

The Music Theory of Georg Friedrich Lingke

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It has become a common belief among cultural historians, learning from anthropologists, that the most striking differences and anomalies we encounter in some distant culture may in fact offer the richest possibilities for insight. Historical understanding, according to this hermeneutic creed, comes about not when we see what is familiar and congenial, but when we discover something that is unexpected and discordant, something that violates our own cultural presuppositions, experiences, and norms of rationality. By interrogating these differences closely, we open up the space that separates us from our subject; paradoxically, though, it is just then that we can most effectively gain understanding through dialogic interaction.¹

The eighteenth century is littered with such cultural cues. For the adventurous historian, it is a topiary garden full of odd-shaped creatures whose identities and meanings are indecipherable by our twentieth-century codes. But it is easy to overlook these anomalous others, too,

¹While any further elaboration or bibliographic excursus on this topic would get me woefully off track at this point, I can recommend one study to the interested reader in which an archaeological hermeneutics is brilliantly outlined and realized: Gary Tomlinson, *Music in Renaissance Magic* (Chicago: The University of Chicago Press, 1993).

as there is so much familiar to the modern eye in the eighteenth century. This is why many historians until recently tended to either assimilate and reduce these oddities within a more general picture that was congenial to their outlook, or to parenthesize them as anomalies—creatures that missed the teleological freight-train of modernity. Obviously, such a historian fails to give a fair hearing to the historical subject by allowing its essential differences to speak out. The hermeneutic alternative, as suggested above, works with the assumption that such differences are precisely the place to begin in historical inquiry.

Now music theory may hardly seem to be an area pregnant with such cultural portent. Particularly in the eighteenth century, when the tonal language and theories with which we are so comfortable were established, it is hard not to view this era through lens heavily tinted by twentieth-century presumptions. Yet discordant intellectual cues do exist in eighteenth-century music theory that reward our attention. There are numerous passages in Rameau's own writings, to take only one example, that belie the received picture we have of a sober, Cartesian rationalist painstakingly working out his monumental theory of the fundamental bass guided by his hard-earned mastery of musical practice. Discordant elements of seeming irrationality, fantasy, and mysticism jar with one another amid the mix of mathematical calculations and empirical observations—and these discordant elements are essential to any understanding of the content and analytic application of Rameau's theory.²

In the present essay, I want to look at another, much less known, music theorist from the eighteenth century whose writings also offer a challenging number of puzzles to the historian: Georg Friedrich Lingke (1697-1777). By sympathetically scrutinizing Lingke's writings—a charity no one before has ever granted him, as far as I can tell—I want to see if I can't open up another small window upon German musical

²I have tried to realize such a multi-faceted interpretation of Rameau's theory in my book, *Rameau and Musical Thought in the Enlightenment* (Cambridge: Cambridge University Press, 1993).

thought from the mid-eighteenth century. For it is not possible to read Lingke's writings simply as a straight-forward "theory of harmony" (whatever that might be). Many of his ideas may seem to a contemporary reader to be logically weak and empirically ill-founded, not to say even downright nonsensical. But by reading his writings in light of eighteenth-century pedagogical concerns, philosophical assumptions, and theoretical traditions, and by looking at the critical reception of his writings among his contemporaries, many of the anomalous ideas in Lingke's writings may become more intelligible; perhaps they will even strike a few of us as creative and imaginative. This is not to say, though, that every oddity in his writings will be explained. Even in the most charitable and historically nuanced reading, I think some amount of nonsense will always remain in Lingke's ideas. Perhaps the insight Lingke's theory offers us today lies less in any analytic solution it may provide as much for the questions it sought to answer. In other words, by examining those problems which seemed of pressing import to Lingke in his writings, we gain access to a part of the eighteenth-century musical mindset through the eyes and ears of an amateur musician, who while neither an accomplished performer or theoretician, had interests in both of these areas and attempted to reconcile them—however awkwardly—within a highly synthesized system of theory.

We know little of Lingke's personal life. He was a gentry landowner and government official active in Weissenfels (a small Thuringian town lying slightly south of Leipzig). The title in the handsome engraving of Lingke reproduced as Plate 1 informs us that he was a "minister of mines for the Polish king"—an honorary title granted by the Saxon monarchy. And like many of his fellow Thuringians, he had a passionate interest in music, and evidently was a tolerably good performer on the lute and harpsichord. What makes Lingke so atypical, though, was his obsession with music-theoretical issues. Johann Adam Hiller, one of our only sources concerning Lingke's biography, noted this fact: "[Lingke] belongs to that class of dilettante who are granted the chance to contemplate musical truths and verse themselves in the theory of music without being particularly

Plate 1. Engraving of Lingke (Courtesy of the Staatsbibliothek, Berlin)



knowledgeable in its practice.”³ And over some thirty-odd years, this professed amateur in music sought to develop a systematic and speculative theory of harmony that he believed superseded all previous attempts. The three principal publications in which he articulated his theory are:

(1) *Einige zum allgemeinen Nutzen deutlicher gemachte musikalische Erwegungs- und andere leichter eingerichtete Uibungs-Wahrheiten* (Leipzig: Michael Blochberger, c. 1750) (“Some Clearly Conceived Musical Reflections of General Use and Other Easily Established Practical Truths”)

(2) *Die Sitze der musicalischen Haupt-Sätze in einer harten und weichen Tonart und wie man damit fortschreitet und ausweicht, in zwei Tabellen entworffen* (Leipzig: Bernhard Christoph Breitkopf & Sohn, 1766) (“The Place of All Principal Musical Harmonies in Major and Minor Keys, and How One May Digress and Modulate, Outlined in Two Tables”)

(3) *Kurze Musiklehre, in welcher nicht allein die Verwandtschaft aller Tonleitern, sondern auch die jeder zukommenden harmonischen Sätze gezeigt, und mit praktischen Beyspielen erläutert werden* (Leipzig: Johann Gottlob Immanuel Breitkopf, 1779) (“A Short Music Primer, in which is Demonstrated not only the Relation of all Scales but also Their Appropriate Harmonies, and Illustrated with Practical Examples”)

³Johann Adam Hiller, preface to *Kurze Musiklehre, in welcher nicht allein die Verwandtschaft aller Tonleitern, sondern auch die jeder zukommenden harmonischen Sätze gezeigt, und mit praktischen Beyspielen erläutert werden*, by Georg Friedrich Lingke (Leipzig: Johann Gottlob Immanuel Breitkopf, 1779), no pagination.

Lingke's interest in music theory must have developed early on, for in 1742, shortly after the founding of Mizler's "Corresponding Society of Musical Science," he became the eighth member of that organization. Soon thereafter, he submitted two elaborate "interval tables" for the society's evaluation and endorsement. (We will shortly examine the contents of these tables.) The tables, according to Mizler, were "unanimously approved and admired."⁴ (Incidentally, Lingke remained one of the few members of Mizler's society who was not a practicing musician.) Lingke eventually published an explanation of the theory to which his tables served in 1750. Two subsequent treatises, as we have noted above, appeared in 1766 and 1779, respectively, which served as elaborations and illustrations of his theory. (The last work was issued posthumously under the supervision of Hiller.) Since Lingke's three major works do not differ from one another to any significant degree, I will consider them together in the following analysis. (It should be noted, however, that Lingke's terminology changed over his treatises; thus, I will sometimes indicate two [or even three] differing German terms used by Lingke to indicate the same concept.)

Lingke's goal with his theory is fully in accordance with the classical *episteme* of the eighteenth century: to offer a systematic taxonomy and genealogy of the fundamental components of music and determine how they comprise our musical language (1750, 1).⁵ Lingke posits "Klang" as the most primitive component of music, one which necessarily precedes both harmony and melody. Hence, he preempts the ontological primacy of either harmony or melody. For Lingke, the sin-

⁴"Nachricht von der Societät der musikalischen Wissenschaften in Deutschland, vom 1738 Jahre, ihren Anfange [*sic*], bis zu Ende des 1745 Jahres," *Musikalische Bibliothek* (Leipzig) vol. 3, no. 2 (1746): 360.

⁵This and all other citations from Lingke's works are taken from the three principal publications found on p. 39, and the pamphlet in response to Johann Mattheson (see p. 55).

gle, undivided sound of a musical *Ton Klang* necessarily takes precedence over harmony and melody, both of which are composite constructs of *Klängen* (1750, 2).⁶

With the *Klang* as a starting point, Lingke then considers in what ways these individual pitches can be combined. The most obvious way, he observes, is to order them in succession, which is to say, as a fundamental scale (*Stammleiter*, *Stufenreihe*, or *Hauptkangleiter*). The two fundamental scale constructs used by musicians are, of course, the major and minor scales. Lingke rejects the alternative view espoused by Rameau and his followers that the basic constructs of pitches were harmonies.⁷ Nor did he begin, as did many German theorists of his day, with intervals. On the contrary, he maintained, harmonies and intervals were themselves products of the scale (1779, 14-15).

Lingke's reification of the scale as a primary generator of tonal material thus betrays an ultimately older viewpoint that can be traced back to modal thought.⁸ Lingke does not bother with justifying the particular order he has presented of his two *Stammleitern*. (Although the question of the "correct" version of the minor scale will become an issue within a different context, as we will soon see.) Melodic scales are simply postulated as empirical givens. His interest, apparently, is not to create tonality from the ground up through logical deduction as much as to systematize it in an orderly hierarchy. (This approach nicely

⁶This was a widely-circulated idea among German theorists of the eighteenth century; the concept of *Klang* as the primitive element of musical science was one articulated clearly by Sorge and Mattheson, but found as early as Johann Crüger (*Synopsis musica*, 1654) and Wolfgang Caspar Printz (*Phrynis oder Satyrischer Componist*, 1676).

⁷This could be because he rejected overtones as a universal property of musical *Klang*. Lingke thought musical tones to be simple and non-composite elements; he believed overtones to be a phenomenon extrinsic to the nature of musical tone, and consequently a precarious basis upon which to base any theory of harmony (1779, 7).

⁸At the same time Lingke published his first treatise, Marpurg came out with his own theory of harmonic generation in Berlin—one ostensibly based upon Rameau—that was similarly scale derived. But neither Marpurg nor Lingke were apparently aware of one another's work at this time.

exemplifies the Wolffian bias of eighteenth-century German scholasticism toward taxonomy and systematization, one at epistemological odds with the French Cartesian tradition that tended towards models of phenomenological deduction.)

Each *Stammleiter*, according to Lingke, is governed by a single tonic note (*Hauptton*). The remaining six notes of the scale are called neighboring tones (*Nebentönen* or *Nebenklängen*). Each neighboring tone can become the foundational note (*Grundklang* or *Grundstimme*) of some harmonic construct, for which they serve as a bass; the other chord notes are called *Oberklängen* or *Oberstimmen*. (*Grundklang* does not mean chord root in a Rameauian sense, but simply the continuo-bass note of a chord; likewise the *Oberklängen* have nothing to do with upper partials, but are simply the constitutive tones of any harmony sounded above the continuo bass.) Every *Grundklang* can in turn become the *Hauptton* for its own scale (called *Abstammendeleiter* or *Nebenklangleiter*). These diatonic “derivative scales” correspond, Lingke believes, to the ancient Greek modes. Finally, each of these scales is harmonized in a prescribed manner, resulting in two fundamental scale harmonizations (*Hauptsatzleitern*) and their respective “derivative scale harmonizations” (*Nebensatzleitern*). We can see these relationships in the following two illustrations (see Examples 1 and 2).⁹

At first glance, these scale harmonizations might seem to be Lingke’s version of the familiar “Rule of the Octave”—the normative diatonic scale harmonization by which the skills of thoroughbass and improvisation were commonly taught to keyboardists in the eighteenth century.¹⁰ But upon closer inspection, a number of peculiarities emerge, ones that indicate Lingke’s purpose with these scales had little to do with the Rule of the Octave. Most obviously, only two chord types are used in each scale harmonization. In the first *Hauptsatzleiter* in C, these

⁹Taken from Lingke, 1779, 62-63; but also reproduced in slightly different forms in the appendix to 1766.

¹⁰I have outlined the origins and practical application of the Rule of the Octave in my article, “The *Règle del l’octave* in Thorough-Bass Theory and Practice,” *Acta Musicologica* 64, no. 2 (1992): 91-117.

Example 1. Lingke's fundamental and derivative scales in major and minor (1779, 62-63): major

Hauptsaßleiter:

Musical notation for the Hauptsaßleiter (main scale) in G major. The treble clef staff shows the scale ascending and descending with fingerings: 3, 6, 2, 4, 7, 5. The bass clef staff shows the scale ascending and descending with fingerings: 2, 3, 4, 5, 5, 7.

Nebensaßleitern:

Musical notation for the Nebensaßleitern (derivative scales) in G major. It consists of three systems, each with a treble clef staff and a bass clef staff. Each system shows the scale ascending and descending with fingerings: 3, 6, 2, 4, 7, 5 in the treble and 2, 3, 4, 5, 5, 7 in the bass.

Example 2. Lingke's fundamental and derivative scales in major and minor (1779, 62-63): minor

Hauptsatzleiter :

Musical notation for the main scale (Hauptsatzleiter) in G minor. The treble clef part shows notes G4, A4, Bb4, C5, D5, E5, F5, G5 with fingerings 3, 6, 2, 4, 7, 5. The bass clef part shows notes G3, A3, Bb3, C4, D4, E4, F4, G4 with fingerings 2, 3, 4, 5, 5, 7.

Nebensatzleitern :

Musical notation for the derivative scales (Nebensatzleitern) in G minor, presented in three systems. Each system consists of a treble clef staff and a bass clef staff. The treble clef parts show notes G4, A4, Bb4, C5, D5, E5, F5, G5 with fingerings 3, 6, 2, 4, 7, 5. The bass clef parts show notes G3, A3, Bb3, C4, D4, E4, F4, G4 with fingerings 2, 3, 4, 5, 5, 7.

chords are C major and G dominant seventh plus their respective inversions. (Like many German theorists of his day, Lingke accepted fully the identity of chords related by inversion [*Verkehrung* or *Umwendung*], without, however, accepting the existence of a generative root in any Rameauian sense.) Lingke's reliance upon only these two chords to harmonize the scale results in a number of peculiarities. First, it has necessitated harmonizing the ascending fourth scale degree with a 6/4/2 harmony—an awkward progression that violated the accepted 6/5 harmonization taught in the normative Rule of the Octave. Second, two chords are placed above the dominant scale degree: 6/4 and 7. Most strangely, though, it has necessitated omitting the sixth scale degree altogether from the scale. What is going on here?

To find the answer, we need to go back and look at another received tradition of German thoroughbass theory from the eighteenth century upon which Lingke was drawing: the “two-chord” system. Many German theorists around Lingke's time were beginning to teach that there were two harmonic sources for all consonances and dissonances: the triad and seventh chord, respectively. All harmonic structures, according to this idea, could be traced back to one of these two constructs by virtue of inversional derivation or non-harmonic tones (manipulating individual tones of these fundamental chords through suspension, anticipation, supposition, and the like). Probably the purest version of this “two-chord” theory in Germany can be found in Kirnberger's writings, although it is also to be seen in the writings of Schröter and Türk.¹¹

¹¹Johann Philipp Kirnberger, *Grundsätze des Generalbasses als erste Linien zur Composition* (Berlin: J. J. Hummel, c. 1781); Christoph Gottlieb Schröter, *Deutliche Anweisung zum General-Bass* (Halberstadt: Johann Heinrich Gross, 1772); Daniel Gottlob Türk, *Kurze Anweisung zum Generalbaßspielen* (Halle und Leipzig: Selbstverlag, in Kommission bey Schwickert in Leipzig und bei Hemmerde und Schwetschke in Halle, 1791).

Now as any student of eighteenth-century harmonic theory knows, this idea is one that ultimately can be traced back to Rameau.¹² The precise path by which Rameau's theory of the fundamental seventh chord migrated to Germany is not entirely clear. But by the third quarter of the century, it had achieved common currency among German theorists.¹³ Few of them seemed aware of its origins in French theory, though, their understanding of Rameau corrupted by the unfaithful exegesis perpetuated upon them by Marpurg. But regardless

¹²Or more specifically, to the Rameau of the *Traité de l'harmonie* of 1722. In his later publications, as we know, Rameau reified the added-sixth chord on the subdominant as a second dissonant source that paralleled the dominant seventh. Still in all his writings, Rameau expressed a lingering suspicion that all dissonances—including the added-sixth chord—could be traced back to the fundamental seventh.

¹³If Lingke's two tables presented to Mizler's Society in 1744 were indeed similar to those shown in Examples 1 and 2, then he must be considered one of the first advocates in Germany of the thesis that dissonance had a harmonic source. The only work in which we find this idea presented earlier in Germany is the small thoroughbass treatise by David Kellner, published first in 1732 (*Treulichem Unterricht in der Musik* [Hamburg: Kissner, 1732]), where the idea was offered as a practical aid for learning to read and realize a variety of dissonant signatures.

It is perhaps significant that Schröter claims that he was already working on this idea as early as the 1720s, although his thoughts were not published until some fifty years later. (See his *Deutliche Anweisung zum General-Baß in beständiger Veränderung des unangebohrnen harmonischen Dreyklanges* [Halberstadt: Johann Heinrich Gross, 1772], xiii.) If this is true, then an influence upon Lingke is not out of the question since Schröter was already an active member of Mizler's society when Lingke joined. Schröter, we might note as further evidence, offered a generally positive assessment of Lingke's theory, defending it against an organist who had written to Schröter complaining of Lingke's book. Schröter did concede, though, that no one would probably carry away too much of practical value by reading Lingke's writings (xxiii).

Finally, between the presentation of Lingke's tables to the Society in 1744 and the eventual publication of his first treatise in 1750, there appeared the three-volumed treatise of Georg Andreas Sorge, in which a modified version of the "two-chord" system was taught: *Vorgemach der musicalischen Composition* (Lobenstein, der Autor, 1745-47). After 1750, though, and particularly after the wider dissemination of Marpurg's writings and his translation of d'Alembert's *Elémens de musique théorique* in 1757, varieties of Rameau-derived harmonic theories proliferated in North Germany as seen in the writings of Nichelmann, Daube, Lohlein, and Kirnberger.

of the progeny of this idea, Lingke accepted it as axiomatic. Indeed, so literally did he accept the idea, that he concluded—as we see in Examples 1 and 2—that a fundamental scale should be comprised *only* of the two functions. In Lingke's view, a key (*Tonart*) is made up—necessarily and sufficiently—by seven fundamental harmonies (*Hauptsätze*): a consonant tonic triad (*Grund Accord*) and its two inversions, as well as a dissonant dominant-seventh chord (*Herrschende Accord*) and its three inversions (1766, 24). This is incidently why Lingke has two chords on the fifth scale degree—it was necessary to have all inversions of his two primary chords present in the scale. This is also why he thought it sufficient to abbreviate the given figured-bass signatures using seven single digits: 2 = 6/4/2; 3 = 6/4/3; 4 = 6/4; 5 = 6/5; 6 = 6/3; and 7 = 7/5/3. Since the sixth scale degree cannot be harmonized by either the tonic or dominant-seventh chord, it must necessarily lie outside of the main key (1766, 9). If a chord is sounded here (perhaps 6/4/3 on the bass note A in the case of C major), it necessarily constitutes a kind of “digression” (*Fortschreitung*), drawn as we can see from Example 1, from the second chord in the derivative scale on G.

Lingke's treatment of the minor scale in Example 2 displays a number of peculiarities that deserve comment. First, he postulates the fundamental version of a minor scale to consist of lowered sixth and raised seventh scale degrees in all versions, since the leading tone is an essential component of the dominant-seventh chord. In his 1779 treatise, Lingke even advocated notating the key signature for all minor keys based upon this fact. So the key signature for D minor would be B \flat and C \sharp ; for A minor it would be G \sharp , and so forth (1779, 80). (Lingke was the first music theorist, incidentally, to describe and advocate this “harmonic” version of the minor scale—although he never called it by this name.) Lingke also posits an “extraordinary” (*Ausserordentliche*) scale on the raised fourth scale degree that is “unknown” to most theorists, but found in the minor-mode works of many composers (1779, 5, 77). In the key of A minor, this scale reads as follows: D \sharp , E, F, G \sharp , A, B, C, D, and D \sharp . Like the other deriva-

tive scales, it too has its own corresponding harmonization. (He seems to have included this scale mainly to account for augmented-sixth chords and commonly-used secondary dominants.)

Now there seems to be an inconsistency in the structure of Lingke's arguments. He had begun his treatise with the scale as a fundamental construct from which harmony is generated. Yet if scales are the basis from which harmony is drawn, how is it that harmony ends up determining which notes of the scale are truly fundamental to the key? Lingke seems now to allow harmony—that is, the tonic and dominant-seventh functions—to be the controlling element of tonality. The answer, I think, is that Lingke was dealing with two different kinds of scales, although he was not very adroit in making this fact clear in his writings. There are two basic diatonic scales (major and “natural” minor), while there are two chordal scales (the *Hauptsatzleitern*) from which are drawn all defining harmonies of a given key. As we saw, if a chord is not part of the *Hauptsatzleiter* (as in the case of a chord falling on the sixth scale degree), it must originate in one of a key's derivative scales (even if the note—as in the case of the natural seventh scale degree in minor—is diatonic to the key and traditionally reflected in the key signature).

The derivative scales, as we can see in Example 1, are not exact transpositions of the major or minor fundamental scales. Nonetheless, they do follow the same two-chord concept, in that each is harmonized exclusively by a triad and seventh chord that is diatonic to the original fundamental scale. (This means, of course, that each fifth scale degree is given two chords, while each sixth scale degree is skipped.) Lingke readily admits that not all of these harmonies are practical ones; indeed, he calls many of them “quite disagreeable, if not entirely unmusical” (1779, 64). Still less should any of these scales be considered as practical harmonic successions, along the lines of the Rule of the Octave. His scales constitute more a systematic taxonomy of all harmonic vocabulary, showing how every diatonic chord may be traced back to either a tonic or dominant function in the fundamental scale or one of its derivative scales. (Lingke believes that these derivative scales

demonstrate the origin of the ancient Greek modes, and that perhaps the harmonies contained in each of these scales may yet be used to enrich contemporary musical vocabulary.)

Beyond the network of fundamental and derivative scales, there is a third level of scales that signify modulation (*Ausweichung* or *Modulieren*) to new keys. These neighboring keys (*Stammverwandschaften* or *Seitenverwandtete Tonarten*) are based upon the derivative scales of Example 1, but incorporate the accidentals necessary to establish the given tonic key. There are six neighboring keys to any *Haupttonart*. In the key of C major, they are G major, E minor, A minor, F major, and D minor. G and F major are the “two sons” of the key, while the minor keys on D, E, and A are its “three daughters.” C minor can also be included as a possible modulatory goal, being the “wife” of C major.¹⁴ Modulation to a new key was termed by Lingke an *Ausschreitung*, while the return home was called *Zurückschreitung* (1779, 74-75). Lingke illustrates these in two large fold-out tables appended to his 1766 treatise, in which all six derivative scales and six neighboring keys of C major and A minor are presented in a matrix, resulting in 49 harmonized scales. These two tables—identical to the ones I suspect he submitted to Mizler’s Society in 1744—are reproduced in the inserts.

The tables are ordered in such a way as to allow one to trace the origins of any chord within the hierarchy of scales, as well as to compare and correlate scale degrees to one another. So, for example, one can not only see the second derivative scale of A minor in Table 2 (on B), but one can compare the chordal content of this scale to the corresponding derivative scales in the neighboring key of E minor (B C, D#, E, F#, F#, G, and B) or F major (Bb, C, D, E, F, F, G, Bb). (The dots after certain figures are Lingke’s notation to indicate that the quality of the given interval is minor or diminished.)

¹⁴Lingke’s use of anthropomorphic metaphors in describing key relations is strong evidence of the influence of Sorge, who also liked to use such metaphors in his treatises.

With this network of derivative scales and neighboring keys, Lingke is able to construct a systematic hierarchy of tonal and chordal relations by which he believes he can account for the harmonic/tonal practice of his contemporaries—as well as the historical practice of church music written according to the modes. All harmonies have either a tonic or dominant function that belong to the main tonic key, one of the derivative scales, or finally, one of the neighboring keys (that are themselves based upon the *Hauptton* of the derivative scales). According to Lingke, the tables could be used by the student for both the analysis and composition of music. If Lingke's generative hierarchy suffers from an excess of *Zwangmäßigkeit*, there is an undeniable logic to it that reflects the growing obsession of German intellectuals in the eighteenth century with the systematic mapping out and ordering of the natural world. It is nothing less than a musical *mathesis* of chordal vocabulary.¹⁵ Through the proper arrangement and ordering of harmony in his tables, Lingke thought, one gains the clearest understanding of music, just as can the botanist by studying nature using the categories of Linnaeus. "The tabular method," Lingke wrote,

is a method by which one arranges the many parts of a whole such that each many be distinguished from the other based upon the clearest notions. In such an arrangement, each genus has its own content, each species its particular nature, and every part its proper place. By this means, that which strikes us as disconnected becomes related, that which is chaotic becomes orderly, that which seems confused becomes coherent, and that which seems diverse is reduced to one. Whereas previously [the

¹⁵For more on the classical notion of *mathesis*, see Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Random House, 1973), 72ff.

student] would require the utmost attention and persistent patience, one may now attain a comprehensive overview of everything in a symbolic way that is also of the greatest advantage to memory.¹⁶

Lingke did not see his theory as purely an intellectual construction. As already mentioned, he thought there were real practical applications of it for the beginning music student. Indeed, in both his 1766 and 1779 treatises, there are numerous cadence patterns, sequences, and other kinds of chordal progressions written out for the beginning keyboardist to practice that are analyzed and arranged according to Lingke's scale system. He was quite proud of the pedagogical implications of his tables:

Whoever keeps these two tables clearly in mind according to [my] explanations, and grasps their meaning clearly and certainly, such a person will learn to recognize in music the same order one observes in all of nature's manifold objects; he will gain certain conviction by applying these tables, without, however, succumbing to improper over-confidence.¹⁷

¹⁶“Die tabellarische methode ist eine solche Lehrart, nach welcher man viel und vierley Theile eines Ganzen so zusammenordnet, daß sie nach klaren Begriffen von einander unterschieden werden kann. Mittelst einer solchen Zusammenordnung hat jede Gattung ihren eigenen Inhalt, jede Art ihr besonderes Fach, und jedes Einzelne wieder seine gehörige Stelle darinne. Das unähnliche wird dadurch ins ähnliche, das unordentliche ins ordentliche, das zerstreute ins beysammene, und vieles dergestalt in Eins gebracht, daß, bey einer vorher nur in etwas recht anzuwendenden Aufmerksamkeit und anhaltenden Gedult, man alles darinne, zunicht geringen Vortheil des Gedächtnisses, auf eine Symbolische Art vor sich sehen, und summarisch übersehen kann.” Lingke, 1766, 1-2.

¹⁷“Wer nach vorherstehenden Erklärungen, beyde Tabellen, in welchen er alles Kurtz, und gleichsam bildlich vor Augen hat, Klar und deutlich einsieht, der wird die Ordnung der Natur, die sie, wie bey allen ihren mannigfaltigen Dingen, also auch in der Musik beobachtet, daraus erkennen lernen, und von dem Nutzen dieser Tabellen, ohne ihnen ein unanständiges Eigenlob zu geben, gewiss überzeugt werden.” Ibid., 25.

He offered several examples of his tables's analytic potential in his 1766 treatise. Example 3 reproduces Lingke's analysis of the chorale, "Aus der Tieffe ruffe ich" (1766, 60). The analysis written below the chorale consists of three levels. The top line indicates the key of the particular passage. We can see that while the chorale is in A minor, it soon modulates to three of its neighboring keys: G major, E minor, and C major. (The letter "d," English readers need to keep in mind, indicates "dur"—the German word for major.)

The second (middle) level of analysis indicated by letter names in lower case signifies the various derivative scales from which the particular harmonies are drawn. The arabic numerals on the bottom line below each chord directs one to the specific point in the derivative scale where one finds the chord. So for the fourth beat of measure one, we see that the digressive harmony is the third chord of the seventh derivative scale on G# in the key of A minor. (The 7 in the figured bass is a suspension to the true harmonic interval of 6.) The second and third beats of the following measure can be mapped onto the third and first chords of the B and E derivative scales, respectively. The same relations apply to the modulations. In measure three, where there is a modulation to G major, all the chords can be found either in the G *Stammleiter* (beats 2 and 3), or in its own derivative scale (the third chord of G's *Nebenleiter* on F#).

This is all admittedly somewhat cumbersome, and we may well dispute Lingke's claims that this analytic notation could have a practical value. (In his 1779 treatise, which was Lingke's attempt at a truly practical *Harmonielehre*, his teaching more closely follows traditional thoroughbass nomenclature and practice.) Nonetheless, his tripartite division of fundamental key, derivative scales, and neighboring keys do suggest a clear hierarchy by which both chords and key successions could be arranged and traced back to a single tonic key—and ultimately, one supposes, a single *Klang*. Chords and key areas that were foreign to the main key, far from constituting tonal ruptures, were shown to relate in the most systematic manner to the original key. This should not be interpreted as evidence of Lingke's great wisdom in hav-

Example 3. Lingke's Analysis of "Aus der Tiefe ruffe ich"

Aus der Tiefen ruffe ich etc.

The image shows a musical score for the piece "Aus der Tiefe ruffe ich". It consists of two systems of music, each with a treble and bass staff. The bass staff includes guitar chord diagrams and fingering. The first system covers measures 1-6, and the second system covers measures 7-12. The chords and notes are as follows:

Measure	Chord	Notes	Fingering
1	Am.	A, C, E	x 5 x
2	A	A, C, E	3 3 3
3	A	A, C, E	3 3 3
4	Gd.	G, B, D	x 3 4
5	Em.	E, G, B	3 3 5
6	Em.	E, G, B	x x
7	Cd.	C, D, F	x 3 3
8	C	C, E, G	7 x
9	C	C, E, G	x x
10	Gd.	G, B, D	3 x
11	Am.	A, C, E	x 4 3 3
12	A	A, C, E	x x
13	Am.	A, C, E	x x x

ing adumbrated a variety of Schenkerian tonal organicism; rather, it is evidence that Lingke's tonal intuition was rooted in an older modal conception, one by which *modulation* was understood as the articulation of harmonies, chordal progressions, and key areas related to the original mode—not movement away from that mode.

Of course, we should not be surprised to discover that Lingke's contemporaries found little practical value in his system. Hiller had to admit that it suffered too much from abstract systematization. But he nonetheless thought it worthwhile to disseminate Lingke's "hypothesis," if for no other reason than to provoke other theorists to think about it. Perhaps it will lead someone to stumble upon truths he might not have thought about before. Maybe it will suggest a new use of the church modes to musicians today. And most alluringly, maybe it will inspire a "second Rameau" to discover a "new system of harmony, even if such a system is not to be found in the treatises of Herr Lingke" (1779). Fétis, too, thought that there was value in Lingke's writings, his theory offering "a glimpse of the true philosophy of tonality."¹⁸

Other music theorists who read Lingke's treatises were less confident. Johann Mattheson, still irascible and obstreperous in his sixty-ninth year, perused a copy of Lingke's 1750 treatise and immediately inserted a paragraph within a treatise he was working upon at the time with a sarcastic dismissal of its claims. Not for a very long time had he seen such a shameful example of "life-sized musical pedantry" ("musikalische Pedanterey in Lebensgrösse") displaying a mish-mash of nonsense that would better be used as "note fodder for rats and mice" ("Notenpulver . . . womit man Ratzen und Mäuse vergeben sollte").¹⁹ Lingke's treatise contained all that Mattheson found most loathsome in music theory: a mathematically-inspired approach to music more concerned with systematization than empirical description,

¹⁸Francois-Joseph Fétis, *Biographie universelle des musiciens*, 2d ed. (Paris: Librairie de Firmin Didot Frères, 1862), 5:310.

¹⁹Johann Mattheson, *Bewährte Panacea*, pt. 3, *Sieben Gespräche der Weisheit und Musik* (Hamburg: Johann Adolph Martini, 1751), forward, par. 19.

a penchant towards stale aesthetic generalizations and mysticism devoid of musical common-sense, and blind veneration of an antiquated, modal practice.

Lingke, innocent of Mattheson's poisoned pen, responded in a petulant and indignant pamphlet of 24 pages: *Verteidigungsschreiben an den Herrn Verfasser der Sieben Gespräche zwischen der Weisheit und Musik von dem Verfasser der Musikalischen Erweg- und Uibungswahrheiten* (Frankfurt and Leipzig, 1753). He was incensed by Mattheson's curt dismissal, especially since the elderly critic did not even bother to discuss any of the details of his treatise. The general condescending tone of Mattheson's critique was "cowardly" and "slandorous" (1753, 8). Lingke thought he was reading the work of a senile hag, so contemptuous and arrogant was it. More to the point, Mattheson stood on precarious ground in calling Lingke's work pedantic, since Mattheson's own writings were so notoriously verbose and opinionated (1753, 13). Certainly Mattheson's criticism of using mathematics was disingenuous, Lingke argued, since Mattheson had on more than one occasion relied upon mathematics in his own writings (1753, 14).²⁰

It is perhaps understandable why the elderly Mattheson did not wish to expend energy critiquing Lingke's ideas in any concrete detail, nor to respond to Lingke's peevish defense. Other critics, however, did grant Lingke a more generous hearing. One theorist writing in the *Allgemeinen Deutschen Bibliothek*, (vol. 5, no. 2 [1767], 12-19) wrote a detailed review of Lingke's 1766 treatise. The anonymous reviewer examined Lingke's tables and their explanation carefully, and after a few polite words of encouragement, detailed six points of disagreement. Quickly summarized, these six points concerned: (1) the spelling of

²⁰Lingke's arguments concerning the role of mathematics in music and the ontology of sound can be considered in light of analogous arguments waged by Mizler and Schröter with Mattheson around the same time period. I have discussed the background of this polemic in my article "Sensus, Ratio, and Phthongos: Mattheson's Theory of Musical Perception," in *Musical Intuitions and Transformations: Essays in Honor of David Lewin*, eds. Raphael Atlas and Michael Cherlin (Boston: Ovenbird Press, 1994), 1-16.

enharmonic intervals; (2) the relevance of the church modes to contemporary harmonic practice and Lingke's system; (3) the terminology to designate whole steps; (4) the omission of the sixth scale degree; (5) the correct version of the minor scale; and (6) the order of relatedness among neighboring keys.

Lingke was obviously a touchy personality. As he had some fifteen years earlier with the criticisms of Mattheson, he responded to the negative review with an impassioned and petulant defense. His response was published in the journal recently founded by Hiller, the *Wöchentliche Nachrichten und Anmerkungen die Musik betreffend*. The anonymous reviewer responded with a defense and elaboration of his critique, leading to yet another round of rebuttals. Eventually, the whole polemic would take up ten different issues of the *Wöchentliche Nachrichten* published over a three-year period.²¹ For all his bluster and long-windedness, though, Lingke offers little new to defend his theory, simply repeating many of the same arguments to be found in his published treatises. It is worthwhile, though, to look briefly at two of the points raised by the anonymous reviewer, as these touch upon some

²¹The whole exchange is found in the following pages of the *Wöchentliche Nachrichten*:

- (1) Lingke's first rebuttal: vol. 2, no. 42 (April 18, 1768): 321-28.
- (2) Reviewer's first response: vol. 3, no. 24 (December 12, 1768): 183-90; and vol. 3, no. 25 (December 19, 1768): 191-93.
- (3) Lingke's second rebuttal: vol. 3, no. 47 (May 22, 1769): 363-66; vol. 3, no. 48 (May 29, 1769): 371-78; and vol. 3, no. 49 (June 5, 1769): 379-86.
- (4) Reviewer's second response: vol. 4, no. 17 (April 23, 1770): 127-34.

Further commentary by an unidentified third party (possibly Hiller himself) on the polemic is found in vol. 3, no. 27 (January 2, 1769): 205-8; vol. 4, no. 38 (September 17, 1770): 293-97; and vol. 4, no. 39 (September 24, 1770): 301-4.

of the most original ideas to be found in Lingke's theory. These two points concern, respectively, the omission of the sixth scale degree, and the "correct" version of the minor scale.

The critic found Lingke's displacement of the sixth scale degree from the main harmonic scale to be unjustified, since practice confirms that a 6/4/3 harmony is commonly placed there. And scale degree six also must be fundamental since it is the tonic of important neighboring keys in both major and minor modes. Lingke responded that it is not a question of the sixth scale degree being commonly used or not, but where the harmonies (or keys) built upon it come from. Since there is no correspondence (*Mitstimme*) of this scale degree with the basic tonic and dominant harmonies, any harmony found upon it must be derived from one of the derivative scales (vol. 3, no. 42, 323).²² Obviously for Lingke, the relative hierarchy of a chord or key in his system is not determined by empirical consensus, but by the generative premises of his system. This also turns out to be true in the question of defining the minor scale.

The reviewer argued that practice dictates that the normal version of any minor scale is different ascending than descending (corresponding to what we today call the "melodic minor" scale). Lingke's positing a skip of an augmented second between scale degrees six and seven is "unnatural" and "disagreeable." Further, a lowered seventh (as found in the natural version of the minor scale reflected in the key signature) more closely and naturally relates to a mode's neighboring keys than does the leading tone (vol. 3, no. 24, 189; vol. 4, no. 17, 130).

Lingke responded that there should be only one version of a minor scale, just as there is for the major scale. And since the seventh scale degree is always raised in a dominant-seventh chord in minor, it should be reflected in the scale. For Lingke, as for many harmonic theorists of the eighteenth century, raised chromatics implied new leading tones. Lingke argued, then, that to raise scale degree six in A minor (making

²²All references in the following discussion are taken from the *Wöchentliche Nachrichten* cited above in n. 21.

it F#) implies a modulation to G major (vol. 3, no. 48, 377). On the other hand, by retaining G♭ for the seventh scale degree in the scale, we lose the very identifying note that helps define A minor. If there is a “natural” version of the minor scale found on A, then it must be derived from the fifth “derivative” scale in C major (vol. 3, no. 49, 382). As for the argument that G# is not found in many of the neighboring keys (of C major, G major, and E minor), Lingke fully agrees; this is precisely why a movement to these keys is a modulation and suggests a new key signature (vol. 3, no. 49, 385). Again, we see that Lingke does not look to empirical practice to construct his system, but a priori to its founding postulates.

What are we to make of Lingke’s accomplishments, then? His tables obviously offer an idealized mapping of musical material by which one can trace a network of chord and key relations. Yet no theorist after Lingke evidently found his tables valuable enough to invoke. And we can perhaps understand why. For all its seemingly progressive character, Lingke’s harmonic vision was a quite limited one. He could only conceive of chords in terms of a rigid bifurcation into tonic and dominant categories, and then again, as static entities, not as dynamic, functional elements. His concentration upon the generative origin and taxonomy of musical vocabulary, and not its syntactic, operative behavior betrays a conception of harmony that was paradoxically modal in character. For as Rameau so brilliantly had shown, the signifying feature of the new tonal language was not so much the use of harmonic constructs as much as the functional relation and behavior of these constructs in temporal unfolding (notated with the *basse fondamentale*) serving to project a tonal center. Modes, on the other hand, serve as more static frames within which musical material can be ordered and articulated.²³ Lingke’s perspective, then, was rooted in an

²³It is difficult to resist comparing Lingke’s approach to chordal taxonomy to the kind of tabular categorizing and ordering of the natural world practiced by such early eighteenth-century scientists like Linnaeus. Both sought to achieve a kind of mechanistic ordering based upon the physical appearances and purported genealogy of their subjects. (Lingke’s recognition of his tables as being quasi-botanical in conception is made plain in the quotation I cited above.) The critical change in natural science in the mid-

older world view, although much of the material with which he was working was mined from more contemporary loads. So in almost innocent fashion, Lingke's system betrays the many competing tensions pulling upon German thinkers at mid-century, when both their musical and intellectual worlds were rapidly being transformed. Like those odd figures we find in our imaginary topiary garden of the eighteenth century, it can be read in several ways simultaneously: as a remnant of a decaying musical/intellectual world view, as well as a presage betokening the ascension of a new one. To that extent, Lingke's writings constitute a notable landmark, indeed.

eighteenth century—as with tonal harmony—was a growing recognition of dynamic, functional behavior. Biological organisms began to be analyzed and categorized according to concepts of physiological vitalism (as in the natural history of Georg Stahl, Albrecht von Haller, and Comte de Buffon), just as harmonies began to be conceived and analyzed in terms of functions within a key.