Thesaurus of Scales and Melodic Patterns

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INTRODUCTION

The present Thesaurus is a reference book of scales and melodic patterns, analogous in function with phrase books and dictionaries of idiomatic expressions. But while phrase books are limited to locutions consecrated by usage, the Thesaurus includes a great number of melodically plausible patterns that are new. In fact, many compositions appearing in recent years contain thematic figures identical with those found in the Thesaurus.

From time to time musical theorists have suggested the possibility of forming entirely new scales based on the division of the octave into several equal parts. As early as 1911 the Italian musician Domenico Alaleona proposed such new scales. Alois Haba, in his Neue Harmonielehre (1927), classifies a great number of scales based on equal intervals and suggests harmonizations of these new scales. Joseph Schillinger in his posthumously published Schillinger System of Musical Composition classifies new tonal progressions in the chapter Theory of Pitch-Scales.

The scales and melodic patterns in the Thesaurus are systematized in a manner convenient to composers in search of new materials. The title Thesaurus of Scales and Melodic Patterns is chosen advisedly. The term scale, as here used, means a progression, either diatonic or chromatic, that proceeds uniformly in one direction, ascending or descending, until the terminal point is reached. A melodic pattern, on the other hand, may be formed by any group of notes that has melodic plausibility. There are scales of 4 notes only; and there are scales and patterns of 12 different notes. But counting repeated notes appearing in different octaves, a scale may have as many as 48 functionally different notes, as in the Disjunct Major Polytetrachord (No. 958). As to melodic patterns, there is virtually no limit to the number of such tones.

The Thesaurus is arranged in the form of piano scales and melodic studies. No fingering is given, for the pianist will readily find the type of digitation best suited to the hand. Other instrumentalists, too, will find most of the scales and melodic patterns in the Thesaurus adaptable to their instruments. The notation throughout is enharmonic, and accidentals are used according to convenience. Double sharps and double flats are avoided entirely. Precautionary natural signs are placed here and there when an unusual melodic interval occurs. All accidentals affect only the note immediately following.

The scales and patterns in the Thesaurus are arranged according to the principal interval of each particular section. In order to avoid association with a definite tonality, these basic intervals are here referred to by Latin and Greek names derived from old usage. In addition, new terms had to be coined for intervals not in the system of historic scales. In these new terms the prefix sesqui stands for the addition of one-half of a tone. Thus, Sesquitone is 1½ tones, or a minor third; Sesquiquadratitone is 4½ tones, or a major sixth; and Sesquiquinquetone is 5½ tones, or a major seventh.
The table of intervals from the semitone to the major seventh appears as follows:

<table>
<thead>
<tr>
<th>Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semitone</td>
<td>Minor Second</td>
</tr>
<tr>
<td>Whole Tone</td>
<td>Major Second</td>
</tr>
<tr>
<td>Sesquitone</td>
<td>Minor Third</td>
</tr>
<tr>
<td>Ditone</td>
<td>Major Third</td>
</tr>
<tr>
<td>Diatessaron</td>
<td>Perfect Fourth</td>
</tr>
<tr>
<td>Sesquiquinquetone</td>
<td>Major Seventh</td>
</tr>
<tr>
<td>Tritone</td>
<td>Augmented Fourth</td>
</tr>
<tr>
<td>Diapente</td>
<td>Perfect Fifth</td>
</tr>
<tr>
<td>Quadritone</td>
<td>Minor Sixth</td>
</tr>
<tr>
<td>Sesquiquadritone</td>
<td>Major Sixth</td>
</tr>
<tr>
<td>Quinquetone</td>
<td>Minor Seventh</td>
</tr>
</tbody>
</table>

The interval of a major ninth is called Septitone, to indicate that it contains 7 whole tones.

These basic intervals are regarded as fractions of one or more octaves. Thus, the Tritone Progression represents the division of the octave into 2 equal parts, and it produces sequential scales and patterns. The Ditone Progression is the division of the octave into 3 equal parts, and is intervallically identical with the augmented triad. The Sesquitone Progression is the division of the octave into 4 equal parts, and is identical with the familiar diminished-seventh chord. The Whole-Tone scale represents the equal division of the octave into 6 parts. The Semitone Progression is equivalent to the chromatic scale. By the process of permutation the chromatic scale is productive of characteristic patterns of the 12-tone technique.

By dividing 2 octaves into 3 equal parts we obtain the Quadritone Progression, which is closely related to the Ditone Progression, being in fact a spread-out augmented triad. By dividing 3 octaves into 4 equal parts we obtain the interval of the major sixth. This is the Sesquiquadritone Progression, which is an unfolded Sesquitone Progression, productive of patterns related to diminished-seventh harmonies.

In the cycle of scales the interval of a perfect fifth is one-twelfth part of 7 octaves, and it is so represented in the Diapente Progression. A perfect fourth is one-twelfth part of 5 octaves, and is classified as such in the section Diatessaron Progression.

Pursuing a similar process, we find that the Sesquiquinquetone Progression, or the progression of major sevenths, is the result of the equal division of 11 octaves into 12 parts. Finally, the Septitone Progression is the equal division of 7 octaves into 6 parts, with the basic interval of a major ninth.

Scales and melodic patterns are formed by the processes of Interpolation, Infrapolation, and Ultrapolation. The word Interpolation is in common usage; here it signifies the insertion of one or several notes between the principal tones. Infrapolation and Ultrapolation are coined words. Infrapolation indicates the addition of a note below a principal tone; Ultrapolation is the addition of a note above the next principal tone. Infrapolation and Ultrapolation result in the shift of direction, with the melodic line progressing in zigzags. Infrapolation, Interpolation and Ultrapolation may be freely combined, resulting in hyphenated forms: Infr-inter-Interpolation, Infr-Ultrapolation, and Infr-inter-Ultrapolation.
Progressions and patterns based on unequal division of the octave are exemplified by Heptatonic scales and Pentatonic scales. Among Heptatonic scales, or 7-tone scales, are our familiar major and minor scales as well as the church modes. In the section Heptatonic Arpeggios the scales are spread out in thirds. In the section Bitonal Arpeggios the C major arpeggio is combined with arpeggios in all other 23 major and minor keys.

Busoni, who had earnestly explored new musical resources, found 113 different scales of 7 notes. Mentioning as an example the scale: C, Db, Eb, Fb, Gb, Ab, Bb, C (it is No. 1035 in the Thesaurus), he writes in his Entwurf einer neuen Aesthetik der Tonkunst: "There is a significant difference between the sound of this new scale when C is taken as the tonic and when it is taken as the leading tone of the scale of Db minor. By harmonizing the tonic with the customary C major triad as a fundamental chord, a novel harmonic sensation is obtained."

In his Chronicle of My Musical Life Rimsky-Korsakov mentions the use he made of an 8-tone scale, formed by alternating major and minor seconds. This is Scale No. 393 in the Thesaurus. Sporadic uses of the Whole-Tone scale are found in Glinka and even in Mozart (as a jest to mock the inept Dorfmusikanten), but it did not become a deliberate device before Debussy. In Debussy's piano piece Voiles the principal melodic structure is in the Whole-Tone scale, but the middle part is written exclusively on the black keys, exemplifying the Pentatonic scale.

The Whole-Tone scale has 6 notes to the octave; the Pentatonic scale has five. The Whole-Tone scale is possible in only one form on a given note, but there can be many Pentatonic scales. There are 49 Pentatonic scales in the Thesaurus.

The 12-Tone Technique of composition promulgated by Schoenberg is based on permutations of the Semitone scale. Various 12-tone patterns are found in the Thesaurus in examples No. 1214 to No. 1318. For example, it is possible to arrange the 12 chromatic tones in 2 major and 2 minor triads without repeating a note. It is also possible to form 4 mutually exclusive augmented triads using all 12 chromatic tones. The theme of Liszt's Faust Symphony is composed of 4 augmented triads. It is further possible to split the chromatic scale into a diminished triad, a minor triad, a major triad, and an augmented triad. These mutually exclusive triads can be arranged in the form of Quadritional Arpeggios.

A recent development of the 12-Tone Technique is the 11-interval technique, which prescribes the formation of progressions containing 11 different intervals. The idea was first introduced by the Austrian musician Fritz Klein in 1921 in a curious composition entitled Die Maschine, with the sub-title Ex-Tonal Self-Satire. The name of the composer was concealed behind a characteristic nom de plume Heautontimorumenos which means Self-Torturer. In this piece Klein introduced a Mother Chord which contains not only all 11 different intervals, but 12 different notes as well.

A further elaboration on the Mother Chord is an invertible 11-interval, 12-tone chord introduced by the author and appropriately christened Grandmother Chord. It has all the intervallic properties of the Mother Chord plus an especial order of intervals so arranged that they are alternately odd-numbered and even-numbered when counted in semitones, with the row of odd-numbered intervals forming a decreasing arithmetical progression and the row of even-numbered intervals forming an increasing arithmetical progression. The order of notes in the Grandmother Chord is identical with the 12-tone Spiral Pattern No. 1232a.
All chords composed of 11 different intervals add up to the interval of 66 semitones, which is the sum of the arithmetical progression from 1 to 11. The interval of 66 semitones equals 5 1/2 octaves, and so forms a Tritone between the lowest and the highest tones in the Pyramid Chord, Mother Chord, Grandmother Chord, and other 11-interval structures.

Scales and patterns listed in the main body of the THESAURUS readily lend themselves to new melodic possibilities. For instance, a descending scale may be played in the form of the melodic inversion of the ascending scale, as suggested in the section Mirror Interval Progressions. It is possible to form complementary scales in the range of 2 octaves, by using in the second octave the notes not used in the first. Other possibilities for the formation of new patterns are demonstrated in the section on Permutations.

A Diatonic counterpart of the 12-Tone Technique is the system of Pandiatonic composition. The term Pandiatonic, first introduced by this writer in 1937, denotes the free use of all 7 tones of the diatonic scale, both melodically and harmonically. In one-part Pandiatonic Progressions, the melody is made up of 7 different notes of the diatonic scale. Such a progression may then be melodically inverted, read backward, or both, resulting in 4 different forms. Pandiatonic Counterpoint in strict style uses progressions of 7 different notes in each voice, with no vertical duplication.

Pandiatonic Harmony is the twentieth century counterpart of classical harmony. Modern composers of such varied backgrounds and musical persuasions as Ravel, Stravinsky, Hindemith, Milhaud, Copland and Roy Harris make use of this technique, arriving at it by different creative processes. Jazz composers, too, have found, by sheer experimentation, effective application for the enriched chords of Pandiatonic formations. It is a common practice to end an orchestral arrangement of a popular song by the enriched major triad with an added sixth, seventh, or ninth.

The concluding sections of the THESAURUS demonstrate the various methods by which tonal materials may be used to best advantage. The section Double Notes shows the combinations derived from corresponding scales and patterns. Plural Scales and Arpeggios give examples of common major and minor progressions arranged consecutively in chromatic transposition. Polytonal Scales are simultaneous progressions in different keys. Polyrhythmic Scales are progressions in different rhythms. Polytonal Polyrhythmic Scales combine different rhythms in different tonalities.

A special word is to be said about Palindromic Canons. Palindromes are words or sentences that read the same forward or backward, as the sentence Able Was I Ere I Saw Elba (applied to Napoleon). Similarly, Palindromic Canons read the same backward or forward. The two Palindromic Canons based on Pattern No. 72 are particularly interesting. They result in a progression of enharmonic triads or their inversions, alternating in major and minor keys.

Fragments of the scales and patterns in the THESAURUS may be used as motives and themes. The rhythmic elaboration is left to the imagination of the composer. By using a portion of a pattern in forward and retrograde motion, in varied rhythms within a given meter, it is possible to form an unlimited number of melodic figures.

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**Pattern No. 194**

Rhythmic Development

\[ \text{Retrograde} \]

\[ iv \]
Two formulas are used in the harmonization of the scales and patterns: one by common triads, and one by seventh-chords. In the harmonization by common triads, only root positions of major triads in close harmony are applied. Either the root, the third, or the fifth may appear in the melody. These positions are referred to as Octave, Tertian, and Quintan, or in figures, 8, 3, and 5. When the melody ascends, diatonically or chromatically, the positions change from the Octave to the Tertian to the Quintan to the Octave. When the melody descends, the order of the positions is reversed. Furthermore, the order of positions may be reversed at the end of a cadence even in ascending motion. When the melody is stationary, the order of positions is free. The resulting harmony traverses several tonalities in an alternation of successive major chords.

Harmonization in Major Triads
(Figures Indicate Intervals Between the Melody and the Bass)

The harmonization in major triads is found in the music of Debussy, Moussorgsky, and other composers of the French and Russian schools. A classical example is the scene in the monk’s cell in Moussorgsky’s opera Boris Godunov. In the second act of Puccini’s opera Tosca the Whole-Tone scale in the bass is harmonized by a row of major triads with the positions following the Octave-Tertian-Quintan (8-3-5) formula.

Moussorgsky: Boris Godunov  Puccini: Tosca (Whole-Tone Scale in the Bass)

The second type of harmonization is effected by means of Master Chords. These Master Chords are dominant-seventh chords with the fifth omitted. In combination with melodic elements of a given scale or pattern, these chords form harmonic structures of the type of seventh-chords, ninth-chords, or whole-tone chords. The Master Chords are indicated for ascending scales and patterns in the sections Tritone Progression, Ditone Progression and Sesquitone Progression by figures within circles, as (☉), and are used to harmonize an entire rhythmic group in a given progression. In the Tritone and Sesquitone Progressions it is also possible to harmonize the entire octave range with a single Master Chord. Furthermore, any Master Chord suitable for harmonization of a given progression may be transposed a tritone up or down with satisfactory results.

Harmonization with Master Chords
Harmonization of both types is given in the tables on pp. 240-241. To harmonize in major triads, it is necessary to alternate the Octave, Tertian, and Quintan positions given in the table. In harmonizing by seventh-chords, ninth-chords, and whole-tone chords, any chord under a given melody note will furnish a workable harmony.

The patterns in the Diatessaron and Diapente Progressions lend themselves to harmonization characteristic of the Dominant-Tonic cycle. When harmonized in consecutive seventh-chords, such patterns acquire a Schumannesque quality.

Harmonization in Seventh-Chords

A harmonization of the Dominant-Tonic type will impart a feeling of tonality even to a 12-tone progression.

Tonal Harmonization of a 12-Tone Pattern

Traditional harmonization in major and minor keys uses chords formed by the diatonic scale. Similarly, new scales may be harmonized with the aid of chords formed by the notes of the scale itself. Examples of such Autochordal Harmonization are given in a special table. There are scales that admit of only 2 different triads, as Scale No. 7, which can be harmonized with C major and F# major triads. The 8-tone scale No. 393 is capable of forming 8 different triads, while other scales, such as No. 5, do not yield a single triad.

All scales and patterns in the THESAURUS are centered on C as the initial and concluding tone. It goes without saying that these progressions can be transposed to any tonal center according to a composer's requirements.

John Stuart Mill once wrote: "I was seriously tormented by the thought of the exhaustibility of musical combinations. The octave consists only of five tones and two semitones, which can be put together in only a limited number of ways of which but a small proportion are beautiful: most of these, it seemed to me, must have been already discovered, and there could not be room for a long succession of Mozarts and Webers to strike out, as these have done, entirely new surpassing rich veins of musical beauty. This sort of anxiety, may, perhaps, be thought to resemble that of the philosophers of Laputa, who feared lest the sun be burnt out."

The fears of John Stuart Mill are unjustified. There are 479,001,600 possible combinations of the 12 tones of the chromatic scale. With rhythmic variety added to the unbounded universe of melodic patterns, there is no likelihood that new music will die of internal starvation in the next 1000 years.

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1 January 1947 Boston, Massachusetts
EXPLANATION OF TERMS

Autochordal harmonization. Application of chords derived from the tones of a given scale (Example, Scale No. 12: C, D♯, F, F♯, A, B, C, harmonized in 2 triads, F major and B major).

Bitonal arpeggios. [Nos. 1191-1213]. Melodic progressions formed of alternating arpeggios in 2 different keys.

Bitonal palindromic canons. Canons that result in the formation of 6-tone chords composed of 2 triads (Example, Scale No. 7: C, C♯, E, F♯, G, A♭, C, developed canonically, forming bitonal chords of C major and F♯ major).

Chord of the minor 23rd. Chord consisting of 12 different notes, arranged in thirds, and forming 4 mutually exclusive triads.

Complementary scales. Melodic progressions of two octaves in range, comprising all 12 tones of the chromatic scale (Example, C major scale plus the pentatonic scale on black keys).

Conjunct polytetrachord. Progression of 12 tetrachords traversing all 12 keys, with the terminal tone of one tetrachord being the initial tone of the next (Examples, Phrygian Polytetrachord, No. 830; Minor Polytetrachord, No. 832; Major Polytetrachord, No. 835).

Crossing intervals. [Nos. 1243-1250]. Two overlapping 6-tone rows comprising all 12 different tones, each row forming a progression of major or minor seconds, thirds, fourths, fifths and sixths.

Diapente. Interval of 3½ tones; a perfect fifth.

Diatessaron. Interval of 2½ tones; a perfect fourth.

Disjunct polytetrachord. Progression of 12 tetrachords traversing all 12 keys, with adjacent tetrachords separated by one diatonic degree (Examples, Disjunct Phrygian Polytetrachord, No. 951; Disjunct Minor Polytetrachord, No. 956; Disjunct Major Polytetrachord, No. 958; Disjunct Lydian Polytetrachord, No. 959).

Ditone. Interval of 2 whole tones; a major third.

Grandmother chord. Chord, invented by Nicolas Slonimsky on February 13, 1938, containing all 12 different tones and different intervals symmetrically invertible in relation to the central interval, the tritone, which is the inversion of itself; the intervocal structure being a row of alternatingly odd and even intervals (counted in semitones), the odd-numbered series forming a diminishing arithmetical progression, and the even-numbered series an increasing progression.

Heptatonic arpeggios. [Nos. 1088-1141]. Melodic progressions by thirds derived from Heptatonic scales.

Heptatonic scales. [Nos. 1034-1087]. Diatonic progressions of 7 degrees, such as major and minor scales and church modes, and also scales containing 1 or 2 augmented seconds.

Infra-inter-ultrapolation. Pattern formed by the insertion of notes below, between, and above the principal tones of a progression (Example, Pattern No. 341).

Interpolation. Insertion of a note below the principal tones of a progression (Example, Pattern 231).

Inter-ultrapolation. Insertion of one or more notes between the principal tones of a progression (Example, Scale No. 21).

Minor bitonal chord. Chord of 2 major triads usually in keys whose tonics are at the interval of a tritone, as C major and F♯ major.

Major polytetrachord. A series of major tetrachords, conjunct or disjunct, covering all 12 major keys (Examples, No. 833 and No. 958).

Master chords. Dominant-seventh chords with the fifth omitted, tabulated chromatically in 12 different keys, to be used in harmonizing scales and melodic patterns, and indicated by figures, enclosed in circles, from 1 to 12.

Minor bitonal chord. Chord consisting of 2 minor chords, usually with tonics at the interval of a tritone, as C minor and F♯ minor.

Minor polytetrachord. A series of minor tetrachords, conjunct or disjunct, covering all 12 minor keys (Examples, No. 832 and No. 956).

Mirror interval progressions. Scales and patterns in which the descending figure is the melodic inversion of the ascending figure (Example, Scale No. 1 ascending is the mirror inversion of Scale No. 4 descending).
MOTHER CHORD. Chord, introduced by Fritz Klein in 1921, containing all 12 tones and 11 different intervals.

MUTUALLY EXCLUSIVE TRIADS. Four triads (major, minor, diminished or augmented) comprising all 12 different tones (Example, C major, F♯ major, D minor, and G♯ minor).

NON-SYMMETRIC INTERPOLATION. Free insertion of additional notes between the principal tones.

OCTAVE POSITION. In four-part harmony, a triad with the root both in the melody and in the bass.

PALINDROMIC CANONS. Canons that read the same backward or forward.

PANDATONIC HARMONY. Part-writing in chords freely combined from the 7 tones of the diatonic scale.

PANDATONIC PROGRESSIONS. Tonal rows composed of all 7 different tones of the diatonic scale.

PATTERN. Melodic figure in which the direction changes from ascending to descending, or vice versa, before arriving at the terminal point (All interpolated and extrapolated progressions are patterns).

PENTATONIC SCALES. [Nos. 1142-1190]. Scales of 5 tones.

PERMUTATION. Distribution of notes of a given melodic pattern in different orders of succession.

PHYRGIAN POLYTETRACHORD. Polytetrachord composed of 12 conjunct or disjunct Phrygian tetra-chords (1 semitone plus 2 whole tones), (Examples, No. 830 and No. 951).

PLEURAL SCALES. Progressions formed by disjunct scales, as C major, D♯ minor, D major, and E♯ major.

POLYRHYTHMIC SCALES. Simultaneous progressions in different rhythms.

POLYTETRACHORD. Progression of 12 tetrachords passing through all 12 keys conjunctly (with the last tone of one tetrachord coinciding with the first tone of the next), or disjunctly (with the terminal tone of the first tetrachord separated by a diatonic degree from the initial tone of the next).

POLYTONAL POLYRHYTHMIC SCALES. Simultaneous progressions in different keys and in different rhythms.

POLYTONAL SCALES. Scales in different tonalities played simultaneously.

PROGRESSION. General term for any scale or melodic pattern.

PROMETHEUS SCALE. [No. 50]. The 6-tone scale (C, D, E, F♯, A, B♭) used by Scriabin in his symphonic poem Prometheus.

PYRAMID CHORD. Chord, introduced by Fritz Klein in 1921, composed of a series of diminishing intervals from an octave to a semitone.

QUADRITONE. Interval of 4 whole tones; a minor sixth.

QUADRITONAL ARPEGGIOS. [Nos. 1251-1291]. Melodic progressions formed by 4 mutually exclusive triads, as C major, D minor, F♯ major, and G♯ minor.

QUARTAL CHORD. 12-tone chord arranged in perfect fourths.

QUINQUETONE. Interval of 5 whole tones; a minor seventh.

QUINTAN POSITION. In four-part harmony, a triad with the root in the bass and the fifth in the melody.

SCALE. Progression of tones changing its direction only at terminal points (All interpolated progressions are scales).

SEMITONE PROGRESSION. Scale consisting of consecutive semitones; a chromatic scale.

SEPTITONE. Interval of 7 whole tones; a major ninth.

SESQUI. Prefix signifying the addition of a semitone to a given interval (Sesquitone = 1½ tones; Sesquiquadritone = 4½ tones).

SESQUIQUADRITONE. Interval of 4½ tones; a major sixth.

SESQUIQUINQUETONE. Interval of 5½ tones; a major seventh.

SESQUITONE. Interval of 1½ tones; a minor third.

SPIRAL PATTERNS. Melodic progressions converging toward a central tone.

SYMMETRIC INTERPOLATION. Insertion of notes at equal intervals from respective pivotal points, resulting in invertible progressions (Example, Scale No. 37: C, D, F, F♯, G, B♭, C, in which the intervals are the same from C upward and from the upper C downward).

TERTIAN POSITION. In four-part harmony, a triad with the root in the bass and the third in the melody.

TONE-CLUSTER. Term, introduced by Henry Cowell, signifying a complex of notes filling one or more octaves, diatonically, chromatically, or pentatonically.

TRITONE. Interval of 3 whole tones; an augmented fourth, or a diminished fifth.

TWELVE-TONE PROGRESSIONS. Melodic figures of 12 different tones.

ULTRAPOLATION. Insertion of one or more notes above a principal tone of a scale (Example, Pattern No. 53, in which G is inserted above F♯).

WHOLE-TONE CHORDS. Chords composed of intervals of one or several whole tones each.
Tritone Progression

Equal Division of One Octave into Two Parts

Interpolation of One Note

1

2

3

4

1  3  5  7  9  11

5  6  8

⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰ ⁰

indicate Master Chords.
Interpolation of Two Notes
Interpolation of Three Notes
Interpolation of Four Notes
Symmetric Interpolation of One Note

Symmetric Interpolation of Two Notes

Whole-Tone Scale
Symmetric Interpolation of Three Notes
Non-Symmetric Interpolation

[Scriabin: Prometheus Scale]

Ultrapolation of One Note
Ultrapolation of Three Notes
Infrapolation of One Note

Infrapolation of Two Notes
Infrapolation of Three Notes
Infra-Interpolation
Infra-Inter-Ultrapolation
Ditone Progression

Equal Division of One Octave into Three Parts

Interpolation of One Note

Interpolation of Two Notes
[Schoenberg: Ode to Napoleon] Infrapolation of One Note

234

235

236
Infrapolation of Two Notes
Infrapolation of Three Notes
Infra-Interpolation
Inter-Ultrapolation
Infra-Inter-Ultrapolation
Miscellaneous Patterns

Dominant Seventh Chords

Six-five chords

Six-four-three chords
Sesquitone Progression

Equal Division of One Octave into Four Parts

Interpolation of One Note

392 Alternating Semitones and Whole Tones

393 Alternating Whole Tones and Semitones
Ultrapolation of One Note

Ultrapolation of Two Notes
Ultrapolation of Three Notes
Infrapolation of One Note
Infrapolation of Two Notes
Infrapolation of Three Notes

[Rimsky-Korsakov: Battle Scene from the Opera *Kisssâ*]
Infra-Interpolation
Infra-Ultrapolation

500 [12 Tones]

501 [5, 6, 13, 12]

502 [5, 6, 11, 12]

503 [12 Tones]

504 [1, 3, 3, 7, 9, 11]

505 [12 Tones]

506 [1, 3, 3, 7, 9, 11]
Miscellaneous Patterns
Whole-Tone Progression

Equal Division of One Octave into Six Parts

Harmonizations

Ultrapolation of One Note
Infrapolation of One Note

579 B-A-C-H

580

581

582

583

584

585
Semitone Progression

Equal Division of One Octave into Twelve Parts

Harmonizations

Permutations

637
Quadritone Progression

Equal Division of Two Octaves into Three Parts

Interpolation of One Note
Interpolation of Three Notes

683

684

685

686

687

688

689
Interpolation of Four Notes
Ultrapolation of One Note
Infrapolation of One Note

Inter-Infrapolation

Ultra-Interpolation
Inter-Infra-Ultrapolation
Sesquiquadritone Progression
Equal Division of Three Octaves into Four Parts

Interpolation of One Note

Interpolation of Two Notes

[12 tones]
Interpolation of Three Notes
Ultrapolation of One Note

Infra-polation of One Note

Infra-Ultrapolation
Inter-Infrapolation

Inter-Infra-Interpolation

Ultra-Infra-Interpolation

Inter-Ultrapolation
Quinquetone Progression
Equal Division of Five Octaves into Six Parts

Interpolation of Two Notes
Interpolation of Three Notes
Ultrapolation of One Note

Infrapolation of One Note
Diatessaron Progression

Equal Division of Five Octaves into Twelve Parts

Interpolation of One Note

Interpolation of Two Notes
Ultrapolation of Three Notes
Infrapolation of Three Notes
Infra-Interpolation.
Miscellaneous Patterns
Septitone Progression
Equal Division of Seven Octaves into Six Parts

Interpolation of Two Notes

Interpolation of Three Notes

[Béla Bartók: Mikrokosmos, No. 143]
Diapente Progression

Equal Division of Seven Octaves into Twelve Parts

Interpolation of One Note
Interpolation of Two Notes
Interpolation of Three Notes
Infrapolation of Two Notes

Infra-Interpolation
Infra-Ultrapolation

Inter-Ultrapolation
Infra-Inter-Ultrapolation

Music notation
Sesquiquinquesone Progression
Equal Division of Eleven Octaves into Twelve Parts

Interpolation of One Note

Interpolation of Two Notes
Heptatonic Scales

1034

1035 Locrian

1036 Phrygian
Heptatonic Scales with an Augmented Second
1059
"Enigmatic Scale" of Verdi

1060
Major Harmonic

Heptatonic Scales with Two Augmented Seconds
Pentatonic Scales

Javanese Pelog Scale
Japanese Hira-Joshi Scale
Bitonal Arpeggios

1191 C Major & C Minor

1192 C Major & Db Major

1193 C Major & C# Minor

1194 C Major & D Major

1195 C Major & D Minor
Mutually Exclusive Diminished-Seventh Chords

Mutually Exclusive Augmented Triads

Crossing Intervals

Crossing Sixths

Crossing Fifths

Crossing Fourths
Division of Twelve Tones into Four Mutually Exclusive Triads

Two Major and Two Minor Triads

Two Augmented, One Major, One Minor Triads
Miscellaneous Dodecaphonic Patterns

1293 Two Major Hexachords

1294
Invertible Dodecaphonic Progressions

With All Different Intervals

(Figures indicate number of semitones)
On a Major Six-Four Chord

White-Key Row of Six Notes

Mother Chord

Grandmother Chord
Intervallic Series

Increasing and Diminishing Intervals

1319

1320

1321

1322

1323

1324

1325

1326

1327

1328

1329

1330
Complementary Scales

C Major and Pentatonic

Mutually Exclusive Whole-Tone Scales

No. 27

No. 29

No. 10

No. 11

No. 12

Permutations

Scale No. 12

Permutations
Pandiatonic Harmony in Four Parts

\[ \text{Lento} \]
\[ \text{Andante} \]
\[ \text{Andantino} \]
\[ \text{Allegretto} \]
\[ \text{Allegro} \]

Pandiatonic Harmony in Five Parts

Pandiatonic Harmony in Six Parts

Pandiatonic Harmony in Seven Parts

[Roy Harris: Slumber]
Double Notes

Tritone Progression

Numbers in parentheses refer to patterns from which the double notes are derived.
(34)

(35)

(36)

(37)

(38)

(39)

(40)

(41 to 58) Simile

(59a)  

(59b)

(60a)  

(60b)  

(61a)  

(61b)  

(62a)  

(62b)  

(63a)  

(63b)  

(64a)  

(64b)
Ditone Progression

(181a)

(181b)  (181c)  (181d)

(182a)  (182b)  (182c)  (182d)

(183a)  (183b)

(183c)  (183d)

(184a)  (184b)

(184c)  (184d)

(185a)  (185b)

(185c)  (185d)
Sesquitone Progression

(392a)

(392b)

(392c)

(392d)

(392e)

(392f)

(393a)

(393b)

(393c)
Double Notes in Contrary Motion

Whole-Tone Scale

(No 336)

(No 2182)
Plural Scales and Arpeggios

Major

Minor
Polytonal Scales

Eb Major and C Major

C Major and Eb Major
E Major and C Major

C Major and E Major
Ab Major and C Major

C Major and Ab Major
Polyrhythmic Scales

3: 2

4: 3
Polytonal Polyrhythmic Scales

E Major and C Major; 3: 2

E Major and C Major; 4: 3
C Major and Eb Major; 5: 3

C Major and Eb Major; 5: 4
Palindromic Canons

Bitonal Palindromic Canon: C Major and F# Major

Scale №7 (In Six Parts)

Bitonal Palindromic Canon: F Major and B Major

Scale №12 (In Six Parts)
Two Palindromic Canons on Pattern 72

In Three Parts
(Alternating Minor and Major Triads)

In Four Parts

Palindromic Canon on Pattern 141
Palindromic Canon on Pattern 186

In Four Parts

Palindromic Canon on Pattern 231
(Theme from Schoenberg: Ode to Napoleon)

In Four Parts
Palindromic Canon on Pattern 394

In Eight Parts

Palindromic Canon on Pattern 447

In Eight Parts
Autochordal Harmonization

Scale No. 7

Harmonic analysis

Bitonal

Scale No. 181

Harmonic analysis

Bitonal

Pedal points

Combinatory

Scale No. 393

Harmonic analysis
Harmonization in Major Triads
by Alternation of Octave, Tertian
and Quintan Positions

Melody Line

Octave Position

Tertian Position

Quintan Position
Harmonization in Seventh-Chords, Ninth-Chords and Whole-Tone Chords

Melody Line

Whole-Tone Chords

Major Ninth-Chords

Minor Ninth-Chords

Whole-Tone Chords

Dominant Seventh-Chords
Synopsis of Chords

Major
Bitonal Chord

Minor
Bitonal Chord

Whole-Tone
Chord

Prometheus
Chord
(Scriabin)

Quartal
Chord

Chord
of the Minor 23rd

Containing All Twelve
Chromatic Tones Arranged in Fourths

Containing All Twelve
Chromatic Tones and
Four Mutually Exclusive Triads
Pandiatonic Chord
Containing All Seven Diatonic Tones

Pandiatonic Tone-Cluster

Pentatonic Tone-Cluster

Pyramid Chord
Containing All Twelve Intervals From an Octave to a Semitone

Mother Chord
Containing All Twelve Chromatic Tones and Eleven Different Intervals

Grandmother Chord
Containing All Twelve Chromatic Tones and Eleven Symmetrically Invertible Intervals