetta* in his hallowed *senario* (a result of the arithmetic division of the octave and fifth), they considered the major triad to be the most fundamental consonant construct of music (see p. 74). Lippius christened this chord the *trias harmonica*, and compared its perfection to the divine Trinity.

French music theorists at the beginning of the seventeenth century evinced little of the triadic awareness of their German counterparts. On the whole, we may say that until mid-century, French theorists tended to be rather traditional.⁶ For example,

³ See, e.g., Hugo Riemann, *Geschichte der Musiktheorie*, 2nd edition (Leipzig, 1920), 474–75.

⁴ In an essay whose very title sets up one of the most specious polarities ever conceived by a music theorist, Schenker decried what he saw as the baleful effect of Rameau's fundamental bass upon the history of musical thought, by which the "seeds of death . . . penetrated into music theory and indirectly into composition": "Rameau oder Beethoven? Erstarrung oder geistiges Leben in der Musik?" *Das Meistenwerk in der Musik* 3 (1930), 492. But as Harald Krebs has shown, Schenker's antipathy towards Rameau is expressed only in his later writings. In his earlier essays, Schenker evinced a far more tempered – and in places, even charitable – assessment of the French theorist's accomplishments. See Harald Krebs, "Schenker's Changing Views of Rameau: A Comparison of Remarks in *Harmony*, *Counterpoint*, and 'Rameau oder Beethoven,'" *Theoria* 3 (1988), 59–72.

⁵ For a good overview of this history, see Joel Lester, *Between Modes and Keys: German Theory 1592–1802* (Stuyvesant [N.Y.], 1989), 28–52; and Benito V. Rivera, "The Seventeenth-Century Theory of Triadic Generation and Invertibility and its Application in Contemporaneous Rules of Composition," *Music Theory Spectrum* 6 (1984), 63–78. Even earlier precedents to these triadic theories have been identified by Professor Rivera in his article "Harmonic Theory in Musical Treatises of the Late Fifteenth and Early Sixteenth Centuries," *Music Theory Spectrum* 1 (1979), 80–95.

⁶ Which is not to say that German theory was uniformly progressive, either. Despite their widespread recognition and acceptance of the triad as an autonomous compositional construct, for example, most German theorists in the seventeenth century continued to teach the older modal system. Indeed, it was only in Germany that we find theorists in the eighteenth century passionately defending the modal system against the practice of major-minor tonality, long after the latter was accepted fully by theorists elsewhere on the continent (Lester, *Between Modes and Keys*, 47).

we find Zarlino's restrictive rules of counterpoint taught faithfully in France long after they were abandoned in most other countries.⁷ The reason for the conservative nature of French theory might be explained in part by a confluence of social and political factors in which the church, court, and music guilds sought to maintain tight control over musical practice by keeping at bay many of the innovations stemming from the Italian *seconda pratica*.⁸ And while these efforts proved only partially successful, they did have the effect of stifling most reforms of music theory and pedagogy. (Many of these conservative forces, we should also remember, were operative well into Rameau's day.)

Still, French music did not entirely escape the general evolution of musical style in the seventeenth century towards simpler, chordally-oriented textures obeying an incipient tonal syntax. A number of independent repertoires of early French Baroque music displaying these features can be identified: the *air de cour*, the Huguenot psalter, choruses from the *ballet de cour*, the *musique mesurée* of Jean Antoine de Baïf and his followers, and the improvised choral psalmody termed "fauxbourdon."⁹ In the numerous dance suites played by lutenists, guitarists, and clavecinists, we find clear evidence of an emerging "harmonic sensibility." Inspired by the chordal texture of Spanish guitar music that was imported via Italy, French instrumentalists in the seventeenth century adopted various Spanish homophonic dance genres within their instrumental suites: the *sarabande*, *passacaille*, *folie*, and *chaconne*. All this points to the emergence of a decided predilection for rich chordal sonorities that has continued to this day to be a hallmark of French musical taste.

In response to the ever-growing chordal textures of this music, a few theorists from the mid-century (such as Antoine Parran and Antoine de Cousu) began to incorporate triadic formulations in their pedagogy. They called the triad, translated from Zarlino, the *harmonie parfaite*.¹⁰ Ironically, this was just at the time some German theorists were abandoning the simple triadic pedagogy of Lippius and his generation. One reason suggests itself: the simple triadic theories of Lippius and his followers could not account for the increased complexity of dissonance treatment found in the more advanced Italian practice coming to be known in Germany at mid-century. Hence the primitive triadic theories found in the early part of the century became increasingly replaced by more contrapuntally oriented compositional

⁷ Albert Cohen, "Survivals of Renaissance Thought in French Theory 1610–1670: A Bibliographical Study," *Aspects of Medieval and Renaissance Music: A Festschrift for Gustav Reese* (New York, 1966), 82–95. The reader should note that in using the term "counterpoint," I do not necessarily restrict my meaning to genres and theories of polyphonic pieces like the fugue. I refer, rather, to a perspective from which musical structures can be understood as composite intervallic relations between individual voices and governed by definitive rules of voice-leading. It is thus possible to take a homophonic genre like the chorale and analyze it as a contrapuntal composition, just as it is equally possible to take a polyphonic genre like the fugue and analyze it as a harmonic composition.

⁸ For a lively discussion of the social forces shaping French music in the seventeenth century, see Robert Isherwood, *Music in the Service of the King: France in the Seventeenth Century* (Ithaca, 1973), especially 150–203.

⁹ Herbert Schneider, *Die französische Kompositionslehre in der ersten Hälfte des 17. Jahrhunderts* (Tutzing, 1972), 228–29.

¹⁰ *Ibid.*, 230. The term *trias harmonica* was never used by French theorists until the eighteenth century (e.g. by Brossard in his *Dictionnaire*, s.v. "sysygia" and "trias harmonica").

theories. Paradoxically, the very triadic innovations of monodic recitative introduced by the Italians as a replacement for the polyphonic complexities of the sixteenth century had themselves soon evolved into a sophisticated harmonic language that could only be explained by a restoration of contrapuntal pedagogy, albeit with updated rules and licenses.

We thus find two parallel – and in many ways contradictory – developments in seventeenth-century musical style. On the one hand, there was a trend towards simplified triadic textures that displayed increasing tonal characteristics. On the other hand, there were, particularly in Italy, ever bolder explorations and employment of dissonance for expressiveness that appeared to complicate, if not undermine, this emerging tonality. In one fundamental sense, there was no contradiction here, as the development and effectiveness of the most extreme “theatrical” dissonance was to some degree predicated upon a clearly-implied triadic tonality. In any event, since French music tended to remain more insulated from the *seconda pratica* during the seventeenth century, these French theorists could deal with their indigenous triadic practice with far fewer of the difficulties encountered by musicians elsewhere. And nowhere does this triadic awareness emerge more strongly than in their pedagogy for the thorough bass.

FRENCH THOROUGH-BASS PRACTICE

Thorough bass was a practice conducive to a harmonic conceptualization of music, since its primary charge was to “fill in” or double various musical textures by the sounding of chords above the bass. These chords either were indicated by the composer with the use of figured-bass notation, or, as was more common in the seventeenth century, were inferred “sopra la parte” by the performer reading the *partitura* or the simple unfigured-bass line. A consequence of this practice was that the composer and performer learned to parse the music into discrete vertical units that could be encoded by a shorthand notation of signatures. Even highly complex polyphonic textures could be expressed harmonically through the thorough bass.

For the political reasons described above, the French were relatively late in adopting the Italian thorough bass. The first work by a French composer calling for it was not published until 1652.¹¹ When the thorough bass finally did arrive after mid-century, though, it spread quickly. One suspects that the reason for this had to do with the way in which this new compositional device proved congenial to the French predilection for full harmonic sonorities. Not coincidentally, perhaps, the instruments favored by the French for the realization of the thorough bass during the seventeenth century were just those instruments most suited for producing strongly chordal textures: the family of strummed instruments such as the lute, theorbo, and above all, the guitar.¹²

¹¹ The *Cantica Sacra* of Henry Du Mont.

¹² A point well-emphasized by Albert Cohen in his article “A Study of Instrumental Ensemble Practice in Seventeenth-Century France,” *Galpin Society Journal* 15 (1962), 3–17.

The solo dance pieces indigenous to the Spanish five-course guitar were primarily homophonic in texture, and were played using a technique of rapid strumming called *rasgueado*. (As mentioned earlier, a number of the most popular dance genres cultivated by the French in the seventeenth century had their origins in Spanish guitar music.) Even if more contrapuntal textures would be played by more proficient guitarists using the technique of *punteado* (plucking), the general textures of these pieces remained mostly chordal.¹³ The theorbo, a particularly favored strummed instrument for the “petit chœur” of the Opéra continuo section, could produce more elaborate contrapuntal textures than the guitar on account of its greater size and number of strings. Still, few theorbo composers and performers could resist adding to their solo music sections of chordal strumming to exploit the distinctively rich and deep resonance of the instrument.

The importance of all these various strummed instruments to French thorough-bass practice in the seventeenth century is underscored by comparing the number of thorough-bass manuals published before 1700 written for guitarists and theorbists to those written for keyboardists. Whereas there are eight such thorough-bass manuals aimed at guitarists and theorbists, there are only three works for harpsichordists and organists. And of the latter, the only substantial one was subtitled “for the Theorbo and Harpsichord.”¹⁴

Seventeenth-century French thorough-bass treatises

A. For guitar, lute, and theorbo

Fleury, Nicolas. *Méthode pour apprendre facilement à toucher le theorbe sur la basse-continue*. Paris, 1660.

Bartolimi (Bolognese), Angelo Michele. *Table pour apprendre facilement à toucher le theorbe sur la basse-continue*. Paris, 1669.

Carré, Antoine, sieur de La Grange. *Livre de guitare . . . avec la manière de toucher sur la partie ou basse continue*. Paris, 1671.

Corbetta, Francesco. *La guitare royalle*. Paris, 1671.

Grénerin, Henry. *Livre de guitare . . . avec une instruction pour jouer la basse continue*. Paris, 1680.

Perrine. *Livre de musique pour le lut. Contenant une méthode nouvelle et facile pour apprendre à toucher le lut sur les notes de la musique . . . et une table pour apprendre à toucher le lut sur la basse continue*. Paris, 1680.

Grénerin, Henry. *Livre de théorbe . . . avec une nouvelle méthode très facile pour apprendre à jouer sur la partie les basses continues*. Paris, 1682.

Derosier, Nicolas. *Les principes de la guitare*. Paris, 1690.

¹³ I have explored the theoretical implications of this practice in an article, “The Spanish Baroque Guitar and Seventeenth-Century Triadic Theory,” *Journal of Music Theory* 36/1 (1992), 1–42.

¹⁴ If we expand our survey to include French-language publications produced outside of France, we could also cite the short résumé of rules compiled by the Belgian organist Lambert Chaumont, “Petit Traité de l’accompagnement,” appended to the *Pièces d’orgue sur les 8 tons* (Liège, 1695).

B. For harpsichord and organ

Denis Delair, *Traité d'accompagnement pour le théorbe et le clavessin*. Paris, 1690.

Guillaume Gabriel Nivers, "L'Art d'accompagner sur la basse continue pour l'orgue et le Clavecin," *Motets a voix seule accompagnée de la basse continue*. Paris, 1689, 149–70.

Jean Henry d'Anglebert, "Les Principes de l'accompagnement," appended to the *Pièces de Clavecin*. Paris, 1689.

There were crucial theoretical ramifications to the practice of thorough-bass realizations using strummed instruments: performers on guitars and theorbos tended to play and think of music in strongly vertical (harmonic) terms, and formulated their notation and pedagogy accordingly. Most of the realizations prescribed in the tutors listed above were strongly chordal, sometimes to the point of entirely discounting voice-leading considerations. One example of this extreme verticalism can be seen in the informal rule of thumb found in most thorough-bass treatises for harmonizing a diatonic bass line. The basic rule states that a "perfect" (5/3) chord was assumed above any bass note unless it was *supra mi*, in which case a 6/3 chord was to be played, so as to avoid the forbidden mi-fa tritone.¹⁵ Plate 3.1 shows a typical illustration of this rule that employs "alfabeto" notation, in which the respective letters indicate a particular chord to be strummed. (These chords are intabulated in tables usually found at the beginning of most guitar instructors. The particular intabulation specified in this example – from a collection of solo pieces by the guitar virtuoso Francesco Corbetta – is transcribed at the bottom of Plate 3.1.)¹⁶ By means of such "scale triads," a continuo player could learn to provide a simple harmonization to almost any diatonic bass line.

Regola per sanar sopra la parte.

Scala di musio
Per. b. quadro e
Per. b. molle

The image shows two musical examples. The top one is a single staff with a treble clef and a common time signature. It contains a sequence of letters: A, D, A, B, E, F, M, G, F, M, N. Above the letters are fingerings: 3, 3, 5, 5, 5. Below the letters is a bass line with notes corresponding to the letters. The bottom example is a grand staff (treble and bass clefs) showing a series of chords (triads) in the right hand and a bass line in the left hand, illustrating the 'scale triads' mentioned in the text.

Plate 3.1 Table and transposition of "scale triads"

¹⁵ Carl Dahlhaus, *Studies on the Origin of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton, 1990), 120.

¹⁶ Appended to Francesco Corbetta, *Varij Capricij per la ghitarra spagnuolo* (Milan, 1643).

Elementary as these scale triads may be, they are noteworthy for suggesting an informal kind of harmonic awareness. Each scale degree of a mode is understood to support some appropriate chord. Scale triads thus reflect the beginnings of a subtle but ultimately decisive shift in music theory, in which a melodic conception of mode based upon the ordering and articulation of particular pitches (*ambitus* and *species*) gave way to a tonal conception of key based upon the context and function of its indigenous harmonies. As we follow the evolution of these scale triads as prescribed in thorough-bass primers during the course of the seventeenth century, we are in essence observing the emergence of a scale-degree based conceptualization of tonality – a kind of primitive *Stufentheorie*, if you will.¹⁷

The popularity of strummed instruments within the French continuo ensemble was largely confined to the seventeenth century. At least one treatise from the early eighteenth century, however, still reflects this tradition: François Champion's *Traité d'accompagnement et de composition selon la règle des octaves de musique* (Paris, 1716). Champion was himself a theorbist and guitarist, and his rules for accompaniment were very much a reflection of this background. Champion's treatise constitutes the final chapter of French guitar-theorbo continuo practice before its eventual usurpation by the keyboard.

The most important feature of Champion's treatise, the *règle de l'octave* – the “rule of the octave” – turns out to be an updated version of the scale triads found in seventeenth-century thorough-bass treatises for strummed instruments. Example 3.1 gives one version of Champion's *règle* in C major and A minor. The idea behind

C major

A minor

The image shows two musical staves, one for C major and one for A minor. Each staff consists of a treble clef and a bass clef. The treble clef part shows a sequence of chords (triads) for each scale degree. The bass clef part shows a sequence of notes, likely the bass line. The chords are labeled with numbers 1 through 7, and some are marked with a sharp sign (#). The notes in the bass clef are also labeled with numbers 1 through 7, corresponding to the scale degrees. The C major staff shows chords for C, D, E, F, G, A, and B. The A minor staff shows chords for A, B, C, D, E, F, and G. The notes in the bass clef are: C major (C, D, E, F, G, A, B) and A minor (A, B, C, D, E, F, G).

Example 3.1 Champion's *règle de l'octave*

¹⁷ Many keyboard thorough-bass treatises from the seventeenth century also contained versions of these scale triads. (Examples by Banciardi, Banchieri, and Sabbatini are given by Franck T. Arnold in *The Art of Accompaniment From a Thorough-Bass* [Oxford, 1931], 75, 83–85, and 112–21, respectively.) But in line with the more contrapuntal orientation characteristic of keyboard practice, these are prescribed less as bona fide triads to be played above each scale degree than as intervallic progressions.

the *règle* is identical to that behind scale triads; it represents a utilitarian means by which a performer could realize a diatonic unfigured bass line *sur la partie*. Instead of the very awkward parallel triads found in earlier treatises, though, we now have a more elegant and a smoother progression largely consisting of sixth chords that help to define each scale degree. Only the tonic and dominant take triads, while all the other scale degrees support some variety of sixth chord. By knowing which particular sixth chord belongs to which scale degree, one has a means of harmonizing every diatonic scale progression. At the same time, by means of differing characteristic dissonances, one can orient a given chord within any key. So, for example, the 6/4/2 chord (the *accord du triton*) uniquely defines the fourth scale degree descending to a 6/3 on $\hat{3}$ (carrying the *accord de la petite sixte* in major). If however we play the *accord de la grande sixte* (6/5/3), we are defining the fourth scale degree ascending to the dominant. Should we raise this chord's lowest note a half-step, thus creating a diminished fifth (figured 6/♭3/3 – the *accord de fausse-quinze*), we are defining a new leading tone (*note sensible*). With only a few exceptions, we can continue in this manner with each scale degree – whether in a major or minor key, whether in an ascending or descending format – and find a chord that distinguishes it from other scale degrees. We will see in Chapter 7 of what theoretical consequence the *règle de l'octave* was to be in Rameau's theory.

By the beginning of the eighteenth century, as I have noted, the harpsichord had largely supplanted strummed instruments in the French continuo. Nonetheless, I think we can detect the legacy of these strummed instruments in the chordal realizations that were prescribed for keyboardists in their own thorough-bass primers. This quality emerges most clearly in the heuristics by which French keyboardists realized the more complex dissonant figures increasingly found in eighteenth-century music.

In order to learn to play these many dissonant chords, thorough-bass instructors often posited the triad as a fixed structure from which more complicated signatures could be derived, either by inversion, by adding dissonant notes below or above the chord, or by altering the notes of the triad itself. Thorough-bass pedagogues began to adopt this strategy with increasing frequency in the course of the eighteenth century. A good example can be found in one text Rameau knew well and quoted in his writings (although not always with citation!): Michel de Saint-Lambert's short treatise, *Traité de l'accompagnement du clavecin, de l'orgue et de quelques autres instruments* (Paris, 1707).¹⁸ In one section entitled "Réduction des Accords chiffrés aux Accords parfaits" ("Reduction of figured chords to perfect chords"), Saint-Lambert advises the student to learn to realize these dissonant figures by playing some consonant triad in the right hand above the bass note played by the left hand:

¹⁸ Gossett has identified a number of short passages from the fourth Book of the *Traité* ("On Accompaniment") that are cribs of Saint-Lambert's treatise (Gossett, xiii–xiv). Strangely, though, none of the cribs concern any sophisticated theoretical ideas, but are quite pedestrian passages. I should add that in my reading of all of Rameau's writings, I have come across no other passages that I have been able to identify as cribbed. In any case, the passages under consideration deal with rather ordinary technicalities of accompaniment. It may seem odd that Rameau would choose to plagiarize them. Yet it was undoubtedly because of their rather pedestrian nature that he obviously felt no qualms in doing so.

Those who are learning Accompaniment usually have more difficulty understanding & remembering by heart figured chords than [they do] perfect chords. But it is easy to make this less difficult, by pointing out that when a [bass] note has several figures that assign to it an unusual chord – this chord (though unusual for that particular bass note) is often the perfect chord of another [bass] note. When an Ut, for example, is figured with a 6, the chord denoted by 6 on Ut is the perfect chord on La; if it is figured with Four & Six 6/4, this is the perfect chord on Fa; if it is figured with 7, or with 7/5, or with 7/5/3, this is the perfect chord on Mi, etc. In order, therefore to give the Reader all possible assistance on the above matter, I am going to teach him how to imagine the majority of dissonant chords indicated by these figures as perfect chords.¹⁹

Saint-Lambert goes on to take more dissonant figures (such as 6/#4/2 and 9/7/4) and show how this strategy simplifies their realization.²⁰ In these last cases, the chord can be found by playing a triad one step higher and lower, respectively, than the notated bass.

The implications for Rameau's theory are striking: as a simple heuristic, students were taught to think of triads as the fundamental building blocks of harmony. All other chords, even the most dissonant, were implicitly derivative. We should not exaggerate the point, though. Saint-Lambert was not saying, as Rameau would, that in any *formal* sense all harmony could be derived from a fundamental harmonic source. His was an entirely practical rule of thumb.

RAMEAU'S PEDAGOGY OF THE THOROUGH BASS

Thorough-bass practice was the catalyst by which Rameau discovered the fundamental bass. Through his experience playing and composing the thorough bass, Rameau learned to conceive of music as discrete harmonic units that were controlled by a temporal bass line. It was a practice he recommended strongly for every music student. "The shortest and surest means for becoming properly sensitive to harmony," he wrote in 1726, "is by accompanying on the harpsichord or organ, since one will always hear a most regular succession of full harmonies."²¹ This is why accompaniment was always such an important topic to Rameau, and why he returned to it again and again in his writings.²² One reviewer of Rameau's own day recognized the importance of this discipline to the development of his theory:

The art of accompaniment is in a sense the primer of the author and that by which he began to be renowned. It is the key that has opened to him the most secret sanctuaries of music.

¹⁹ *A New Treatise on Accompaniment*, translated and edited by John S. Powell (Bloomington, 1991), 42–43.

²⁰ Other thorough-bass theorists who follow a similar method are Denis Delair, *Traité d'accompagnement* (Paris, 1690); and Gottfried Keller, *A Compleat Method for Attaining to Play a Thorough Bass* (London, 1707). For a description of Keller's method, see Matthew Shirlaw, *The Theory of Harmony* (London, 1917), 448–53. Arnold is generally dismissive of this heuristic, calling it "worse than useless" (*The Art of Accompaniment*, 183).

²¹ *Nouveau système*, 91.

²² Besides the fourth Book of the *Traité*, advice to the student accompanist can be found in the *Dissertation* of 1732, "L'Art de la basse fondamentale" of the 1740s, and the *Code de musique pratique* of 1760.

It is in this that we should expect to receive from him ideas that are the most precise, the most naive (if I may use this term), the most developed and the most methodical.²³

Thorough-bass accompaniment was not unlike composition, since the performer must be able to play harmonies without hesitation following the very rules that guide the composer. Hence Rameau could write in 1760 that “the principles of composition and accompaniment are the same but in an entirely opposite order.”²⁴ Learning the former skill, he explained, is like studying a tree by starting at its roots, while in the latter, one begins with the branches.

We have seen through Suaudeau’s study of Rameau’s Clermont notes how the fundamental bass was initially conceived as a practical aid for learning to realize chords above a continuo bass. If many of the signatures of the figured bass were shown to be related, and indeed could be played using identical fingerings in the right hand, then the mastery of accompaniment is much simplified. As we have just seen, this was the approach that Saint-Lambert took. Rameau would adopt Saint-Lambert’s idea in the fourth Book (“On Accompaniment”) in his *Traité*, but pursue it far more systematically. Rameau suggests that by knowing only two basic chordal structures – the consonant triad and the dissonant seventh chord – an accompanist can realize any signature, provided he knows which triad or seventh chord to place above the given note in the bass.

We can see this process clearly illustrated in Example 3.2, taken from a “Carte générale de la basse fondamentale” written by Rameau to serve as a summary of his theory.²⁵ While Rameau wrote this example several years after the *Traité* was published, it accurately reflects ideas he articulated in Book 4 of that work. We can see that by utilizing only the consonant triad and three different seventh chords (and making a few adjustments for the minor mode), Rameau is able to generate thirty-two separate chords. The “fundamental bass” indicated below the basso continuo part reveals the true foundation of each chord, determined by the bottom note of the respective triad or seventh chord that forms its core. The first three chords are all considered to be consonant since they are products of the tonic triad. The second group of chords is derived from the dissonant minor seventh chord built on the second scale degree (“la septième de la seconde note du ton”). Here Rameau is able to generate twelve separate chords by placing different notes in the basso continuo. Two chromatic alterations are also included so as to produce a secondary dominant in the major mode, and a “French” augmented sixth chord in the minor mode. (The notes designated with black noteheads are to be omitted when the chord is sounded in order to avoid unacceptable octave doublings and dissonant clashes.) The chord figured 4 is another exception noted by Rameau. He still considers the chord to be a kind of seventh built on D even though a non-chord tone (G) is sounded in the basso continuo. This latter note of “supposition” is analyzed by Rameau as standing outside of the chord (an “hors d’œuvre”). Similar instances are

²³ CTW I, xlvi. The reviewer was Castel, an eccentric Jesuit whom we will encounter again in Chapter 5.

²⁴ *Code de musique pratique*, 24.

²⁵ “Carte générale de la basse fondamentale,” *Mercure de France* (September, 1731); CTW VI, 64.

found in those chords figured as #7, 9, and #5.²⁶ The remaining two groups involve the dominant-seventh chord and the diminished-seventh chord on the leading tone (minor mode only). We can see that with but a few licenses related to chromatic alterations, omitted notes, and “supposed” basses, there are just four basic chord types involved and hence just four fundamental basses.

Rameau’s fundamental bass is thus a great simplification of accompaniment since one must only know how to finger four chords in the right hand. Moreover, voice leading is made much easier since one need only know how to prepare and resolve these four chord types. Two basic rules are laid out by Rameau: (1) the seventh of each dissonant chord (the “minor” dissonance as he calls it) is usually – but not in all cases – prepared as a consonance in the previous chord and resolves downwards by step, and (2) the leading tone of a dominant-seventh chord and diminished-seventh chord at a cadence (the “major” dissonance) resolves upwards by step to the tonic note. Rameau offers an exercise to practice these rules in the *Traité* (see Example 3.3).²⁷

In this example, Rameau writes out a chain of dissonant seventh chords in order to show how the seventh is prepared as a consonance and resolved downwards by step to another consonance in the following chord. (The only exceptions to this “rule of the seventh” are in the first measure, and in m. 6 where two sevenths are displaced by chromatic motion.) The added-sixth chord figured in m. 7 is interesting since it is assigned its own fundamental bass. (We will see in Chapter 5 how Rameau was acutely ambivalent in the *Traité* about the true nature of this chord.) Because the added sixth is here considered by Rameau to be a “major” dissonance, it resolves upwards by step to the third of the following triad, just as does the leading tone.

The striking feature Rameau wishes to illustrate by this example is the unification of voice-leading rules possible through the fundamental bass. By showing a variety of possible basso continuo lines that could conceivably support this harmonic progression, Rameau is demonstrating that there are really only a very limited number of fundamental chord progressions, despite the diversity of dissonant figures one may find above the basso continuo. In a real sense, all the myriad rules of dissonance treatment found in typical thorough-bass treatises are redundancies. One simply needed to know *how* a given dissonance progression was related to the fundamental seventh chord. We should note that Rameau did not propose these various continuo lines as viable bass parts that a composer might choose; he admitted that many of them were quite awkward. Rather, they were illustrations of the variety of signatures that could be related to each of these seventh chords depending upon the particular bass voice used in the continuo. The example was thus a kind of thesaurus of harmonic vocabulary not unlike the chords itemized in

²⁶ We will consider the theoretical arguments related to these chords in Chapter 5 along with Rameau’s theory of “supposition.”

²⁷ *Traité*, 419; Gossett, 432.

The image displays a musical score for Example 3.3, titled 'Traité, 419'. It consists of nine numbered staves (1-9) and a treble clef staff at the top. The notation is primarily figured bass, with figures placed below the notes. The figures are as follows:

Staff	1	2	3	4	5	6	7	8	9
1	7	7 7	7 7	7 7	7 7	7 7	7 7	7 7	7 7
2	6	6 5 7	8 6	7 6	6 5 4#	8 4#	6 4#		
3	6 7	6 7	6 7	6 7	2 8	4# 8	6 5 6	6	
4	6 4 5	2 6 5	4# 7	6 5 2	6 8	7b 6	6 6		
5	6 5	7 6 5	7 6 5	6 6 5	6 5 6#	7# 6	6 5 8		
6	6 4 7	6 6 5	6 2	6 5 7	6 7	6# 7	6 6		
7	6 5	7 6	6 6	6 6	6 6#	8 7b	6 5 7	6 4	
8	6 7	9 7	9 7	9 7	7 5#	8 7b	6 5 8	[6]	
9	7	7 7	7 9 4	8 7 3 7	2 7#	7# 6 4	6 5 7		

Example 3.3 *Traité*, 419

Example 3.2, except that now these chords were connected together in a variety of sequential patterns.

Despite this extraordinary revision of thorough-bass pedagogy, Rameau does not entirely reject more traditional approaches for learning accompaniment. Indeed, for most of the lessons contained in the fourth Book of the *Traité*, Rameau has recourse to received empirical rules of voice leading and counterpoint measured above the continuo bass (as opposed to the fundamental bass), as well as mnemonic formulas such as the *règle de l'octave*. He cites the *règle* in Chapters 6 and 7 (which he calls “une progression diatonique de la basse, tant en montant qu’en descendant d’une octave”).²⁸ The *règle* proved useful for Rameau, since it helped him clarify the tonal context of his seventh chords and inversions, that is, it showed which chords were typically to be found above which scale degree. So as one example, we find Rameau recommending that the “chord of the small sixth” (6/4/3) usually occur over the second scale degree of any mode and resolve upwards by step to the simple “chord of the sixth” (6/3) on the mediant.²⁹ Yet later he discusses the same progression in terms of his fundamental bass, which is to say as a dominant-seventh chord with its fifth in the bass resolving to a tonic triad with its third in the bass.³⁰ The result is an eclectic system of accompaniment, relying upon traditional methods of pedagogy and his new fundamental bass.

Over the following years, Rameau evidently continued to refine his system of accompaniment, for by 1729 we find him engaged in a lively dispute over this very topic. This will be only the first of many quarrels we will see the temperamental Rameau involving himself in concerning his theory. The dispute (known as the “Conference”) involved “two well-known musicians who met at the home of someone whose daughter is a skilled harpsichordist in order to discuss together several points of harmony upon which they disagree.”³¹ Although the two disputants are referred to throughout the controversy as the “first” and “second” musicians, respectively, it becomes quite clear that Rameau is the “first” musician in question. As to the identity of the second musician, the most likely candidate is the composer and pedagogue Michel-Pignolet de Montéclair (1666–1737).³²

²⁸ *Traité*, 382.

²⁹ *Traité*, 393; Gossett, 406.

³⁰ *Traité*, 413; Gossett, 426.

³¹ The “Conference” was reported in the pages of the *Mercure* (June, 1729), 1,281–89. This was followed by a series of increasingly-vituperative open letters penned by the two participants that was also published in the *Mercure* over the following two years. The complete exchange is reprinted in *CTW* VI, 29–65.

³² Rameau and Montéclair were well-known rivals in their days, not only as music pedagogues, but as opera composers. And a contemporaneous annotation in a copy of the *Mercure* now at the Bibliothèque Nationale indicates that the “second” musician was indeed Montéclair (Cuthbert Girdlestone, *Jean-Philippe Rameau: His Life and Work*, 2nd edition [New York, 1969], 486). But the case for Montéclair is not conclusive. For one thing, he never published any pedagogical works on harmony or accompaniment. (His pedagogical writings are all elementary primers on singing and the violin.) Moreover, it is known that Rameau had enough regard for Montéclair’s music to have borrowed a number of passages from the opera *Jephthé* (1732) in his own *Hippolyte et Aricie*, produced only one year later. See Robert Fajon, “Le Prérâamisme dans le répertoire de l’opéra,” *Rameau Colloque International*, 307–29.

While there were a number of issues involved in the dispute between Rameau and Montéclair, one subject quickly assumed capital importance: what means was the most efficacious for teaching accompaniment – the fundamental bass or the *règle de l'octave*? Rameau was by now growing ever more confident in regards to his theory, and he believed he could now construct a method of accompaniment that was exclusively built upon the fundamental bass. It is “the first and only principle to which everything else leads in music and from which proceed rules as definite as they are simple.”³³ With the fundamental bass, it is possible for the student to play any signature without hesitation, and moreover, know how to connect that harmony to the next without any faults. With the *règle de l'octave*, on the other hand, the student is faced with learning by memory hundreds of individual chords and patterns – 1,584 to be precise (given that there are twenty-two different chords in the *règle* to be memorized in 3 different hand positions in 24 keys – resulting in a grand total of 1,584 chords!).³⁴ And even then, there are so many exceptions and progressions contrary to common practice in the *règle*, that it is rendered all but useless:

The number of these exceptions is prodigious. The knowledge and practice of them are filled with almost insurmountable difficulties on account of the quantity of chords, the infinite variety of their accompaniment, and the constant surprise caused by the different types of progressions to which each chord is individually susceptible contrary to habits often already formed. There is a confusion between fundamental rules with those of taste and an emptiness too often suffered by the harmony because of the impoverished resources available to the ear in learning the real progress of sounds. There is finally the servile subjection to frequently incorrect figures and false applications to which none of the many rules and innumerable exceptions can be subjected.³⁵

Compare this, Rameau challenges, to his own theory of the fundamental bass, which reduces all harmonies to but two basic building blocks: the consonant triad and the dissonant seventh chord.

Montéclair answered Rameau's charges by defending the utility of the *règle* and in turn accusing Rameau's system of suffering itself from pedagogical difficulties and exceptions to practice.³⁶ Among the criticisms raised by Montéclair were that

³³ *CTW* VI, 49.

³⁴ Of course Rameau's calculations are misleading, as many of the harmonies in all the various *règles* are identical; hence, there are far fewer than the 1,584 separate chords Rameau claimed. In any event, Rameau misrepresents the pedagogy of the *règle*, as Champion emphasizes not the memorization of individual chords in separate keys but rather the memorization of common harmonic progressions and finger patterns that can be called upon spontaneously by the player.

³⁵ “Observations sur la méthode d'accompagnement pour le clavecin qui est en usage, & qu'on appelle Echelle ou Règle de l'Octave,” *Mercur de France* (February, 1730), 253–54; *CTW* VI, 45. Rameau develops his critique of the *règle* further in his *Dissertation*, 53–58.

³⁶ The vigor with which the second musician defends the *règle* from Rameau's attacks raises the intriguing possibility that the disputant in question is not Montéclair at all, but the most prominent advocate and “discoverer” of the *règle*: Champion! It may be of significance that it was just at this time that Champion published two works that served as clarifications and propaganda on behalf of the *règle*: *Lettre du sieur Champion à un philosophe disciple de la règle de l'octave* (Paris, 1729); and *Addition au traité d'accompagnement et de composition par la règle de l'octave* (Paris, 1730). It is true that in the first of these publications Champion offered somewhat elliptical praise for Rameau's fundamental bass. But this need not have precluded his still engaging in a debate with Rameau over the merits of the *règle*.

Rameau's system resulted in clumsy realizations and mechanical voicings that were often faulty. Moreover, his system was difficult for the student to learn, and even more difficult to put into practice. Not willing to concede any point, Rameau pressed on to develop his method. Indeed, within one year after the conclusion of this dispute, Rameau published his important treatise of accompaniment, the *Dissertation sur les différentes méthodes d'accompagnement pour le clavecin* of 1732. Building upon ideas first enunciated in the "Conference," Rameau outlines a complete system of accompaniment by which one could learn to play the basso continuo without even knowing how to read music!

Rameau's "nouvelle méthode" consists of two parts. The first is a new notation for the basso continuo. Figures used by composers today, Rameau bemoans, are both too numerous and too imprecise. A single figure 6 or 7 in the basso continuo, for instance, might refer to any one of a dozen possible chords. Rameau insists that the accompanist needed to know how to play only seven different kinds of chords with the right hand (thus expanding by three the list given in Example 3.2). He did not need to worry about doubling the bass line with the left hand, since another continuo instrument would play that part. Here are the seven chords and their new symbols according to Rameau's system:

<i>Chord Name</i>	<i>Symbol</i>
Tonic Triad (C-E-G)	C
Dominant Seventh (B-D-F-G)	X
Minor Seventh (C-D-F-A)	2
Added Sixth (C-E-G-A)	aj
Four Three (C-E-F-A)	4/3
Four (C-D-G)	4
Seven (C-E-G-B)	7

By knowing these seven chord types, Rameau argues, it is possible to realize almost any diatonic progression. The triad was the only one of these chords that could be transposed (indicated by its letter name). But the other chords were fixed within the given mode. Naturally music changes keys, thus one needed to know all these chords in all possible keys. (Key changes were to be indicated by designating the letter name of the key in the basso continuo.) Finally, if a chord needed to be played that could not be found on this list, it would be easy to play and notate it through the diatonic or chromatic displacement of notes belonging to one of these chords.

The second part of Rameau's new method consists of a series of rules for connecting chords. Essentially it involves keeping the right hand in as closed a position as possible while fingering a chord, keeping all common tones between chords, moving by stepwise and contrary motion between outer voices whenever possible, and having all dissonances resolve downwards by step (except when the dissonance is an added-sixth, in which case the sixth resolves upwards). To indicate any irregular resolutions, Rameau employs a notation of dots to direct the keyboardist's finger movements. Depending upon the placement and number of dots, the performer

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SONATA III. DE CORELLI.



Adagio.

C

C A C | 2 4 x C x | C x C ay x |
 1 2 3 4 | 1 2.3 4 | 1 2 3 4.

G

G E G | 2 4 x G x | G x G ay x |
 1 2 3 4 | 1 2 3 4 | 1 2.3 4 | 1 2 3 4.

D

G ay : | x G 2 G 4 x | G C 4 : : : : |
 1 2 3 4 | 1 2.3 4. | 1 2 3.4. | 1 2 3 4 |

: x A 2 4 x | A C ay x | G ay A ay x | x E 4 x E C |
 1 2 3.4. | 1 2.3 4. | 1 2.3 4. | 1.2.3 4 |

ay : C ay : C | 2 C x C 4 x C | ay : x 4 C 2 | x C 4 x C G |
 1 2.3 4. | 1.2.3.4 | 1 2.3.4 | 1.2.3 4 |

2 x C ay : C 2 | x C 4 x C ay : | x C 4 x C
 1.2.3.4. | 1.2.3 4. | 1.2.3 4 ||

Plate 3.2 Rameau's figured-bass notation for Corelli's sonata Op. 5 no. 3

was to move one or two fingers downwards at the prescribed moment. We can see an illustration of this notation in the one example Rameau provided from a sonata by Corelli (see Plate 3.2).³⁷ The rhythmic placement of each chord can be

³⁷ *Dissertation*, 64.

determined by the beats of the measure marked underneath the respective chord symbols.³⁸

With Rameau's new method, continuo playing was purely a mechanical process of chord placement and finger movement, or, as he proudly noted, just a "mécanique des doigts." By vastly reducing the plethora of chord signatures, and further by prescribing a few simple rules of chordal connection, Rameau had ostensibly made one of the most daunting and time-consuming tasks of musical practice accessible to everyone. What had previously taken years of practice to perfect could now be accomplished in only a few months' time.³⁹

It probably need not be pointed out that Rameau's method is logically inconsistent. As only the most obvious example, one may demand why Rameau chooses the seven chord types he did, given that a number of other functional types (e.g. any chord of the mediant or leading tone) are omitted. We must agree with Montéclair that his method really was both too mechanical and too cumbersome to be of practical value.⁴⁰ His symbols were ultimately insufficient in accommodating the more complex harmonic vocabulary required of accompanists in the eighteenth century, and his limited rules of voice leading resulted necessarily in clumsy and often faulty progressions. But Rameau was not blind to this fact either.⁴¹ He never did, after all, employ his new notation in any of his own compositions (nor, as far as I can tell, did any other composer).

And when he returned to the question of accompaniment in his *Code de musique pratique* thirty years later, he admitted that this method was inadequate.⁴² He retained most (but not all) of the traditional figures for notating the basso continuo line as well as reinstating many of the older contrapuntal rules of voice leading. Reflecting

³⁸ For a more detailed discussion of Rameau's method of accompaniment, as well as a transcription of the Corelli example, see Deborah Hayes, "Rameau's 'Nouvelle méthode,'" *Journal of the American Musicological Society* 27/1 (Spring, 1974), 61–74.

Rameau's notational reform, we should note, was only one of many proposed in the eighteenth century. Numerous other "methods," "machines," "secrets," "tables," and the like were offered by authors seeking to satisfy the public's demand for means to facilitate learning to read and play music. Two in particular may be mentioned: Demoz de la Salle, *Méthode de musique selon un nouveau système très-courte, très facile et très-sûr* (Paris, 1728); and Jean-Jacques Rousseau, "Projet concernant de nouveaux signes pour la musique lu par l'auteur à l'Académie des sciences, le 22 août 1742" (Genève, 1781). Even Montéclair caught the reformist virus and proposed a new system of notation in 1736 that he believed greatly simplified the reading of music, as well as helping the student intone pitches more accurately: "Abrégé d'un nouveau système de musique," in *Principes de musique* (Paris, 1736). For a comprehensive description of these many notational reforms in the eighteenth century, the reader is encouraged to consult Johannes Wolf's still-authoritative *Handbuch der Notationskunde*, 2 vols. (Leipzig, 1913–19) II, 335–86.

³⁹ *Dissertation*, 62.

⁴⁰ Rousseau later remarked that Rameau "corrected a fault" with his system of figured-bass notation "only by substituting for it another" (s.v. "chiffres," *Dictionnaire de musique*).

⁴¹ In the Bibliothèque Nationale there is a copy of the *Dissertation* (call number Vm8 X4 [3]) with substantial annotations and corrections penned in the margins. These seem to be by Rameau and suggest that he was at some point thinking of revising the work.

⁴² *Code de musique pratique*, 74. It is ironic, then, that the *Dissertation* was the only work of Rameau's to enjoy a second edition in the eighteenth century with a reprinting around 1772 by Bailleux. A reviewer of this edition rightly expressed his puzzlement about the need for reissuing a work that was clearly so obsolete (CTWV, 91).

his new-found fascination with sensationalist ideas, Rameau replaced his mechanical method with a new approach to accompaniment that emphasized the performer's *feeling* his way to a proper realization ("feeling" in the sense of both touch and innate *sensibilité*). Yet his goal stated in the *Dissertation* of reducing all chords and voice leadings to a small number of paradigmatic constructs was never abandoned as an ideal. It simply required refinement. And despite Montéclair's scathing criticisms of Rameau's system, it is telling evidence of both the practical appeal of the fundamental bass and its rapid dissemination that Montéclair nonetheless accepted its basic heuristic. Never once did he deny that chords might have a common fundamental bass; he only thought that the particular basses Rameau assigned to some chords (such as the suspended fourth and ninth) were wrong.

The thorough bass was the chrysalis in which Rameau's theory of the fundamental bass was born; it furnished him with the major pedagogical problems he sought to solve, the notation and nomenclature to do this, and finally, the practice to which he would continually return in order to test his solutions. It is not too much of an exaggeration to say, I think, that Rameau's system of the fundamental bass is a theory of the thorough bass. But as we will see over the following chapters, it was one whose ramifications were far from restricted to the thorough bass.

HARMONIC COUNTERPOINT

It was not only in French thorough-bass pedagogy that we can observe a growing sensitivity among music theorists to harmony. The same awareness is manifest in practical composition treatises of the later seventeenth century. As has already been noted, for the first half of the seventeenth century, French compositional theory was relatively conservative. Writers such as Salomon de Caus (1610), Mersenne (1636), Antoine Parran (1639), and Antoine de Cousu (1658) essentially restated the rules of counterpoint found in Zarlino's third book of the *Istitutioni harmoniche* with little change.⁴³ Music was conceived as a composite counterpoint between individual voices, the specific intervallic relationships following a conservative grammar codified by the norms of the *prima pratica*.

After mid-century, though, a notable shift can be detected in French music theory that parallels the harmonic maturation of French musical style that we have already noted above. Pedagogues beginning with La Voye Mignot (1656), and then René Ouvrard (1658), Guillaume-Gabriel Nivers (1667), Marc-Antoine Charpentier (c. 1692), Etienne Loulié (1696), and Charles Masson (1697), formulated a distinctive pedagogy of counterpoint that was harmonically influenced, even while they retained the outward shell of the received contrapuntal paradigm. Two-part counterpoint was now held to be the scaffolding of a three- or four-part progression of chords, even if those chords were only implied. Counterpoint, in other words, was seen as a kind of "figured harmony." As La Voye Mignot expressed it, "Counterpoint, whether simple or figured, is nothing but the art of presenting

⁴³ Schneider, *Die französische Kompositionslehre*, 220–23.

well-regulated chords."⁴⁴ While Masson observed, "by the term counterpoint, one should understand harmony."⁴⁵

An example of such a two-part harmonic counterpoint by Etienne Loulié is given in Example 3.4.⁴⁶ This progression is really a kind of fourth-species diminution on the *règle de l'octave*. Even though no chords are sounded vertically, a clear harmonic succession is implied. Since full harmonies could now be inferred in two-part progressions, theorists began to allow the imperfect consonance of the third as an opening and closing interval. Nonetheless, any such two-part progression was understood to be "imperfect" since, as Masson noted, it lacked the full harmonic sonority of a "perfect" three- or four-voiced progression.⁴⁷

A further indication of the new harmonic perspective was the importance assigned the bass voice. No longer was the tenor the part against which all other voices were measured and composed; the bass now assumed this important task. This can be seen as one consequence of the thorough bass. Moreover, as Masson notes, it is the bass voice that constitutes the harmony:

The image shows two systems of musical notation for a two-part harmonic counterpoint. Each system consists of a treble staff and a bass staff. The bass staff contains notes and figured bass notation: (6), (5 - 6), (5 - 6), (5 - 6), (6), (5 - 6). The treble staff contains a melodic line of eighth and sixteenth notes.

Example 3.4 Example of "harmonic" counterpoint by Loulié

The part that sings below the other parts in music is the base and foundation of the other parts, since one builds them upon it. In effect, the harmonies are what they are only because of the relation they have with it.⁴⁸

⁴⁴ *Traité de musique*, 2nd edition (Paris, 166), Part 4, 2.

⁴⁵ Charles Masson, *Nouveau Traité des règles de la composition de la musique* (Paris, 1699), 31. The French were by no means the only ones to reinterpret counterpoint harmonically, though. Joel Lester has looked at the writings of a number of German Baroque theorists, including Niedt and Fux, and showed how their contrapuntal rules were strongly influenced by the new harmonic thinking (*Compositional Theory in the Eighteenth Century* [Cambridge, Mass., 1992], especially Chapter 2, "Species Counterpoint and Fux's *Gradus*").

⁴⁶ Quoted in Richard Semmens, "Etienne Loulié and the New Harmonic Counterpoint," *Journal of Music Theory* 27/2 (1984), 76.

⁴⁷ *Nouveau Traité*, 29.

⁴⁸ *Ibid.*, 31.

One of the most important catalysts for French theorists in their development of a pedagogy of harmonic counterpoint was the repertoire of homophonic dance forms such as the *passacaille*, *chaconne*, and *folia*. As we saw, many of these dances were introduced early in the seventeenth century by performers playing the Spanish five-course guitar, and became wildly popular in France by mid-century. Each one of these dances is characterized by a relatively simple harmonic formula that the composer would elaborate upon with numerous diminutions and variations. Binary dance forms like the *sarabande* or *menuet*, on the other hand, were sometimes embellished by the composer in written-out repeats (called “doubles”), or as was more frequently the case, by the performer improvising his own ornamentations. This practice helped to cultivate further the idea of “harmonic counterpoint.”

The French did not entirely neglect traditional counterpoint in their practice and pedagogy. But the cultivation of strict counterpoint – *contrepoint pressé* – was never as strong in seventeenth-century France as it was in either Germany or Italy. Even outwardly polyphonic genres like the fugue were treated by French composers in a unique way. The fugue never became the forum for the display of contrapuntal virtuosity as it did in Germany (at least not before the French Conservatory started holding fugal competitions and exams). Rameau’s prescriptions for the fugue in his *Traité*, for instance, have to do less with the contrapuntal manipulations to which a theme may be subjected than with the harmonies by which imitative voices should enter.⁴⁹ This is one reason French discussions of the fugue in the eighteenth century are often so difficult to reconcile with their German and Italian counterparts.⁵⁰ A fugue by Lully or Rameau (in one of their “French overtures,” for example) could revert to purely homophonic textures in lively dance rhythms after the initial entries of the individual voices were finished.⁵¹

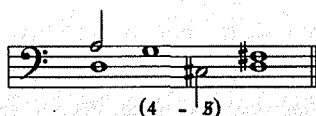
Perhaps the most noteworthy theoretical consequence of this harmonic sensibility is to be found in the interpretation of dissonance. Consider the two-part progression shown in Example 3.5. The dissonant fourth resolving to an even more dissonant diminished fifth was widely employed by seventeenth-century musicians. But this progression could not be easily explained by traditional rules of strict counterpoint.⁵² The *Figurenlehre* by which German theorists such as Christian Bernhard explained such “theatrical” styles of dissonance treatment was foreign to French theorists of the seventeenth century. Instead, the French tended to explain such dissonances as the product of harmonic figuration – the outlining of an underlying harmonic progression.

⁴⁹ See Chapter 44 of Book 3.

⁵⁰ Alfred Mann, *The Study of Fugue* (New Brunswick, 1958), 50–52. An enlightening analysis of Rameau’s fugue “technique” is found in Jean Duron, “Le Grand Motet: Rameau face à ses contemporains,” *Rameau Colloque International*, 331–70.

⁵¹ Not coincidentally, the one piece in the entire *Traité* for which Rameau offers a fundamental-bass analysis (i.e. a “harmonic reading”) is one of his own fugal motets: “Laboravi Clamans” (*Traité*, 341–55; Gossett, 358–66).

⁵² Schneider, *Die französische Kompositionslehre*, 251.



Example 3.5 Example of two-part dissonant resolution

The interpretation of dissonance as a harmonic event marks a watershed in musical thought. Whereas for Renaissance musicians dissonance was an interruption of a consonant progression, many seventeenth-century musicians began to interpret dissonance as an essential component of musical structure.⁵³ It was necessary, in Masson's view, not only for the smooth and proper connection of harmony, but also the expressiveness of melody.⁵⁴ We recall how Campion's *règle de l'octave* employed characteristic dissonances on most of the sixth chords (on scale-degrees 2, 4, and 7 ascending; 6, 4, and 2 descending) in order to define each respective scale degree and reciprocally orient a chord within a mode. Dissonance was also useful for smoothing out voice leading by preparing common tones between successive harmonies. Dissonance, in other words, was neither a disruption nor a darkening of some consonant chord progression; rather, it was an artful and even necessary means of defining that progression. Because two-part structures were understood to imply fuller harmonies, localized transgressions of strict counterpoint rules (cross-relations, accented dissonances, hidden parallels, unprepared and unresolved dissonances, etc.) could be tolerated provided that the underlying harmonic progressions made sense.

Of course French theorists did not dispense entirely with contrapuntal analysis in favor of chordal analysis; they did not yet have the conceptual framework or vocabulary to do this. Masson's important treatise of composition, for instance, still relied mostly upon traditional – if heavily modified – rules of counterpoint.⁵⁵ What is striking, though, is how theorists like Masson taught these contrapuntal rules in harmonic contexts – as vertical counterpoint, if you will. The following examples illustrate some of the various ways theorists accounted for unusual dissonance treatments or voice leadings by invoking implied harmonic structures.

In the excerpts from Masson's composition treatise given in Example 3.6, the various unprepared and unresolved diminished fifths are tolerated since they can be heard as implying a full – and presumably less harsh – harmony.⁵⁶ Charpentier allows the Example cross relations between E and B \flat in Example 3.7 on account of the agreeable harmonic progression it outlines.⁵⁷

The increased acceptance of harmony as the essential determinant of musical structure led French theorists to formulate a species of dissonance that would be

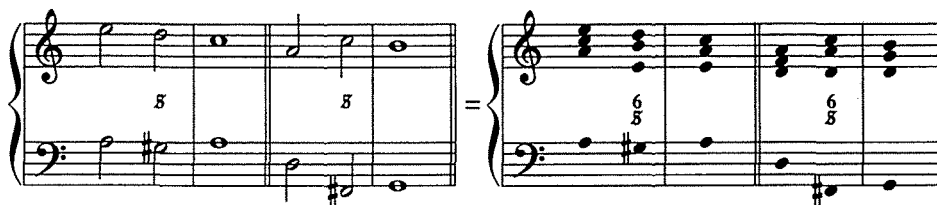
⁵³ *Ibid.*, 246–47.

⁵⁴ Charles Masson, *Nouveau Traité*, 59.

⁵⁵ For further information on Masson and his treatise, see Herbert Schneider's fine study, "Charles Masson and sein *Nouveau Traité*," *Archiv für Musikwissenschaft* 30/4 (1973), 245–74.

⁵⁶ Rameau quoted the second of these progressions (among others) from Masson's treatise in his own *Traité* as an example of two-voiced counterpoint expressing a single harmony. We will look at Rameau's analysis of Masson's counterpoint in Chapter 5 (p. 119 below).

⁵⁷ Quoted in Wilhelm Seidel, "Französische Musiktheorie im 16. und 17. Jahrhundert," *Geschichte der Musiktheorie*, vol. ix (Darmstadt, 1986), 108.



Example 3.6 Two-part counterpoint implying fuller harmonies. Charles Masson, *Nouveau Traité*, 74–75



Example 3.7 Cross relation allowed by Charpentier

crucial to Rameau's theory: *supposition*. Supposition was initially defined in the seventeenth century as a melodic dissonance caused by passing tones and ornamentation.⁵⁸ Brossard tells us:

Supposition occurs when one part holds a note while the other part has two or more notes of lesser value that move by conjunct degrees against the first note. It is one of the ways of ornamenting the counterpoint that is called *Contrapunto sciolto* by the Italians, *Celer progressus* by others, and *Ornement du Chant* by still others. One of the most important uses made of supposition occurs when we treat the most dissonant sounds like [consonances].⁵⁹

While this meaning was retained right through the eighteenth century (Rameau, for instance, referred to the supposition at one point in the *Traité* as a “dissonance pour le goût du chant” [p. 320]), a harmonic flavor to the term came to be inferred towards the end of the seventeenth century. Here is Nivers's definition:

The [supposition] is an activity that occurs in, and consists of, two notes of equal value sounded one after the other in conjunct motion, of which a dissonant one substitutes for its neighbour which is consonant. And in this manner dissonances are acceptable on the second, third or fourth parts of a measure, and even on the first. But one of the parts must hold firm against the dissonance, which should always be preceded and followed by a consonance.⁶⁰

Supposition, in other words, could be understood as a kind of *non-harmonic* tone. Loulié considered it a category of “dissonances par harmonie.”⁶¹ For René Ouvrard,

⁵⁸ Albert Cohen, “*La Supposition* and Changing Concepts of Dissonance in Baroque Theory,” *Journal of the American Musicological Society* 24 (1971), 63–84. Mersenne's use of the term was somewhat idiosyncratic and will be discussed in relation to Rameau's theory of supposition in Chapter 4.

⁵⁹ Brossard, *Dictionnaire*, s.v. “supposition.”

⁶⁰ Guillaume Gabriel Nivers, *Traité de la composition de musique* (Paris, 1667); trans. Albert Cohen (Brooklyn, 1961), 30.

⁶¹ Cohen, “*La Supposition*,” 76.

the author of a composition primer entitled *Secret pour composer en musique* (Paris, 1689), *supposition* was a dissonance in two-part composition that was to be understood as a displacement of some consonance within a four-part, bass-oriented harmonic scaffolding.⁶² In the second edition of his important thorough-bass treatise, Denis Delair called the consonant triad the “accord fondamental.” All other dissonant harmonies, he tells us, are “suppositions.” Every non-triadic dissonant interval “supposes” a consonant one: 4 supposes 3, 6 supposes 5 (!), and 7 and 9 suppose the octave.⁶³ Supposition can also occur in the bass voice. In Example 3.8, the accented passing tones in the bass are to be heard against a “natural melody” revealed by Delair in the bottom line.⁶⁴ This natural melody implies a simple harmonization against which the “supposed” dissonance is to be heard. The crucial point is that supposition came to be a means of accounting for melodic dissonance through harmony. Dissonances were measured according to some present or implied consonant chord of resolution.

Exemple des Suppositions

Chant supposé

Chant naturel

Example 3.8 Example of melodic supposition in the bass

If we need any further evidence of this fact, we need only consider what was probably the most ubiquitous example of supposition to be found in French Baroque music: the various species of long appoggiaturas described in eighteenth-century singing treatises (*port de voix*, *coulé*, *cadence appuyée*, etc.). These ornaments constituted a compendium of appoggiatura types utilized by French singers to enhance important notes of phrases at almost all cadential points (see Example 3.9).⁶⁵

⁶² Seidel, “Französische Musiktheorie,” 102.

⁶³ Denis Delair, *Traité d’accompagnement pour le théorbe et le clavier*, 2nd edition (Paris, 1723), Preface.

⁶⁴ *Ibid.*, 61.

⁶⁵ For a helpful inventory of vocal embellishments common to the music of Rameau’s day, see Nicholas McGegan and Gina Spagnoli, “Singing Style at the Opéra in the Rameau Period,” *Rameau Colloque International*, 209–26.

written **played**

Port de voix achevé



coulé



cadence appuyée



Example 3.9 Common French vocal embellishments

Their expressiveness was achieved precisely because of the explicit consonant harmonies against which they sounded and ultimately resolved. The excerpts from the operas of Lully and Rameau cited in Chapters 5 and 8 require constant embellishment of the vocal line, even if these embellishments are not always indicated in the notation. The reader must not misconstrue the above examples as exhaustive of the kinds of dissonance analysis to be found in French composition texts in the seventeenth century. The studies of both Schneider and Seidel have shown us just how dependent French theorists from the later seventeenth century remained upon the contrapuntal rules bequeathed by Zarlino. But the examples do convey some of the new harmonic attitudes that were brought to that older theory. Schneider writes:

In summary, it is evident that in practice an empirical attitude reigned as far as dissonance treatment was concerned that had distanced itself from classical polyphony (without however achieving the freedom of Italian music) and that [this practice] can be viewed as a transitory stage on the way to functional-harmonic composition using self-sufficient chords.⁶⁶

By the beginning of the eighteenth century, a harmonic sensibility had permeated French musical practice and theory. It was in this well-tilled harmonic soil that Rameau's theory of the fundamental bass was to germinate.

THE INVERSIONAL DERIVATION OF TRIADS

It is quite natural that an informal notion of triadic inversion should have arisen in seventeenth-century thorough-bass pedagogy, particularly for performers on strummed instruments such as the guitar and theorbo. (Nowhere, however was the term "inversion" ever used by theorists to describe this practice.) Because of the peculiar tuning of these instruments, a given chord notated in the tablature might actually end up being played in a variety of positions, spacings, and doublings. This was

⁶⁶ Schneider, *Die französische Kompositionslehre*, 254.

because these instruments either used double courses that were sometimes tuned in octaves, or tuned the top strings an octave lower (so-called "re-entrant" tuning). Thereby a note written higher than another might actually be sounded an octave lower, or vice versa. Consequently, when a guitarist or theorbist realized a given figure, the sounding chord could overlap the basso continuo line and create awkward voice-leading.⁶⁷ Pedagogues for these instruments generally discounted these overlappings and voice-leading violations as unimportant.⁶⁸ Keyboardists, too, would have found the notion of octave transposition familiar given that on most harpsichords and organs one could change the octave registration of a chord by the simple drawing of a stop or coupler. In general, we can say that performers of the thorough bass in the seventeenth century were concerned more with the *functional sonority* of a chord than with its particular voicing. If the bottom note of some realization failed to coincide with the basso continuo line, this was rarely a problem so long as the resulting harmony still contained the required pitches.⁶⁹

Octave complementation was also a familiar technique in *musica theorica* to derive intervals on the monochord. For Zarlino, any interval and its octave complement possessed the same nature ("una istessa natura"), since the one was merely the inverse of the other.⁷⁰ The German theorists mentioned earlier in this chapter applied the technique of octave transposition to the triads they had reified.⁷¹ Johannes Lippius offered perhaps the most explicit enunciation of this doctrine:

The *diffusa* [triad] is that whose parts or root voices, less mutually neighbors to one another, are dispersed to different octaves than that which their proper root requires. Indeed, either only one part may be transferred from the fundamental [position], the other two remaining the same; or two [parts can be transferred], one constant; or all three [can be transferred]. Yet all of these conjunctions sound together perfectly because of the direct root whence they arise according to elegant proportions . . . And, moreover, that triad is always sweeter, fuller, and more perfect, whose prime is firmly in place lowest and deepest, the remaining notes above . . .⁷²

The term Lippius uses to describe the "root" of the triad (*radix*) would find favor among subsequent German theorists. (Werckmeister, for instance, would refer to the *Wurtzel* of a 6/3 triad lying a third below its lowest note.⁷³) But there was nothing of the generative implications to this concept comparable to Rameau's *son fondamentale*, as we will see in the next chapter.

⁶⁷ I have illustrated and analyzed such tablature "overlappings" in my article "The Spanish Baroque Guitar."

⁶⁸ Nigel North, *Continuo Playing on the Lute, Archlute and Theorbo* (London, 1987), 163.

⁶⁹ One reason why the "inversions" played by guitarists and theorbists were not necessarily apparent in performance was that the bass line was usually doubled (by a bassoon, for example). This helped to cover up any of their overlappings.

⁷⁰ *Dimostrazioni harmoniche* (Venice, 1571), 89–90. They did not, however, necessarily possess the same degree of consonance. All major imperfect consonances, for example, were considered more closely related to one another than to their respective inversions. The same was true for all minor imperfect consonances.

⁷¹ Lester, *Between Modes and Keys*, 31–45.

⁷² Quoted in *ibid.*, 40.

⁷³ *Harmonologia Musica* (Frankfurt, 1702), 76.

English theorists of the seventeenth century also invoked practical heuristics by which to teach chordal inversions. In his *A New Way of Making Fowre Parts in Counterpoint* (London, c. 1613), Thomas Campion points out that when sixths are notated above bass notes, “such Bases are not true Bases, for where a sixt is to be taken . . . the true Base is a third lower.”⁷⁴ He illustrates this by notating two sixth chords above E and F \sharp respectively, and then indicating in the following measure the “true Bases” of C and D. Other seventeenth-century English writers who illustrated similar kinds of chordal inversions, complete with suggestions of chord roots, were Roger North and Christopher Simpson.⁷⁵

If somewhat belatedly, French composition teachers in the seventeenth and early eighteenth centuries also pointed out inversional derivations of certain triads. For instance, Masson noted that the sixth chord commonly sounded on *mi* was derived from the same (triadic) harmony found above *ut*. Likewise, the sixth chord on *fa* was related to *re*.⁷⁶ In a treatise by the famous organist Louis Marchand (1669–1732) that exists in manuscript, we find a description of three “consonant chords” whose relations were due to inversion: the “natural” 5/3, the “bonne quarte” (6/4), and the “sixte” (6/3), of which Marchand pointed out “Il faut remarquer que tous ces accords se trouvent de trois maniere[s] differentes sous la main par raport à la basse.”⁷⁷ Notably fewer theorists, however, mentioned the seventh chord in regard to its inversions. This was not because they failed to follow the logic of triadic inversion; rather, they simply did not believe the seventh to be a fundamental chord like the triad.⁷⁸

Another of the catalysts leading to the acceptance of chordal inversion was the recognition by theorists that certain scale degrees played critical tonal roles. Depending upon the context, these scale degrees retained their function no matter in which voice they appeared. The clearest example of this was the leading tone (*notte sensible*). All theorists agreed that the leading tone was critical at cadential points for the definition of the *finales* or *tonique*. Thus Jacques Hotteterre, in his 1707 flute treatise (which, despite its title, contains much on harmony and “modulation”), gave the excerpts shown in Example 3.10 employing the leading tone.⁷⁹ In the first excerpt, he tells us, the third of the first chord is the leading tone, while in the second excerpt it is in the bass. (Note, incidentally, how Hotteterre fails to resolve the bass in the last example on account of the parallel octaves it would create with the soprano.) The two chords were nonetheless seen by Hotteterre to be functionally related.

⁷⁴ Percival Vivian, *Campion's Works* (Oxford, 1909), 204.

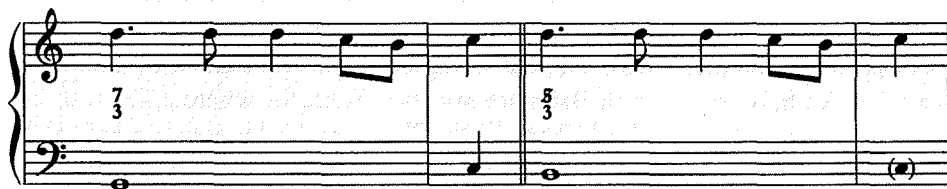
⁷⁵ Barry Cooper, “Englische Musiktheorie im 17. und 18. Jahrhundert,” *Geschichte der Musiktheorie*, vol. ix (Darmstadt, 1986), 216–17.

⁷⁶ *Nouveau Traité*, 35.

⁷⁷ “Regle pour la Composition des accords à 3. Parties par Mr. Marchand,” F-Pn Ms. Rés Vm8 21, fol. 39r. A direct influence by Marchand upon Rameau is highly plausible, given that Rameau, as we noted in Chapter 2, p. 22 above, was a great admirer of Marchand, and studied under the elder organist during his first stay in Paris in 1706. See Girdlestone, *Rameau*, 4 and 18–19.

⁷⁸ However, see the revealing suggestions by de Cousu quoted in Schneider, *Die französische Kompositionslehre*, 155.

⁷⁹ Jacques Hotteterre, *Principes de la flute traversière* (Paris, 1707), 46.



Example 3.10 Jacques Hotteterre, *Principes de la flute traversière*, 46

Now, it is important to make a distinction in these descriptions between inversional *derivation* and inversional *equivalence*. For virtually every seventeenth-century music pedagogue, whether a practical thorough-bass instructor, composition teacher, or speculative theorist, 6/3 and 6/4 chords were not considered “equivalent” to the perfect 5/3 triad, since the very quality that determined the perfection of the 5/3 triad – the harmonic division of the octave and fifth – would disappear as soon as the *bassus* was transposed into an inner voice. The triad would lose its *luogo naturale* as Zarlino called the disposition of the *harmonia perfetta*. This is why inversions were designated by theorists with names that emphasized their subordinate nature: *diffusa* (Lippius), *imparfait* (Boyvin), *Versetzung* (Werckmeister), or *Verkehrung* (Heinichen).

Zarlino had drawn the analogy between the four voice parts and Aristotle’s four elements. The bass was equated with the earth, while the tenor, alto, and soprano corresponded to water, air, and fire, respectively:

As the earth is the foundation of the other elements, the bass has the function of sustaining and stabilizing, fortifying and giving growth to the other parts. It is the *foundation of harmony* and for this reason is called bass, as if to say the base and sustenance of the other parts. If we could imagine the element of earth to be lacking, what ruin and waste would result in universal and human harmony! Similarly a composition without a bass would be full of confusion and dissonance and would fall into ruin.⁸⁰

What sense would it make to exchange the places of earth and water in this peripatetic world? When a bass voice is “transposed” to an inner voice, it thereby forfeits its role as “sustainer” and “stabilizer” of the other parts. In order for the concept of octave transfer to become inversional “equivalence,” a brand new idea born of tonality needed to be introduced: the generative fundamental. For only with the notion of a chord fundamental could one begin to speak of inversions as somehow consanguineous by virtue of having been generated by an identical source. But this would require a change in theoretical perspective for which practicing musicians of the seventeenth century were not yet prepared. The way was being forged, though, in several speculative theoretical tracts, some of which would eventually influence Rameau in his formulation of the *basse fondamentale*. It is to these developments that we now turn.

⁸⁰ Gioseffo Zarlino, *The Art of Counterpoint*, trans. Guy A. Marco and Claude V. Palisca (New Haven, 1968), 179.