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# A descriptive overview of the music theory of Paul Hindemith

Bryan M. Miller

NORTHERN ILLINOIS UNIVERSITY

# A Descriptive Overview of the Music Theory of Paul Hindemith

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by

Bryan M. Miller
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# JOURNAL OF THESIS ABSTRACTS

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ABSTRACT (100-200 words):

Paul Hindemith devised a harmonic language and music theory designed to better accomodate the tonal expansion of Western music. This work is intended to provide a cohesive presentation of that language. My principal focus during the research was on that of works written by Hindemith himself. Outside interpretations and criticisms of his principles were also included in order to gain a better sense of perspective and to determine to what extent and by what means others' scholars have either accepted or rejected his philosophies. I have attempted not only to cover all of the major foundations and innovations of Hindemith's musical language, but also to relate each component to each other component, as well as to that of the whole, in order to arrive at significant philosophical commonalities which govern the process from its large scale construction to its internal components.

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ABSTRACT

Paul Hindemith devised a harmonic language and theory designed to better accomodate tonal expansions in Western music. This work is designed to provide a cohesive presentation of that language. My principal focus during the research was on that of works written by Hindemith himself. Outside interpretations and criticisms of his principles were also included in order to gain a better sense of perspective and to determine to what extent and by what means others' scholars have either accepted or rejected his philosophies. I have attempted not only to cover all of the major foundations and innovations of Hindemith's musical language, but also to relate each component to each other component, as well as to that of the whole, in order to arrive at significant philosophical commonalities which govern the process from its large scale construction to its internal components.

There is one inherent problem with the subject matter at hand which I do not feel this work adequately overcomes. Because the information which I am dealing with is presented in the form of a theory and applications to validate and support it, there is, consequently, little room for such creative analysis on my part as the theorist. I shall, however, attempt to overcome this abatement through bringing light to unifying principles and techniques which prevail

throughout the entire theory of the musical language which Hindemith presents.

"If the confusion in the technique of composition is not to increase and spread, and if the conflicting results of an outworn system of instruction are not to bring disaster in the wake of uncertainty, a new and firm foundation must be constructed" (Kemp, 1970). With this as his purpose, Paul Hindemith devised a compositional method which erects a musical language that both encompasses the vocabulary of traditional harmony and accounts for, interprets, and classifies twentieth century harmonic developments. As the reason for such an undertaking, Hindemith wrote, "I am not animated by any desire to freeze into any permanent shape what I have been teaching for years...I feel called upon to devote to the writing of a theoretical work the time and trouble which I would rather spend in composing living music" (Kemp, 1970). However, it is more likely that The Craft of Musical Composition, the work in question, was created as a compositional order for himself as well. This is supported by Hindemith's letters to Schenker (Neumeyer, 1953). Born into the Neoclassical era, Hindemith felt a need to systematize and restore order into the music of his day (Kemp, 1970). During the Romantic era, music had reached its furthest limitations ever, achieving extended tonal domains (such as Wagner's "Tristan and Isodole"), the recognition of new harmonic construction, and new means of melodic line construction. Neoclassical features show themselves in Hindemith's creative personality through his distaste for self indulgent expression and his

emphasis upon the clarity of the line and texture, which remained typical of his music throughout his life (Kemp, 1970).

Following his Neoclassical framework and philosophies, Hindemith believed that music should be useful and practical. This philosophy was expressed in the Gebrauchmusic Manifesto. Gebrauchmusik translates from the German literally as "functional music." That is, music designed with specific events, purposes, and audiences in mind (Kemp, 1970). This movement was paralleled by all of the arts in pre-Hitler Germany, countering the subjectivity of expressionism. In poetry, the movement was Gebrauchlyric, and in painting, it was the neue sachlichkelt. Gebrauchmusik was the expression of Hindemith's beliefs concerning the problems which contemporary music faced in light of a philosophy of "art for art's sake." He stated that the composer should know for what purpose he is writing, and that the composer and the consumer must come to a common ground. He believed that the problems of contemporary music would be greatly reduced if composers wrote for les personal and more realistic ends (Kemp, 1970). By design, it was also a great advance in winning back some of the rapport between composer, performer, and listener which had been lost during the nineteenth century (Kemp, 1970). Hindemith was also the great champion for amateur music. He engaged in composing many such endeavors. He felt so strongly about the

importance of amateur music, as defined in the Gebrauchmusik Manifesto, that he saw it as having potential for the world peace movement, and as a great unifying force for humanity in general. He states, "People who make music together cannot be enemies, at least not while the music lasts" (Kemp, 1970).

Hindemith puts great stock in the importance which is embodied within the listener (Hindemith, 1953). This importance is fundamental by design, as without an active lisener no aesthetic experience may be derived, for which without, there is no music (Hindemith, 1953). The limitations and capacities of the listener, as well as the psychological and physiological forces which govern his perceptions are all given substantial consideration in Hindemith's musical language (Hindemith, 1953). Many of the very cornerstones of it are based upon them. This is evidenced by a quote from one of Hindemith's composition classes at Yale: "The science of music deals with the proportions objects assume in their quantitative and spatial, but also in their biological and spiritual relations" (Ruff, 1974). Again, the human element is necessary for the compositional process to be complete by Hindemith's interpretations of its integral design and function. Under these conditions, the music must reach the ears of an active-minded listener for it to become an aesthetic experience. The ensuing enjoyment is predicated upon how well a composition fulfills the expectations, and,

through various compositional techniques, the arrival at the sonority of destination. Because of the temporal nature of the art form, all interpretations are in essence retrospective, and any kind of aesthetic summation may be made only through how well the composition measures in relation to the mental templates which the listener has evolved and stored up from previous listening experiences (Kemp, 1970). We may be so bold to say that the better an external musical event alligns with the listener's preconceived mental template, the more completely satisfying the musical event will be (Hindemith, 1953). This does not disallow the composer great liberties in deviation from the form which may indeed augment our satisfaction, such as surprise cadences, extensions, and a myriad of other compositional techniques which briefly postpone or circumvent the listener's expectations. On a larger scale, Hindemith speculates that because the listener is constantly measuring the music which occurs as a temporal experience against the mental templates and expectations he has stored up, we may go so far as to state that in theory, no new material in the general order, shape, or relationship of musical successions may ever be added. This is because pending each new entry of material we perceive as music, we are lessening the listener's ability to be active and involved, and consequently, we are lowering the amount of aesthetic experience which may possibly be derived (Hindemith, 1953).

Hindemith addresses the emotional reactions of music as well as the above-mentioned intellectual ones. These emotional reactions which are brought about by the music are not true feelings, but merely memories of them. It is for this reason that the spectrum of emotions which may be perceived and the rate of perception is "infinitely larger" than those of the other arts (Hindemith, 1953). Hindemith reaches this thesis through the reasoning that real feelings take not only time to develop, but also time to pass and be replaced with new feelings. Following this logic, we must then also realize that we may not through the music vicariously experience any feeling which we have never truly known ourselves. This is because the music is merely serving the role of the catalyst for the induction of the memory, not the facillitator of a genuine human experience (Hindemith, 1953). This is also evidenced in that we are able to recall former experiences from our memories, and they are still able to impress us with the same strengh and intensity as the original event, or in turn, the music would (Hindemith, 1953).

In the construction of his musical language, Paul Hindemith first constructed a tonal hierarchy which explains every vertical sonority and then proceeds to rank them in order of importance based upon his concepts regarding purity and Nature itself (Hindemith, 1942). Through this tonal hierarchy, Hindemith expanded our Western music theory through making a case for accepting twelve tones instead of

only seven. This case is predicated upon the condition that Western music is not really diatonic, scalar, or modal. Rather, it is the relationships of fifths in accordance with a given tonic, rather than a scale or mode which define our pitch system as functional and determine the tonality (Cazden, 1954). The relationships of fifths are accounted for and derived from the hierarchical tone row which Hindemith defines as Series 1. Is is the cornerstone of his musical language.

(Hindemith, 1942).

Series 1 provides us with a significant order in which the twelve tones appear in relationship to their given tonic or progenitor tone. The harmonic significance of the tones decreases as one progresses from left to right (Kemp, 1970). Hindemith constructed Series 1 from manipulations of the overtone series. In his manipulations, Hindemith disregards the seventh overtone, as it is too flat to be used adequately. He explains as his reasoning for this that the overtone series is not suitable for use in its raw state because as one travels upwards in the overtone series, one will find continually diminishing distances between its adjacent tones (Hindemith, 1942). The exact method which Hindemith employs is elaborated upon in The Craft of Musical

Composition, Volume 1. An encapsulation of this formula is to divide the vibration number of each overtone successively by the vibration numbers of the preceeding tone in the series. In this formula, he is simply treating each overtone as if it sat one position lower in the overtone series than it actually does; or he is dispensing with the fundamental tone in terms of its role as the first partial and has replaced it with the first overtone. A natural division occurs in the series. It is predicated upon those tones which are derived from the progenitor tone directly (5, 4, 3, 6) and those which are derived from the first generation calculations (2, 7, TT).

It is through consistencies and relationships to Series 1 which I will attempt to make a cohesive explanation of Hindemith's case for his musical language. In it, Series 1 operates in the same capacity in which the overtone series operates in traditional harmony. Hindemith is able to tie everything together with a sense of greater completenes through those relations to the cornerstone of Series 1 which I shall present. The reasoning for Hindemith's departure from the existing language and his deviations in his reckoning of the overtone series is based upon the essence of Western music itself. This is because Western music is primarily a vertical, and not a horizontal language. We may then realize that all pitch systems created for Eastern monodic music do not require the kind of functional structure of relationships among scale degrees that Western

music requires in order to be functional in terms of its vertical significance (Hindemith, 1942). Not every scale derived for strictly melodic purposes will be well adapted to the needs of harmonic organization. This is because in such systems the intervals are fixed in relationship to each other (Hindemith, 1942). Because of this, a given note cannot successfully perform both melodic and harmonic roles in different sonorities. Even in today's equal-tempered tuning system, the music performed upon fixed pitch instruments lacks the fine tuning of that performed on moveable pitch instruments (Hindemith, 1942). For a scale system to successively perform both melodic and harmonic functions, the intervals must be such that the intervals come from the lower reaches of the overtone series, where the intervals (based upon their combination tones) are as pure as possible. Hindemith cites this as a critical aspect of our vertically dominated language of Western music (Hindemith, 1942). The moveability of pitches is not so as to change our perceptions of an equal distance, but ti much to infer the functions of each tone in relationship to the fundamental tone of the series (Hindemith, 1942).

Based upon Series 1, Hindemith evolves a Series 11. It is concerned with vertical sonorities, and is founded upon the physiological phenomenon of combination tones. Series 11 is formed through Hindemith's concepts governing the hierarchy of the intervals, combination tones, and the original position of the series derived from the

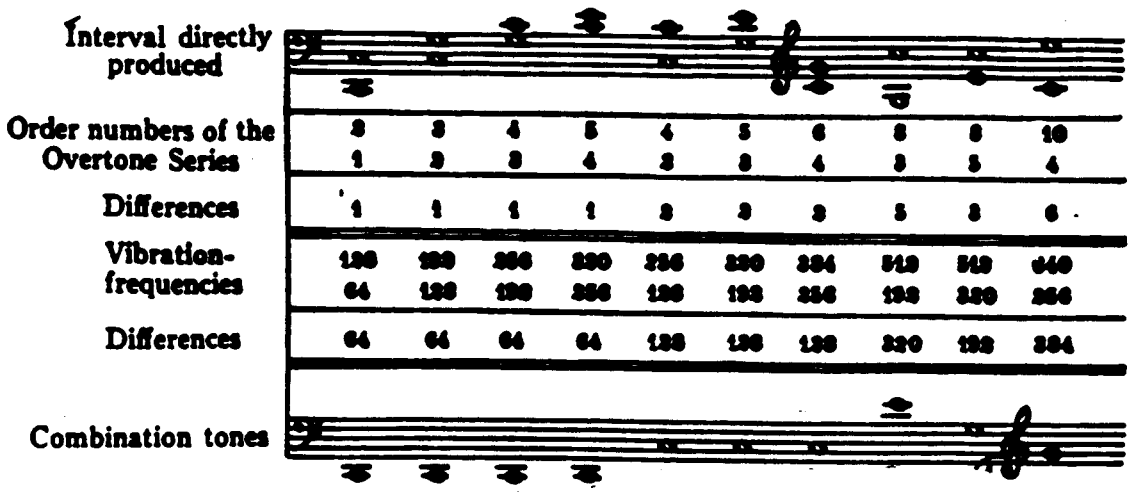
manipulations of the overtone series in Series 1 (Hindemith, 1942).


(Hindemith, 1942).

As we can see, Series 11 is the harmonic complement to Series 1. The order of the actual tones, as we know, was derived from the overtone series and second generation calculations. The respective order of the intervals, which shows relative harmonic strengths, is derived from what Hindemith terms combination tones.

According to Hindemith, combination tones are "the third point of a triangle whose other two points are in the sounding interval, making for the ear a sort of trigonometry by which it is enabled to form a judgement of the purity of an interval" (Hindemith, 1942). Combination tones are a physiological phenomenon which are produced in the ear when two simultaenous frequencies are heard. Combination tones are strictly a human phenomenon, and may only be created with great difficulty in a scientific artificial environment. (This information was obtained from Professor Peter Middelton of Northern Illinois University in 1988.) Combination tones are to the interval as overtones are to the single tone. They affect our perception of

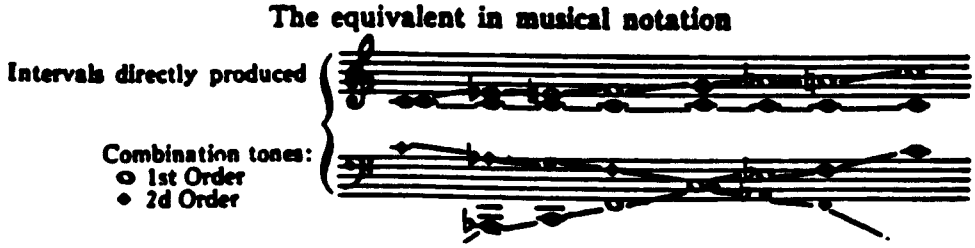
intervals and can be perceived strongly by the ear. The frquency of the combination tone produced is always equal to that of the difference between the two frequencies directly produced in the interval (Hindemith, 1942). As we see what this means in terms of tonality we see not only Hindemith's insight into his theories concerning the invertability of chords, the importance of a perceived root, and that of the triad being the natural center of human music.




(Hindemith, 1942).

Combination tones are perceived as extra weight or burden for the listener; the less the burden, the more harmonically important the interval (Hindemith, 1942). The combination tones appear as additions to the tones which are actually sounding, and they create the experience of one tone being predominant over the other (Hindemith, 1942). As we can see, the burden or weight increases proportionally with the original template of Series 1. An important concept which bears reference to Hindemith's viewpoint of

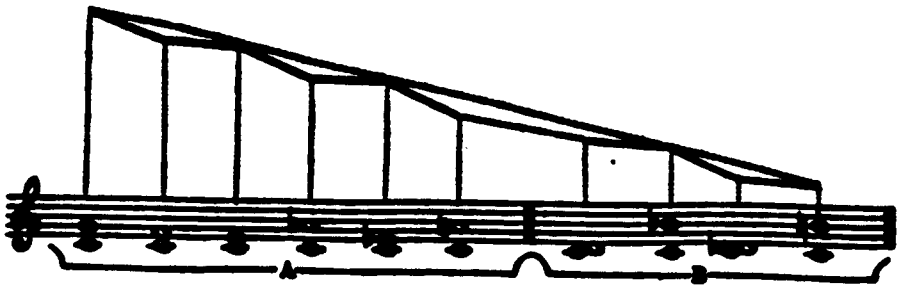
the triad being natural in Nature comes to us from combination tones. As combination tones do exist and can be heard and perceived, they are actual sounds. Therefore they obey the same laws and principles which govern all sounding tones. It is because of this that a second order of combination tones is introduced (Hindemith, 1942). It is the result of the interactions of the first generation combination tones with the actual sounding tones, consequently producing entities of their own. This process could be carried on indefinitely, but the first two orders are all which affect the human perception (Hindemith, 1942). As is evidenced below, the triad is produced through second order combination tones, lending credibility to Hindemith's remarks concerning the triad as being the central pillar of our musical Nature (Hindmith, 1942).




(Hindemith, 1942).

Because of combination tones we also realize that in an interval one of the two tones will be perceived as having dominance over the other (Hindemith, 1942). This tone is felt as giving the vertical structure its stability. Psychological reasoning for this perception includes that in

lower sonorities heavier physical substances and larger objects are generally associated with producing lower frequencies. This is a form of conditioning which affects our associative reasoning. The slower activity of the air refractions at lower frequencies also creates the impression of more ponderous physical realities, necessitating the slower motions of air against the ear's membrane (Hindemith, 1942). If we refer back to Series 11 and employ our knowledge of combination tones, we realize that the point of stability, or the perceived root (as surmised by the combination tones) alternates position from lower member to upper member with each alternating place in the series. Because of this, we feel an inherent stability with the intervals P5, M3, m3, m7, M7; and, conversely, we feel instability with P4, m6, M6, M2, m2, and TT (which really has no perceivable root when outside the context of a progression) (Hindemith, 1942). This realization nicely brings together Hindemith's theories concening invertability and roots of chords. As we see from the series itself, every alternating interval is the inversion, the mirror image of every other alternating interval. The combination tones verify the change in perception. This graph shows Hindemith's interpretation as to how their harmonic strength is affected.

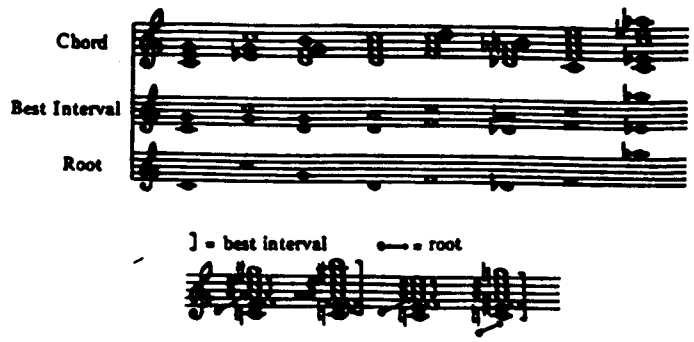


(Hindemith, 1942).

If we perceive the decrease in harmonic value from P5 to M7 as an oblique descending line moving from left to right, we see that the intervals P5, M3, m3, m7, and M7 have true intercepts, while those intervfals of P4, m6, M6, M2, and m2 fall short of their true intercepts (Hindemith, 1942). This is based upon the combination tones. The sonorities in which the combination tone was that of the lower, or bass tone of the interval, rank higher than those whose did not at every particular value. This is founded upon interpreting each inversion of the intervals and deeming them two quantities of the same quality. We may then surmise that vertical sonorities whose root tone and bass tone are the same will rank higher than similar vertical structures whose bass tone and root tone do not coincide. This is because the root tone and the bass tone are each trying to gain control of the sonority through their properties as progenitor tones. Because Hindemith's method of harmonic analysis is dependent upon Series 1, so too should follow his method for root analysis. This is again founded upon the pretense that Western music is predicated upon the relationships of fifths.

Because of this, the system which utilizes the construction and arangement of thirds is not always the correct method. Under Hindemith's method for root and chordal analysis, the fifth is the best interval for

determining the root of a chord. The next best interval is a fourth, and so on; the system progresses through the hierarchy of Series 1. In instances when a chord possesses two or more equal intervals, the lower/lowest is the one of choice in determingin the root. This follows the logic of both the overtone series and that of combination tones.




(Hindemith, 1942).

In cases such as the Tritone, and other ambiguous vertical structures, Hindemith appoints a root representative. This is the member of the sonority which moves by the smallest step to the progenitor, or root, of the interval of resolution. Chords which fall under this doctrine are those of the diminished triad, diminished seventh, the augmented triad, and quartal-quintal harmonies such as stacked fourths.


(Hindemith, 1942).

From the root analysis, we may determine the root, or degree progression. This serves as the basic progression of a musical setting. Its relative value decreased in the same fashion as did the intervals of Series 11. This is supported by the fact that most Western music is comprised predominantly of degree progressions which move chiefly in fifths and fourths. This shows the closeness of the degrees and the relation to the given tonal center. Thereby, we can see that through the degree progression the tonality is determined.

Hindemith defined tonality as the sum of all the harmonies that our analytic hearning can relate to a central harmony or tonic (Hindemith, 1943). In order for the perceived tonality of a piece to be successful, the tonic must be arranged in such a manner that it is superior to the other harmonies through favorable position, cadences, recurrent appearances, and support from closely related harmonies. Hindemith likened tonality to the "gravitational force of Earth", in that it may not be escaped for a long period of time (Hindemith, 1953). The tonics of such tonalities are embodied in chords of no tension, such as major and minor triads. Feeling so strongly as to the central significance of the triad in his harmonic language, Hindemith wrote, "In composition, the triad or its extensions can never be avoided for more than a short time without completely confusing the listener. It serves as our constant guiding point, our unit of measure,

and our goal, even in those sections which avoid it" (Kemp, 1970).

We again refer to the fundamental nature of the overtone series, Series 1, and Series 11, and the combination tones produced thereof to substantiate Hindemith's claims about the importance of the triad. Based upon our calculations and interpretations of the above, we may make a case for the triad to bear physical and physiological relationships to the body itself. This is the premise by which Hindemith determines the relative hierarchy of the vertical structures in his chord analysis. The basic division between types A and types B is determined through the presence or absence of a tritone. Further divisions are determined through the inclusion on seconds or sevenths, and internal subgroupings are based upon the position of the perceived root tone in the vertical sonority. This is an attempt at making an accurate classification of all vetical structures, and is shown in Hindemith's Table of Chord Groups (Hindemith, 1942).

## Table of Chord-Groups

### A Chords without Tritone

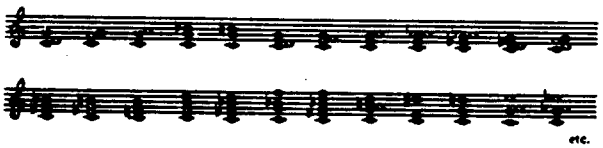
**I** Without seconds or sevenths

1. Root and bass tone are identical

2. Root lies above the bass tone

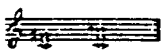
**III** Containing seconds or sevenths or both

1. Root and bass tone are identical




2. Root lies above the bass tone


**V** Indeterminate



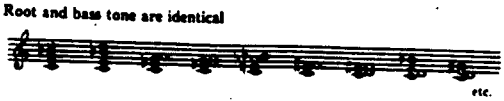
### B Chords containing Tritone

**II** Without minor seconds or major sevenths
The tritone subordinate

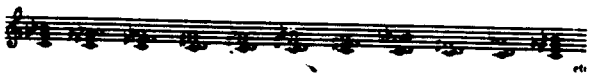
a. With minor seventh only (no major second)
Root and bass tone are identical

b Containing major seconds or minor sevenths or both

1. Root and bass tone are identical




2. Root lies above the bass tone




3. Containing more than one tritone


**IV** Containing minor seconds or major sevenths or both
One or more tritones subordinate

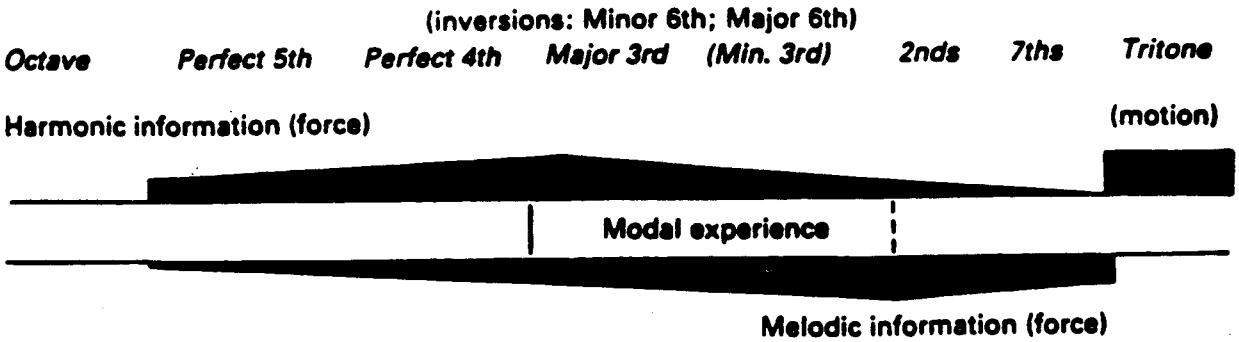
1. Root and bass tone are identical


2. Root lies above the bass tone

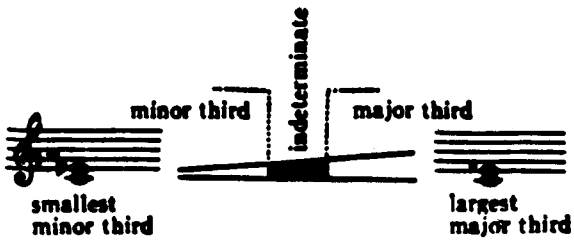

**VI** Indeterminate. Tritone predominating

(Hindemith, 1942).

As evidenced from the Table of Chord Groups, we see that Hindemith places the major triad and the minor triad in the highest position of the hierarchy. This is also based upon calculations which he expounds in The Craft of Musical Composition, Volume 1. As evidenced by the overtone series, the minor triad has a better group of supporting tones than does the major. Another factor which he brings to light is that there is no tonality which is the antithesis of a major tonality. Following this logic one step further, we can consider the major and minor triads quantitative differences of the same quality. They function as polarities of the same sonority. They represent the light and the dark, the strong and the weak (Hindemith, 1942). As to the exact number of vibrations which constitute the major or minor quality, there is also quite a bit of grey area. This middle ground, which makes such an enormous psychological difference, even in spite of its relatively minute change in terms of vibrations, is also a case to assign modal qualities to the thirds, and their inversions, the sixths (Hindemith, 1942).




(Bobbitt, 1965).




(Cazden, 1954).

Using the premise that it is impossible to escape tonality and the Table of Chord Groups, Hindemith constructs his theory of Harmonic Fluctuation. Harmonic Fluctuation is determined by the decrease in the value as chords move from Groups 1, 11, and 111 to Groups 1V, V, and V1. The basis for Harmonic Fluctuation is the continuum of intratonal relations given in Series 1. From the dominants on down the series, the harmonic force gradually decreases and movements become milder and softer. We may conceptualize Harmonic Fluctuation as a shifting of the center of gravity. The progession from a chord of greater value to one of a lesser value results in a decreased harmonic value, but also an increased tension. The complement to Harmonic Fluctuation is that of Tonal Amplitude. Tonal Amplitude represents the distance traversed from a given tonic in terms of tonal distance, coined "tonal deflection" by Hindemith (Hindemith, 1942). Another dual relationship is constructed through which one force (in this case, Harmonic Fluctuation) dictates the qualitative role; and in which another (here it is Tonal Amplitude) dictates the quantitative. Functioning inversely to Harmonic Fluctuation is that of melodic force. Western music primarily consists exclusively of vertical structures. Because of this, it is literally quite impossible for us to interpret melodic lines

without the harmonic connotations and tonal implications which they present to us pyschologically. The intervals produced by a horizontal line not only produce melodic function, but that of implied harmonic signnificance. The means of this production includes harmonic cells, harmonic fields, recurring structures, and arpeggiation (Hindemith, 1943). The following is Hindemith's example of the roles and relationships of harmonic force and melodic force with reference to Series 11.


(Bobbitt, 1965).

The technique of Harmonic Fluctuation consists of starting with relatively stable structures, proceeding through structures of less harmonic value, and consequently, more tension, and again returning to the structures of stability. There is no surprise here; is this not the entire history of Western music encapsulateded into a central idea? While the conclusion which Hindemith does reach provides not shocking discrepancies from the doctrines which have antedated him, the means which he invents to achieve this end are very thorough and very complete, forming a relatively unbroken circle of relationships which each validate and support the others' completenes.

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