Thematic Appendix

1

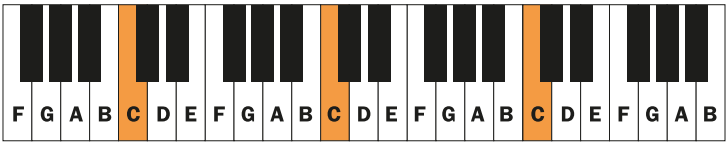
THE 12 CHROMATIC NOTES

The most familiar notes — C, D, E, F, G, A, B — are the NATURAL NOTES. They are also known by their solfège syllables: Do, Re, Mi, Fa, Sol, La, Ti.

The ancient Greeks were the first to use a system of 7 notes, but their first note was the one we now call A, not C. That is why, later on, in the Middle Ages, the notes were named using the Latin alphabet in that order: A, B, C, D, E, F, G. It was only during the Renaissance that this other way of ordering them, starting with C, became dominant: C · D · E · F · G · A · B.

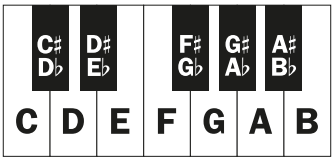
Over time, 5 more notes were also added in between. The pattern of 2 and 3 black keys that repeats along the piano corresponds to those 5 added notes. The 7 white keys around them are the natural notes.

The white key just to the left of each group of 2 black keys is C. The 6 white keys that follow are: D, E, F, G, A, B.



The 5 black keys take their name from the white keys next to them, by adding ACCIDENTAL symbols, which are:

(sharp) or b (flat)



— The name of the white key to its left, plus a sharp, or
— The name of the white key to its right, plus a flat.

For example, the note between D and E can be called either D# or Eb.

In fact, every note can be named using a different letter, by adding one symbol for each key that separates it from the one giving it the name: flats going to the left and sharps going to the right. For example, E is also Fb or D## (double sharp); and F is also E# or Gbb (double flat). When the same note is named in different ways, we say those names are "enharmonic". They sound the same but are spelled differently depending on the context.

While every note can be named with accidentals, we call ALTERED NOTES the 5 that don't have a letter of their own.

Together, the 7 NATURAL NOTES and the 5 ALTERED NOTES complete the 12 CHROMATIC NOTES of the modern musical system. These are the 12 notes of Carmony.

2

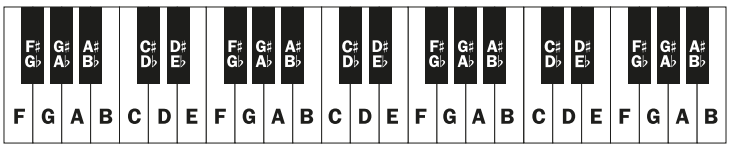
THE CIRCULAR PIANO

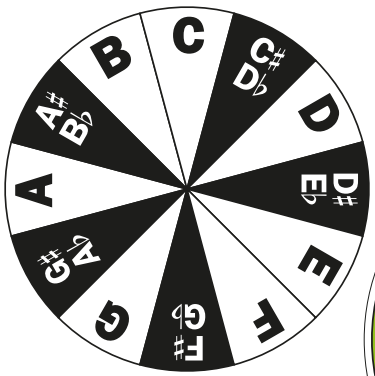
In equal temperament — the system used in Western music today — the distance from one chromatic note to the next is always the same. This unit of measurement that separates the notes is called a SEMITONE — also known as a half step.

12 semitones away you find the same note, but at a different PITCH — higher or lower. The distance between two identical notes at different pitches is called an OCTAVE — a span that contains all 12 chromatic notes. That is why they repeat from left to right along the piano: each one exists in different octaves, each one higher than the last.

Given this repetition, the octave can be represented as a circle: B would sit next to C, forming a rolled-up piano with the 12 notes in the place of the hours of a clock.

In music theory, this is known as the "chromatic circle", and in Carmony it is represented by the CHROMATIC WHEEL. The 12 notes divide the wheel into sectors of equal size. Turning to the right is like moving toward the higher pitches on the piano — ascending; turning to the left is like moving toward the lower pitches — descending. Completing a full turn brings you back to the same note — one octave higher or lower.





3

THE MUSICAL STRUCTURES

In music, what matters is how notes relate to one another — whether they are played together or one after the other. There is a way of representing these relationships in an ordered form, and that is what MUSICAL STRUCTURES are. The first is the INTERVAL, which is the name we give to the distance between two notes, measured by the number of semitones between them.

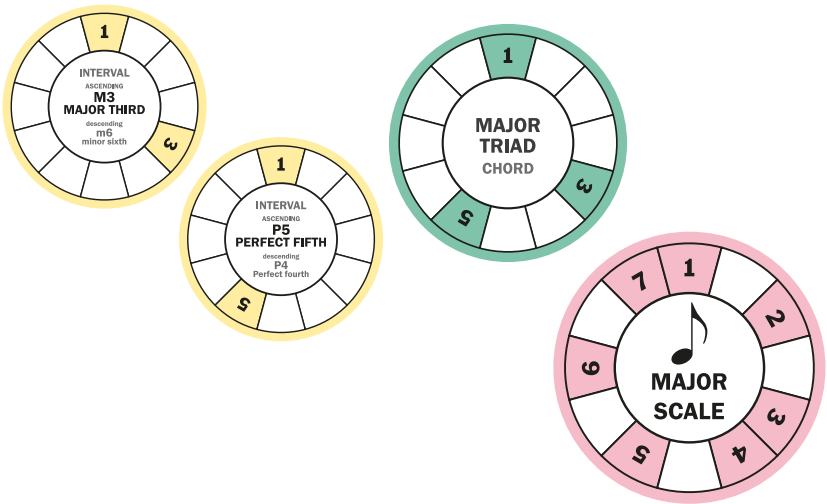
If a melody is a sequence of notes — sounded at different pitches and durations — it is also a sequence of intervals. Across history, different cultures have chosen intervals that felt pleasing to the ear, and used them to organize the notes when composing melodies. These patterns of intervals are called SCALES.

When certain notes of a scale are played simultaneously, they form CHORDS — which accompany the melody and are the foundation of musical harmony.

These are the 3 MUSICAL STRUCTURES, represented in Carmony by the MELD cards:

— INTERVAL — distance between two notes, measured in semitones.
— CHORD — group of notes from a scale, played at the same time.
— SCALE — sequence of notes within an octave, defined by a pattern of intervals.

The interval is the basic unit of the other two: it lives both within the chord and within the scale — which in turn contains the chords that belong to it.



4

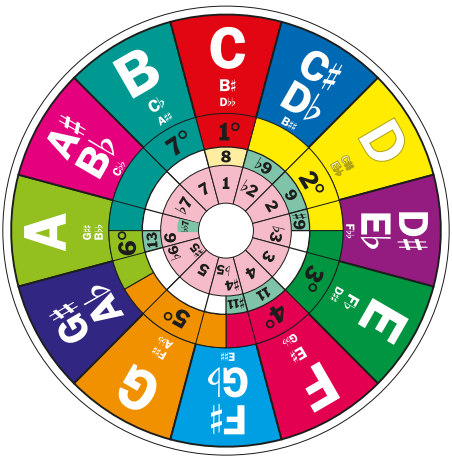
THE MUSICAL CLOCK

Musical structures are written with numbers and accidental symbols: # (sharp), b (flat). The number refers to the DEGREE, and the symbol — or its absence — indicates the POSITION of the degree, which can be natural or altered.

There are 7 DEGREES in Western music, one for each of the 7 letters: A, B, C, D, E, F, G.

THE ALPHABETICAL ORDER DETERMINES THE DEGREES.

The letter of the first note — the one of degree 1 — determines the degrees of the following notes, in alphabetical order. For example, if the first note is C and an F# appears, that note is degree 4 of the structure, since F is the fourth letter starting from C.



The NATURAL MAJOR SCALE is the one formed by the 7 natural notes starting on C.
IT IS THE REFERENCE that defines the natural positions of the degrees.

When a degree sits in the position it has in this scale, its POSITION is called NATURAL and is written with the number alone, no symbol: 1, 2, 3, 4, 5, 6, 7.

In other structures, however, degrees are shifted from their natural position:

— AUGMENTED position (#): the degree shifts one ascending semitone. The note sounds one semitone higher.
— DIMINISHED position (b): the degree shifts one descending semitone. The note sounds one semitone lower.
— DOUBLE AUGMENTED (##) or DOUBLE DIMINISHED (bb) position: the degree shifts two semitones — a whole step — in ascending or descending direction, respectively.

For example, b7 indicates that the 7th degree is shifted one semitone lower than its natural position, as in the minor seventh interval, which appears in many chords and in scales like the Mixolydian. Another example: #4 indicates that the 4th degree is shifted one semitone higher than its natural position, as in the Lydian Scale, which differs from the Major Scale precisely by its augmented fourth.

In Carmony, this system is visualized on the Wheel. The MELD cards work like the hands of a clock: the sectors with numbers and symbols — degrees in their positions — directly point to the notes that form the structure.

It is important to know that an altered degree does not necessarily mean an altered note, and vice versa. The Major Scale — which has all degrees in their natural positions — only matches the 7 natural notes when it begins on C. In all the others, there are altered notes even though the degrees remain natural. Conversely, a structure with altered degrees — such as the minor third interval (1 - b3), which has the third degree in a diminished position — can perfectly well contain two natural notes, for example D and F.

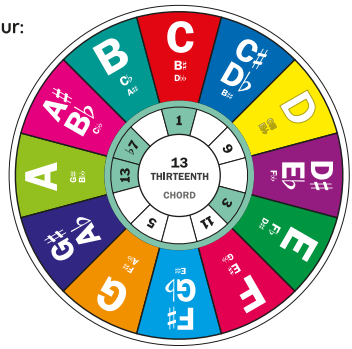
THE CLOCK GOES AROUND TWICE

When the distance between two notes exceeds the octave, the degrees repeat on a second round of the clock. Like the hours we tell apart with AM and PM, these positions are named with numbers greater than 7.

THE SECOND ROUND REPEATS THE DEGREES, ONE OCTAVE HIGHER.

The most common positions on the second round are four:

— Position 8 (the octave) — 1st degree
— Position 9 (the ninth) — 2nd degree
— Position 11 (the eleventh) — 4th degree
— Position 13 (the thirteenth) — 6th degree



Each of these positions sounds 12 semitones higher than its corresponding degree on the first round. For example, b9 is the same note as b2 but higher in pitch, because the distance from degree 1 is different: b2 is a simple interval (within the octave), and b9 is a compound interval (b2 + an octave).

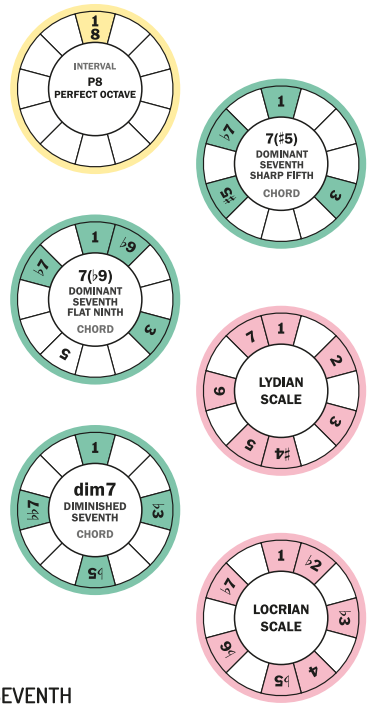
The positions of the second round appear on the MELD cards: in the Octave interval and in the extended chords — the Ninth, Eleventh, and Thirteenth.

The whole Carmony system rests on this image of the clock and its two rounds. The MELD cards sit on the Wheel like a hand pointing to the notes of the structure: when the numbers are 7 or lower, the hand travels the first round; when they are higher, a second one.

POSITION TABLE

These are all the positions that appear on the MELD cards of Carmony, organized by degree, with some of the most common ways of naming them:

1st degree
— 1 — TONIC (scales), FIRST (intervals), or ROOT (chords). This position marks the ROOT NOTE — the note that gives the structure its name. If the 1 sits on C#, the interval, chord, or scale is "of C#".
— 8 — PERFECT OCTAVE
2nd degree
— 2 — SECOND or MAJOR SECOND
— b2 — FLAT SECOND or MINOR SECOND
— 9 — NINTH
— b9 — FLAT NINTH or DIMINISHED NINTH
— #9 — AUGMENTED NINTH
3rd degree
— 3 — THIRD or MAJOR THIRD
— b3 — FLAT THIRD or MINOR THIRD
4th degree
— 4 — FOURTH or PERFECT FOURTH
— #4 — AUGMENTED FOURTH
— 11 — ELEVENTH
— #11 — AUGMENTED ELEVENTH
5th degree
— 5 — FIFTH or PERFECT FIFTH
— b5 — FLAT FIFTH or DIMINISHED FIFTH
— #5 — AUGMENTED FIFTH
6th degree
— 6 — SIXTH or MAJOR SIXTH
— b6 — FLAT SIXTH or MINOR SIXTH
— 13 — THIRTEENTH
7th degree
— 7 — SEVENTH or MAJOR SEVENTH
— b7 — FLAT SEVENTH or MINOR SEVENTH
— bb7 — DOUBLE FLAT SEVENTH or DIMINISHED SEVENTH

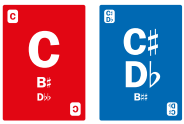


5

THE LETTER RULE

ENHARMONY has its own logic within a musical structure. The names of the notes always depend on the name of the structure: the ROOT NOTE (degree 1). The letter of the first note indicates which letters correspond to the following degrees, in alphabetical order. Hence the rule:

NO TWO DEGREES CAN SHARE THE SAME LETTER.



A few examples on the Carmony Wheel:

When the "Minor Second" interval card (1 – b2) is placed with the 1 pointing to the note C, b2 points to the sector with the note C#/Db. Since the letter that corresponds to degree 2 is the next one after C in the alphabet — D — the correct way to name that interval is C – Db (and not C – C#).

The same applies when the root is an altered note: it depends on the name of the structure being referred to. Using the previous example, with the 1 of the card pointing to the G#/Ab sector, if it is "the minor second of G#", the 2nd degree is A. But if it is "the minor second of Ab", the 1st degree is Ab and the 2nd degree is the enharmonic note: Bbb (B double flat), which sits in the same sector of the Wheel as A.

Another example is the Diminished 7 chord (1 – b3 – b5 – bb7). If it is "Cdim7", placing the card with the 1 on C, degree 7 points to A. But the letter A corresponds to degree 6 — the sixth letter starting from C — and the letter of degree 7 is B, which in that sector of the Wheel is: Bbb.

In practice, musicians don't need to know the names of the notes when playing them, but understanding enharmony and how each degree maps to a single letter is essential for understanding the language of music.

Although no two degrees can share the same letter, this doesn't mean the same letter cannot appear twice in a structure — because the same degree can be played in more than one position. That is the case with the Blues scales, which are pentatonic scales with one added note: the blue note. It consists of playing the same degree in two positions — natural and diminished. In the Major Blues Scale, both 3 and b3 appear (the two forms of degree 3); and in the Minor Blues Scale, both 5 and b5 appear (the two forms of degree 5).

TO KEEP EXPLORING

On the INTERVAL cards, the Major Second and the Minor Seventh have the same shape, mirrored: from C to the closest D going up is an ascending Major Second; but from C to the closest D going down is a descending Minor Seventh. The same happens between Seconds and Sevenths, Thirds and Sixths, Fourths and Fifths. This is the symmetry of intervals: M2-m7, m2-M7, M3-m6, m3-M6, 4-5.

The CHORD cards point to the notes that form each chord, and also show the intervals of each note relative to the root (degree 1). In practice, however, these intervals can differ, because musicians often "octave" some notes when playing their instruments. This is called chord inversion. The first inversion consists of playing the root one octave higher, leaving degree 3 as the lowest note. The second inversion leaves the fifth as the lowest. When the lowest note doesn't belong to the chord at all, these are called slash chords, like C/D — a C chord with D in the bass.

There are many more chords and scales than the ones in Carmony. Chords are built from intervals of thirds over scales. Every chord, then, comes from a scale. MODAL harmony focuses precisely on that: on the distinctive color of each chord within a progression, given by the scale it corresponds to. TONAL harmony, by contrast, prioritizes the function of each chord within the progression based on the sense of stability it produces in the ear. Starting from a tonal center — the note that produces the greatest sense of rest — and a given scale, chords are built on each of the degrees of that scale. These form the chord family of the key, grouped by degree and function: dominant (tension) — the 5th, with the 7th as its alternative; subdominant (medium tension) — the 4th, with the 2nd as its alternative; and tonic (rest) — the 1st, with the 6th and the 3rd as alternatives.

As you'll have noticed, Carmony only opens a door to musical knowledge. It tries to bring together in a visual system the two perspectives that explain much of music theory: the chromatic perspective of 12 equidistant units, reflected in the Wheel and the NOTE cards; and the diatonic perspective, shown in the MELD cards, where structures are thought of in terms of 7 degrees. But let's remember that music is the art of combining sounds in time. There is still another fundamental part to explore: time, represented by note values — the duration of each sound. There is a whole theoretical world to discover and enjoy as you connect with the practice.

It all depends on your curiosity.

CARMONY