JOSEPH SCHILLINGER

CORRESPONDENCE COURSE

With: Dr. Jerome Gross Subject: Music

Lesson CXXX.

MELODIZATION OF HARMONY.

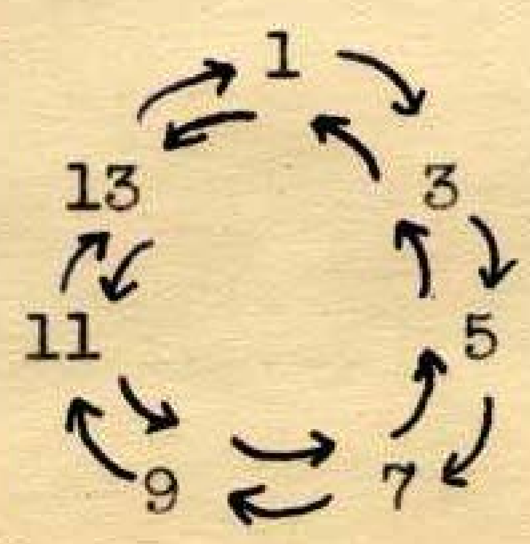
Composition of melody with harmonic accompaniment can be accomplished either by correlating the melody with a chord progression or by composing the melody to such a progression. While the first procedure is more commonly known, and attempts have been made even to develop a theory to this effect, the second procedure has brought forth music of unsurpassed harmonic expressiveness. Many composers, particularly the operatic ones (and among them Wagner) indulged in composing the melodic parts to harmonic progressions.

So far as this theory is concerned, the technique of harmonization of melody can only be developed if the opposite is known. If melody can be expressed in terms of harmony, i.e. as a sequence of chordal functions and their tension, then a scientific and universal method for the harmonization of melody can be formulated by reversal of the system of operations.

The process of composing melody to chord progressions thus becomes the melodization of harmony.

Though such a word cannot be found in the English dictionaries of today, we can be certain it will be there very soon, as the discovery of a new technique necessitates the introduction of a new operational concept.

This *Theory of Melodization* will be applied to harmonic progressions satisfying the definition of the *Special Theory of Harmony.* According to this definition all chord-structures are based on E, of the seven-unit scales containing seven musical names without identical intonations. Thus any pitch unit of melody can only be one of the seven functions: 1, 3, 5, 7, 9, 11, 13. These seven functions produce the manifold which we call *the scale of tension.* By arranging the scale of tension in a circular fashion, we obtain two harmonic directions: the clockwise and the counter-clockwise.



Clockwise functioning of the consecutive pitch-units of a melody necessitates the positive

form of tonal cycles.

Counterclockwise functioning of the consecutive pitch-units of a melody necessitates the negative form of tonal cycles.

Assuming that all pitch-units of a melody are stationary and identical, and therefore could be any pitch-unit that is stationary, we shall choose c as such a unit. By assigning the clockwise functioning to such a unit, we obtain the positive form of harmonic progressions.

	1		3		5		7		9		11		13		1	
Melody:	c	+	c	+	c	+	c	+	c	+	c	+	c	+	c	C_3
Chords:	C	+	A	+	F	+	D	+	B	+	G	+	E	+	C	

←————————————→

By reading the above progression backwards, we obtain the negative form.

Omission of certain chordal functions for the consecutive pitch-units of the melody will result in the change of cycles but not of the direction.

	1		5		9		13		3		7		11		1	
Melody:	c	+	c	+	c	+	c	+	c	+	c	+	c	+	c	C_5
Chords:	C	+	F	+	B	+	E	+	A	+	D	+	G	+	C	

←————————————→

Likewise:

	1		7		13		5		11		3		9		1	
Melody:	c	+	c	+	c	+	c	+	c	+	c	+	c	+	c	C_7
Chords:	C	+	D	+	E	+	F	+	G	+	A	+	B	+	C	

←————————————→

It follows from the above reasoning that every chord has seven forms of melodization, as 1, 3, 5, 7, 9, 11 or 13 can be added to it.

The reduction of the scale of tension decreases this quantity respectively.

We shall consider all the reduced forms of the scale of tension to be the ranges of tension. When each chord is melodized by one attack (or one pitch-unit) the range of tension can be entirely under control.

The minimum range of tension possible can be acquired by assigning only one chordal function to appear in the melody. Let us assume that such a function is the root-tone of the chord. Then if harmony consists of three parts, melody will sound like the bass of progressions of S(5) const.

For example: $2C_5 + C_3 + C_5 + 2C_7$

Melody: c + f + b + g + c + d + e + . . .

Chords: C + F + B + G + C + D + E + . . .

Figure I.

It is easy to see that the pattern of melody in such a case is conditioned by the cycles through which the chords move. The predominance of C_7 produces scalewise steps or leaps of the seventh. Other cycles influence the melodic pattern accordingly.

Now, if we assign any other chordal function (still one for the entire progression), the resulting melodic pattern does not change, but the form of tension does.

This time we shall take the seventh to melodize the same chord progression.

Figure II.

The different ranges of tension produce different types (styles) of melodization. Music progresses clockwise through the scale of tension.

A narrow range, confined to lower functions produces more archaic or more conservative styles. The resulting melodization may suggest Haydn

or other early forms (in most cases such styles later become trivial). Whereas a narrow range confined to higher functions results in melodization suggesting stylistically Debussy or Ravel. The intermediate form may produce Wagner, Frank, Delius. When the entire scale is used as a range of tension, the resulting melodization becomes highly flexible in its expression.

Lesson CXXXI.

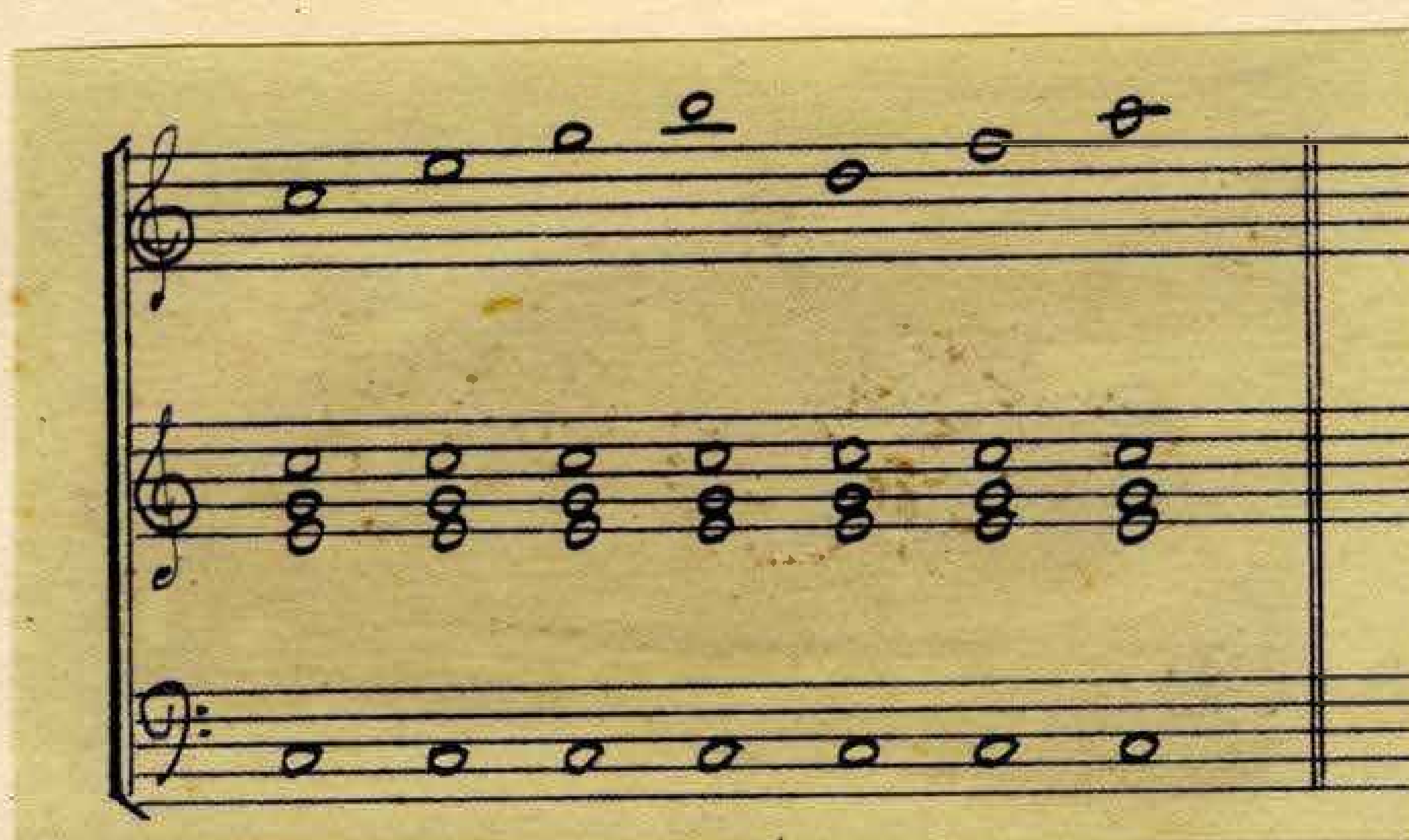
I. Diatonic Melodization

As it follows from the preceding exposition, any chordal function can participate in melodization. The only necessary step which follows is the assignment of chordal functions for melodization with regard to actual chord-structures.

We shall express melody as M and harmony -- as H. In terms of attacks, one pitch-unit assigned for melodization of one chord becomes $\frac{M}{H} = 1$. Under such conditions it is possible theoretically to evolve seven forms of melodization.

For example, a C- chord can be melodized by c(1), e(3), g(5), b(7), d(9), f(11) and a(13).

Figure III.



It is easy to see that the majority of pitch-units of M are satisfactory. Two of them (d and f), however, do not result in a satisfactory melodization. The reason for the latter is that high functions, without the support by the immediately preceding function in harmony, are not acceptable.

Likewise, the presence of lower functions in the melodization of high-tension chords is equally inacceptable. The 13 is fully satisfactory as melodization of S(5) because by sonority it converts an S(5) into S(7).

Now we can construct the table of melodization for the fifth voice above four-part harmony, where both melody and harmony are diatonic.

Figure IV.

Table I: $\frac{M}{H} = 1.$

M	7, 13	9, 13[x)]	5, 11, 13	5, 13	5, 11	5, 9
H	5 3 1	7 5 3 1	9 7 3 1	11 9 7 1	13 9 7 1	13 11 7 1
S	S(5)	S(7)	S(9)	S(11)	S(13)	

It follows from the above table that:

(1) classical and hybrid four-part harmony can be used for the diatonic melodization;

(2) all chordal tones actually participating in the chord as well as the functions designated as M can be used for the diatonic melodization;

(3) by diatonic melodization we shall mean the participation of pitch units of one diatonic scale and from which the chord-progression is evolved;

(4) the use of 13 in S(7) is acceptable when the root of the chord is in the bass (i.e. do not use inversions);

(5) the alternative in selection of functions for the melodization of S(13) is due to two forms of structures covered by the branch of hybrid four-part harmony.

Assuming that there are on the average about five practical pitch-units (functions) for the melodization of each chord through the form $\frac{M}{H} = 1$, the number of possible melodizations of one harmonic continuity (under such conditions) equals 5 to the power, the exponent of which represents the number of chords. Thus a progression consisting of 8 chords produces $5^8 = 390,625$ melodizations.

The two fundamental factors in determining the quality and the character of melodization are:

(a) the range of tension;

(b) the melodic pattern (i.e. the axial combination of melodic structure)

The interest may be concentrated on either one or on both. Attack-interference patterns add interest to melodization.

In the following examples, R represents the range of tension, A -- the axial combination. All the following examples can be played in any system of accidentals.

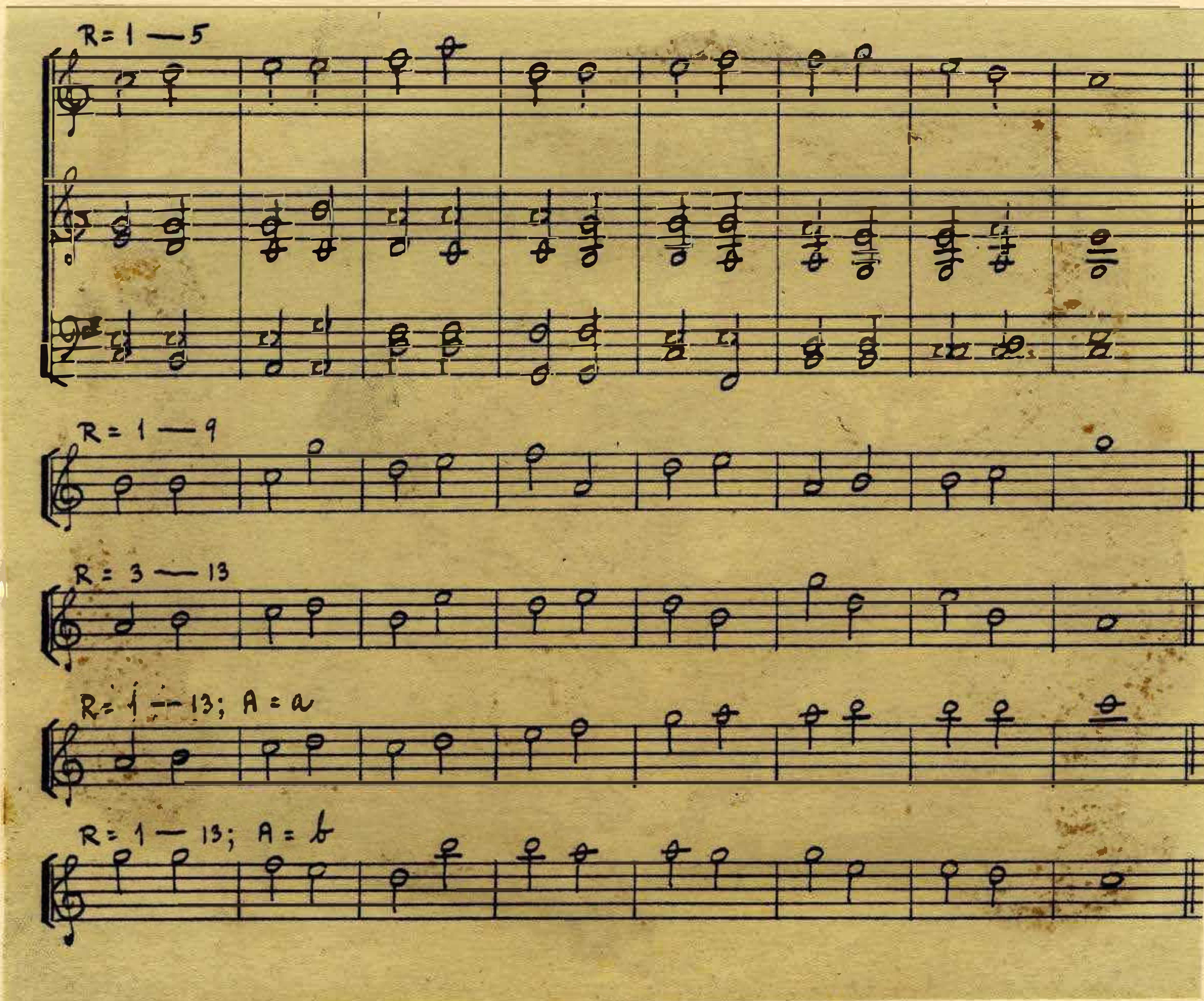
<u>Figure V.</u>

Examples of Diatonic Melodization

$$\frac{M}{H} = 1$$

(please see following pages)

(Fig. V)



(Fig. V, cont.)


R = 1 — 13; A = a+b
R = 1 — 13; A = b+a
R = 1 — 13.
BINARY PARALLEL AXES
R = 1 — 13
BINARY DIVERGING AXES
R = 1 — 13
BINARY CONVERGING AXES
THREE ATTACK PATTERN

Lesson CXXXII.

The increase of the number of attacks necessitates a slight remodeling of Table I (Fig. IV). Any higher function can be supported by the immediately preceding function of immediately preceding rank.

For instance, 9 can be used for melodization of S(5) providing it is immediately preceded by 7, and the root of S(5) is in the bass (the necessary condition for the support of 9). For the same reason 11 can be used for melodization of S(7) if preceded by 9 and when S(7) has a root in the bass.

Figure VI.

Table II: $\frac{M}{H}$ = 2, 3, 4, . . .

Additions to Table I:

7 → 9	9 → 11
5 3 1	7 5 3 1
S(5)	S(7)

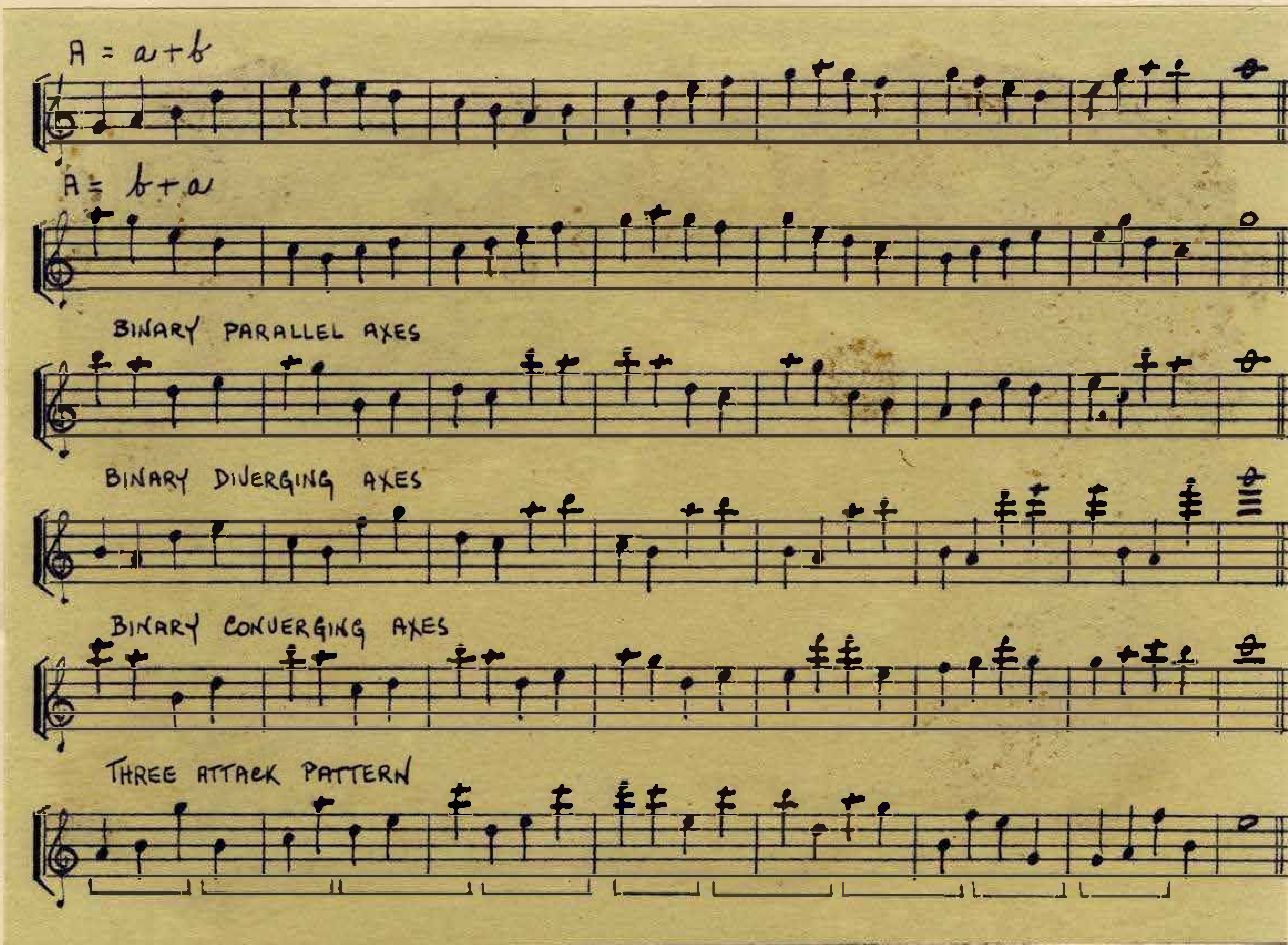
Figure VII.

Examples of Diatonic Melodization.

$\frac{M}{H} = 2$

(cont. on next page)

(Fig. VII, cont.)



With the further growth of the quantity of attacks of $\frac{M}{H}$, greater allowances (particularly in the fast tempi) can be made. This particularly concerns the use of unsuitable functions for melodization, when such functions are used as auxiliary tones

<u>moving into chordal tones,</u> actually present in the harmonic accompaniment. Such styles of melodization (particularly in the harmonic minor) can be easily associated with Mozart, Chopin, Schumann, Chaikovsky and Scriabine, i.e. with the sentimental, romantic lyrical type.

<u>Figure VIII.</u>

Examples of Diatonic Melodization.

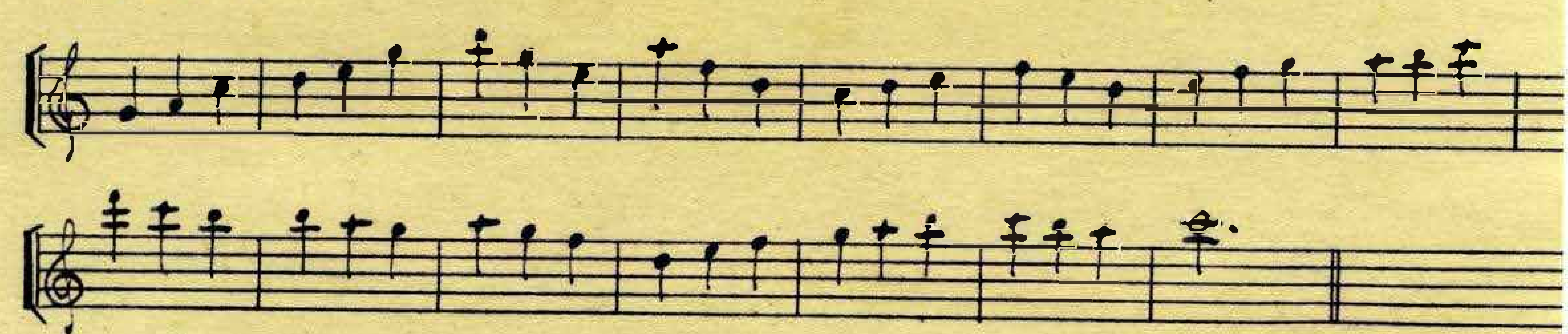
$\frac{M}{H} = 3$

(cont. on following pages)

A = a

A = b

A = a + b




BINARY PARALLEL AXES
BINARY DIVERGING AXES
BINARY CONVERGING AXES
TWO-ATTACK PATTERN

FOUR-ATTACK PATTERN

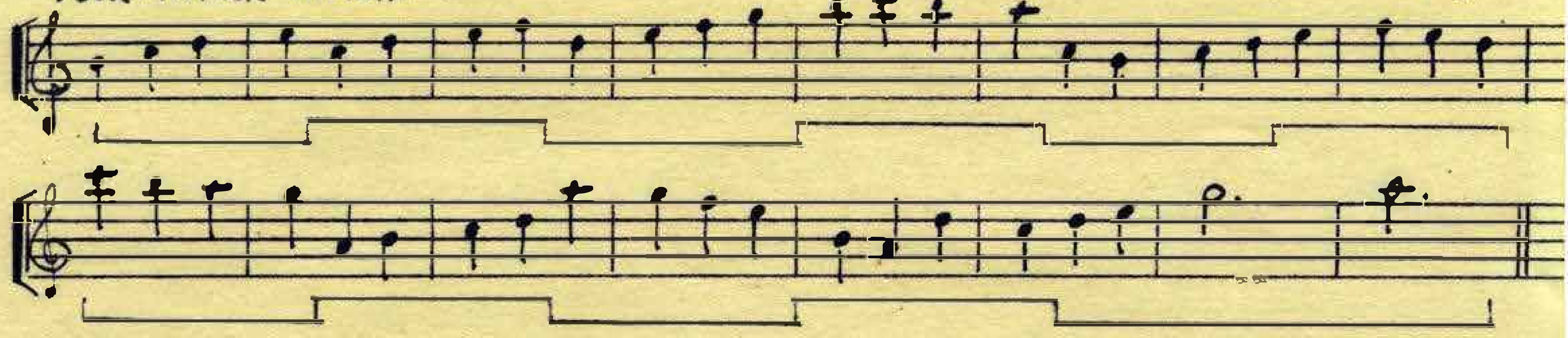


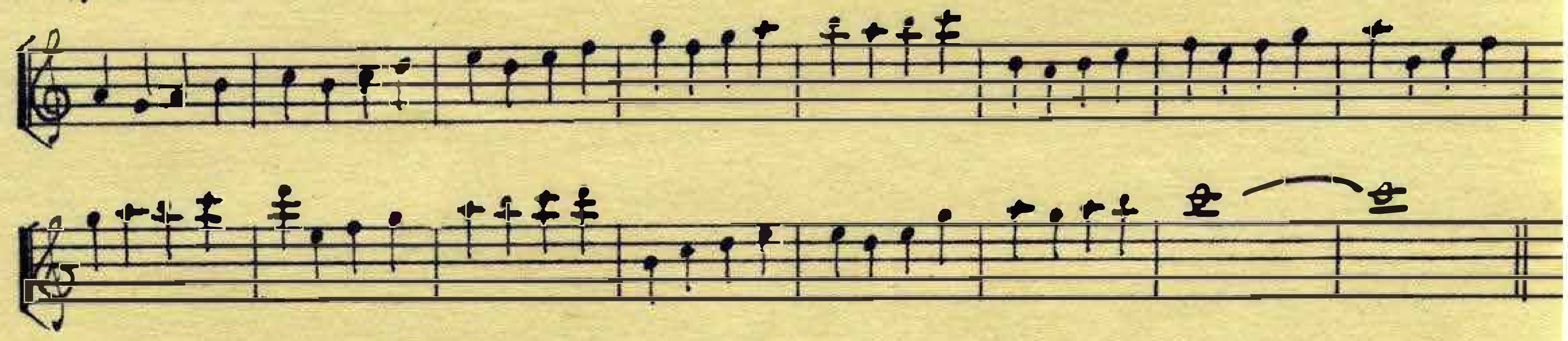
Figure IX.

Examples of Diatonic Melodization

$\frac{M}{H} = 4$

9.

A = a



A = b

A = a + b

BINARY PARALLEL AXES

BINARY DIVERGING AXES

(Fig. IX, cont.)


BINARY CONVERGING AXES
THREE-ATTACK PATTERN
FIVE-ATTACK PATTERN

Lesson CXXXIII.

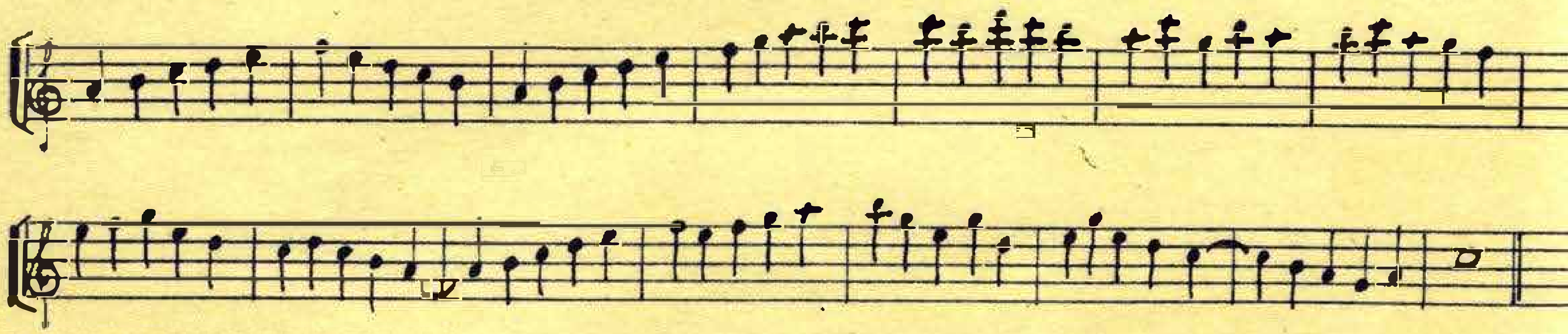
Figure X.

Examples of Diatonic Melodization.

$\frac{M}{H} = 5.$

(cont. on following pages)

A = a + b



BINARY PARALLEL AXES

BINARY DIVERGING AXES

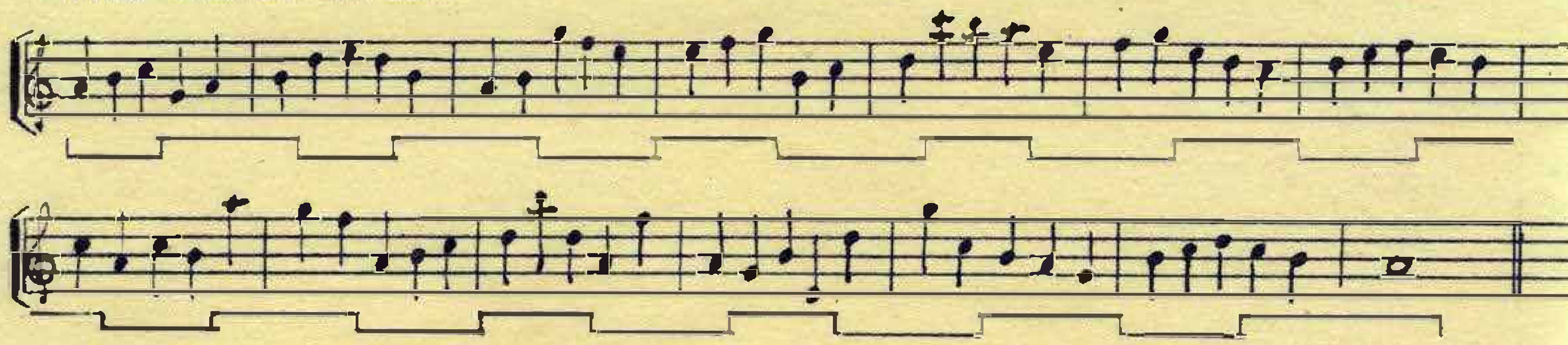


Figure XI.

Examples of Diatonic Melodization.

Compare the following illustrations with Chopin, when playing in C - minor.

11.

BINARY PARALLEL AXES

BINARY CONVERGING - DIVERGING AXES

ATTACK PATTERN: 4 + 2

Figure XII.

Examples of Diatonic Melodization. $\frac{M}{H} = 7$

12.

Figure XIII.

Examples of Diatonic Melodization. $\frac{M}{H} = 8.$

Compare classical type ($\frac{4}{8}$ series) with jazz ($\frac{8}{8}$ and $\frac{12}{12}$ series) in the following illustrations.

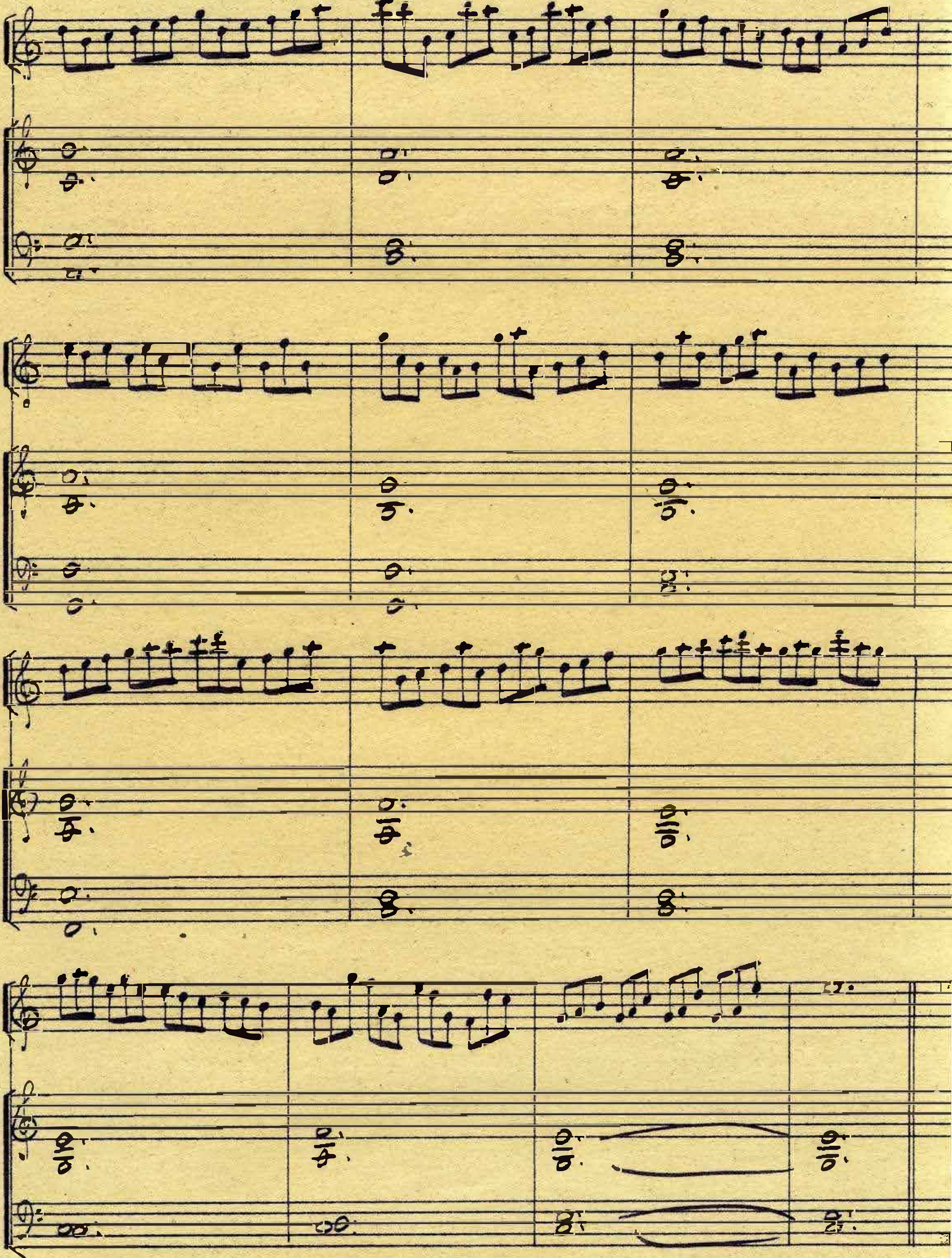
13.


A = b+a

BINARY DIVERGING - CONVERGING AXES

ATTACK PATTERN: 8(3)+3+2+3

Figure XIV.
Examples of Diatonic Melodization. $\frac{M}{H} = 12$



JOSEPH SCHILLINGER

CORRESPONDENCE COURSE

With: Dr. Jerome Gross — Subject: Music

Lesson CXXXIV.

Composition of the Attack-Groups of Melody.

In all the previous forms of melodization, the attack-group of M was constant. Any assumed quantity of attack per chord (H) was carried out consistently. The monomial attack group (A) in all cases was an integer remaining constant throughout $H \rightarrow$. This monomial form of an attack-group can be expressed as $\frac{M}{H} = A$, where A can be any integer (from one to infinity).

Now we arrive at binomial attack-groups for the melody. This can be expressed as $\frac{M}{2H} = A_1 + A_2$, i.e. melody covering two successive chords consists of two different attack-groups.

For instance:

(1) $\frac{M}{2H} = 2a + a$; (2) $\frac{M}{2H} = 3a + 2a$;

(3) $\frac{M}{2H} = 5a + 3a$; $\frac{M}{H} = a + 8a$; . . .

These expressions can be further deciphered as:

(1) $\frac{M}{H_1} + \frac{M}{H_2} = 2a + a$; (2) $\frac{M}{H_1} + \frac{M}{H_2} = 3a + 2a$;

(3) $\frac{M}{H_1} + \frac{M}{H_2} = 5a + 3a$; (4) $\frac{M}{H_1} + \frac{M}{H_2} = a + 8a$; . . .

The main significance of a binomial attack-group is the introduction of contrast between the two successive portions of M. The greater the contrast required, the greater the difference between the two number-values of a binomial. This proposition can be reversed into the following: the contrast between the two terms of a binomial decreases when their values approach equality.

Thus, $\frac{M}{2H} = a + 6a$ is more contrasting than $\frac{M}{2H} = 2a + 6a$; $2a + 6a$ is more contrasting than $3a + 6a$; $3a + 6a$ is more contrasting than the least contrasting $5a + 6a$. With further balancing we obtain a monomial as: $\frac{M}{H_1} + \frac{M}{H_2} = 6a + 6a$ which means that $\frac{M}{H} = 6a$.

If permutation takes place in a binomial attack-group, it results in the second order binomial attack group.

For instance:

$\frac{M}{2H} = 4a + 2a$; in the course of $\overrightarrow{H} = 4H$, this becomes: $\frac{M}{4H} = \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} + \frac{M}{H_4} = 4a + 2a + 2a + 4a$.

The above described method of binomial attack-groups is true of any polynomials. The latter are subject to permutations.

Examples of trinomial attack-groups:

(1) $\frac{M}{3H} = 3a + 2a + a;\ \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} = 3a + 2a + a;$

(2) $\frac{M}{3H} = 4a + a + 3a;\ \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} = 4a + a + 3a;$

(3) $\frac{M}{3H} = a + 2a + 4a;\ \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} = a + 2a + 4a;$

(4) $\frac{M}{3H} = 3a + 5a + 8a;\ \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} = 3a + 5a + 8a.$

Examples of polynomial attack groups based on the resultants of interference:

(1) $r_{4 \div 3}$:

$$\frac{M}{6H} = \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} + \frac{M}{H_4} + \frac{M}{H_5} + \frac{M}{H_6} = 3a + a + 2a + 2a + a + 3a.$$

(2) $r_{\underline{3 \div 2}}$:

$$\frac{M}{7H} = \frac{M}{H_1} + \frac{M}{H_2} + \frac{M}{H_3} + \frac{M}{H_4} + \frac{M}{H_5} + \frac{M}{H_6} + \frac{M}{H_7} =$$

$$= 2a + a + a + a + a + a + 2a.$$

(3) $r_{9 \div 8}$:

$$\frac{M}{16H} = 8a + a + 7a + 2a + 6a + 3a + 5a + 4a + $$
$$+ 4a + 5a + 3a + 6a + 2a + 7a + a + 8a .$$

The effect produced by such composition of attacks as (3) is that of counterbalancing the original binomial: it starts with excessive animation over H_1 (8a) and complete lack of it over H_2(a); it follows into the state closest to balance, after which the counterbalancing begins, ultimately reaching its converse: a + 8a.

In all cases of $r_{a \div b}$ the maximum animation takes place at the beginning and at the end. When the opposite effect is desirable (minimum animation at the beginning and at the end) use the permutation of binomials (which is possible when the number of terms in the polynomial is even).

For instance: (3) can be transformed into

$$\frac{M}{16H} = a + 8a + 2a + 7a + 3a + 6a + 4a + 5a + 5a + $$
$$+ 4a + 6a + 3a + 7a + 2a + 8a + a .$$

In addition to resultants, involution (power) groups as well as various series of variable velocities (natural harmonic series, arithmetical and geometrical progressions, summation series) can be used as the forms of attack-groups.

For instance: $(2 + 1)^2$:

$$\frac{M}{4H} = 4a + 2a + 2a + a \;;$$

$(1 + 3)^2$:

$$\frac{M}{4H} = a + 3a + 3a + 9a \;;$$

$$\frac{M}{5H} = 2a + 3a + 5a + 8a + 13a \;.$$

For the time being we shall use the simplest duration-equivalents of attacks, as this subject is a matter of further analytical investigation (which will follow in the next lesson).

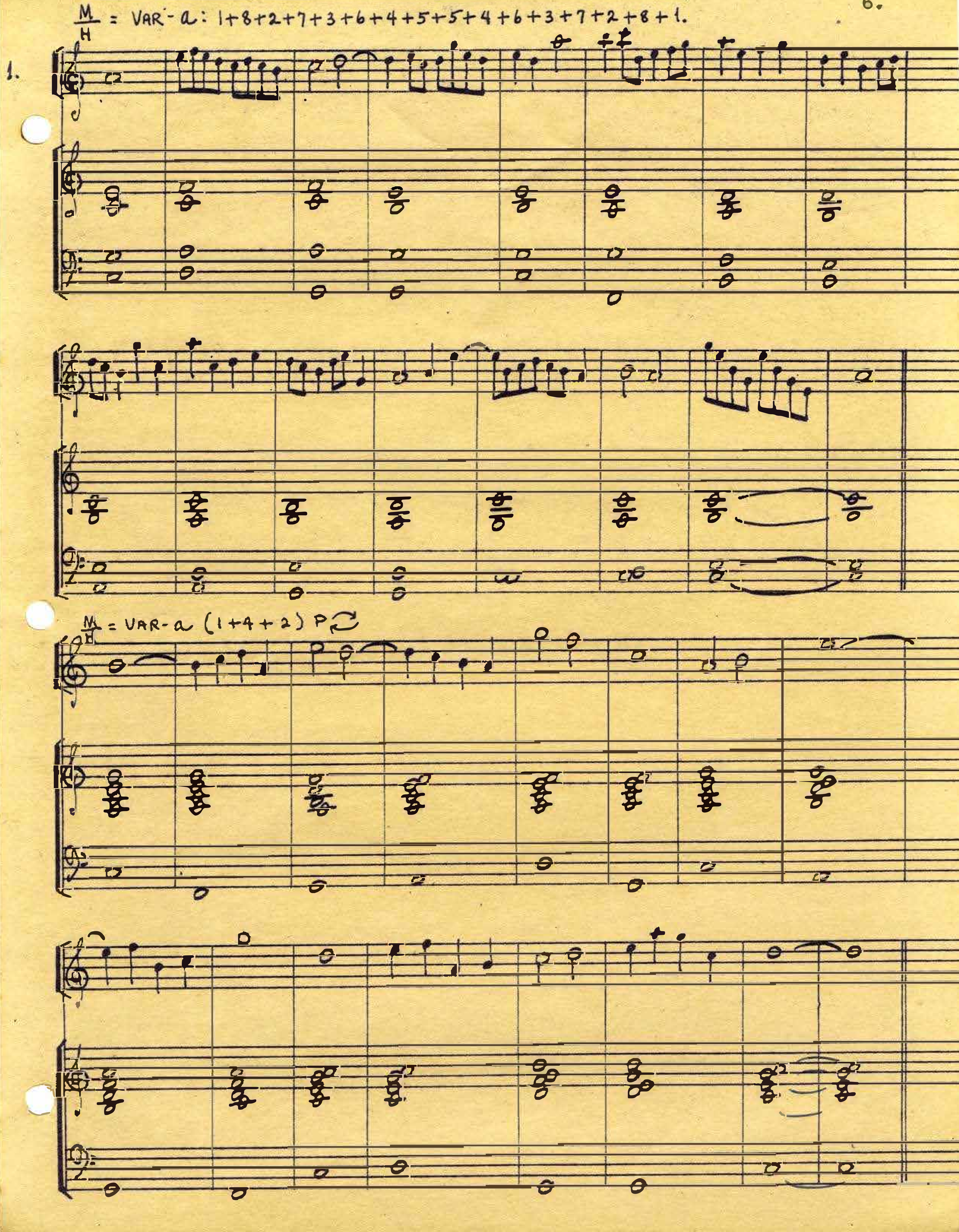
Figure XV.

Examples of Diatonic Melodization with

Variable Quantity of Attacks of M over H:

$$\frac{M}{H} = A\ \text{var.}$$

(please see following pages)


M/H = VAR-a: 1+8+2+7+3+6+4+5+5+4+6+3+7+2+8+1.
1.
M/H = VAR-a (1+4+2) P

(Fig. XV, cont.)

Ties in the above examples were added after the completion of melodization.

Lesson CXXXV.

Composition of Durations for the Attack-Groups of Melody.

Composition of durations for the attack-groups of melody can be accomplished by means of technique previously defined as Evolution of Style in Rhythm. Every attack-group, monomial, binomial, trinomial, quintinomial, etc. can be expressed through the different series. For instance, a binomial of $\frac{3}{3}$ series is 2 + 1 or its converse; a binomial of $\frac{4}{4}$ series is 3 + 1 or its converse; a binomial of $\frac{8}{8}$ series is 5 + 3 or its converse.

Likewise a trinomial of $\frac{4}{4}$ series is 2 + 1 + 1 or one of its permutations; a trinomial of $\frac{6}{6}$ is 4 + 1 + 1 or one of its permutations; and the trinomial of $\frac{8}{8}$ series is 3 + 3 + 2 or one of its permutations.

Selection of durations for the attack-groups through the different series permits to translate a piece of music from one rhythmic style into another.

When a choice is to be made as to the form of a binomial or a trinomial, the form of balance (unbalancing, balancing) becomes the decisive factor.

Thus, out of the two binomials 3 + 1 and 1 + 3, the first is more suitable at the beginning of melody and the second -- at the end. In the case of a trinomial in $\frac{4}{4}$ series: 2 + 1 + 1 at the beginning, 1 + 2 + 1 somewhere about the center and 1 + 1 + 2 at the end. Likewise, in $\frac{8}{8}$ series: 3 + 3 + 2 at the beginning, 3 + 2 + 3 about the center and 2 + 3 + 3 at the end. Four attacks can be achieved by splitting one of the terms of a trinomial. Splitting of the terms serves as a general technique for acquiring more terms for low determinants.

Examples of composition of durations for the attack-groups of melody where each term of an attack-group corresponds to one chord: $\frac{M}{H} = A$.

$$\overrightarrow{A} = A_1 + A_2 + A_3 + A_4 + A_5 + A_6 + A_7$$

$$A_1 = a \; ; \; A_2 = a + b \; ; \; A_3 = a + b + c \; ;$$

$$A_4 = a + b + c + d + e \; ; \; A_5 = a + b + c \; ;$$

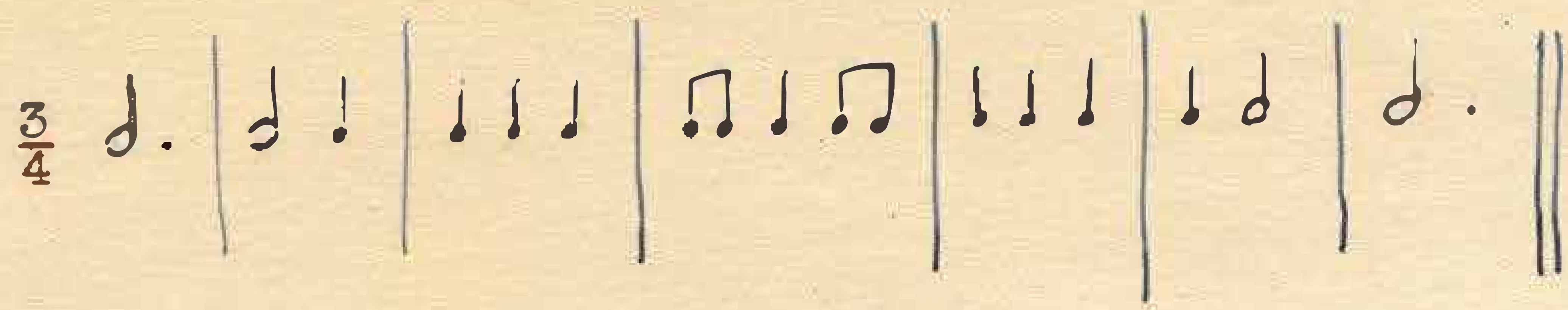
$$A_6 = a + b \; ; \; A_7 = a$$

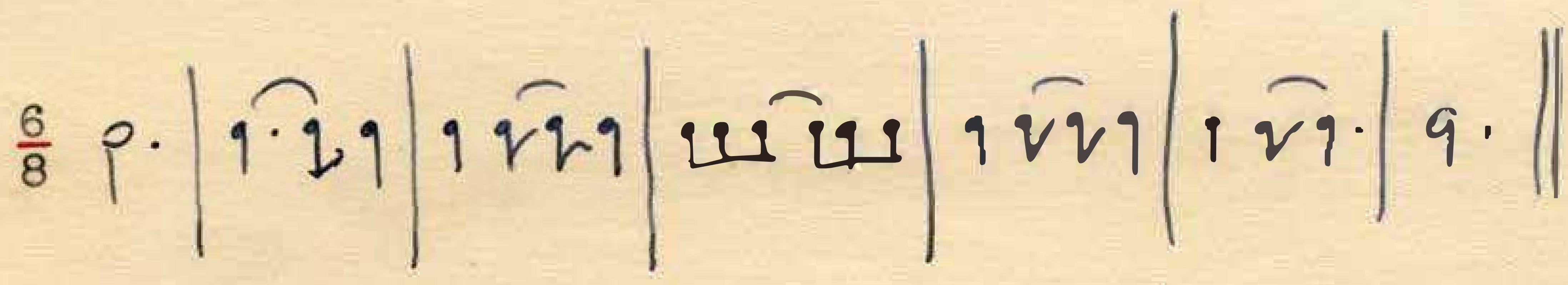
$$\overrightarrow{A} = a + 2a + 3a + 5a + 3a + 2a + a$$

Series: $\frac{3}{3}$

$$T = 3H_1 + (2+1)H_2 + (1+1+1)H_3 + \left(\tfrac{1}{2} + \tfrac{1}{2} + 1 + \tfrac{1}{2} + \tfrac{1}{2}\right)H_4 +$$

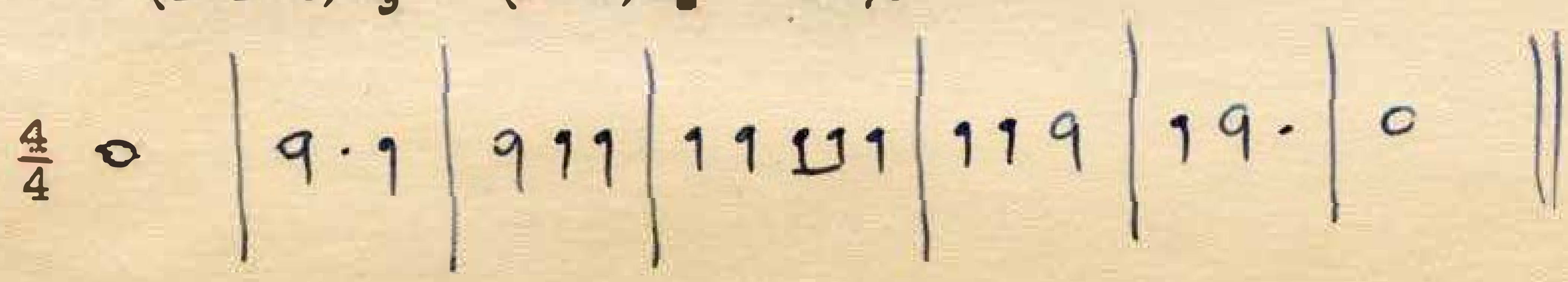
$$+ (1+1+1)H_5 + (1+2)H_6 + 3H_7 \, .$$





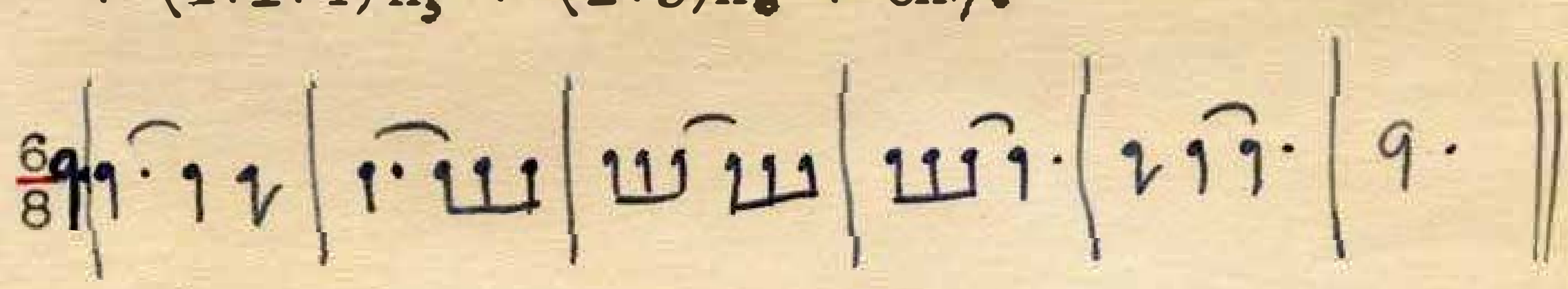
Series: $\frac{4}{4}$

$$T = 4H_1 + (3+1)H_2 + (2+1+1)H_3 + (1+1+\tfrac{1}{2}+\tfrac{1}{2}+1)H_4 +$$
$$+ (1+1+2)H_5 + (1+3)H_6 + 4H_7.$$

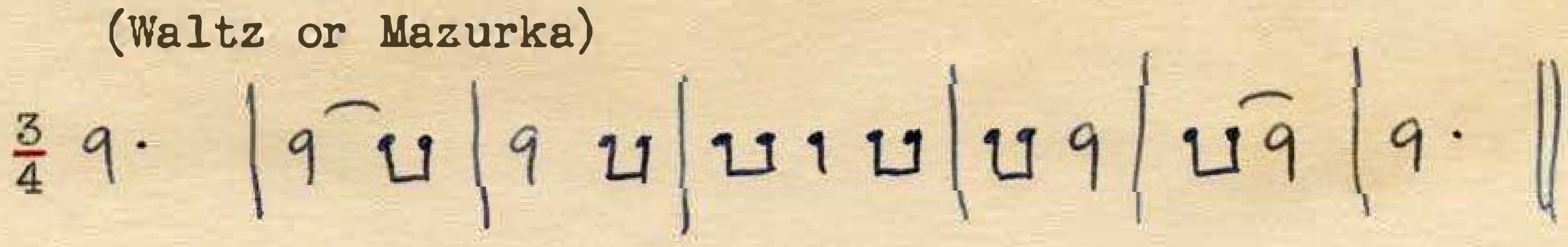


Series: $\frac{6}{6}$

$$T = 6H_1 + (5+1)H_2 + (4+1+1)H_3 + (1+1+2+1+1)H_4 +$$
$$+ (1+1+4)H_5 + (1+5)H_6 + 6H_7.$$



(Waltz or Mazurka)



Series: $\frac{8}{8}$

$$T = 8H_1 + (5+3)H_2 + (3+3+2)H_3 + (2+1+2+1+2)H_4 +$$
$$+ (2+3+3)H_5 + (3+5)H_6 + 8H_7.$$

(Foxtrot, Rhumba, Charleston)

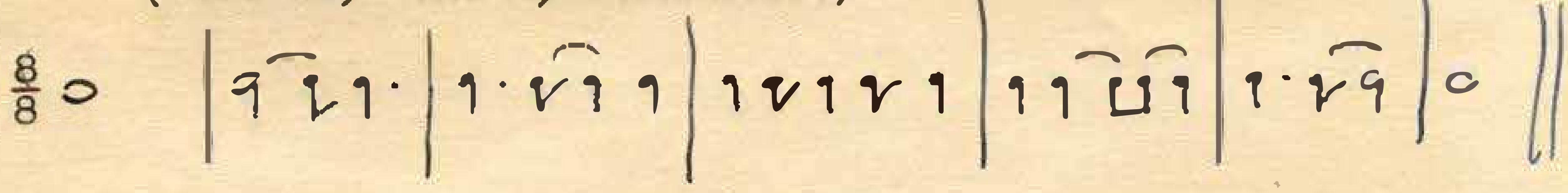


Figure XVI.

(Fig. XVI, cont.)

The final and most refined technique of coordination of the attack and the duration-groups takes place when the attack-groups are constructed independently of T. As this causes interference between the attack and the duration-groups, the duration of the individual chords is not conformed to bars or their simplest subdivisions.

We shall take a simple case for our illustration.

Let us choose $A = r_{5\div4} = 4a + a + 3a + 2a + 2a + 3a + a + 4a = 20\ a$.

Let us execute the durations as $T = r_{4\div3}$.

As T in this case has 10a and A has 20a, the interference is very simple.

$$\frac{a\ (A)}{a\ (T)} = \frac{20}{10} = \frac{2}{1}\ ; \quad \begin{matrix} 1 \\ 2 \end{matrix} \begin{Bmatrix} 20 \\ 10 \end{Bmatrix}$$

Hence, $T' = 16t \cdot 2 = 32t$.

Let $T'' = 8t$, then:

$$N_{T''} = \frac{32}{8} = 4$$

The duration of each consecutive H equals the sum of durations during the time of attacks corresponding to such an H.

Thus, H_1 corresponding to 4a, the durations of which constitute $3t + t + 2t + t$, will last 7t. Likewise the next chord, i.e. H_2 will last t as at

this point melodization consists of one attack, and that attack corresponds to one unit of duration.

Here is the final solution of the case.

$$(1)\quad \frac{a\ (M)}{a\ (H)} = \frac{4}{1} + \frac{1}{1} + \frac{3}{1} + \frac{2}{1} + \frac{2}{1} + \frac{3}{1} + \frac{1}{1} + \frac{4}{1} =$$

$$= 4aH_1 + aH_2 + 3aH_3 + 2aH_4 + 2aH_5 +$$

$$+ 3aH_6 + aH_7 + 4aH_8$$

$$(2)\quad \frac{T\ (M)}{T\ (H)} = \left(\frac{3+1+2+1}{7} + \frac{1}{1} + \frac{1+1+2}{4} + \frac{1+3}{4}\right) + \left(\frac{3+1}{4} +\right.$$

$$\left. + \frac{2+1+1}{4} + \frac{1}{1} + \frac{1+2+1+3}{7}\right) = \left[\left(\frac{3t+t+2t+t}{7t}\right) H_1 +\right.$$

$$\left. + \left(\frac{t}{t}\right) H_2 + \left(\frac{t+t+2t}{4t}\right) H_3 + \left(\frac{t+3t}{4t}\right) H_4\right] +$$

$$+ \left[\left(\frac{3t+t}{4t}\right) H_5 + \left(\frac{2t+t+t}{4t}\right) H_6 + \left(\frac{t}{t}\right) H_7 +\right.$$

$$\left. + \left(\frac{t+2t+t+3t}{7t}\right) H_8\right]$$

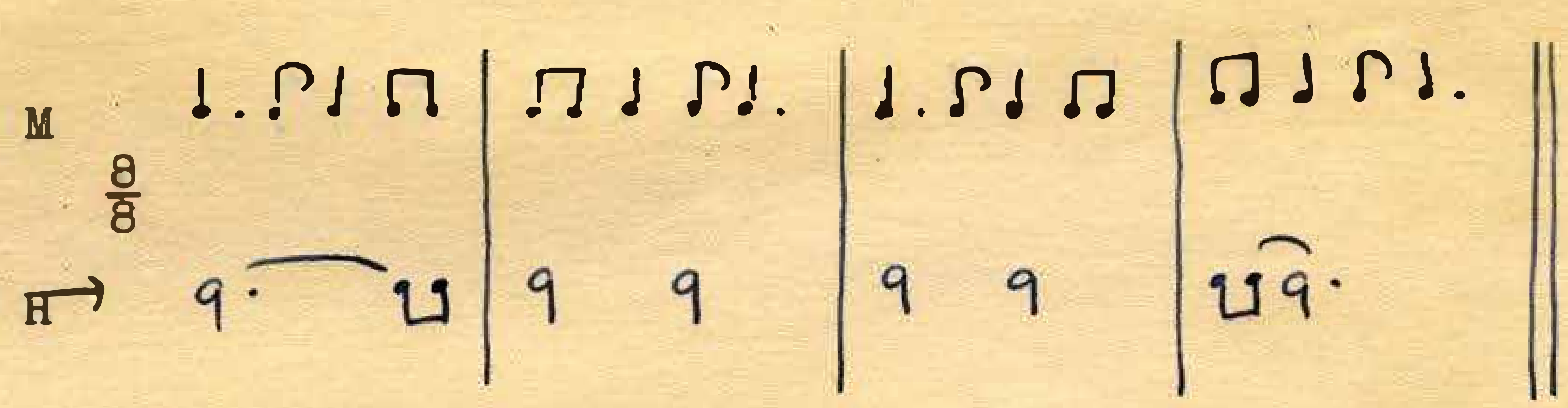


Figure XVII.

Lesson CXXXVI.

Direct Composition of Durations Correlating Melody and Harmony.

Time-rhythm of both melody and harmony can be set simultaneously by means of a proportionate distribution of durations for a constant quantity of attacks of $\frac{M}{H}$.

This can be achieved by synchronizing a polynomial (consisting of the corresponding number of terms, representing attacks) with its square, or the square of a polynomial with its cube, etc.

For instance, we would like to have 4 attacks per chord in the style of durations of the $\frac{4}{4}$ series. Let us take a quadrinomial: 3 + 1 + 2 + 2 and square it.

$$(3+1+2+2)^2 = (9+3+6+6) + (3+1+2+2) + (6+2+4+4) + + (6+2+4+4)$$

The above distributive square represents T (M). The T (H) is the original quadrinomial, synchronized with the distributive square:

$$8\ (3+1+2+2) = 24 + 8 + 16 + 16$$

Thus we obtain:

$$\frac{T\ (M)}{T\ (H)} = \frac{9t + 3t + 6t + 6t}{24t} + \frac{3t + t + 2t + 2t}{8t} +$$

$$+ \frac{6t + 2t + 4t + 4t}{16t} + \frac{6t + 2t + 4t + 4t}{16t}$$

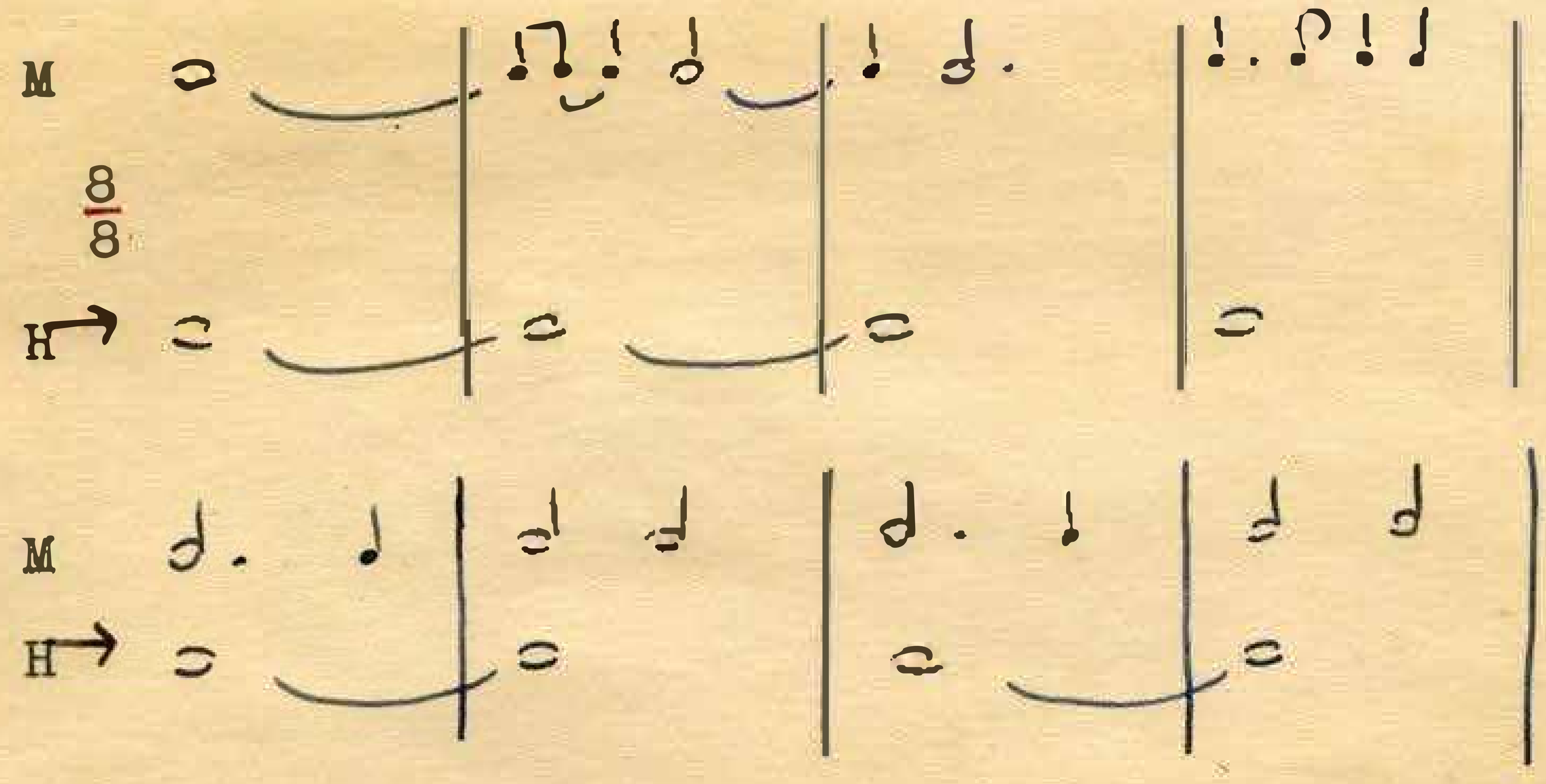


Figure XVIII.

Likewise, synchronization of the distributive square with the distributive cube can be used for melodization of harmony. The group of the square furnishes durations for the chords and the group

of the cube furnishes durations for the melody.

$$\frac{T\ (M)}{T\ (H)} = \frac{(2+1+1)^3}{4(2+1+1)^2} = \frac{8t+4t+4t}{16t} + \frac{4t+2t+2t}{8t} +$$

$$+ \frac{4t+2t+2t}{8t} + \frac{4t+2t+2t}{8t} + \frac{2t+t+t}{4t} +$$

$$+ \frac{2t+t+t}{4t} + \frac{4t+2t+2t}{8t} + \frac{2t+t+t}{4t} + \frac{2t+t+t}{4t} .$$

This produces harmony: $\overrightarrow{H} = 9H$, and melody: $M = 27a$, with constant 3 attacks per chord.

Figure XIX.

(please see next page)


5

For greater contrast in the quantity of attacks between M and $H^{\rightarrow}$, use the synchronized first power group for $H^{\rightarrow}$ and the distributive cube for M.

In addition to distributive powers, <u>coefficients of duration</u> can be used.

For instance:

$$\frac{M}{H^{\rightarrow}} = \frac{(3+1+2+1+1+1+1+2+1+3) + (3+1+2+1+1+1+1+2+1+3)}{6+2+4+2+2+2+2+4+2+6}$$

Lesson CXXXVII.

Chromatic Variation of the Diatonic Melodization.

It is more expedient to obtain a chromatic melody to diatonic chord progressions by using two successive operations:

(1) Diatonic Melodization of Harmony

(2) Chromatization of Diatonic Melody

The first is fully covered by the preceding techniques.

The second (chromatization) can be accomplished by means of passing or auxiliary chromatic tones. The most practical way to perform this rhythmically is by means of <u>split-unit groups</u> (see "Theory of Rhythm": Variations). This does not change the character of durations (with respect to their style) but merely increases the degree of animation of melody.

Figure XX.

Example of the Chromatization of Diatonic Melody.

(please see next page)

DIATONIC MELODIZATION -

6.

CHROMATIC VARIATION.

The Σ (13) Families.

(Introduction to Symmetric Melodization)

Each style of symmetric harmonic continuity (Type II, III and the generalized) is governed by the Σ (13) families. Pure styles are controlled by any one Σ (13), while hybrid styles are based usually on two, and seldom as many as three, Σ (13).

The complete manifold of Σ (13) families corresponds to the 36 seven unit pitch scales which contain the seven names of non-identical pitches. The Σ (13) are the first expansion (E_1) of such scales.

We shall classify all forms by associating 1, 3, 5 and 7 as the lower structure [as S(7)] with 9, 11 and 13 as the upper structure [as S(5)], eliminating all enharmonic coincidences, as well as all adjacent thirds which do not satisfy $i = 3$ and $i = 4$.

These limitations are necessitated by the scope of the Special Theory of Harmony.

Figure XXI.

Complete Table of Σ (13)

(please see next page)

(Fig. XXI)


I
II
III
IV
V
VI
VII
VIII
IX
X
XI
XII
XIII
XIV
XV
XVI
XVII
XVIII
XIX
XX
XXI
XXII
XXIII
XXIV
XXV
XXVI
XXVII
XXVIII
XXIX
XXX
XXXI
XXXII
XXXIII
XXXIV
XXXV
XXXVI

JOSEPH SCHILLINGER

CORRESPONDENCE COURSE

With: Dr. Jerome Gross Subject: Music

Lesson CXXXVIII.

Symmetric Melodization of Harmony

Symmetric melodization provides the composer with resources particularly suitable for equal temperament ($\sqrt[12]{2}$). Whereas in the diatonic system some chord-structures, particularly of a high tension, produce harsh sounding harmonies, in the symmetric system both the chord-structures and the intonations of melody are entirely under control and are subject to choice. The technique of symmetric melodization makes it possible to surpass the refinements of Debussy and Ravel. And, whereas it took any important composer many years to crystallize his original style, this technique of melodization offers 36 styles to choose from when one Σ (13) is used at a time. The amount of possible styles grows enormously with the introduction of blends based on two Σ (13). Then the number of styles becomes $36^2 = 1296$. Likewise by blending three Σ (13), which is a reasonable limit of mixing, we acquire $36^3 = 46,656$ styles.

It is correct to admit that only about 4

of the 36 master-structures have been explored to any extent, the rest being virgin territory packed with most expressive resources of melody and harmony.

In offering the following technique, I shall use symmetric progressions of type II, III and the generalized form in four and in five part harmony. The main difference between the four and the five parts is density. For massive accompaniments use five and for lighter ones use four-part harmony.

When all substructures [S(5), S(7), S(9), S(11)] derive from one master-structure [Σ (13)], they adopt all intonations of that master-structure. The easiest way to acquire a quick orientation in any Σ (13) is to prepare a chromatic table of such a master-structure. Taking Σ (13) XIII from Figure XXI, we obtain the following table of transpositions.

Figure XXII.

Such a table is very helpful, as all intonations for both melody and harmony can be found for any symmetric progression.

Each Σ (13) being E_1 of a seven-unit scale corresponds to E_0 of the same scale.

The rest of the procedure of melodization is based on the same principle of tension as in the diatonic melodization. The functions added to respective tensions of chords are the most desirable ones as axes of the melody. Thus the axis of the melody above S(5) in four-part harmony is either 7 or 13. Actually such a choice creates polymodality, as S(5) d_0 serves as an accompaniment to melody which is d_6 or d_5 respectively. It is polymodality that makes such music more expressive.

The following is the table of melodic axes for the respective structures in four and five-part harmony. In some cases there is a choice of more than one. Some of the forms are admitted because there has been practical use of them already. For example, S(5) in five-parts with melodic axis on d_1 (= 9). It is interesting to note that Σ (13) XIII is used most of all, and that it is the most obvious master-structure, as it consists of a large S(7) and a major S(5).

Figure XXIII.

Table of Melodic Axes in Relation to the Tension of H.

Master-Structure: Σ (13) XIII.

(Fig. XXIII, cont.)

Lesson CXXXIX.

Using this $\Sigma(13)$ we shall melodize a generalized symmetric progression in four parts in $\frac{M}{H} = a$.

Figure XXIV.

Theme: $2 + 2 + 2 + 1$; tension: $S(5) + 2S(7) +$
$+ S(9) + 2S(13)$

$\Sigma(13)$: XIII

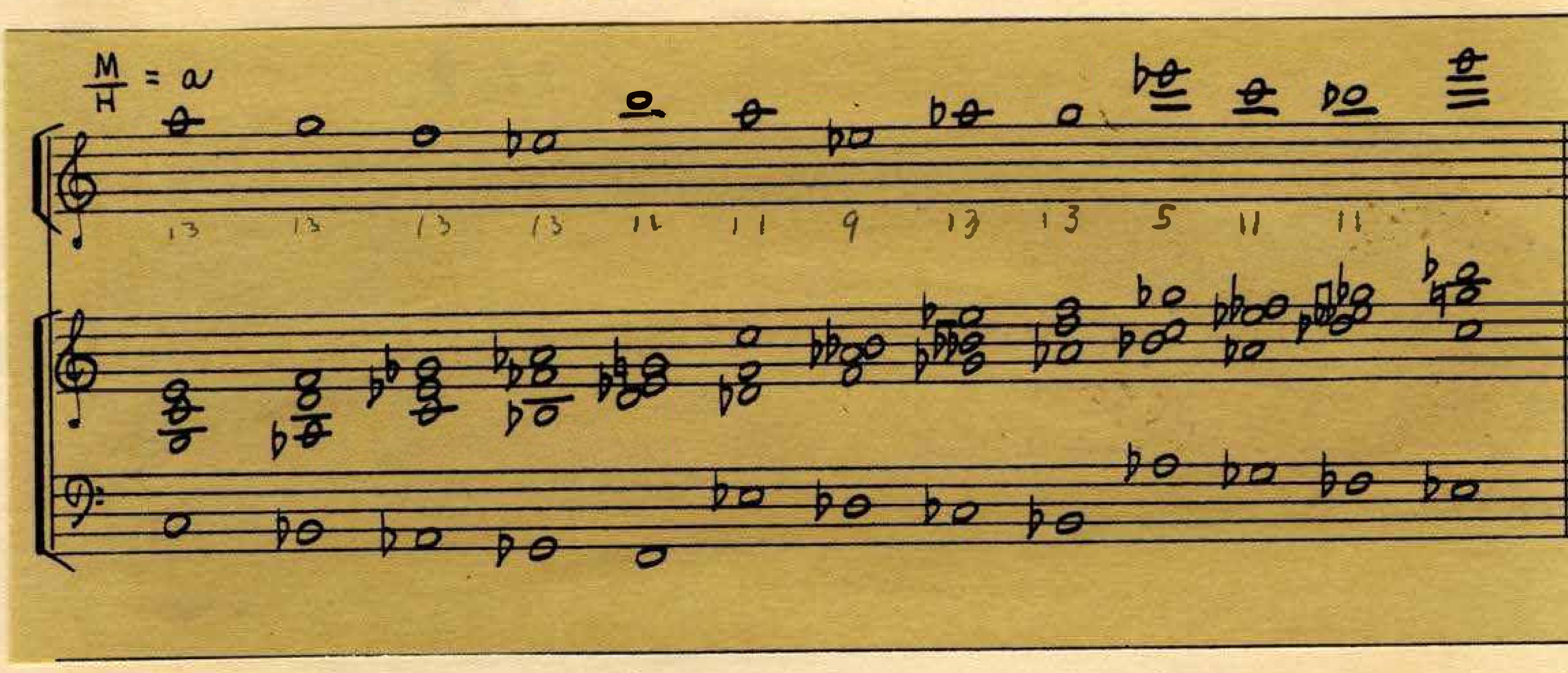


Figure XXV.

Theme: Type II: $\circlearrowright = 2C_5 + C_{-7} + 2C_3 + C_{-5}$

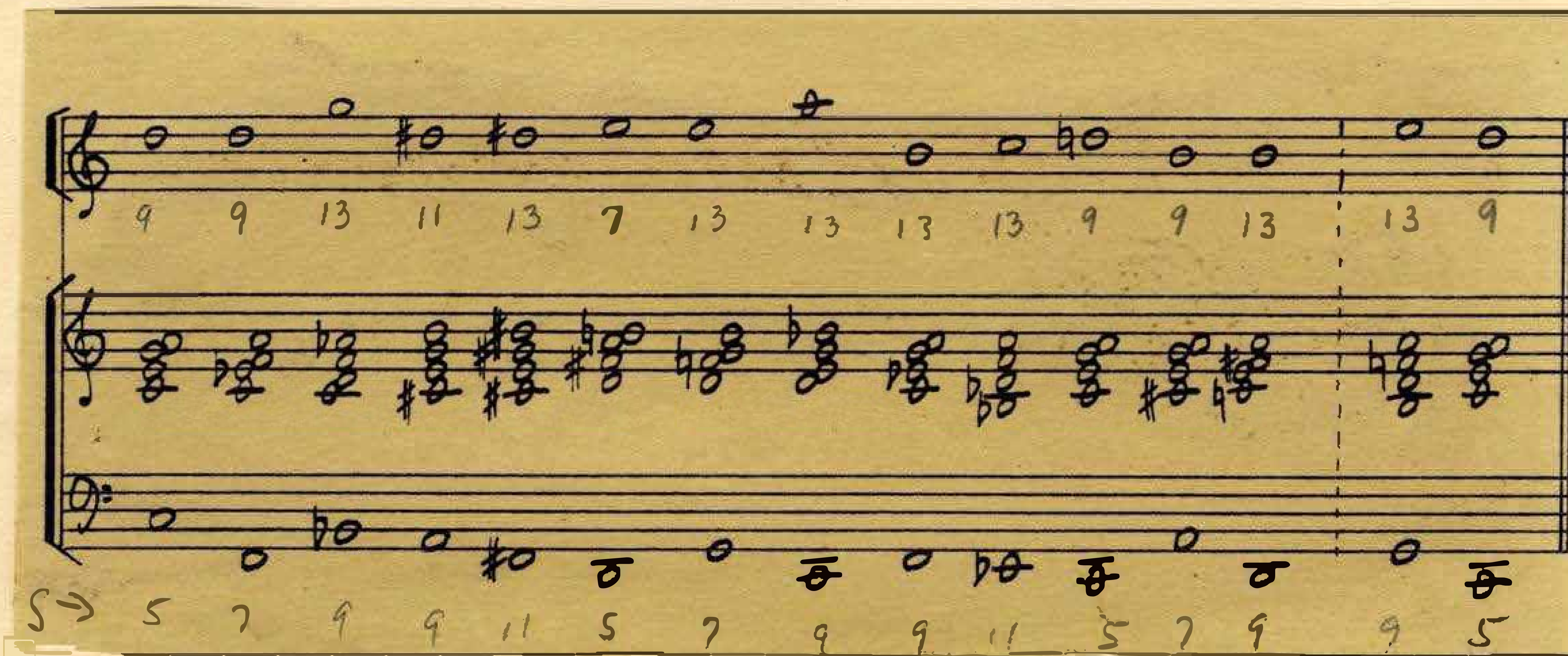
tension: $S(5) + S(7) + 2S(9) + S(11)$

$\Sigma(13)$: XIII

$\frac{M}{H} = a$

(please see next page)

(Fig. XXV)



With more than one attack of M per H, the quality of transition in melody, during the chord changes, becomes more and more noticeable.

In melodizing each H with more than one attack of M, it becomes <u>necessary to perform modulations in melody.</u> Such modulations are equivalent to <u>polytonal-unimodal</u> and <u>polytonal-polymodal</u> transitions. The technique for this based on <u>common tones,</u> <u>chromatic alterations</u> or <u>identical motifs</u> is provided in the <u>Theory of Pitch Scales</u> (The First Group).

<u>Examples of Symmetric</u>

<u>Melodization.</u>

$\frac{M}{H} = 2+4+3$; $\frac{4}{4}$ SERIES OF T.

12

$\frac{M}{H} = 2+6+3+5+4$; $\frac{6}{6}$ and $\frac{3}{3}$ SERIES OF T.

(Fig. XXVI, cont.)

With this type of saturated harmonic continuity melody often gains in expressiveness by being more stationary than it would be desirable in the diatonic melodization. Greater <u>stability of tension</u> is another desirable characteristic.

While mixing the different master-structures for one harmonic continuity, it is desirable to alter either the lower part of the Σ (13), i.e. 1, 3, 5, 7 or the upper part of it, i.e. 9, 11, 13, without altering the lower.

Let us produce a mixed style of master-structures, confining the latter to Σ (13) XIV and Σ (13) XVII. After such a selection is made, the master structures become simply: Σ_1 and Σ_2 . Now in devising the style we must resort to the coefficients of recurrence, as the predominance of one Σ over another is the chief stylistic characteristic.

Let us assume the following recurrence-scheme: $2\Sigma_1 + \Sigma_2$.

$\frac{M}{H} = a + 4a$; $\frac{4}{4}$ series of T.

$H^{\rightarrow} = 2C_7 + C_5 + C_3$ (type II).

$S^{\rightarrow} = 2S(9) + S(13)$.

Figure XXVII.

(please see next page)

(Fig. XXVII)

Lesson CXL.

Chromatic Variation of the Symmetric Melodization.

Any melody evolved by means of symmetric melodization can be converted into chromatic type by means of passing and auxiliary chromatic tones. Such chromatic tones do not belong to the master-structure. Rhythmic treatment of durations must be performed by means of split-unit groups.

Figure XXVIII.

Example of Chromatic Variation of the Symmetric Melodization.

Theme: Fig. XXVII.

All rhythmic devices such as composition of attack and duration-groups are applicable to all forms of symmetric melodization.

Chromatic Melodization of Harmony

Chromatic Melodization of Harmony serves the purpose of melodizing all forms of chromatic continuity. This includes: chromatic system, modulation, enharmonics, altered chords and also hybrid harmonic continuity. As a consequence, it is applicable to all forms of symmetric progressions, but by this we have nothing to gain as symmetric melodization is a more general technique.

There are two fundamental forms of chromatic melodization. One of them produces melodies of either chromatic type, or of extensively chromatized type. Another produces melodies of purely diatonic type.

The first technique consists of anticipating chordal tones and using them as auxiliary tones. In a sequence $H_1 + H_2 + H_3 + \ldots$ the chordal tones of H_2 are the auxiliaries and the chordal tones of H_1 are chordal tones while this chord sounds. In the next chord (H_2) the chordal tones of H_3 are the auxiliaries and the chordal tones of H_2 are chordal tones while this chord sounds. This

procedure can be extended ad infinitum.

As all the disturbing pitch-units are harmonically justified as soon as the next chord appears, the listener is not aware that nearly all chromatic units of the octave are used against each chromatic group, especially when there is a sufficient number of attacks of M against H.

Auxiliary tones must be written in a proper manner, i.e. by raising the lower (ascending) auxiliary and by lowering the upper (descending) auxiliary, even if they have a different appearance in notation of the following chord.

Figure XXIX.

Example of Chromatic Melodization by Means of Anticipated Chordal Tones.

(Fig. XXIX, cont.)

Lesson CXLI.

The second technique is based on the method of constructing a quantitative scale. Such a scale can be evolved by a purely statistical method. Whereas it is not obvious even to the most discriminating ear, it is easy to find by plain addition the quantity in which each chromatic pitch-unit appears during the course of harmonic continuity.

In order to find a quantitative scale it is necessary to write out a full chromatic scale from any note (I do it usually from c).

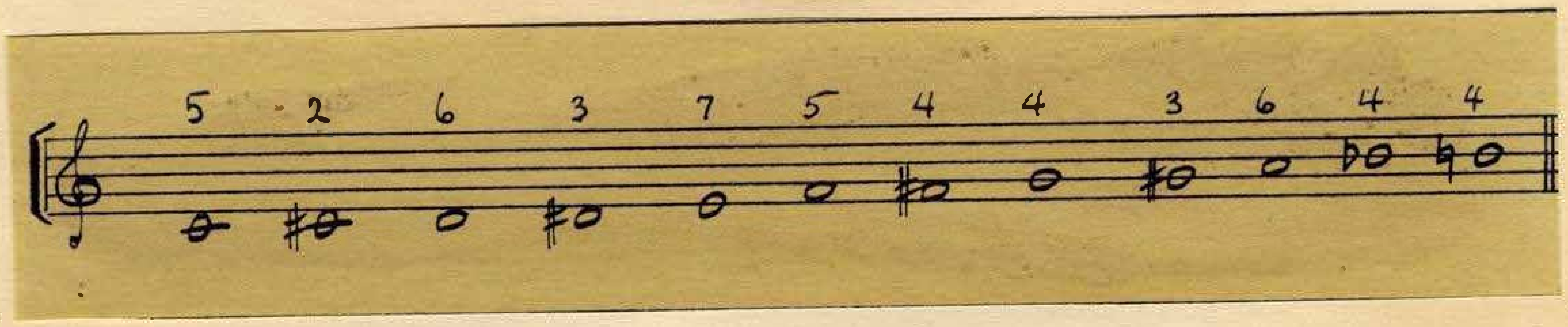
The next procedure is to add all the c-pitches in a given harmonic progression (doubled tones to be counted as one and enharmonics to be included). Then all the c# - pitches, d - pitches, etc., until we sum up the entire chromatic scale. This produces a quantitative analysis of a full chromatic scale. Now by eliminating some of the units which have lower marks, we obtain a quantitative (diatonic) scale.

If there is one unit having highest mark, it should become the root-tone of the scale and, possibly, the axis of the future melody. If there are more than one units having highest mark, it is up to the composer to assign one of them as an axis.

In the chromatic progression of

Fig. XXIX, the quantitative analysis of the chromatic scale appears as follows.

Figure XXX.



By excluding all values below 4, we obtain the following nine-unit scale with the root-tone on e (maximum value).

Figure XXXI.

If such a scale still appears to be too chromatic, further exclusion of the lower marks may reduce it to fewer units.

By excluding all the marks below 5 (in this case) it will reduce the scale to five units and give it a purely diatonic appearance.

Figure XXXII.

The next procedure is the actual melodization, which is to be performed according to the diatonic technique. By this method, the tones which quantitatively predominate during the course of chromatic continuity (and which affect us as such physiologically, i.e. as excitations) become the units some of which satisfy every chord and attribute a great stylistic unity to the entire product of melodization.

The quantity of attacks of M against H largely depends on the possibilities of melodization.

Figure XXXIII.

Example of Chromatic Melodization by means of Quantitative Diatonic Scale

(please see next page)

(Fig. XXXIII)

The two techniques of chromatic melodization can be combined in sequence. This results in contrasting groups of diatonic and of chromatic nature. The quantity of H covered by one method can be specified by means of the coefficients of recurrence.

For example: 2H di + H ch.

Figure XXXIV.

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CORRESPONDENCE COURSE

With: Dr. Jerome Gross Subject: Music

Lesson CXLII.

HARMONIZATION OF MELODY

The usual approach to harmonization of melody is entirely superficial when the very fact of finding a "suitable" harmonization seems to solve the problem in its entirety. Looking back at the music which has already been written, we find quite a diversity of styles of harmonization. In some cases melody has a predominantly diatonic character while chords seem to form a chromatic progression, and others when melody has a predominantly chromatic character while the accompanying harmony is entirely diatonic. Operatic works by Rimsky-Korsakov and Borodin may serve as an illustration of the first type, and music by Chopin, Schumann and Liszt, of the second type. This brings up the question of systematic classification of the styles of harmonization.

By a pure method of combinations we arrive at the following forms of harmonization:

(1) Diatonic harmonization of a diatonic melody.

(2) Chromatic harmonization of a diatonic melody.

(3) Symmetric harmonization of a diatonic melody.

(4) Symmetric harmonization of a symmetric melody.

(5) Chromatic harmonization of a symmetric melody.

(6) Diatonic harmonization of a symmetric melody.

(7) Chromatic harmonization of a chromatic melody.

(8) Diatonic harmonization of a chromatic melody.

(9) Symmetric harmonization of a chromatic melody.

In addition to this, various hybrids may be formed intentionally, and they do exist in the music written on an intuitive basis. The necessity of handling the hybrid forms of harmonic continuity, which is inevitable not only in popular dance music, but frequently in music of composers who are considered "great" and "classical", for the purpose of arranging or transcribing such music, requires a thorough knowledge of all pure, as well as hybrid, forms of harmonization.

1. Diatonic harmonization of a diatonic melody:

There are two fundamental procedures required for the above method of harmonization:

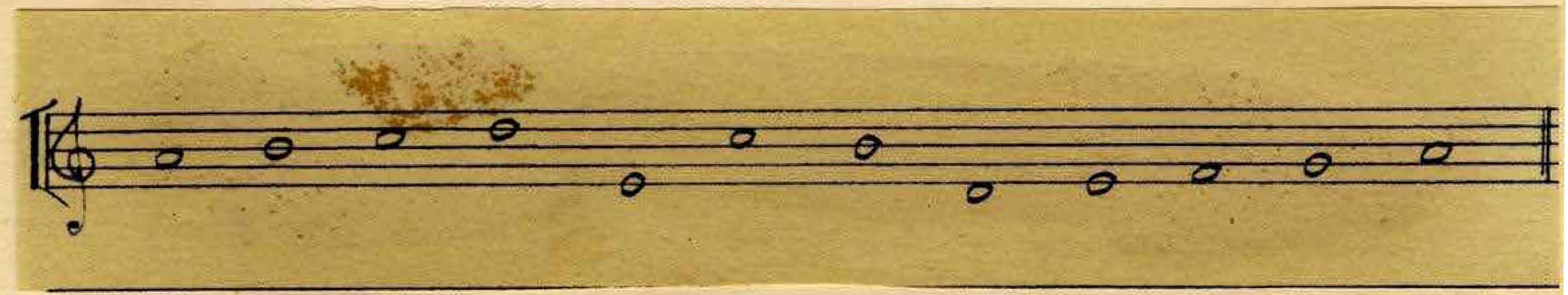
(a) The distribution of the quantity of attacks in melody and harmony, i.e. the quantity of attacks of melody harmonized by one chord, or the quantity of chords harmonizing one attack in melody.

(b) Selection of the range of tension.

Let us take a melody consisting of 12 attacks. Such a melody may be harmonized by 12 different chords, each attack in the melody acquiring its individual chord. It may offer as well two attacks of a melody harmonized with one chord. In this case 6 different chords will constitute the harmonic progression. Further, each 3 attacks of a melody may acquire a chord, thus requiring 4 chords through the entire melody. Proceeding in a similar fashion one may ultimately arrive at one chord harmonizing the entire melody. This is possible because no pitch-unit in a diatonic scale may exceed the function of 13th, and will merely require an 11th chord for harmonization, in order to support the 13th as an extreme function in a melody where all the remaining units of the scale may be present as well.

Let us take, for example, the following melody.

Figure I.



In order to harmonize this melody with 12 different chords it is necessary to assign each pitch-unit of the melody to a chord. Such an assignment is based on a selection of the range of tension.

Let us suppose that we limit our range of tension from the 5th to the 13th. Having a considerable choice in the assignment of pitch-units as chordal functions we will give preference to those forming a positive cycle.

Examples of assignment of the above melody:

$\frac{M}{H} = 1$ Range of tension: 5 -- 13

Figure II.

A.

B.

In assigning 2 attacks in the melody against 1 chord, it is necessary to conceive the 2 adjacent pitches in a scheme of chordal functions (thirds in this case). Thus, the first 2 units, a + b, have to be translated into $\frac{a}{b}$, which may assume the following assignments:

a	9	11	13
b	3	5	7

Likewise, c + d transforms itself into:

c	9	1I	13
d	3	5	7

The next two units produce:

e	5	7	9	11	13
c	3	5	7	9	11

The next two units produce:	d	5	7	9	11	13
	b	3	5	7	9	11
The next two units produce:	e	9	11	13		
	f	3	5	7		
The next two units produce:	g	9	11	13		
	a	3	5	7		

This group of assignments offers quite a variety of harmonizations, even with the preservation of the positive system of progressions.

Figure III.

$\frac{M}{H} = 2$ Range of tension: 3 -- 13

Lesson CXLIII.

Assigning every 3 pitch-units of the melody to one chord, and distributing them through the scheme of chordal functions, we acquire the following table.

$\frac{M}{H} = 3$ Range of tension: 1 -- 13

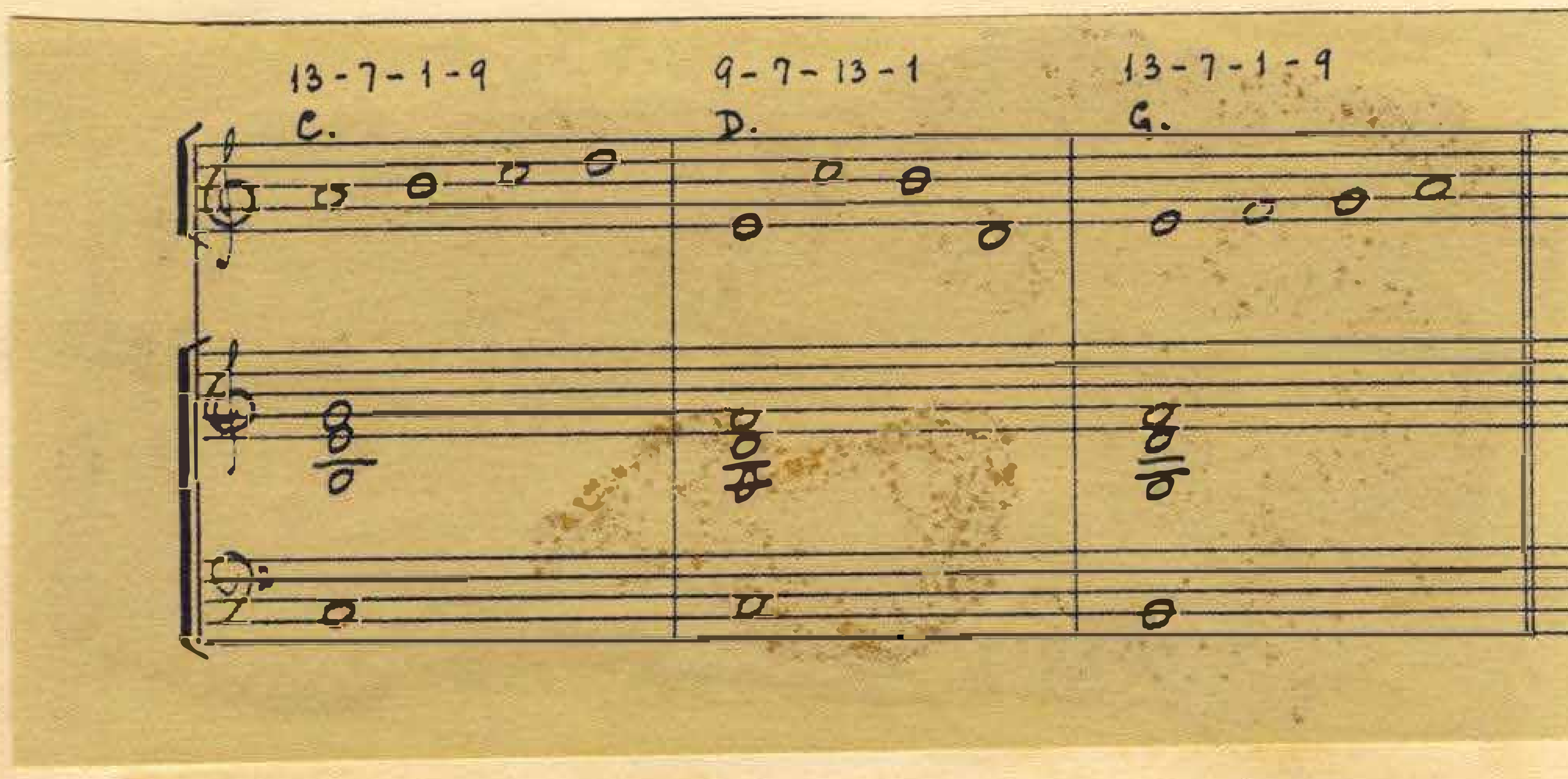
Figure IV.

A.

B.

C.

$\frac{M}{H}$ = 4 Range of tension: 1 -- 13



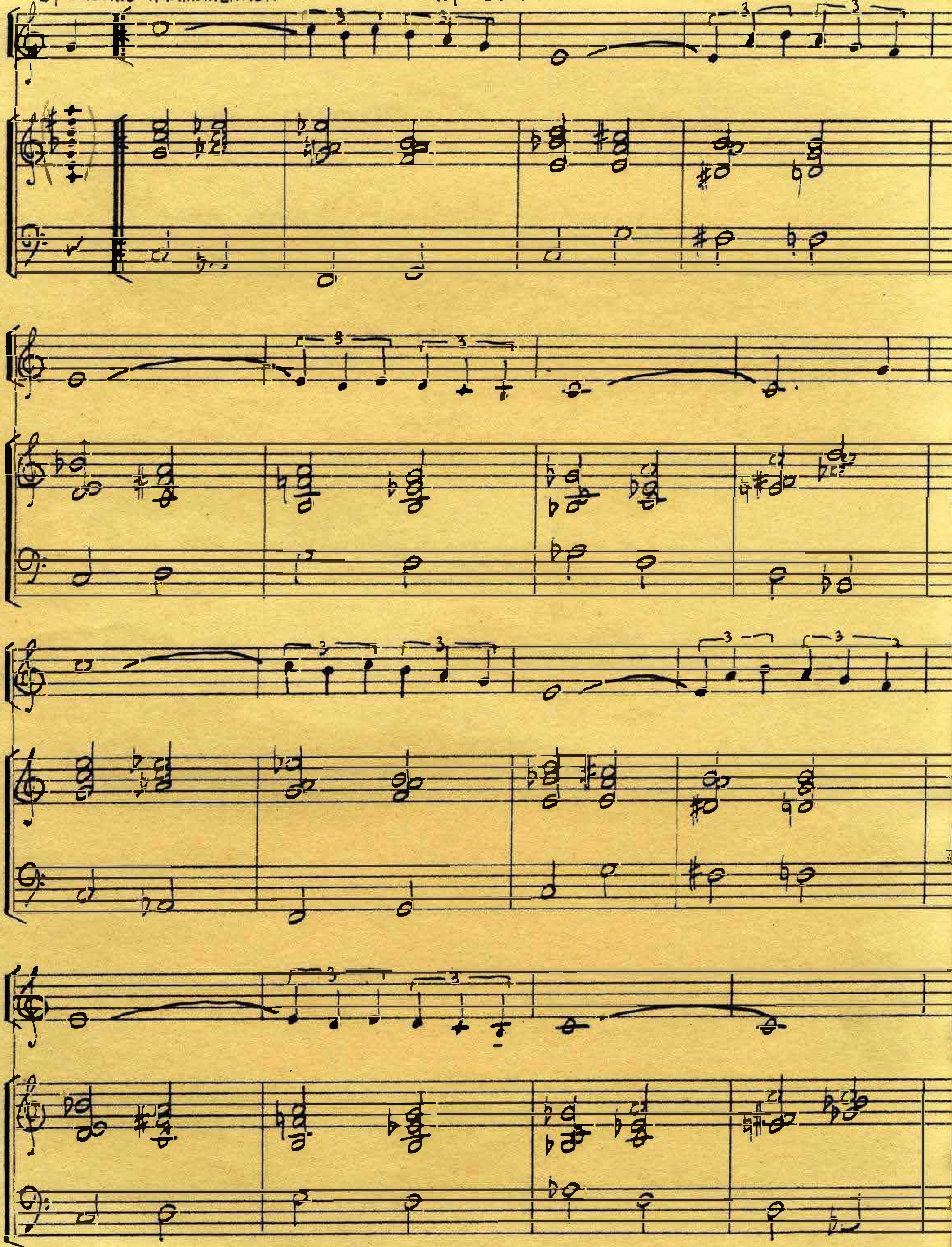
$\frac{M}{H}$ = 6 Range of tension: 1 -- 13

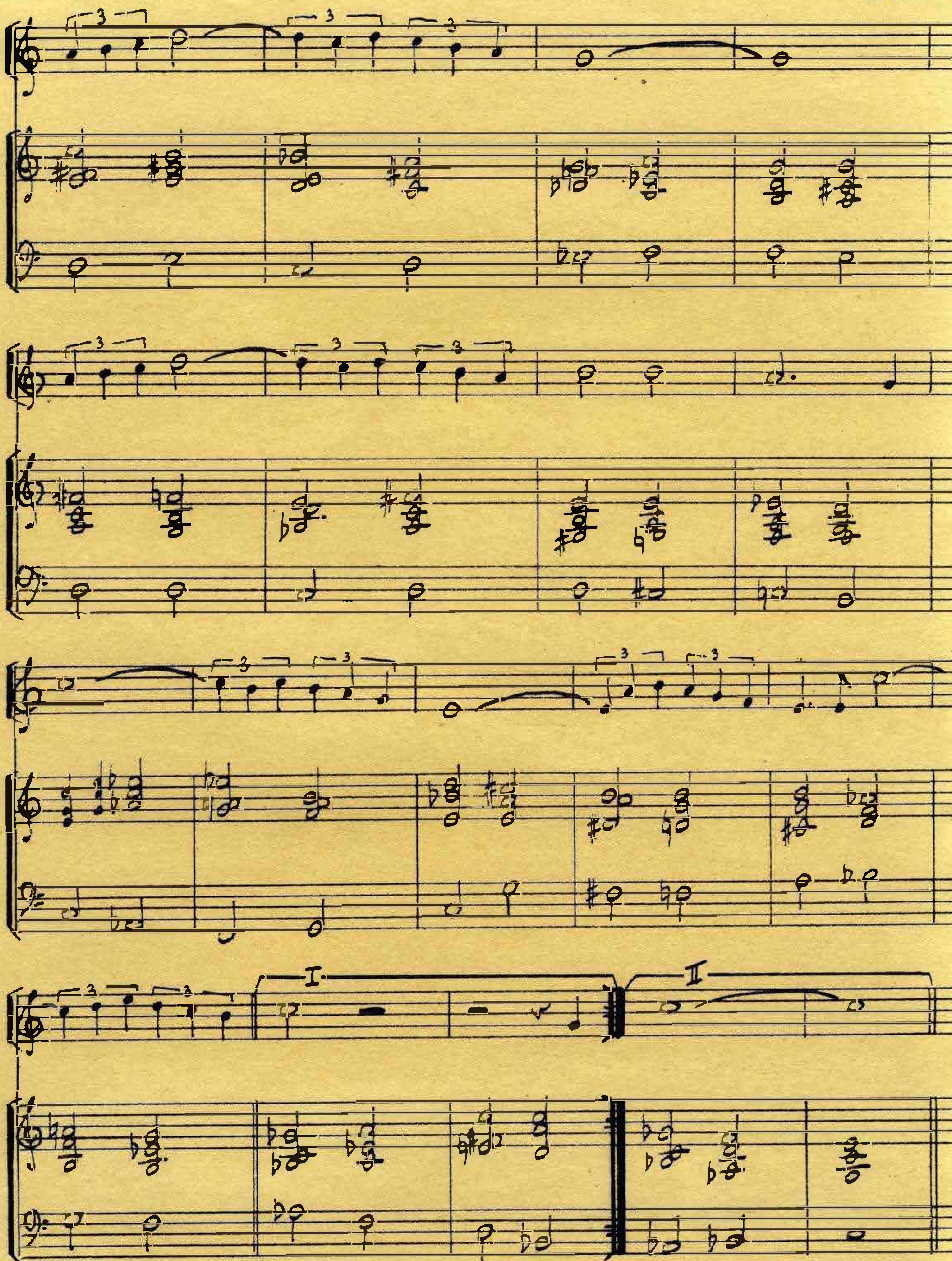
Figure X.

"MY OWN"

SYMMETRIC HARMONIZATION

10.




I
II

4. Symmetric harmonization of a symmetric melody:

There is a very small probability that melodies composed from symmetric scales outside of this method have been in existence, as the conception of symmetric scales itself is unknown to the musical world. The problem of harmonization of melodies composed from symmetric scales requires, therefore, the existence of such melodies. As it has been explained in the third and fourth group of symmetric pitch scales, melodies can be composed through permutation of pitch-units in the sectional scales (each starting with a new tonic). After the complete melodic form is achieved the final step consists of superimposition of the rhythm of durations on such a continuity of melodic forms. Let us take a scale based on 12 tonics where each sectional scale has a structure 3 + 4 and limit the entire scale to the first 3 tonics. As scales of the 12 tonic system have a wide range expanse it is desirable, in many cases, to reduce the range by means of octave-contraction.

Figure XI.

The next step is to select a melodic form based on circular permutations of pitch-units in the above scale and the rhythmic form based on synchronization of $2 + 1$ and $(2 + 1)^2$.

Figure XII.

By superimposing the rhythm of durations on melodic form we obtain an interference as the number of attacks in the melodic form is 9, and the number of attacks in the rhythmic form is 6. Thus, melodic form will appear twice and rhythmic form three times.

Figure XIII.

Composition of Melodic Continuity

Melodic form consists of 9 attacks

$$\frac{9}{6} = \frac{3}{2} \qquad \begin{matrix} 2 \\ 3 \end{matrix} \begin{Bmatrix} (9) \\ (6) \end{Bmatrix}$$

Rhythmic form consists of 6 attacks

Melodic Continuity

(please see next page)

(Fig. XIII)

In the above melody the sequence of chords will be assigned to each tonic. Thus, the first sectional scale emphasizes 13t, the second -- 5t, the third -- 13t, the second recurrence of the first -- 5t, the second recurrence of the second -- 13t, the second recurrence of the third -- 5t, and an axis (= 18t) is added for completion.

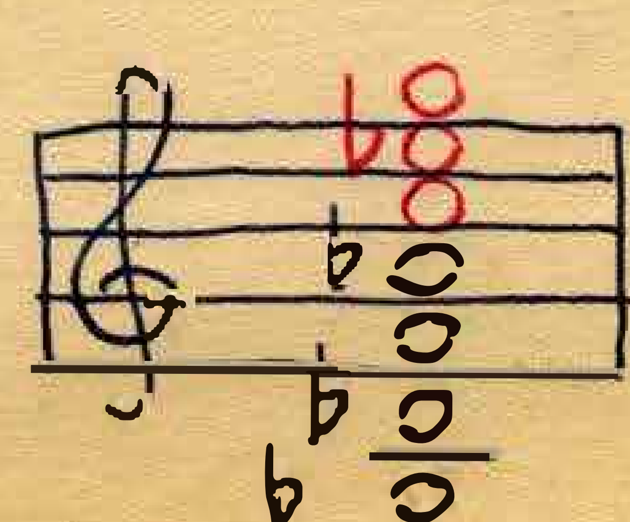
Lesson CXLV.

Here are two methods of symmetric harmonization of melodies constructed on symmetric pitch scales. The first provides an extraordinary variety of devices while the second is limited to a considerably smaller number of harmonizations.

A. The first method assigns the important tones (all pitch-units in this case) of a sectional scale to be the three upper functions of a $\Sigma(13)$ adding the remaining functions downward through any desirable selection. The first sectional scale in the above melody has three pitch-units (c, e♭, g) which we shall originally conceive as 13 - 11 - 9, downwards. The continuation of this chord downwards will require pitch-units of the following names: a, f, d, b. In the following $\Sigma(13)$ a certain structure is offered as a special case of many other possible Σ.

Figure XIV.

Σ 13



The upper three functions of the chord (red ink) may produce their own chord in harmony. Thus, the functions 9 - 11 - 13 of the Σ may actually become 1 - 3 - 5. All pitch-units of melody and harmony are identical in this case. (See Figure XV - A). By assigning the same three pitch-units as 3 - 5 - 7 we have to add one function down. (See Figure XV - B).

All further assignments of the three pitch-units, namely 5 - 7 - 9, 7 - 9 - 11, 9 - 11 - 13, 11 - 13 - 1, 13 - 1 - 3 are the c, d, e, f, g, respectively, on Figure XV. This Figure offers a complete transposition of all the assignments through the three tonics employed in the melody.

<u>Figure XV.</u>

(please see next page)

15 MELODIC STRUCTURES:

C - GROUP

B - GROUP

B♭ - GROUP

As Figure XV exhausts all the possibilities under the given group of chords it is possible to exhaust all the forms of harmonization for the given melody through various forms of constant and variable assignment of functions. As the melody consists of 3 groups, the sequence of chords with regard to these 3 groups can be read directly from Figure XV, and the letters on Figure XVI represent the respective bars of Figure XV in such a fashion that the first letter refers to the first group of the melody, the second to the second, and the third to the third.

Figure XVI.

aaa bbb ccc ddd eee fff ggg

aab	aba	baa	cca	cac	acc	eea	eae	aee	gga	gag	agg
aac	aca	caa	ccb	cbc	bcc	eeb	ebe	bee	ggb	gbg	bgg
aad	ada	daa	ccd	cdc	dcc	eec	ece	cee	ggc	gcg	cgg
aae	aea	eaa	cce	cec	ecc	eed	ede	dee	ggd	gdg	dgg
aaf	afa	faa	ccf	cfc	fcc	eef	efe	fee	gge	geg	egg
aag	aga	gaa	ccg	cgc	gcc	eeg	ege	gee	ggf	gfg	fgg

bba	bab	abb	dda	dad	add	ffa	faf	aff
bbc	bcb	cbb	ddb	dbd	bdd	ffb	fbf	bff
bbd	bdb	dbb	ddc	dcd	cdd	ffc	fcf	cff
bbe	beb	ebb	dde	ded	edd	ffd	fdf	dff
bbf	bfb	fbb	ddf	dfd	fdd	ffe	fef	eff
bbg	bgb	gbb	ddg	dgd	gdd	ffg	fgf	gff

abc	bcb	cde	def	efg
abd	bce	cdf	deg	
abe	bcf	cdg	dfg	
abf	bcg	cef		
abg	bde	ceg		
acd	bdf	cfg		
ace	bdg			
acf	bef			
acg	beg			
ade	bfg			
adf				
adg				
aef				
aeg				
afg				

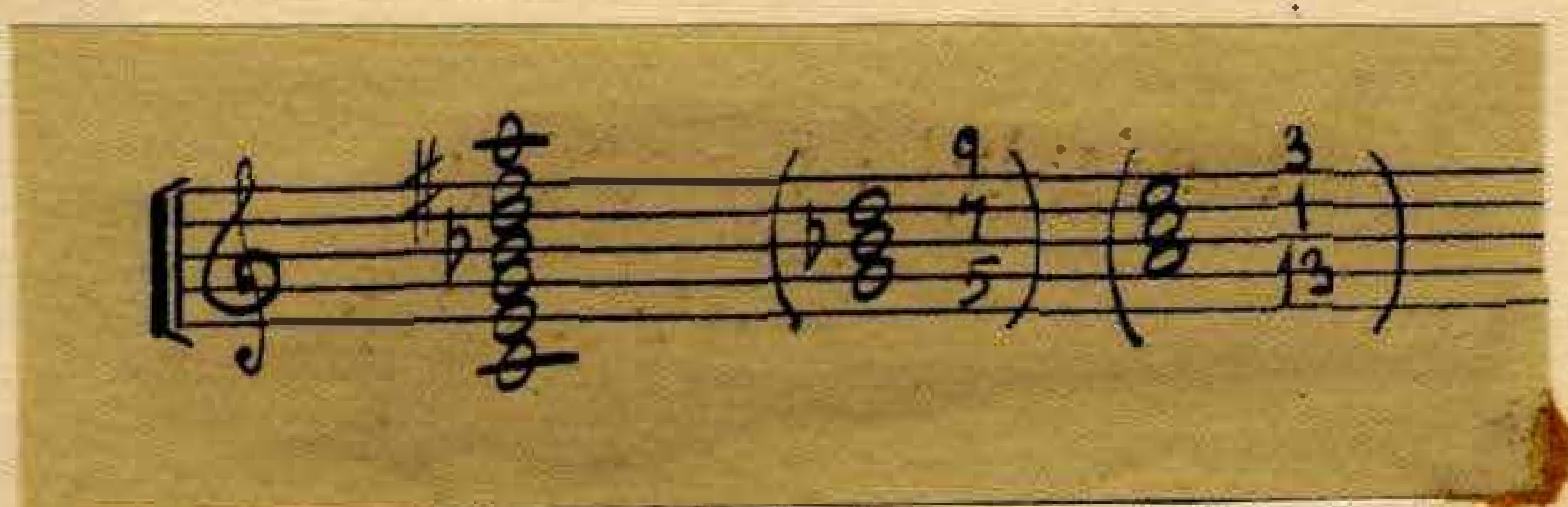
The total number of possible harmonizations to be derived from Figure XVI is as follows: 7 cases on constant tension: aaa, bbb, etc. 18 x 7 =

= 126 cases on a tension that is constant for 2 of the three groups. 35 x 6 = 210 cases with variable tension for all 3 groups. Thus, the total number of harmonizations for the melody offered is 7 + 126 + 210 = 343.

B. The second method is based on a random selection of a $\Sigma(13)$ based entirely on the preference with regard to sonority. As any $\Sigma(13)$ has definite substructures and often in limited quantities, the possibilities of harmonization are less varied than through the first method. If one selects $\Sigma(13)$ with $b^{\flat}$ and $f^{\sharp}$ on a c scale (see Figure XVII) the possibilities of accommodating a sectional scale 3 + 4 (minor triad) becomes limited to only two assignments, namely, 5 - 7 - 9 and 13 - 1 - 3.

Figure XVII.

$\Sigma(13)$



Retransposing these functions to the melody assigned for harmonization we obtain the following results.

Figure XVIII.

As it follows from this figure, each sectional scale of the melody permits only two versions of chords. Thus, by a constant or variable assignment of the two possible versions, a complete table of possible harmonizations is obtained.

Figure XIX.

aaa	bbb
aab	bba
aba	bab
baa	abb

Thus, the total number of possible harmonizations amounts to 8.

In the cases where sectional scales are too complete, the assignment of only certain tones as chordal functions is necessary. For example, in the following scale based on 3 tonics and 5-unit sectional scales, it is sufficient to assign the white notes as chordal functions, then in the melody derived from such a scale, black notes become the auxiliary and passing tones.

Figure XX.

In some symmetrical scales the structure of individual sectional scales is such that the sonority of certain pitch-units does not conform to the structures of special harmony (i.e. harmony of thirds). Some of the units of such sectional scales may be disturbing, and though they may fit as passing tones in some other chord structures than the ones emphasized by special harmony, they decidedly do not fit as passing tones in many Σ (13). In such a case each pitch-unit in such sectional scale of a compound symmetric scale must be assigned

either as a chordal function or an auxiliary tone with a definite direction. These pairs, i.e. the chordal tone and its auxiliary tone, are directional units.

In composing melodic forms from the scales containing directional units it is necessary to permute the directional units and not the individual pitch-units. After all the units are assigned the above described procedure of harmonization (the second method) may be applied.

Figure XXI.

The arrows on the above figure lead from an auxiliary tone to a chordal function.

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Lesson CXLVI.

5. Chromatic harmonization of a symmetric melody:

Chromatic harmonization of a symmetric melody is based on the same principle as chromatic harmonization of a diatonic melody (see Form 2, page 1 of Lesson CXLII). The procedure consists of inserting passing and auxiliary chromatic tones into symmetric harmonic continuity. As a result of such insertion of passing or auxiliary chromatic tones altered chords may be formed as independent forms.

This type of harmonization may sound as either chromatic continuity or symmetric continuity with passing chromatic tones to the listeners.

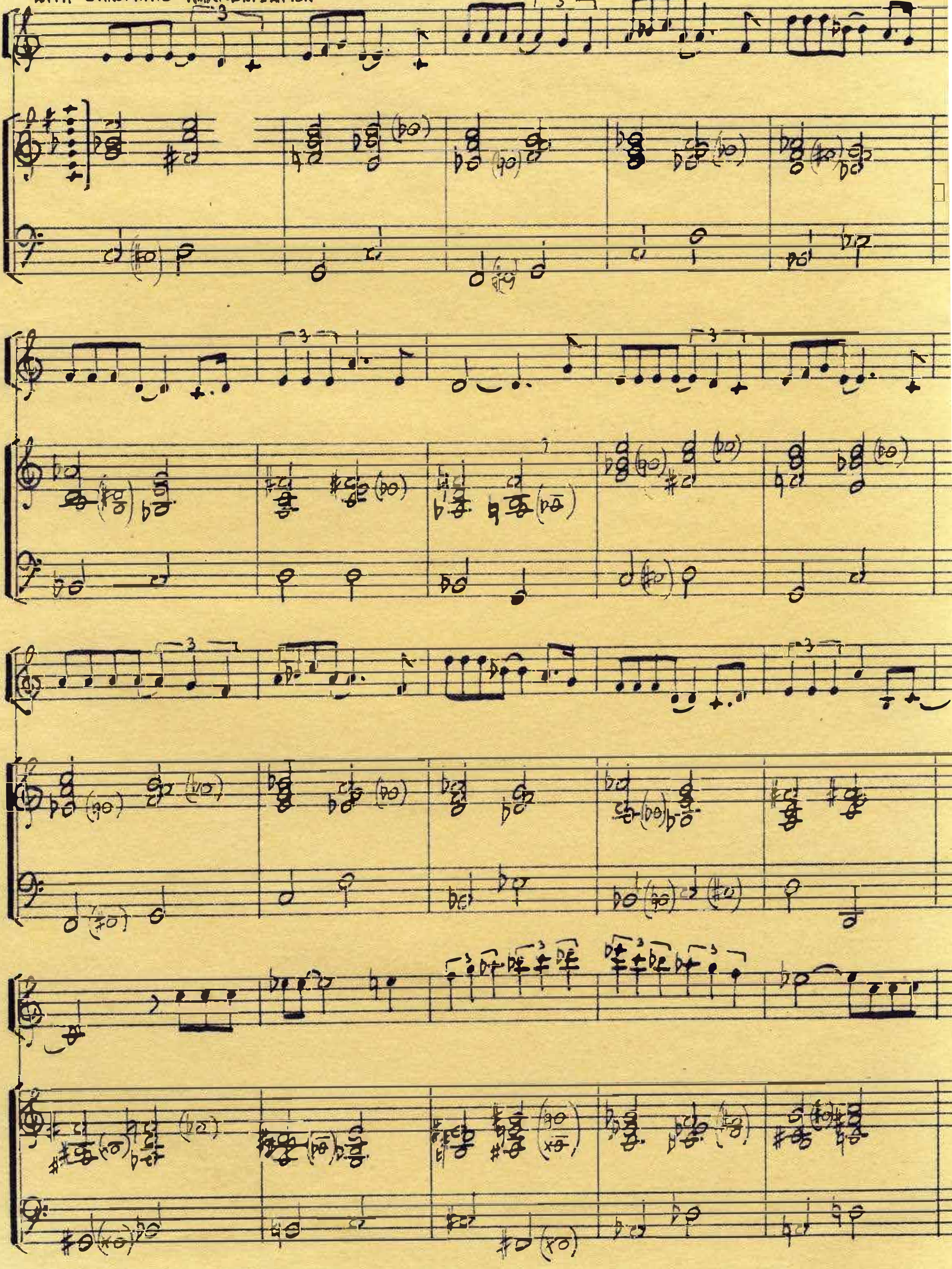
(please see next page)

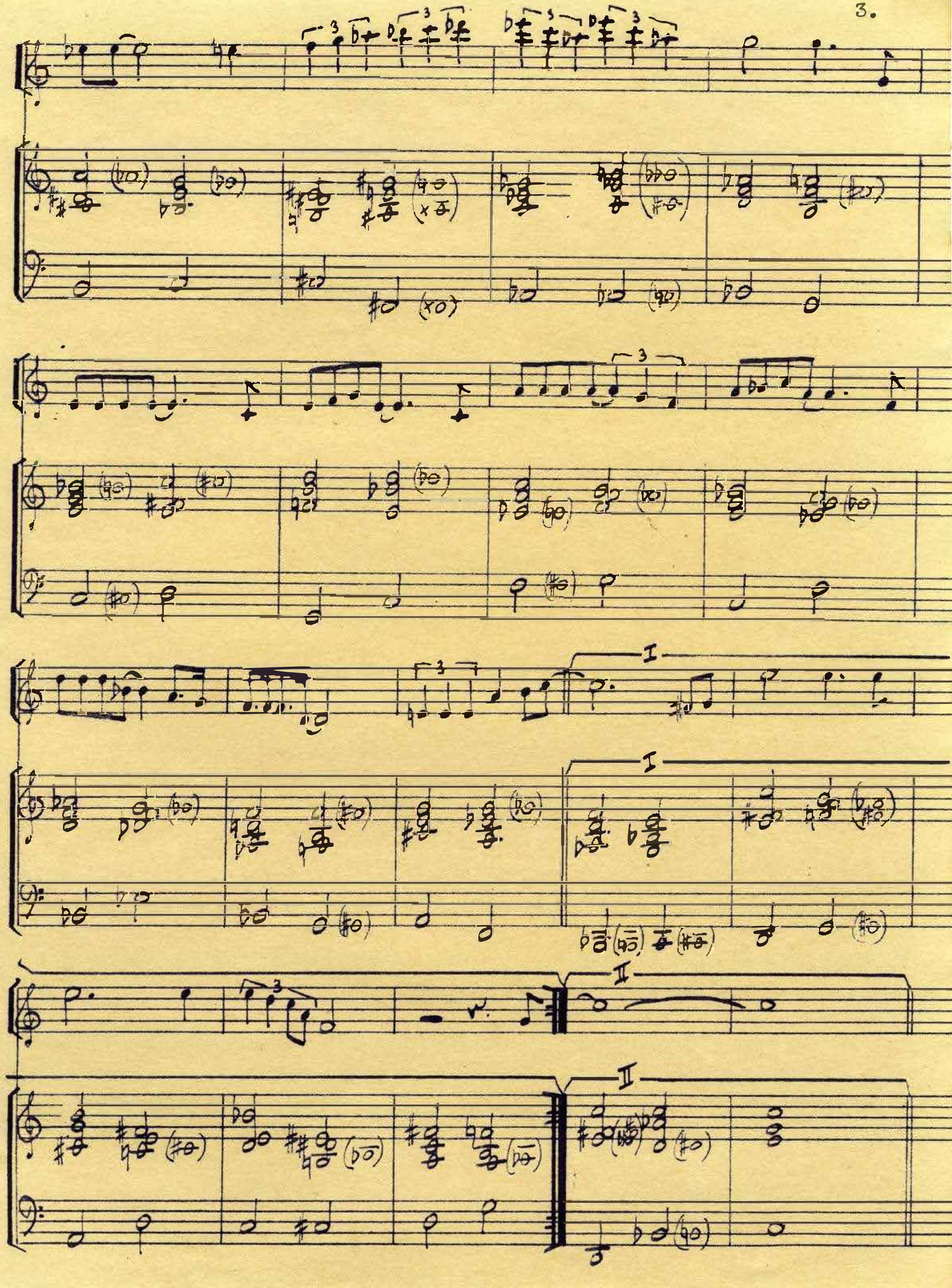
Figure XXII.

"Deep In A Dream"

FOUR-PART HYBRID WITH CHROMATIC HARMONIZATION

22.




I
II

If you find that certain passing or auxiliary tones in the above example sound unsatisfactory, you may eliminate them. The greater the allowance given for altered chords, the greater the number of possibilities for the chromatic character of symmetric harmonic continuity.

6. Diatonic harmonization of a symmetric melody:

Melodies constructed from symmetric scales cannot be harmonized by a pure diatonic continuity. The style that has diatonic characteristics is in reality a hybrid of diatonic progressions symmetrically connected. This type of harmonization is possible when melody evolved within the scope of an individual sectional scale can be harmonized by several chords belonging to one key. The relationship of symmetric sectional scales defines the form of symmetric connections between the diatonic portions of harmonic continuity. The diatonic portions of harmonization are conformed to one key. Symmetrical tonics do not necessarily represent the root chords of a key. For example, a note c in a melody scale may be 1, 3, 5, etc. of any chord. In most cases of the music of the past such harmonizations usually pertained to identical motifs in symmetric arrangement, as in

the first announcement of a theme by the celli in Wagner's Overture to "Tannheuser", where identical motifs are arranged through $\sqrt[4]{2}$, and the diatonic portions appear as follows: the first in B minor making a progression IV - I - V - III. The following sections are exact transpositions through the $\sqrt[4]{2}$, i.e. they appear in D minor and F minor, respectively.

Figure XXIII.

In the following example of harmonization the melody is based on a symmetric scale with three pitch-units (2 + 1) connected through $\sqrt[3]{2}$.

Figure XXIV.

Each bar comprises one sectional scale utilizing the melodic form abcb. As there are many ways of harmonizing such a motif, here is one of them producing $C_0 + C_1 + C_5$ for each group, and all the following groups are identical reproductions of the original group connected through $\sqrt[3]{2}$.

Figure XXV.

Music by Rimsky-Korsakov, Borodin and Moussorgsky is abundant with such forms of harmonization.

In order to transform the above harmonization into a chromatic one, all that is necessary is to insert passing and auxiliary chromatic tones. Diatonic harmonization of symmetric melodies not composed on the sequence of identical motifs where different portions pertaining to

individual sectional scales are connected symmetrically is possible as well. The latter form is not as obvious and may seem somewhat incoherent to the ordinary listener.

Lesson CXLVII.

7. Chromatic harmonization of a chromatic melody:

A melody which can be harmonized chromatically must be a chromatic melody consisting of long durations. Each group of three units must be assigned to a chromatic operation in a chromatic group of harmony. The usual sequence d - ch - d refers to every three notes, if the middle note is a chromatic alteration. Thus, in the following melody the chromatic groups of harmony will be assigned as follows:

Group 1: c - c♯- d

Group 2: d - d♯- e

Group 3: a - a♭- g

Group 4: g - g♯- a

Group 5: a - a♯- b

Figure XXVI.

The process of harmonization of a chromatic melody chromatically, consists of two procedures after the pitch-units have been assigned to some number combinations. As our technique of chromatic harmony deals with 4-part harmony, the melody must become one of the four parts. Let us assign the chromatic groups to the above melody as follows:

Group 1: 1 - 1 - 1

Group 2: 1 - 1 - 5

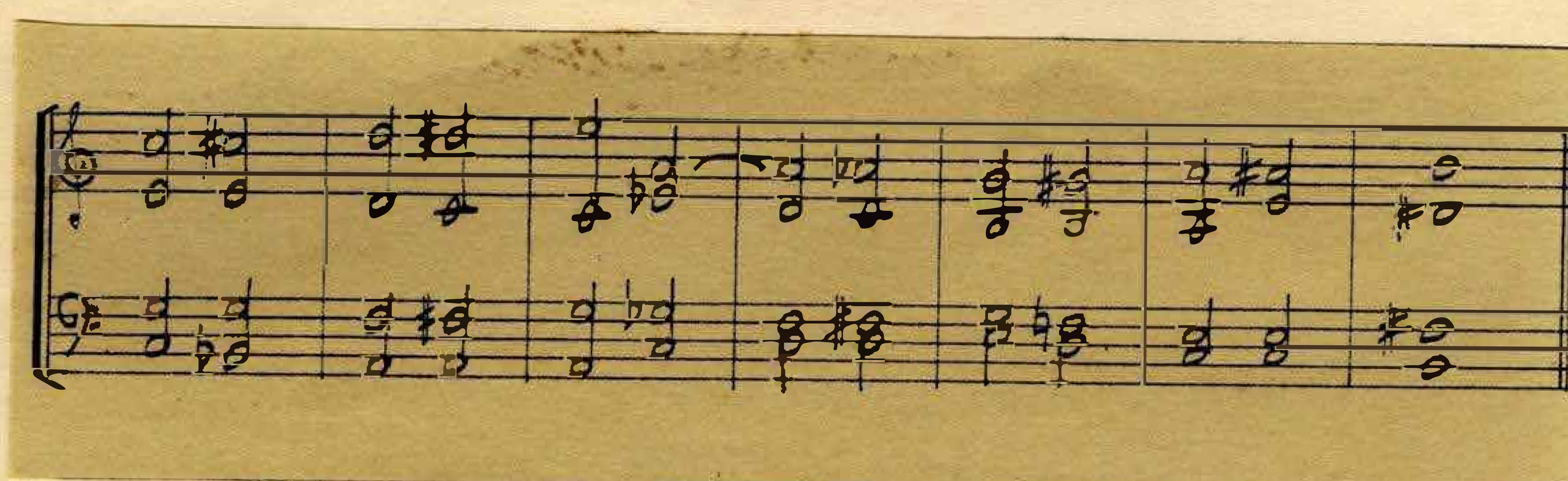
Group 3: 5 - 5 - 3

Group 4: 3 - 1 - 1

Group 5: 1 - 1 - 1

In group 3, a♭ is a lowered fifth. In group 5, a♯ is a raised root tone. The following example represents the above melody in a 4-part setting.

Figure XXVII.



The final procedure of chromatic harmonization of a chromatic melody consists of isolating the melody, placing it above harmony and melodizing the remaining 3-part harmony with an additional voice. This additional voice is devised according to the fundamental forms of melodization, i.e. it may double any of the functions present in the chord, or add the function next in rank.

In the following example the notes in parenthesis represent such added voice. The functions of this voice are:

g - 5	e - 9
b - 13	c# - 13
a - 5	d - 5
b - 9	e - 5
b - 7	g - 7
c - 7	a - 7

Figure XXVIII.

8. Diatonic harmonization of a chromatic melody:

A chromatic melody may be diatonically harmonized when it has a considerable degree of animation (short durations). In such case some of the tones are chordal functions and some become auxiliary or passing chromatic tones. The principle of assigning the functions which are supposed to be diatonic, must take place in this case.

The following example is the melody which was used as an illustration in the preceding paragraph and only used in its most animated form.

Figure XXIX.

By assigning c - 5 / d - 13 we acquire F chord. In the next bar, by assigning a - 5 / e - 9 we obtain D chord. By assigning g - 1 / a - 9 we obtain G chord, and by assigning b 1 - 5 we obtain B and E chords. Thus, the entire melody can be placed into a certain

desirable key (C major in this case). The units a# and c# in the second bar are auxiliary tones to the third and fifth respectively of the G chord. The entire harmonization has a Phrygian character.

Figure XXX.

Another example of harmonization of the same melody. By assigning the following functions we obtain another harmonization:

c - 5	e - 13	g - 5	
d - 13	a - 9	a - 13	b - 3

Figure XXXI.

9. Symmetric harmonization of a chromatic melody:

Symmetric harmonization of a chromatic melody is used for the melodies of long durations. In most cases each pitch-unit of a melody has to be harmonized by a different chord. The advantage of the symmetric method of harmonization is that if a melody is partly diatonic there is an opportunity of using one chord against more than one pitch-unit of a melody. Any symmetric harmonization, as in the cases above, must be based on a preselected $\Sigma(13)$.

Let us assign the following $\Sigma(13)$ and use it for the harmonization of melody utilized in the previous examples. The important considerations in the following procedure are variation of tension and utilization of enharmonics as participants of $\Sigma(13)$ ($a^{\flat}$ supplements an equivalent of $g^{\sharp}$ for the 13th of a B chord).

(please see next page)

Figure XXXII.