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Reger and Riemann: Some Analytical and Pedagogical Prospects

By Per F. Broman

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In June of 1997 a conference devoted exclusively to Neo-Riemannian music theory was held at SUNY Buffalo.[2] The participants included well-known scholars such as David Lewin, Richard Cohn, and John Clough, all of whom have recently contributed to this field. Right after the conference I met with one of the participants and asked her about the conference and about this new branch of theory of which I knew nothing. She told me that it incorporates aspects of Hugo Riemann's nineteenth-century method of harmonic analysis into a transformational framework originally developed in conjunction with the analysis of twentieth-century music. I explained that I grew up with Riemann's approach to analysis. I went to a special magnet school for music and we had to perform functional analysis, as we called it, from the fifth grade onward. She stared at me as if I were a time capsule containing authentic historical information from a distant and fascinating past. This is of course an exaggeration. Any living tradition changes, and I am probably as far from The Real Riemann as anyone else. However, a couple of notions I inherited during my childhood are now the latest rage in certain theory circles, as we will see.

This paper deals primarily with the analytical potential of Neo-Riemannian theory. Although Neo-Riemannian theory originated as a response to analytical problems encountered in chromatic music—specifically as a way of approaching passages that are triadic but are not tonally unified—its subsequent development has focused heavily on the theory's formal properties and their mathematical implications, emphasizing, for example, the group structure and geometric representation of the various Neo-Riemannian transformations. Whereas analysis is normally deductive, that is, it generates theories based on the observation of individual works, Neo-Riemannian theory has taken the opposite path thus far; Neo-Riemannian theory has been formalized and extended, independent of any widespread analytic application.

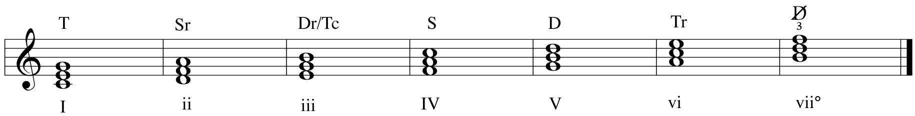
Following a brief introduction to Neo-Riemannian theory, I will turn my attention to Max Reger's first piano piece in the collection *Träume am Kamin,* and present some ideas as to how this work could be approached using the new methods. I will also provide a couple of suggestions regarding pedagogical applications of this theory.

I am most grateful to Nora Engebretsen for comments and suggestions on this paper.

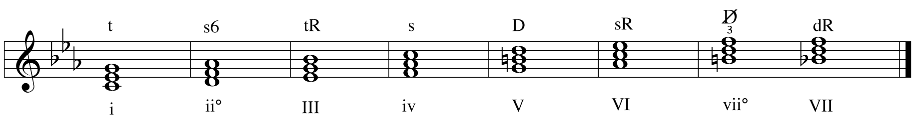
2. A similar conference was held in July of 2001.

Neo-Riemannian Theory

Example 1 gives the Riemannian labels for triads in a major key and example 2 for a minor key.[3] Hugo Riemann's harmonic system shares certain traits with Roman numeral analysis. Notably, both describe the relationship of the diatonic triads to their referential tonic. While the rather neutral numeric labels of Roman-numeral analysis reflect scalar ordering, Riemann's labels reflect a hierarchical organization. Riemann's system emphasizes three fundamental triads—Tonic, Subdominant, and Dominant. Each of the remaining triads is then derived from one or two of the three main triads, the *Hauptdreiklänge*. For example, in a major key the triad on the second scale degree is called the *Subdominantparallelle*—or the Subdominant relative, as it is usually translated. The triad on the sixth degree is normally called the Tonic relative. This is straightforward and easy to understand. We often refer to "relative" keys.



Example 1



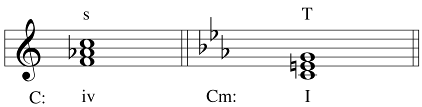
Example 2

The labeling of the triad built on the third scale degree is little more complicated, however. Following the same logic applied in labeling the triads built on scale degrees two and six, the triad built on scale degree three would be the Dominant relative. But this label is often problematic, in that it implies a close functional relationship between iii and V—Riemann's theory puts a great stress on the way we perceive a particular chord to function within a progression, so it is important to label the chords correctly. The triad on the third scale degree is not necessarily connected to or associated with the one built on scale degree five. The more common function of iii is as a substitute for, or extension of I, as in the progression I—iii—V or I—iii—IV. For this reason, three is often labeled as the Tonic's counter relative (*Kontraparallelle*)—the triad lying a third from the tonic in the opposite direction from the Tonic

3. The labels follow Riemann's system, translated to English: For example, "Sr" denotes the minor relative of the major subdominant.

relative. Another Riemannian term for this relation is *Leittonwechsel*. This will become clearer in the course of this paper.

Riemann invoked one other common relationship to account for simple chromatic alterations, the parallel—or *Variante*, as Riemann called it. The parallel relation would be used to account for minor four in a major key, or for a final major one in a minor key—the Picardy third, that is (see example 3).

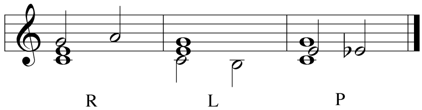


Example 3

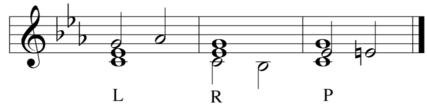
The one remaining diatonic triad—the triad built on scale degree seven—is problematic from a pedagogical point of view. In Riemann's theory it is considered an incomplete chord—a dominant seventh chord without the root because it functions like a dominant as in the progression I—vii°6—I6.

The relationships I have just described are part of Riemann's original harmonic theory. How does this all relate to the new, *Neo*-Riemannian theory? David Lewin initiated the Neo-Riemannian project in his seminal 1982 article, "A Formal Theory of Generalized Tonal Functions", and further developed his ideas in his 1987 book *Generalized Musical Intervals and Transformations*. In these works Lewin introduced the notion of a transformational approach to triadic relations and also forged the connection between this approach and Riemann's theory. Brian Hyer (1989) and Richard Cohn (1996) have subsequently built upon Lewin's work, establishing three of Riemann's relationships as the fundamental transformations of the Neo-Riemannian approach and exploring their musical—and mathematical—potential under composition.

Neo-Riemannian theorists have appropriated Riemann's Relative-, Parallel-, and *Leittonwechsel*- relationships—which they usually refer to in abbreviated form as R, P, and L—and they have recast these relationships in dynamic, transformational terms. These transformations have been formalized in the literature, but for our purposes, definition by example will suffice. I will take the C-major triad as my point of departure, but these operators can be applied to any major or minor triad.



Example 4



Example 5

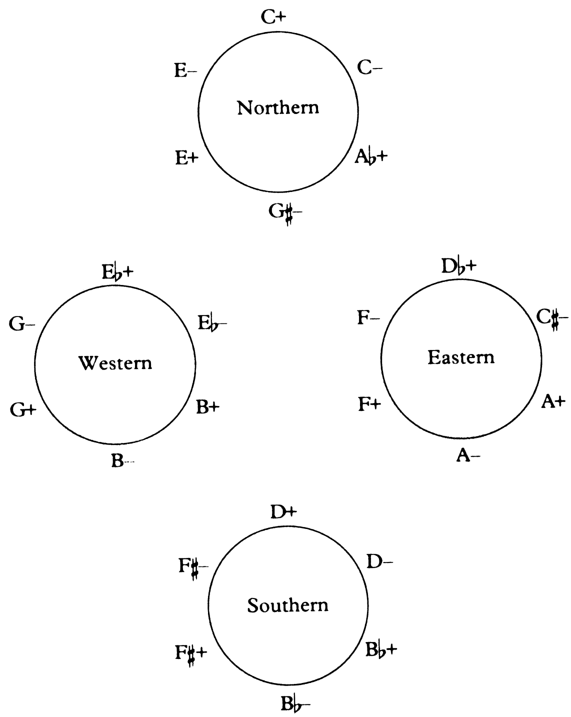
The Relative operator R transforms a C-major triad into an A-minor triad and an

A-minor triad into a C-major triad; the Parallel operator P leads from a C-major triad into a C-minor triad and vice versa, and the *Leittonwechsel* operator L links the C-major and E-minor triads (see example 4). The German term *Leittonwechsel* is used in historical Riemannian theory as well as in Neo-Riemannian theory, and indicates a change of leading tone—that the root of a major triad moves down a half step or the fifth of a minor triad moves up a half step. This is the same relationship I earlier referred to as the counter relative. In minor mode the relationships are reversed (see example 5).

In addition to redefining the original Riemannian labels as transformations, it is important to note that Neo-Riemannian theory also discards their reference to diatonic context: the Relative operator transforms a C-major triad into an A-minor triad, whereas Riemann would have classified the A-minor triad with respect to a particular key: as the tonic relative in the key of C, or as the subdominant relative in G, and so forth. The abandonment of diatonic context allows Neo-Riemannian theory to model non-diatonic relationships among triads: any consonant triad can be connected to any other through some combination of the P, L, and R transformations.

The three transformations are the backbone of the system. We can make a few interesting observations, however: First, the three Neo-Riemannian operators provide a connection between tonal and atonal theory: the Parallel-, Relative-, and *Leittonwechsel*- operators and their combinations are conceptually similar to the familiar Transposition and Inversion operators, but with one significant difference. The Neo-Riemannian operators are what are known as contextual operators: the specific action of each operator depends on the quality of the triad to which it is applied. For example, the Parallel operator—which links the major and minor triads with the same root—*lowers* the third of a major triad by a semitone but *raises* the third of a minor triad, again by a semitone. In general, each of the three operators changes the mode of a triad, from minor to major or vice versa, and each holds two notes in common, while the remaining note changes by step.

When I first heard about Neo-Riemannian theory, I recalled a game that two classmates and I used to play in the fifth grade. We would pick a key and a non-diatonic triad, and would then try to label the triad in Riemannian terms. In other words, we would try to establish a connection, based on Riemannian relationships, between this triad and one of the three primary triads of the chosen key. How, for example, would an F-sharp-major triad be accounted for with respect to the key of C major? One answer is as the relative parallel relative parallel of the Tonic. C major—A minor—A major—F-sharp minor—F-sharp major. In effect, we invoked an R—P—R—P transformation. It sounds very strange and did not make any musical sense but it was a fun brain teaser. It resembles the word game in which you take a given word and transform it into another specified word by changing one letter at the time. We grew tired of this game fairly quickly, but not before we had discovered some fundamental properties of an *avant la lettre* Neo-Riemannian theory: Although our labels still reflected some remnants of a diatonic context, we were treating Riemann's relations as transformations and were exploring the various relationships among triads that we could model using these three transformations in different combinations. Among other things, we discovered that to create progressions we had to use two or more operators, since one operator used twice would reverse the first operator. Begin with any triad, apply R, L, or P twice and you will get the first triad again. In mathematical terminology, operators with this property are called involutions. More familiar involutions from atonal set theory include all of the I operators, as well as T_0 and T_6.



Example 6

The most interesting work in Neo-Riemannian theory therefore centers on various combinations of the three operators. Let me show you a few examples of what has been done thus far. Richard Cohn has explored the results of applying the P and L transformations in succession or combination. If we begin with C major and apply P and L in alternation we will get the following progression: C major—C minor—A-flat major—A-flat minor—E major—E minor, and then we arrive back at C major again. Cohn calls this a hexatonic cycle because of its pitch-class content. There are four such cycles, equally partitioning the twenty-four major and minor triads into four cycles of six triads each. Cohn identifies each of the four cycles in terms of its position within the scheme shown in example *6*—northern, eastern, southern, and western (note that Cohn uses a plus sign to indicate a major triad and a minus sign for minor). In generating these cycles, it does not matter if one begins with a major or minor triad, or if one begins with P or L. Cohn incorporates these four cycles into a larger system, which he uses to describe motion both within and between the individual cycles. He also cites a few instances of these cycles in real music, Franck's Quintet for Piano and Strings being a very illustrative example.[4]

The R and P operators will generate a different set of triads when applied in alternation: C major—A minor—A major—F-sharp minor—F-sharp major—E-flat minor—E-flat major—C minor and we are back to C major. There are only three such octatonic cycles.

The R and L operators produce yet another, completely different cycle: C major—A minor—F major—D minor—B-flat major—G minor—E-flat major—C minor, etc. In fact, this cycle will produce all twenty-four major and minor triads before returning to C major. It follows the cycle of fifths in the subdominant direction. The third relations among the triads resemble Brahms's use of third relations, as in the beginning of his fourth symphony.

If we use three operators in succession, the situation becomes more complicated. Six different combinations are possible, and each results in cycles of six triads and therefore partitions the twenty-four major and minor triads into four cycles of six chords each—much as the PL-cycles did:

PLR C—Cm—Ab—Fm—F—Am—C
PRL C—Cm—Eb—Gm—G—Em—C
LPR C—Em—E—C#m—A—Am—C
LRP C—Em—G—Gm—Eb—Cm—C
RLP C—Am—F—Fm—Ab—Cm—C
RPL C—Am—A—C#m—E—Em—C

Any one of these cycles—whether they involve two or three operators in succession—could serve as the basis for a sequential passage, or could serve a more "background" function, presenting a limited collection of triads that underlie and unify some non-sequential passage that appears to lack tonal unity in the traditional sense.

4. See pp. 17 and 26–27 of his article.

An Analytical Application

I will now turn to the piece by Reger to demonstrate more specifically some ways in which Neo-Riemannian theory can serve to explain certain passages in late-Romantic music. Neo-Riemannian theory will probably never completely replace the more traditional analytic methods applied to this repertoire. There may be pieces that could be analyzed effectively using Neo-Riemannian theory alone, but often a methodological eclecticism is more appropriate. I do not want to put a piece of music in a kind of analytic straitjacket, in which the theory is guiding the understanding of the piece, as opposed to the piece deciding which methods to use. Neo-Riemannian theory is a useful tool for describing what is happening in passages that are triadic, yet seem to lack tonal coherence. Most often these passages can be assigned a linear role within a functional context—or at least appear in works in which phrases and sectional divisions are articulated by functional cadences—so the Neo-Riemannian approach is best used in conjunction with a functional perspective in these cases.

Max Reger's music provides excellent examples of the sorts of passages most suitable for, or susceptible to, the Neo-Riemannian approach. In his *Music in Transition* Jim Samson points out quite correctly that Reger is "a composer whose harmonic practice owed as much to Brahms as to Wagner [...] His music inclines rather towards a compression of chromatic, but for the most part *triadic* harmonies within a short time-span and a single tonal region."[5] The triadic property is important here. While often triadic and formally straightforward, much of Reger's music has proved quite resistant to standard tonal analytic approaches. It is striking to note that not a single work of Reger's appears in the most common analytic anthologies—perhaps because Reger's music is so difficult to analyze.

Träume am Kamin, Dreams at the Fireplace, op. 143 (see example 7 next pages), was written in 1915, one year before Reger's death. The first piece in this collection begins with a portion of an LR cycle: D minor, B-flat major, G minor, E-flat major, with applied leading tones on off beats separating the chords of the cycle. From E-flat major, we might expect the cycle to continue with C minor, A-flat major, F minor and so on. The expected C-minor triad is omitted, however, and the next triad we hear is the A-flat major triad that would follow that C-minor triad, if it were present. I believe the case for an LR cycle is convincing despite this omission since, if we have identified the cyclic pattern, we expect the A-flat chord at some point. Without reference to the cycle, the A-flat chord would be difficult to explain. The initial portion of the cycle could be interpreted as a progression from the D-minor tonic through a succession of pre-dominant chords, but it is not clear how the A-flat major triad could be accounted for in terms of its function within this diatonic context—other than as an apparent chord created by simultaneous non-chord tones

5. Samson 1977 p. 6

Max Reger *Träume am Kamin* op. 143/1 (from *Zwölf kleine Klavierstücke*).

Example 7


2 (228)
ritardando
espressivo
a tempo
dolce espressivo
poco ritardando
a tempo
dimi-
nuendo
dolcissimo
espressivo
ritardando
a tempo
mp cre-
poco ritardando
a tempo
dolce
scendo
ma dolce
diminuendo
ritardando
ppp
espressivo
M.R. 11

embellishing the move from the E-flat major triad to the D-minor triad on the second beat of the second measure.

Since the LR cycle will run through all twenty-four major and minor triads, it has to be interrupted to avoid monotony. This is done through the introduction of the D-minor chord in bar 2. If the cycle had been maintained, this chord would have been an F-minor triad. In traditional Riemannian theory, the chord Reger uses could be labeled as an F-major triad in which the fifth has been replaced by a sixth. This is plausible, since F is strongly emphasized both by its appearance in the bass and by its doubling in the alto voice. However, a more likely interpretation is that this chord is in fact the D-minor tonic. This D-minor triad then gives way to a half cadence on A on the third beat of the measure, bringing the opening gesture to a close.

This introductory theme or gesture will appear several times during the course of the piece, with and without the cyclic harmonization. At the recapitulation in measure 22, for example, the harmonization features the same LR cycle used at the opening—just as one would expect. In the coda, at measure 35, the falling theme recurs in altered form and the harmonization is changed, perhaps to avoid the excursions into remote key areas associated with the cyclic harmonizations. Here the gesture begins in B-flat minor and leads to B-flat major.

To return to the beginning of the piece, following the Dominant A-major triad in bar two, there is a deceptive cadence to a B-flat-major triad, which also functions as a Neapolitan sixth and thus reverses the function of the A-major chord from Dominant to Tonic. This reading makes the cadence on the dominant seventh on E in the following bar quite logical. Reger uses chords that belong to the key, but in an order that does not follow traditional harmonic rules. The initial theme returns as an RL cycle, now in A minor: A minor—F major—D minor, then the expected B-flat-major triad is missing. Rather than skipping ahead to the next member of the cycle, G minor, as the original statement of the theme did, the cycle is abandoned here: on the first beat of measure 5 we find a G-flat in the bass (instead of the perhaps expected G-natural) and that G-flat supports the altered dominant of the following F-major triad, which is in turn followed by a C-minor triad. The C-minor triad carries pre-dominant function—Subdominant function in Riemannian terms—and creates the expectation that a cadence on B-flat will follow. The C-minor triad thus marks the end of the first two phrases while at the same time implying an immediate harmonic goal for the continuation of the piece. The expected cadence in B-flat does not materialize, however; instead when the B-flat-major triad does appear in measure 6, it is as part of a deceptive cadence in D minor, reminiscent of measures 2 and 3. The clear arrival on B-flat does not occur until the recapitulation at bar twenty-two.

The continuation after measure 6 makes sense from a traditional point of view, although we get some help from Neo-Riemannian theory, and as I will show later, it will open up further possibilities for the theory. Measure 7 is difficult to understand: Which notes are structural and which are dissonances? I have selected the notes in the left hand as constituting the fundamental harmonic structure. These chords comprise complete harmonies, and the initial D and B-flat in the right hand are also de-emphasized since they are held over from the previous bar. Here the succession of third-related chords, as in bar one, is broken up into pairs of chords. The chords are not related through R or L operations, however, since there is no common tones held between the first pair of triads: E-flat minor—C major, and only one between F major—D major. And, this chord progression could be understood within traditional harmony as well: as a 5–6 sequential pattern with applied dominants.

Measures 9 through 11 feature a progression from G minor to C minor, and once again, the C-minor triad does not lead to a cadence in the tonic B-flat major. Instead, it marks the beginning of another LR cycle in measure 11, moving from C minor, to A-flat major, which is then prolonged in measures 12 and 13 and followed by the expected F minor in measure 13. Reger then breaks off the cycle and instead moves to an incomplete D-major chord (without root), which resolves to a chord that combines the two chords G major and C minor on the fourth beat of measure 13.

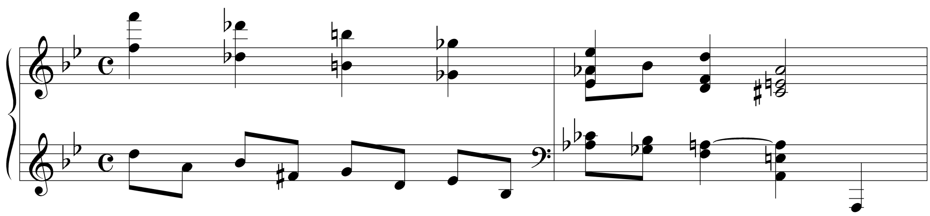
I will conclude my discussion of the Reger piece here. There is not much more to talk about from a Neo-Riemannian point of view. There are, of course, a number of other features to talk about in this piece, for example, contrapuntal and motivic aspects, the way in which Reger displaces the chord tones and the way in which the motifs are transformed. Measures 14 through 21 incorporate outer voice tenths from original theme and descend into B-flat in measure 20. The rest of the piece is essentially a repetition of the first half.

Pedagogical Prospects

I hope to have demonstrated how the Neo-Riemannian approach can contribute to an understanding of harmonic structure. I also hope to have shown that we cannot rely exclusively on this new model. Some of the passages susceptible to Neo-Riemannian analysis can also be understood functionally: I described the initial LR cycle, for example, as moving from tonic through pre-dominant harmonies, until the functional perspective is thwarted by the A-flat-major triad. Perhaps more significantly, we have also seen the way in which tonal cadence structures are often used to articulate ends of gestures well modeled by the Neo-Riemannian transformations. The Neo-Riemannian approach should therefore be viewed as supplementing, rather than supplanting more traditional analytic techniques.

The Neo-Riemannian approach has pedagogical potential beyond analysis. To conclude, I would like to speculate about some other ways of using this theory: For a composition student, Neo-Riemannian theory could open new doors to both neo-tonal and atonal styles, providing a structure within which to explore issues related to voice-leading connections and set-class consistency. He or she could begin by using the theory as an aid in the exploration of the triadic system and developing new, not necessarily functional progressions. In my presentation, I have focused on relatively simple P, L, and R-operations, and on the cycles they form, and as a result, the system may appear rather restrictive and narrow: I have demonstrated, for example, that only three basic cycles can be produced using two operators in alternation, and only six cycles using three. Triadic successions generated or supported by the Neo-Riemannian approach need not be limited to these nine cyclic orderings, however. Richard Cohn has demonstrated, for example, that the partitions of the twenty-four major and minor triads created by certain combinations of operators—such as the four cycles of six triads each created under P and L—can be viewed as harmonic regions or collections. The triads need not be presented in cyclic order, but the cycle underlying the collection contributes a sense of unity, regardless of the order in which the triads are presented. Non-consecutive triads within each cycle will not share two common-tones, but can be described in terms of composite transformations: C major can be transformed into E major, for example, by applying L then P (which is reminiscent of my childhood game.)

Neo-Riemannian cycles could also be taken as a point of departure and then manipulated to produce new successions. For example, we might take the now familiar RL cycle and reverse the mode of each triad, then instead of C major—A minor—F major—D minor—B-flat major—G minor we would get C minor—A major—F minor—D major—B-flat minor—G major. I took the liberty of recomposing the beginning of the Reger piece along these lines and now it sounds like this. See example 8 (note that the first chord is unaltered).



Example 8

The progression sounds somewhat strange, but resembles other music by Reger. One could also use Neo-Riemannian cycles as a background structure to be elaborated through the use of non-chord tones.

The same principles that govern successions of major and minor triads could also be applied to other chords or sets—though there are relatively few such pitch collections that can engage in the sort of cycling with maximal common-tone retention associated with the Neo-Riemannian treatment of triads. In an issue of the *Journal of Music Theory* presenting a number of papers given at the 1997 Buffalo symposium, the extension of Neo-Riemannian theory along these lines is discussed. Richard Cohn (1998) discusses the role augmented triads can play in connecting different cycles of triads while maintaining the double common-tone retention. Extensions of the Neo-Riemannian approach to cycles of dominant and half-diminished seventh-chords are explored by Adrian Childs (1998) and by Edward Gollin (1998).

Neo-Riemannian voice-leading connections could also be explored compositionally using materials not associated with common-practice tonality. In the aforementioned issue of *JMT*, Clifton Callender (1998) examines the step-wise voice-leading connection between Scriabin's mystic chord and the whole-tone collection. Students could be asked to explore the voice-leading potential of pentatonic chords (cycles can be created by changing just one note of the usual pentatonic to create another instance of the same set type). Or students working in systems other than the twelve semitone octave could seek out chords with similar properties.

Neo-Riemannian theory might also provide an intuitively sound way of bridging the gap between tonal and atonal techniques in theory pedagogy: notions of transformation could be introduced using the familiar triads and with reference to familiar voice-leading connections, then the results of the Neo-Riemannian transformations reinterpreted in terms of T and I operators.

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