

Chromatic Mediant Relationships

Neo-Riemannian theory (NRT) studies transformations between major and minor triads. Major triads and minor triads are treated as privileged sound objects that we will represent using *lead-sheet symbols*.¹ As shown in Figure 1, we define three basic *Neo-Riemannian operations* (NROs) called P, L, and R that *map* a major triad onto a minor triad, and vice versa (Hughes 2023).

Figure 1. Neo-Riemannian Operations

Parallel (P)	Leading-tone exchange (L)	Relative (R)
$C \overset{P}{\leftrightarrow} C_m$	$C \overset{L}{\leftrightarrow} E_m$	$C \overset{R}{\leftrightarrow} A_m$

As shown in Figure 2, each NRO exhibits *parsimonious voice leading*; i.e., two common tones (0) are held, while the other voice moves by half step (1) or whole step (2).

Figure 2. Parsimonious voice leading

Parallel (P)	Leading-tone exchange (L)	Relative (R)
$C, E, G \overset{P}{\leftrightarrow} C, E_b, G$	$C, E, G \overset{L}{\leftrightarrow} B, E, G$	$C, E, G \overset{R}{\leftrightarrow} C, E, A$

Figure 3 shows the *diatonic mediant relationships* available in C major and C minor, respectively; i.e., the motions from tonic to mediant triad, and tonic to submediant triad as NROs.

Figure 3. Diatonic mediant relationships

C major	C minor
$C \overset{R}{\leftrightarrow} A_m$	$C_m \overset{R}{\leftrightarrow} E_b$
$C \overset{L}{\leftrightarrow} E_m$	$C_m \overset{L}{\leftrightarrow} A_b$

Since P, L, and R map an ‘M’ triad onto a ‘m’ triad, or vice versa, it is helpful to keep the space of all 24 possible major and minor triads in mind. Figure 4 shows 24 triads available in twelve-tone equal temperament (12-tet) using lead-sheet symbols (LSS) and pc sets.²

Figure 4. The 24 possible major and minor triads in 12-tet

LSS	PC Set	LSS	PC Set
C	{C, E, G}	C _m	{C, E _b , G}
C [#] /D _b	{D _b , F, A _b }	C [#] _m /D _b _m	{C [#] , E, G [#] }
D	{D, F [#] , A}	D _m	{D, F, A}
D [#] /E _b	{E _b , G, B _b }	D [#] _m /E _b _m	{E _b , G _b , B _b }
E	{E, G [#] , B}	E _m	{E, G, B}
F	{F, A, C}	F _m	{F, A _b , C}
F [#] /G _b	{F [#] , A [#] , C [#] }	F [#] _m /G _b _m	{F [#] , A, C [#] }
G	{G, B, D}	G _m	{G, B, D}
G [#] /A _b	{A _b , C, E _b }	G [#] _m /A _b _m	{G [#] , B, D [#] }
A	{A, C [#] , E}	A _m	{A, C, E}
A [#] /B _b	{B _b , D, F}	A [#] _m /B _b _m	{B _b , D _b , F}
B	{B, D [#] , F [#] }	B _m	{B, D, F [#] }

¹ In NRT, major triads are typically represented using a “+” (plus) symbol and minor triads are typically represented with a “−” (minus) symbol; e.g., C+ $\overset{P}{\leftrightarrow}$ C−. However, we will use lead-sheet symbols to represent triads.

² We define a *pc set* to be an unordered collection of pitch classes in 12-tet. Mathematicians notate sets within curly braces. The notes of the set are called elements or members. In a set, order does not matter and duplications are not allowed.

When performing NROs, always be sure to take *enharmonic equivalence* into account. For example, the following examples are considered to be equivalent operations: $F\sharp \overset{R}{\leftrightarrow} D\sharp-$ and $F\sharp \overset{R}{\leftrightarrow} E\flat-$.

Chromatic mediant relationships (CMR) are nonfunctional two-chord progressions that connect major and minor triads whose roots are a major or minor third apart (Kopp 2002). The adjective ‘chromatic’ refers to the fact that the triads involved in the two-chord progression do NOT belong to the same key. Musically, CMRs create a sudden shift in harmonic color, while simultaneously providing voice leading continuity. That is, they are transformations that provide a smooth way to go to a neighboring tonal region without functional modulation. Figure 5 provides a listing of all possible CMRs starting on a C major triad and a C minor triad, respectively.

Figure 5. Chromatic mediant relationships³

a. Starting on a C major triad

	LSS	PC sets	CT	NRO
1.	$C \leftrightarrow A\flat$	$\{C, E, G\} \leftrightarrow \{A\flat, C, E\flat\}$	1	$C \overset{PL}{\leftrightarrow} A\flat$
2.	$C \leftrightarrow E\flat$	$\{C, E, G\} \leftrightarrow \{E\flat, G, B\flat\}$	1	$C \overset{PR}{\leftrightarrow} E\flat$
3.	$C \leftrightarrow A$	$\{C, E, G\} \leftrightarrow \{A, C\sharp, E\}$	1	$C \overset{RP}{\leftrightarrow} A$
4.	$C \leftrightarrow E$	$\{C, E, G\} \leftrightarrow \{E, G\sharp, B\}$	1	$C \overset{LP}{\leftrightarrow} E$
5.	$C \leftrightarrow A\flat m$	$\{C, E, G\} \leftrightarrow \{A\flat, C\flat, E\flat\}$	0	$C \overset{PLP}{\leftrightarrow} A\flat m$
6.	$C \leftrightarrow E\flat m$	$\{C, E, G\} \leftrightarrow \{E\flat, G\flat, B\flat\}$	0	$C \overset{PRP}{\leftrightarrow} E\flat m$

b. Starting on a C minor triad

	LSS	PC sets	CT	NRO
7.	$Cm \leftrightarrow A\flat m$	$\{C, E\flat, G\} \leftrightarrow \{A\flat, C\flat, E\flat\}$	1	$Cm \overset{PL}{\leftrightarrow} A\flat m$
8.	$Cm \leftrightarrow E\flat m$	$\{C, E\flat, G\} \leftrightarrow \{E\flat, G\flat, B\flat\}$	1	$Cm \overset{PR}{\leftrightarrow} E\flat m$
9.	$Cm \leftrightarrow Am$	$\{C, E\flat, G\} \leftrightarrow \{A, C, E\}$	1	$Cm \overset{RP}{\leftrightarrow} Am$
10.	$Cm \leftrightarrow Em$	$\{C, E\flat, G\} \leftrightarrow \{E, G, B\}$	1	$Cm \overset{LP}{\leftrightarrow} Em$
11.	$Cm \leftrightarrow A$	$\{C, E\flat, G\} \leftrightarrow \{A, C\sharp, E\}$	0	$Cm \overset{PRP}{\leftrightarrow} A$
12.	$Cm \leftrightarrow E$	$\{C, E\flat, G\} \leftrightarrow \{E, G\sharp, B\}$	0	$Cm \overset{PLP}{\leftrightarrow} E$

As shown in Figure 4, each progression may be transposed to any one of twelve transposition levels in 12-tet.

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References

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³ LSS – lead sheet symbol; Collections – Initial pc set and resultant pc set; CT – Number of common tones held; NRO – Equivalent compound NRO. Compound NROs are executed using *left-to-right orthography*; i.e., in left-to-right order. For example, $C \overset{PL}{\leftrightarrow} A\flat$ is executed as: P, followed by L, or $C \overset{P}{\leftrightarrow} Cm \overset{L}{\leftrightarrow} A\flat$. CMRs 5-6 and 11-12 are often called *doubly-chromatic*, mediant relationships, because they do NOT preserve any common tones.