MODERN MUSIC

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PROBLEMS OF HARMONY*†

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MODERN music has centered interest on two problems: that of tonality, and that of dissonance. It cannot be said that the conflict regarding these questions is new, nor that it is waged with new weapons. On the contrary: just as all the battle-fields of world history are constantly the scene of renewed strife, so, too, is this one; this also is a battlefield in the historic sense.

Of course, it is not necessary for me to cite as proof the well-known precedents from the musical past. It is enough to recall the "Dissonance"-Quartet of Mozart and Hans Sachs' lines:—

Ihr schlosset nicht im gleichen Ton,
Das macht den Meistern Pein;
Doch nimmt Hans Sachs die Lehr' davon;
Im Lenz wohl müss' es so sein.

[Your closing key is not the same,
This gives the masters pain;
But Hans Sachs draws a rule from this;
In Spring it must be so, 'tis plain.]

In Spring!

We can say that in the development of art, it must always be as it is in Spring! One does what is necessary, though it cause somebody else pain; one does what the situation demands, unconcerned about the approval or disapproval of others.

†This article, first presented as a lecture during Mr. Schönberg's recent professorship at the Berlin Akademie der Künste, was revised by him for present publication in May, 1934. It has been translated by the composer, Adolph Weiss.

And the cause of music demands, as the history of art-battles shows, that the secret of the sounding tone be always pursued anew. The development of music is more dependent than any other art upon the development of its technic. A truly new idea —at least as musical history reveals—is hardly imaginable without significant changes in musical technic. The material of music offers inexhaustible possibilities; but every new possibility in turn demands a new kind of treatment, because it presents new problems or at any rate demands a new solution of the old one. Every tonal progression, every progression of even two tones, raises a problem which requires a special solution. Yet the further such tones are brought into relation and contrast with each other and with rhythm, the greater is the number of possible solutions to the problem, and the more complex are the demands made on the carrying out of the musical idea.

In no art, properly speaking, can one say "the same thing," the same thing which has been said once before, least of all in music.

An idea in music consists principally in the relation of tones to one another. But every relationship that has been used too often, no matter how extensively modified, must finally be regarded as exhausted; it ceases to have power to convey a thought worthy of expression. Therefore every composer is obliged to invent, to invent new things, to present new tone relations for discussion and to work out their consequences. It is for this reason that the technic of music must develop so quickly and so persistently. In a methodic progression from the more simple to the more complex, one would hardly be aware of the inevitable changes in technic. But imagination does not ask about method nor does it invent according to a graduated scale. Differences in technic therefore appear far more abrupt than they are in reality. When we realize that today the difference in the technic of the early Beethoven from that of the later is apparent only to the connoisseur, we can no longer understand the cry from the gallery at the premiere of Beethoven's *Eighth Symphony*: "Es fällt ihm schon wieder nichts ein."

As I have said, the battle today, as always in music, is fought for the cause of dissonance and tonality, around concepts that are not even now clearly enough defined. For the phenomena which

they are intended to reveal have been in continuous development since the beginning of music. This compels us always to conceive them in a new way. Therefore we shall try in the main to define them in relation to our time, according to present conditions, without claiming eternal validity.

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Let us first examine the concept of tonality.

This coincides to a certain extent with that of the key, in so far as it refers not merely to the relation of the tones with one another, but much more to the particular way in which all tones relate to a fundamental tone, especially the fundamental tone of the scale, whereby tonality is always comprehended in the sense of a particular scale. Thus, for example, we speak of a C-major tonality, etc.

If however, we wish to investigate what the relation of tones to each other really is, the first question that arises is: what makes it possible that a second tone should follow a first, a beginning tone? How is this logically possible?

The question is more important than it seems at first; nevertheless to my knowledge it has not previously been raised. Although all imaginable and far-reaching problems have been considered, no one has yet asked: How, after all, can two tones be joined one with another?

My answer is that such a juxtaposition of tones, if a connection is to be brought about from which a piece of music may be the result, is only possible because a relation already exists between the tones themselves.

Logically, we can only join things that are related, directly or indirectly. In a piece of music I cannot establish a relation between a tone and, let us say, an eraser; simply because no musical relation exists.

To elucidate the relationship between tones one must first of all recall that every tone is a compound sound, consisting of a fundamental tone (the strongest sounding one) and a series of overtones. We may now make the statement, and to a great extent test and prove it, that all musical phenomena can be referred to the overtone series, so that all things appear to be the applica-

tion of the more simple and more complex relationships of this series.

Considered singly these relations are as follows:-

1. The major scale is to be explained as nothing else than the addition of the tones of the three main triads on the I, IV and V degrees. In C-major they are, on the I degree: c-e-g; IV degree: f-a-c; V degree: g-b-d. But these tones again are nothing other than the fourth, fifth and sixth overtones of the three main fundamentals of a scale, (dominant, tonic, sub-dominant) which the following table demonstrates:

1	2	3	4	5	6	7	8	9	10	11	12	13
C	C	G	c	e	g	bb	c	d	e	f#	g	ab
F	F	C	f	a	c	eb	f	g	a	b	c	db
G	G	D	g	b	d	f	g	a	b	c#	d	eb
			[cfg	eab	gcd]							

The origin of the main fundamental tones is explained by the fact that each one occurs as the third overtone of the one lying a fifth below it. So that C is the third overtone of F, just as G is the third overtone of C. In this manner G:C = C:F. And it is evident that C attracts the tones related to it through G, just as F and its related tones do with the complex of C.

The natural origin of these fundamentals of the main degrees, of the three main triads constructed on them, and of the resultant major scale from these components, as well as the circumstance that we actually to some extent hear and to some extent feel this relationship in every sounding tone, makes it possible for us to combine the tones of the major scale with one another.

2. But if we note the more distant overtones (up to the thirteenth) of these same fundamental tones, F, C, G, (see the table above) we find the chromatic scale. Thus there appear:

bb as the seventh overtone of C
f# " " eleventh " " C
eb " " seventh " " F and thirteenth of G
db " " thirteenth " " F and eleventh of G
ab " " thirteenth " " C

Of course the lower overtones that lie nearer the fundamentals are more easily perceptible than the higher, more distant ones.

It is certain that the more perceptible overtones sound more familiar to the ear than those it hears but faintly; these last therefore remain strange to it. For that reason the chromatic scale is a somewhat more complicated tonal form than the major. And since, moreover, the chromatic scale levels the differences in the intervals, a fundamental tone can hardly be regarded as implied at the outset. On the contrary the significance of the tones changes in accordance with the manner in which one or the other is artificially made the fundamental. In each case we have seven other major scale tones and five other non-diatonic tones. In the major scale the relation of the tones to one another is firm and constant through their relation to the fundamental, but in the chromatic scale the relation of the tones is variable and dependent entirely on whether one of the tones is regarded as a fundamental.

But let us bear in mind that the chromatic scale flows from the same source as the major: from the elements which are the constituents of every tone. The difference is only that the one imitates the natural sound up to the sixth overtone, while the other reaches about twice as far, to the thirteenth overtone; in other words, the chromatic scale brings the more distant overtones within the possibility of relationship.

And here is the answer to our question regarding the possibility of interconnection of the tones. It is founded on the fact that in the sounding tone and its nearest relative, the union and the companionship of the tones is continuously demonstrated to our ear, so that we do nothing more than imitate nature when we make use of these relations.

In the major scale the ear follows a clearly perceptible pattern. Other scales, as for example the minor and the church modes, I regard as art products. The church-modes represent, namely, previous attempts to find the true fundamental tone and its laws, whereas the minor scale has its particular characteristic less in the minor third than in the artificial imitation of the cadence, by means of a half step, which is found in the major scale.

The chromatic scale, as the result of the more distant overtones, raises the question whether, and by what means, one of its tones

following or opposing its nature, may be made a fundamental; and we can only answer that the means must be the same as those employed in the major, which we shall examine more closely later. Of course, any tone of the chromatic scale can be made a fundamental if the succession of tone and chord combinations gives emphasis to such meaning. Each tone can pass for a fundamental if its most important characteristics are strengthened, for example, if its major third and its perfect fifth are reinforced, if the major triad which is lightly sounded in the overtone series be stressed, be awakened to life.

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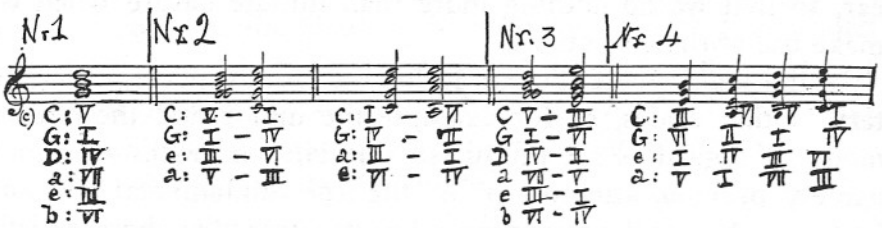
Not every succession of diatonic tones or chords unequivocally expresses a key, that is, the predominance of a fundamental tone. Every major triad by itself belongs to at least three major and three minor keys (and here we are not considering transitional dominants and the like). For instance the triad g-b-d belongs to C, G and D-major as well as to A, E and B-minor. [See below, Example 1.]

A succession of two chords, for example, V-I in C-major belongs to four keys (C and G-major, E and A-minor). [Example 2.]

But V-III in C-major belongs to six keys, namely C, G and D-major, and A, E and B-minor. [Example 3.]

Even a succession of four chords may belong to four keys, for instance, the succession III, VI, V, I of C-major may belong to C as well as to G, but also to E-minor and A-minor. [Example 4.]



Anyone well versed in harmony knows that there are even more complicated instances and that tonality is often so endangered that one can only say "the last prevails." But in contradiction even to this, let me point to the B-flat Allegretto of Beethoven's *Eighth Symphony,* where even the last does not pre-

vail, for undoubtedly the piece does not end as it should in B-flat major, but rather on the V of E-flat major.

And this in spite of some of the cadences.

Cadences are successions of chords so chosen and arranged that a key appears to be set off from those it most resembles, and that its fundamental tone is significantly strengthened by being placed at the end.

But if the cadence were really a definite means to establish a key, we would not find, in the midst of a piece of music, cadences to various keys or degrees, the so-called modulations. And the classicists would not have been obliged to add many such cadences together if their feeling for form had not indicated that a key is not definitely established through a cadence. Therefore the familiar endings, consisting of a number of cadences of various combinations are often further extended through repeated successions of V-I, and concluding in several repetitions of I. Thus "the last prevails," a method of procedure which Wagner, as is known, ironically characterized as grandfatherly in "Papa Haydn." But unjustly so; for Haydn knew how difficult it is to set up a key definitely and how necessary such persistent emphasis was for apperception by his audience.

Even in the relatively simple forms, those most nearly related to the fundamental tone, which employ chords and chord successions that are very near the key, tonality does not appear automatically, of itself, but requires the application of a number of artistic means to achieve its end unequivocally and convincingly.

The question of endangering tonality becomes acute at that stage, where, in addition to the diatonic, key-determining chords, an excessive number of chords occur within a composition, whose use the key at best permits but which no longer definitely refer to it.

This danger manifested itself rather early in musical history. In my *Harmony-Treatise* I have shown how every diminished seventh-chord and every augmented triad belong to all major and minor keys and, what is more, in many a different sense. This is probably the place to point out that J. S. Bach in many "Introductions," for example, and especially such pieces or parts labelled "Fantasia" prefers a disposition of the harmonic struc-

ture which neither in its entirety nor even in its detail can be easily referred to a key. It is not uninteresting that in just such instances these old masters use the name "Fantasia" and unconsciously tell us that fastasy, in contradistinction to logic, which everyone should be able to follow, favors a lack of restraint and a freedom in the manner of expression, permissible in our day only perhaps in dreams; in dreams of future fulfillment; in dreams of a possibility of expression which has no regard for the perceptive faculties of a contemporary audience; where one may speak with kindred spirits in the language of intuition and know that one is understood if one use the speech of the imagination—of fantasy.

To recapitulate:-

1. Every isolated major triad can of itself express a key.
2. If no contradiction is added it may be taken for a tonic-chord.
3. But every succeeding chord contests the feeling for this tonality and pleads for others.
4. Only a few very special kinds of chord-successions permit the conception that any one of the used chords, chiefly the last one, is the fundamental chord of a key.
5. But even this designation is only final if nothing contradictory follows.
6. Without the application of very definite art-means a key cannot be unequivocally expressed.

For example: the last movement of Beethoven's quartet, Opus 59, No. 2 is in E-minor. We know this principally because it ends in E-minor. But it begins in C-major with a theme which uses every means to establish this key. After a few measures it turns to the key which Beethoven decides to make the main tonality of the piece. I beg you to give due consideration to this case: by every ingenious means C-major is at first stressed in the harmony and in the melody; and the subsequent turn to E-minor can be taken even at that point as the third degree of C-major. How unconvincing is a key under certain conditions, if such a group can still be taken as the main theme of a movement in E-minor! I could cite many such instances in Beethoven, Brahms and other masters, where, in an extremely fine and ingenious

manner, the ambiguity, that is, the indefiniteness of a key is made apparent.

We must conclude that neither at the beginning nor at the end, nor in the middle is the key automatically present. On the contrary at every point firm measures of art are required to give the key unequivocal expression.

Now then, since tonality is not something which the composer unconsciously achieves, which exists without his contribution and grows of itself, which would be present even if the composer willed the opposite; since, in a word, tonality is neither a natural nor automatic consequence of tone combinations and therefore cannot claim to be the automatic result of the nature of sound and so an indispensable attribute of every piece of music, we shall probably have to define tonality as the art of combining tones in such successions and such harmonies or successions of harmonies, that the relation of all events to a fundamental tone is made possible.

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Thereupon the second question presents itself: Must tonality be unconditionally present in every piece of music?

To answer this, one might say that tonality could not be sacrificed

1. if it accomplished the indispensable;
2. if no other substitute could be created for what it accomplishes.

Let us see what tonality accomplishes.

Even here the development of music can point the way. It is difficult to imagine that music could have pursued a road different from the one taken. Naturally at first the successions of the more directly related tones were obtained: the triad inherent in the tone, the major scale, the diatonic triads. It was natural also that these closely related results should be the first to be combined into forms.

But even here we find an inconsistency, a side-jump. For, strange to say, the near relationships were not realized immediately at the start, but only by the devious route of the church-modes. These reveal a remarkable phenomenon: the key of the underlying tonal series of which they are composed is different

from the key in which the piece really exists. If, for example, a piece is written in the Doric mode on D, the tones of which it is composed are those of C-major. But in this mode the tones d,e,f,g,a,b,c, should be related to the fundamental D, and all endings, all semi-cadences and all else that expresses the key should refer to this D. Naturally these tones, which are fixed by their intervals, with the leading tones e-f, and b-c, are without a doubt in the C-major tonality. As is well known, these seven tones are the material of other modes on E, F, G, etc. This contradiction was first resolved when the two principal modes used today were evolved out of the church-modes into a predominant position. Up to that time music can scarcely be regarded as tonal, in the present sense of the word. On the contrary we must concede that the church-modes do not at all conform to the law of tonality.

I have ventured to characterize the role played by the ear in the following statement: the presence of a fundamental tone was felt, but, since it was not known which of the scale tones possessed this quality, all tones were tried. However the opposite point of view might also be justified: it was felt that a fundamental could be present, but, since the necessity of allowing the claims of a particular tone was not demonstrated, all tones were tried. And, as a matter of fact, exactly this proved to be possible!

Let us hold to the essential results of the foregoing consideration:

1. Music at that time was without tonality as we understand it.
2. The tones of our major scale could be referred to different fundamentals from those predicated by our idea of tonality.
3. We arrived at our present-day tonality by a very roundabout process.

As the ear advanced to the major and minor tonality it was already inspired with the certainty that it was possible to add other tones to the seven diatonic ones generally used. The ear knew that in the series c,d,e,f,g,a,b, no matter what the mode, almost all the missing half-steps could be used as accidentals, namely: c-sharp and b-flat in the Dorian mode, g-sharp in the

Phrygian, b-flat in the Lydian, f-sharp in the Mixolydian, and g-sharp in the Aeolian,—all the tones except d-sharp, which appeared only later in transpositions. The major and minor tonalities were not based, as might be expected, from the beginning on seven diatonic tones, but included also the four or five non-diatonic tones, which not only served the chromaticism of melodies, but also the development of closed tonalities on the individual degrees, as I call them, or, as they are otherwise known, modulations to the nearest keys.

From the beginning major and minor tonalities were interspersed with non-diatonic elements tending to form opposition to the fundamental tone yet compelling the application of strong means in order to verify the tonality, to paralyze eccentric effects. This was evident even before Bach's time. The conflict becomes more acute in the Romantic period following the Classical. The increasing attraction exerted by foreign harmonies made them more and more a significant element of expression. I shall not adduce all the known facts, for everyone is familiar today with the road that led from Schubert through Wagner to Reger, Richard Strauss, Mahler, Debussy and others. It is more important to state that this development began almost simultaneously with the realization of the major and minor tonalities, and that the art of music was never really in possession of a tonality wholly limited to the seven diatonic tones of the scale.

Though the development of tonality was by leaps and bounds, though it has not signified the identical thing at all times, its function has, nevertheless, been one and the same. It has always been the referring of all results to a centre, to a fundamental tone, to an emanation point of tonality, which rendered important service to the composer in matters of form. All the tonal successions, chords and chord-successions in a piece achieve a unified meaning through their definite relation to a tonal centre and also through their mutual ties.

That is the unifying function of tonality.

Just as important is its other, the articulating function, by means of which, parts that previously were unified by a different application of the same means, are limited and separated.

If, for example, a phrase in A-flat may on the one hand, be regarded as belonging to C-major, on the other, this A-flat is somewhat kindred to the original tonality, and its relationship though distant is nevertheless well balanced; in this manner it helps to produce what is required in every exposition of an idea: coherent contrast.

The degree of relationship allows a graduated removal of individual parts away from the tonal centre, according to the degree of their meaning: more remote digressions can thus be characterized differently from ideas that are closely related.

Not only the position of the parts but their form can be fixed by assistance of the tonality. Whether something be principal or subordinate idea, introduction or transition, episode, bridge, connecting link, embellishment, extension or reduction, whether independent or dependent, and, further, at which moment it begins or ceases to express one of these formal characteristics,—all this is possible for masters of form to make manifest through harmony. Characteristic kinds of beginnings and endings, basic and concentrated or resolving and liquidating dispositions of the harmony and many other means of art have accomplished that great clarity necessary to formal ends.

I perceive in both these functions, the conjoining and the unifying on the one hand, and on the other the articulating, separating, and characterizing, the main accomplishments of tonality. The resulting advantages to the composer and audience are as follows: through the unity of relationships, the listener of a certain degree of comprehension must inevitably perceive a work so composed to be a unit, to be a totality. On the other hand the impression on his memory is deepened by the articulating function which characteristically builds the whole and its parts as well as their relation to one another, thereby facilitating the comprehension of fugitive events. For instance the listener with a schooled musical ear will recognize the reprise of the theme through the return to the original key; he will also feel that so long as foreign keys are present the main theme is less likely to recur, but rather secondary themes or developments. Such trained listeners have probably never been very numerous, but that does not prevent the artist from creating only for them.

It is evident that abandoning tonality can be contemplated only if other satisfactory means for coherence and articulation present themselves. If, in other words, one could write a piece which does not use the advantages offered by tonality and yet unifies all elements so that their succession and relation are logically comprehensible, and which is articulated as our mental capacity requires, namely so that the parts unfold clearly and characteristically in related significance and function.

Without a doubt there are means of accomplishing this; certainly it would not be impossible to mention and to explain at least a few. But our question, if we put it negatively, is easier to solve, and the answer can be given in a general, relevant form. Let us ask then: do unity and coherence depend exclusively on tonality? A few well known facts will quickly elucidate this question.

Everyone with a knowledge of music is aware that each piece has certain parts, the smallest, which always recur: the so-called motives. Though it is not always possible or easy to follow the function of these motives in the most modern compositions, there is no doubt that it can almost always be done in the classics. The meaning of the elaboration of motives can only be uniformity (the more of an art-form the composition is, the more far-reaching the application): it is always the same material which is being handled; every form no matter where or how it appears may be traced back to these motives, the same idea is at the base of everything. Hence we shall find in the classics, besides the unity of tonal relations, that at least the same end of coherence is attained with at least the same amount of carefulness, through the unity of configurations, the unity of ideas.

Tonality is thus seen to be not the only means of producing the unity of a piece. It could, moreover, be easily shown that a work might have tonal unity, but nevertheless might still be confused in content, incoherent, superficial, external, yes, even without sense. It is apparent that it would not be difficult to apply to the harmonic structure of any sonata movement of Beethoven —incoherently and without any connection—themes from his other works. That such a product would be sheer nonsense is obvious. It must of course be conceded that to attempt the re-

verse, to build a structure, moreover, artistic in its motive forms, but on a foundation harmonically senseless, would probably lead to just as unintelligent results.

But here I have been trying not to show how the greatest nonsense can be achieved, but rather, that harmony alone, while contributing essentially to unity and articulation cannot fill these requirements, since it needs other active art-means cooperating in the same direction. I am rather inclined to believe that one may sooner sacrifice logic and unity in the harmony, than in the thematic substance, in the motives, in the thought-content. Without doubt, in a genuine work of art, from the point of view of the ideal, there can be no serious consideration of the question as to whether one of the elements which compose it has less meaning than any other. Yet we know that dross is found in many a significant work. And if I reiterate that I do not regard tonality as the natural requirement of a piece of music, it will be understood in what sense I make the following statement:

It is difficult to conceive that a piece of music has meaning unless there is meaning in the motive and thematic presentation of ideas. On the other hand a piece whose harmony is not unified, but which develops its motive and thematic material logically, should, to a certain degree, have intelligent meaning. A message written in the worst orthography, with the grossest grammatical errors can nevertheless convey a clear, comprehensible report. On the other hand we know certain stylists, poets, who in recounting an incident are unable to state clearly, whether the lover shoots the husband or the wife, or whether the wife one of the others.

We have said that a meaningless harmonic foundation may support a structure artistic in its motive forms. If, even in this case, a certain effect cannot be denied the whole, how can it be denied when the harmony is not without meaning, when only the sense of the harmony is not easy to recognize, because, for example, certain requirements (tonality) are not fulfilled, or because it consists only of unresolved dissonances? It is obvious that such harmonies may appear irrational to an untrained ear which can just about receive the conventional. But there is no proof as yet that such a harmonic scheme lacks tonality, and it

is easy to imagine that the concept of tonality will be so extended as to include all sorts of tone-combinations.

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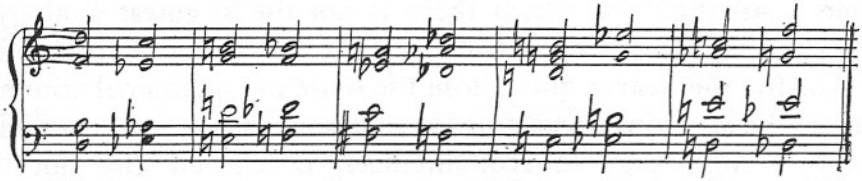
What detracts from the impression of tonality, according to my observation, is not so much the absence of the conventional formulæ, the usual succession of degrees, that is, not alone the flow of these harmonies, but rather the appearance of a greater number of such tone successions and chords, the relation of which is difficult to account for, especially when their relation to a fundamental tone is not particularly emphasized.

This is the moment to consider the unresolved dissonances whose key relationship is not expressly fixed.

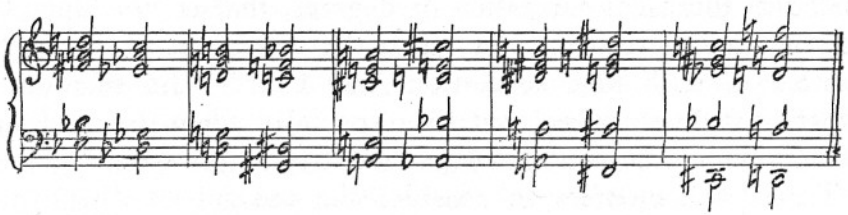
Up to a few decades ago only such chords were written as tended toward a key. These chords as a rule refer clearly to a fundamental, or they are made up of tones that have the melodic tendency to resolve like a leading tone, a half-step up or down; as, for example, the fourth-chords, which I have discussed in my *Harmony-Treatise.*

Distinct from these two groups is a great number of more-than-five-tone chords, the resolving tendencies of which have not as yet been systematically investigated. It can be maintained neither that they belong to a tonality, nor that they point toward one. And conversely neither can the opposite be held; no proof has yet been brought that these properties are entirely lacking. But something else can be proved. If, with the simplest triads, such as I have shown in the example above, we can produce short phrases which do not definitely determine a key, we can also take chords, not too complicated, such as are used in Wagner's harmony, and make rather extensive examples in which no unresolved dissonance occurs, all of which by themselves may refer to a key but which in toto leave no doubt that no tonal center exists and therefore no modulation. (Example 5)



Then, too, conversely, we can take such chords as well as

more complicated ones, that in no manner refer to a key, and join them to diatonic triads and similar successions, in this manner creating, *a posteriori,* an impression that the preceding dissonances, no matter how unprepared and unresolved, referred to this key.* (Example 6)



Strange to say, the ear accepts the final chord here just as it does a tonic and it might almost seem as if the preceding dissonances were really standing in legitimate relation to this tonic. The law mentioned before is again made manifest: "The last prevails."

One thing is certain: all chords, that in any way turn to a key, no matter how dissonant they may be, fall within the domain of the old harmony and do not disturb tonality.

It might further be said:

Tonality does not depend on the number of dissonances used, nor on their eccentric effect, but rather

1 on whether these chords may be referred to a key; or

2 whether these relations are convincingly enough worked out.

Dissonances, even the simplest, are more difficult to comprehend than consonances. And therefore the battle about them goes on throughout the length of music history. The number of consonant chords is limited; in fact, it is rather small. The number of dissonances is so great that it would be difficult to systematize the relation of even the simplest ones to all the consonances and to each other, and to retain them in the memory. With the majority of dissonances the ear meets a new and unknown situation, often a situation for which there is not the slightest analogy. How difficult it was even with the four and five-tone dissonant chords for the hearer not to lose the sense of coherence! But as soon as the ear grew accustomed to such sounds and tonal combinations, recognizing old acquaintances, it learned also not to lose the coherence, even though the solution of the problem was

*N.B.—Which of the two examples is tonal, which atonal?

revealed not immediately but later.

It is easier to recognize and define three different, simultaneously sounding tones than five or six; it is easier to follow and to perceive the succession of three, than of five or six. But is the use of polyphonic chords therefore unjustified because they are more difficult to apprehend?

The criterion for the acceptance or rejection of dissonances is not that of their beauty, but rather only their perceptibility. The recognition of coherence, logic, conclusiveness is one of the most important conditions for the apprehension of what occurs, and one can only understand what one has retained in memory. If *a* plus *b* equals *c,* I can conceive *c* in the sense of *a* plus *b* only if I remember *a* and *b*; only thus can I sum them up as equal to *c*. Since the presence of complicated dissonances does not necessarily endanger tonality. and since on the other hand their absence does not guarantee it, we can ask now, what are the characteristics of that music which is today called "atonal." Permit me to point out that I regard the expression atonal as meaningless, and shall quote from what I have already expounded in detail in my treatise on Harmony. "Atonal can only signify something that does not correspond to the nature of tone." And further: "A piece of music will necessarily always be tonal in so far as a relation exists from tone to tone, whereby tones, placed next to or above one another, result in a preceptible succession. The tonality might then be neither felt nor possible of proof, these relations might be obscure and difficult to comprehend, yes, even incomprehensible. But to call any relation of tones atonal is as little justified as to designate a relation of colors aspectral or acomplementary. Such an antithesis does not exist."

I am usually not a coward; but if I should be asked to give this phenomenon a name, I would prefer—to avoid it entirely. But a habit has arisen of regarding music first, not with the ears by listening, second, not with the eyes by playing and reading it, and third, not with the mind but according to some technical peculiarity, for which there is a suitable slogan, a most striking term. "This symphony is impressionistic!" Yes, but has something occured to the writer? "This song is expressionistic!" Yes, but does the composer know anything? "This piano

piece is atonal!" Yes, but does it contain an idea? And how is it accomplished? And what does the composer say that is new? or worth while saying?

If audiences and musicians would ask about these more important things and attempt to receive answers by listening, if further they would leave the idle talk and strife rather to the school-masters, who also must have something to do and wish to make a living, I, who have the hope that in a few decades audiences will recognize the *tonality* of this music today called *atonal,* would not then be compelled to attempt to point out any other difference than a *gradual* one between the tonality of yesterday and the tonality of today. Indeed, tonal is perhaps nothing else than what is understood *today* and atonal what will be understood in the *future.* In my *Harmony* treatise I have recommended that we give the term "pantonal" to what is called atonal. By this we can signify: the relation of all tones to one another, regardless of occasional occurrences, assured by the circumstance of a common origin.

I believe, to be sure, that this interrelationship of all tones exists not only because of their derivation from the first thirteen overtones of the three fundamental tones, as I have shown, but that, should this proof be inadequate, it would be possible to find another. For it is indisputable that we can join twelve tones with one another and this can only follow from the already existing relations between the twelve tones.

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Now let us briefly recapitulate the assertions already advanced. Tonality has been revealed as no postulate of natural conditions, but as the utilization of natural possibilities; it is a product of art, a product of the technic of art. Since tonality is no condition imposed by nature, it is meaningless to insist on preserving it because of natural law. Whether, for artistic reasons, tonality must be retained depends on whether it can be replaced. Since, as I have pointed out, the logical and artful construction of a piece of music is also secured by other means, and since the lack of tonality only increases the difficulty but does not exclude the possibility of comprehension; and since further proof of lack of tonality has not yet been adduced but as, on the contrary,

probably much that today is not regarded as tonal, may soon be so accepted; and since dissonances need not in the least disturb tonality, no matter how increasingly difficult they may make the understanding of a work; and inasmuch as the use of exclusively tonal chords does not guarantee a tonal result, I come to the following conclusion: music which today is called "tonal" establishes a key relationship continuously or does so at least at the proper moment; but music which is today called "not tonal" never allows predominance of key relationships. The difference between the two methods is largely in the emphasis or non-emphasis on the tonality. We further conclude that the manner of composition of a piece abandoning tonality in the traditional sense must be different from that in which tonality is followed. From this angle tonality is seen as *one of the means* which facilitates the unifying comprehension of a thought and satisfies the feeling for form. But since this means alone does not achieve the goal, it may be said that tonality accomplishes but a part of the purpose. If the function of tonality be dispensed with, but the same consideration be given to unity and feeling of form, this effect must be achieved by some other function. Obviously music so contrived can hardly be easy to grasp at the present time.

To prove the correctness of an idea no special method of order and construction in its presentation is demanded. The effort of the composer is solely for the purpose of making the idea comprehensible to the listener. For the latter's sake the artist must divide the whole into its parts, into surveyable parts, and then add them together again into a complete whole now conceivable in spite of hampering details. Experience teaches us that the understanding of the listener is an unstable quantity: it is not permanently fixed. Fortunately! It gradually accommodates itself to the demands made on it by the development of art. How otherwise would it have been possible, in scarcely more than sixty years, to follow the leaps and bounds of musical development that have led us from Wagner through Mahler, Reger, Strauss and Debussy to the harmony of today. Many are still living who can recall the difficulties presented to their sense-perception by the dissonances of Wagner. Certainly there must still be many today who only a short time ago found Mahler,

Strauss, Reger and Debussy incomprehensible; yet today these composers must appear to them, at least in their manner of expression, self-evident. No longer does one lose the thread in their compositions—insofar as one holds it at all— because of incomprehensible harmonic passages. Nothing now hinders the understanding of their thoughts, the recognition of their melodies, of the flow and construction of their works. What at first appeared harmonically incoherent, wild, confused, arbitrary, eccentric and hideous is today felt to be beautiful.

If we imagine that the perceptive faculties of audiences will advance nearly as far in the near future as in these past years, then we must have faith that we shall achieve a true knowledge of the ideas presented today and an understanding of their beauty. The difficulty here is, in the first instance, to recognize and to feel in the polyphonic dissonant sounds, the capacity to be joined successively; to see in them elements of form and construction in the same manner as in the simple chords, and to feel also their relative measure of weight and significance just as in the older harmonies. Theoretical knowledge here is not the most essential need. Wagnerian and post-Wagnerian music was understood for a number of years before the derivation of certain chords and their relation to the key were theoretically established. Probably habit is all that is required; for it is able to prevent the recurrence of shock and the resultant lapse of presence of mind. He who is frightened is seldom in a position to follow exactly what is happening. Should such a one be accepted as witness, or rather one who does not lose presence of mind and remains calm, is enraptured or stirred only through the power of the idea and the emotion?

I do not assert that from now on there will be no more works of art which stress tonality; on the contrary, I believe that this is possible in more than one way. First, a popular art can exist beside pure art-music. Furthermore, works can be written occasionally "in the old style." But I cannot deny the possibility that now, as often in the musical past, when harmony has developed to a certain high point, a change will occur which will bring with it entirely different and unexpected things. The best example of this we find in J. S. Bach, whose manner of com-

position was regarded as out-moded by his son, Philip Emanuel, and in whose time, directly at the apex of the contrapuntal style, the homophonic-melodic of the classical period began.

How such a new method of composition is to be contrived, I am as little in a position to say as probably Bach in his day. I hope it will not be held against me, if I confess that I have no faith in such an end—though I hold it to be possible. For the parallel is not entirely sound. Bach was, to be sure, the first and only one to found and develop a domain of contrapuntal writing. He carried over perfectly—a fact not yet discovered—the secret of the old contrapuntal art of former periods, from the church-modes to major and minor, from seven to twelve tones. This art had no predecessor and no successor and probably herein lies the explanation of the sudden turn toward a new goal; namely that the goal of the contrapuntal style had been perfectly realized! But the music of today is developing a field which must at first appear entirely new to us. And here probably is the difference: the field must first be cultivated. It is virgin soil. We are not at the high-point of an old art but rather at the beginning of a new one. It seems improbable to me that this is already the moment for departure; I do not believe we can afford to call a halt on work that is hardly begun; but naturally I am not able to dispute this.

Translated by ADOLPH WEISS

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