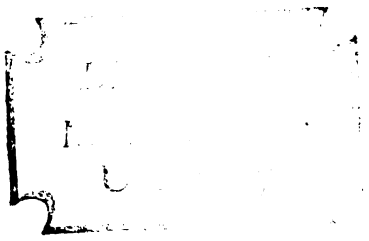
THE THEORIES OF JOSEF MATTIAS HAUER: AN ENGLISH TRANSLATION OF SELECTED WRITINGS WITH CRITICAL COMMENTARY AND A LIST OF WORKS

Dissertation for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
ROGER STANLEY GUSTAFSON
1977



This is to certify that the

thesis entitled

The Theories of Josef Mattias Hauer: An English Translation of Selected Writings With Critical Commentary and a List of Works

presented by

Roger Stanley Gustafson

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Music

Major professor

Date May 18, 1977

O-7639

ABSTRACT

THE THEORIES OF JOSEF MATTIAS HAUER: AN ENGLISH TRANSLATION OF SELECTED WRITINGS WITH CRITICAL COMMENTARY AND A LIST OF WORKS

By

Roger Stanley Gustafson

Outside of Austria and Germany, little is known about the Austrian theorist and twelve-tone composer, Josef Mattias Hauer. There are several reasons for this situation, the principal one being that the theoretical works were written in German and, until now, have never been translated either in part or in toto. The purpose of this study is to translate into English the three most important treatises of Hauer. The three works in question are Vom Wesen des Musikalischen: Grundlagen der Zwölftonmusik (The Essence of Musicality: Foundations of Twelve-Tone Music), Vom Melos zur Pauke: Eine Einführung in die Zwölftonmusik (From Melos to the Kettledrum: An Introduction to Twelve-Tone Music) and Zwölftontechnik: Die Lehre von den Tropen (Twelve-Tone Technique: The Theory of the Tropes.) In addition to the translations, there is a list of works which includes information necessary to distinguish individual compositions (with and without opus numbers) from one another.

Hauer (1883-1959), as these three treatises demonstrate, was a unique and original composer and theorist

who attempted to rectify the weakness which he saw in the music of the late nineteenth century. Fundamental to his ideas is the concept of music as a nonsensual, objective form of art which relies on the twelve tones of the equal-tempered system of tuning, particularly on their inherent intervals, as a means of achieving objectivity. According to Hauer, only music which is based on this system and played on instruments capable of equal temperament (piano, organ, harmonium and harpsichord) can approach this "sacred" state. For him, total objectivity was achieved after he had considered all the possible combinations and permutations of the chromatic scale and grouped them into forty-four tone constellations or, as he calls them, tropes. It was upon these forty-four tropes, which result from "totality," that he based his compositions. Hauer's first twelve-tone composition (Nomos) was written in 1919.

In the treatises, Hauer discusses his concept of music, as briefly related above, and attempts to find support for his system in the overtone series as well as in a re-examination of individual intervals and the manner in which they are perceived by the human ear. It is from the interval (the single sound event) that everything is derived: melos (the melodic element), rhythm, timbre, etc. In a philosophical manner, he compares the individual pitches as they relate to C (hence intervals) to what Goethe in his Farbenlehre had to say in 1810

about color, light and the light spectrum. Hauer believed that only after a musician had come to an understanding of such ideas was he ready to engage in the act of composition. For the composer, Hauer gives particular instructions on the way one should select a trope, incorporate that trope in a composition and approach voice leading, etc.

It is in The Essence of Musicality (1920 and 1923 with a new edition by Robert Lienau, Berlin, in 1966) that Hauer explores the fundamentals of music and gives a preliminary explanation of twelve-tone music. In From Melos to the Kettledrum (Universal Edition, 1925) and Twelve-Tone Technique (Universal Edition, 1926), he provides the practical application of his theories to composition. Among these applications found in the latter two treatises, is an explanation of Hauer's ingenious twelve-tone system of notation which (through an alternating series of two and three lines with intervening spaces) is based on the arrangement of the white and black notes of the keyboard.

For Hauer, twelve-tone music was an all-embracing concept through which he saw a reconciliation of various areas of human endeavor such as differing philosophies, creeds, languages, etc. In addition, it was a mode of meditation through which the composer could come to a better understanding of himself and his relation to the universe and its Creator.

THE THEORIES OF JOSEF MATTIAS HAUER:

AN ENGLISH TRANSLATION OF SELECTED WRITINGS WITH CRITICAL COMMENTARY AND A LIST OF WORKS

By

Roger Stanley Gustafson

A DISSERTATION

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Music

1977

PREFACE

It is safe to say that, outside of his native Austria and neighboring Germany, very little is known about Josef Mattias Hauer as a composer or theorist. The little that is known about him generally rests on the fact that Hauer, like his contemporary Arnold Schönberg, subscribed to a twelve-tone method of composition. It is usually further assumed that both men wrote in the same manner, and, because of this, any differences which existed between the two composers and their individual conceptions of the twelve-tone method of composition are overlooked. If anything else is known about Hauer, it generally concerns the still existing controversy over the issue of the actual "inventor" of the system.

That such a situation exists is not surprising, when one realizes that in present-day Austria and Germany, Hauer is still published, performed, written about and, in general, considered to be a composer and theorist of some merit who did more than compose music in the same manner as Schönberg. In the rest of the world, however, only the briefest accounts of the man and his work are to be found in sources written in a language other than German, and almost none of his works are ever performed. This predicament is attributable partly to the fact that Schönberg, with his great ability to project to the musical public his personality and his ideas on music, overshadowed Hauer (and

continues to do so), partly to Hauer's self-confessed "disagreeable personality"[1] and partly to Hauer's recondite ideas and manner of presenting those ideas.

It is to the latter of these three reasons for Hauer's seeming lack of popularity that the present study is primarily addressed. There are great numbers of books and periodical articles written about Hauer in German but only the barest handful of articles or encyclopedia entries in English, thus preventing those who do not possess a working knowledge of German from obtaining anything more than the briefest accounts of Hauer's theories. Even with a fair command of German, the average person would find that reading Hauer's works in German was at best, difficult; Hauer often wrote in a confused and turgid style,[2] which is filled with puns, outmoded vocabulary, dialectical expressions and, in general, poor syntax.

It is hoped that an English translation of the important theories of Hauer will aid in understanding and assessing what Hauer had to say, particularly as it might

---

1. Josef Mattias Hauer, Vom Melos zur Pauke: Eine Einführung in die Zwölftontechnik (Vienna: Universal Edition, 1925), 20.

2. Hauer himself realized that this was a problem for him. In the Foreword to his Vom Melos zur Pauke, Hauer expresses hope that there are people "who are able to penetrate my clumsy schoolmaster German in order to reach that point where an interest in twelve-tone music could begin."

differ from what other writers had to say about twelve-tone music. The three treatises of Hauer given here in translation are Vom Wesen des Musikalischen: Grundlagen der Zwölftonmusik (The Essence of Musicality: Foundations of Twelve-Tone Music), Vom Melos zur Pauke: Eine Einführung in die Zwölftonmusik (From Melos to the Kettledrum: An Introduction to Twelve-Tone Music) and Zwölftontechnik: Die Lehre von den Tropen (Twelve-Tone Technique: The Theory of the Tropes).

It is with great pleasure that I acknowledge all those who have aided me in the preparation of this dissertation. I would first like to thank Professor Richard E. Klausli for being the one to introduce me to the music and theories of Hauer as well as providing so much help and encouragement. To the other members of my Doctoral Committee, Dr. Russell Friedewald, Dr. Theodore Johnson and Dr. James Niblock, I wish to extend my gratitude for their time and most helpful suggestions concerning the translations. I am particularly grateful to Bruno Hauer, Mattias Hauer's son, and to Oktavian von Spitzmüller, Senior Editor at Universal Edition in Vienna, for the many kindnesses which they extended to me when I met with them in Vienna in 1973 and again in 1975. From Bruno Hauer I obtained much original information concerning the biography of his father as well as material which made a corrected works-list possible. Herr von Spitzmüller very kindly provided me with copies of all works of Hauer which were either out of print or existed

only in manuscript score and for which Universal Edition had copies in their archives. My thanks also go to Victor Sokolowski, Director of the Hauer Seminar and Hauer-Kreis in Vienna, for the long interview at which he provided me with many personal insights into Hauer's theories. I gratefully acknowledge The University of Western Ontario and The Canada Council for the travel funds which made possible my research in Vienna.

My special thanks go to my friend and colleague, Dr. Gerhard Wuensch, for his interest and for his advice concerning the translation, particularly as it pertained to the sections containing Viennese dialect and grammatically obtuse ideas. Without such help, the translation of these portions would be much the poorer.

Finally, I would like to thank the publishing houses of Universal Edition, A.G., Vienna, and Robert Lienau, Berlin, for their kind consent to allow me to employ the three treatises appearing here in translation. From Universal Edition, I received permission to use Vom Melos zur Pauke and Zwölftontechnik, and from Robert Lienau I received permission to use Vom Wesen des Musikalischen.

TABLE OF CONTENTS

Chapter

I. INTRODUCTION 1

II. THE ESSENCE OF MUSICALITY: FOUNDATIONS OF TWELVE-TONE MUSIC 23

III. FROM MELOS TO THE KETTLEDRUM: AN INTRODUCTION TO TWELVE-TONE MUSIC. . . . 112

IV. TWELVE-TONE TECHNIQUE: THE THEORY OF THE TROPES 140

V. CONCLUSION 179

APPENDIX

LIST OF WORKS. 188

BIBLIOGRAPHY 209

Chapter I

INTRODUCTION

In order to understand Hauer, the man and the musician, his musical training, the external influences which, in part, guided him, as well as the influence he has had on music of this century, an exposition of the most essential biographical information is in order. Hauer was born in 1883 in the city of Wiener Neustadt which, as its name implies, is not far removed from Vienna. His first acquaintance with music occurred at about age five when his father began teaching him the zither and the basic elements of harmony.[1] From this time until he attended the local teacher's college and received a more formal music education, he was almost entirely self taught. The five years spent at the teacher's college included instruction in piano, organ, cello and voice.

Following his studies and the completion of the state examinations for teaching, he taught in Wiener Neustadt while making his first attempts at composition. During this time he was also active as an organist and choirmaster

---

1. Josef Mattias Hauer, Deutung des Melos: Eine Frage an die Künstler und Denker unserer Zeit (Vienna: E.P. Tal & Co. Verlag, 1923), 7.

and as cellist in a string quartet.[2] In 1907 he married Leopoldine Hönig. Three children resulted from this marriage of which one, Bruno, is actively carrying on the work of his father by publishing or republishing many of his father's compositions (particularly those written since 1939) at his Fortissimo Verlag in Vienna.

The years 1918 and 1919 were extremely important for Hauer, for they mark the beginning of his theoretical writing as well as his first experiments with twelve-tone composition. The beginning of his theoretical writing is seen in a short treatise which Hauer published at his own expense in 1918 entitled Über die Klangfarbe. Actual composition took place while he was recuperating from a serious illness after the fulfillment of his military obligation in the First World War. It was during this period of enforced rest that he discovered, as he tells us, "the twelve-tone laws."[3] This discovery resulted in a work for piano (or harmonium) entitled Nomos, Op. 19, which was his first composition organized totally according to the newly found principles of twelve-tone construction. (According to Hauer, this was not only his first piece of twelve-tone music but the world's as well.)

---

2. Monika Lichtenfeld, "Untersuchungen zur Theorie der Zwölftontechnik bei Josef Mattias Hauer," Kölner Beiträge zur Musikforschung, ed. Karl Gustav Fellerer (Regensburg: Gustav Bosse Verlag, 1964), XXIX, 1.

3. Josef Mattias Hauer, "Vom Melos zur Pauke: Eine Einführung in die Zwölftonmusik," Theoretische Schriften (Vienna: Universal Edition, 1925), I, 18.

After the war, Hauer settled in Vienna, resuming his career as a teacher for a short period of time while furthering his investigation of and experimentation with the twelve-tone "laws." The results of this investigation and experimentation are found in the three treatises which are the subject of this study. From this period until the time of his death in 1959, Hauer lived in Vienna[4] in a state of almost total reclusion, associating with only a few friends, teaching only a few pupils and sequestering himself in his study for long periods of time during which he was not seen even by his family.[5] His means of financial support during this long period of time was assured by an inheritance from his wife's family, by city and state grants and pensions and by money given to him by Erich Köchert, a wealthy jeweler and philanthropist who had an abiding interest in the arts.[6]

From the earliest days of his professional career, Hauer shared the friendship of and, in some cases, was influenced by some of the most outstanding people Vienna had

---

4. Hauer lived the entire period in the same house. This house, at Benogasse 2, was torn down in the summer of 1973, ("Im Haus Bennogasse 2 lebte auch ein Komponist," Wiener Kurier, August, 1973).

5. This was told to me by Bruno Hauer in a conversation we had on December 19, 1975.

6. The descendents of Köchert still possess one of the largest collections of Hauer's manuscripts and personal effects.

to offer in the field of the arts. His early associations were with the philosopher Ferdinand Ebner, the "Bauhaus" painter Johannes Itten and the painter Erwin Lang. These and other persons amenable to Hauer's mode of thought and interests met on a regular basis to exchange ideas and to discuss their latest studies. Later in his life, this "Hauer-Circle" included the painters Herbert Boeckl, Josef Dobrowski and Fritz Wortruba and the art historian Johannes Schwieger. Hauer's personal manner and unconventional philosophy, particularly as it concerned music, also appealed to several writers of the day, for, in several instances, Hauer was employed as the model for a character in a novel. Authors who made use of Hauer in this fashion include Otto Stoessl (Sonnenmelodie), Hermann Hesse (Das Glasperlenspiel) and Franz Werfel (Verdi: Roman der Oper).[7]

In comparison to his contemporaries (R. Strauss, Schönberg, Bartok and others), Hauer had what Herbert Eimert called an "undistinguished career."[8] This situation was caused largely by his perverse personality and his seeming lack of desire to exploit his own compositions. In spite of this, there were several occasions at which

---

7. Lichtenfeld, 7.

8. Herbert Eimert, "Hauer, Josef Mattias," Musik in Geschichte und Gegenwart, 15 vols., ed. Friederich Blume (Kassel: Bärenreiter, 1949-75), V, 1823-24.

Hauer was recognized for his talents. Hermann Scherchen was the instigator of two very important performances of Hauer's works; it was at Scherchen's suggestion and under his conductorship that the Seventh Suite for Orchestra, Op. 48, was performed at Frankfurt a/M. in 1927 and that the chamber oratorio Wandlungen, Op. 53, was performed at Baden-Baden in 1928. Performances of similar importance include a concert-version of sections of the opera Salambo, Op. 60, at Berlin in 1930 conducted by Otto Klemperer and the premier of Der Menschen Weg, Op. 67, in 1953 conducted by Hans Rosbaud in Vienna.

Governmental recognition came from two sources: Russia and Austria. In 1930 Hauer was invited to Leningrad by the Russian Commissar of Education who knew and approved of Hauer's ideas and style of composition. For personal reasons, Hauer declined the invitation. In the same year, he was given an honorary stipend-pension by the city of Vienna. Further honors were bestowed upon him when he was made an Honorary Member of the Vienna Concert-House Society (Die Konzerthausgesellschaft) in 1953 and when the federal government granted him the title "Professor" and awarded him the Grand Prize of Austria (Grosse Österreichische Staatspreis) in 1954 and 1956 respectively.

Between the years 1938 and 1945, Hauer, like so many other composers and artists, suffered great humiliation and financial loss at the hands of the ruling government. Since

he did not compose in a style amenable to the authorities (his works, like those of others, were classified as decadent and degenerate[9]), his stipend from the city of Vienna was retracted and further performances of his works were prohibited. In spite of suffering for professional reasons, Hauer, as a Christian, was fortunate in not having to endure the indignities and persecution to which many of his contemporaries were subjected.

Hauer's relationship with Schönberg is a subject which has been frequently discussed, but a few words concerning this aspect of Hauer's life are necessary in order for us to understand one of the predominant themes in Hauer's thoughts and writings. In the early stages of their relationship, there existed a certain respect if not the ingredients of friendship. Schönberg, in the third edition of his Harmonielehre of 1922, stated that Hauer's music, while perhaps serving more as a model to fit a theory, "reveals creative gifts."[10] In 1925, Hauer responded to this friendly gesture by dedicating his treatise, Vom Melos zur Pauke, to Schönberg. There were other instances of a similar nature such as the decision to collaborate on a book which would explain the different conceptions each composer had of twelve-tone composition. Unfortunately, this last idea never came to fruition.

---

9. Lichtenfeld, 8.

10. Arnold Schönberg, Harmonielehre (Vienna: Universal Edition, 1922), 488.

Relations between the two men, the aforementioned acts of friendship notwithstanding, soon degenerated into a state of animosity with Hauer stating that Schönberg had stolen from him his method of composing with twelve tones. Hauer even went so far as to utter antisemetic remarks about Schönberg in letters to his colleagues[11] and to have rubber stamps (which were used rather liberally on letters and scores) made bearing statements attesting to his authorship of the system as well as his importance as a composer. In one such case he stated: "the spiritual creator and, in spite of many imitators, still the sole person knowledgeable about and capable of creating twelve-tone music." Hauer's almost pathological hatred of Schönberg was a recurring theme with him for over thirty years.

Seen in the broadest of terms, Hauer was an eclectic who, as a thinker and creator, found his intellectual roots in such diverse disciplines as mathematics, geometry, literature and philosophy (both occidental and oriental with emphasis on the latter). In addition, he was also interested in physics and psychology, particularly as they are applied to the production and perception of musical sound.

---

11. Alois Melichar, Musik in der Zwangsjacke: Die Deutsche Musik zwischen Orff und Schönberg (Vienna: Eduard Wancura Verlag, 1959), 274-278. (Melichar quotes a letter which Hauer wrote to an unidentified friend in 1917. In the letter, Hauer discusses a meeting which the two composers had, and continues by giving a very candid assessment of what he thought about Schönberg as a man and as a composer.)

From the earliest period of his life, he studied the works of Mozart, Bach, Beethoven, etc., and, to one degree or another, was influenced by the compositions of these admitted masters. It was not long, however, before he began to repudiate the works of these composers, stating that the very foundation upon which these works were built (i.e., tonality) was outmoded and, even in its own time, was a misguided and ill-conceived system upon which to construct a piece of music. Following his "thorough investigation of the laws" and along with his increasing dissatisfaction with the concept of tonality, he literally set out on his own and consciously tried to apply to music the ideas he had gained from his acquaintance with his friends Itten and Ebner and others, as well as from his extensive reading, which included such authors as Plato, Boethius, Cassiadorus, Goethe and the philosophers of the orient. In his deliberate attempt to divorce himself from the influence of music of previous periods, he sold or gave away what was purported to be a rather extensive library of books and scores, all of which he had acquainted himself with and which were no longer of any use to him. Hauer's son, Bruno, was most emphatic about the point that the only book belonging to his father at the time of his death was I Ching, The Book of Changes.[12]

---

12. Conversation with Bruno Hauer, December 19, 1975.

As a composer, Hauer wrote more than is commonly believed: ninety-two works with opus numbers and virtually hundreds without opus numbers. If Hauer's list of works were to be divided into style periods, there would be three basic divisions. The first period comprises all the compositions written up to 1919 when, with Op. 19, he began organizing his compositions according to the twelve-tone principle. The second period covers the years 1919 to 1939. The compositions of this period have opus numbers which, as already stated, begin with Op. 19 and proceed to Op. 92. Included in this group are works employing the twelve-tone organization in all genres, from opera to string quartet, to works for piano, voice, cello, orchestra, etc. The third period of composition is represented by works which, for the most part, do not use opus numbers and which were written between 1939 and the year of his death in 1959. Most of the works of this period, almost to the exclusion of any other type of composition, are what Hauer early on referred to as Zwölftönespiel (game with twelve tones) and later simply as Zwölftonspiel (twelve-tone game). Since few of these works were numbered (those that are numbered have Roman numerals) and since he was known to have written so many (a number of which are thought to be lost or destroyed), no accurate number of compositions from this period can be stated. A great proportion of these works are for piano, either two or four

hands, but other instruments and groups of instruments are represented as well. Because almost all of them lack opus numbers and all share the same title (Zwölftonspiel), Hauer often dated them with the month and year of completion (May, 1955) or, in some cases, with an important holiday (Christmas, 1946).

As can be seen in the translation of his three important treatises which follow, Hauer's ideas concerning twelve-tone music are substantially different from those of Schönberg, or at least those that are generally taken as being representative of twelve-tone music. Central to Hauer's concept of the system is the idea that music must not be considered as a representational art, that is to say, one which employs some extra-musical story or idea as a point of departure. In taking this stand, he clearly calls into question the entire area of program music and, in fact, most of the music of the recent past, which he claims is predicated on some element of a program. He declares that such music is sensual and that sensuality has no part in a pure art such as music. He states further that absolute music (i.e., music which is free of all extra-musical associations) is the only type of music of any worth. In the latter period of his life Hauer wrote and printed a list of aphorisms which quite clearly reveal the seriousness with which he took his concept of absolute music. Given here in translation are two of those aphorisms:

> For now and for all time, God has created absolute music in all its perfection. In the course of civilization, we human beings strive to learn this sacred language of God.
>
> The language of the Creator is the art form of art forms, the science of sciences, the most holy, most spiritual and most precious language of the world. This language is music but music which is substantially different from the musically deprived notions of tone painting and the symphonic poem, from the ever "new" and modern cultural manure and from organized noise.[13]

In order to achieve the goal of absolute music in its purest state, the only mode of expression possible is through the notes and intervals of the equal-tempered system of tuning which divides the octave into twelve equal divisions.

> The tempered system having twelve equal steps is the mouth of God which proclaims life's commandments which, in turn, provide order to the world and plot the course of the planets.[14]

Equal temperament, as Hauer states, can only be made audible through the medium of instruments which lend themselves to equal temperament or are, in themselves, equal tempered instruments. By his definition, these instruments can only be the piano, harpsichord, harmonium, organ,

---

13. Found among a group of aphorisms printed on a single page. A copy of this sheet was kindly given to me by Bruno Hauer. The translation is mine.

14. Taken from a sheet of aphorisms given to me by Bruno Hauer. The translation is mine.

celeste and the human voice. While he did write for other instruments, he preferred these instruments because they do not possess the disturbing timbres found in other instruments; they allow the timbre inherent in the individual interval to predominate when it is made physically audible.

It is at this point that we come to the most important feature of Hauer's music and theories: the interval. It is from the interval that all possibilities of music arise. It is from the interval, which must be listened to in an intellectual manner, that melody and timbre come about. "Everything purely musical is contained in the interval--everything."[15] The most essential element contained in the interval is "melos." To Hauer, melos is the point of departure for all atonal music; it is also something within the musician which must be developed very carefully.

> We call melos the musical event and activity--the tension existing between notes of various pitch. Mind you, it is a musical process which takes place in us. Melos is a purely musical process in musical people which is totally intellectual. The various notes are only the physical and physiological prerequisite to this experience.[16]

---

15. Josef Mattias Hauer, Vom Wesen des Musikalischen: Grundlagen der Zwölftonmusik (Berlin, 1923), new ed. by Victor Sokolowski (Berlin: Robert Lienau, 1966), 13. Used "with the permission of the original publisher: Robert Lienau, Berlin."

16. Hauer, Vom Melos zur Pauke, 9.

Melos, considered in this manner, is the precursor of melody or, at least, of the melodic or lyric element of music.

In addition to this, it is something more. Melos is not only the beginning of melody but also "the nucleus of timbre" and rhythm.

> As soon as we sing an interval, i.e., sing its melody, we make a "musical" gesture. This expresses itself in a certain rhythm and conveys to us the "meaning" of color--of the interval. On the other hand, melody (as it creatively arises in us) with its rhythm (expression) is unfolded in the interval and, consequently, in the timbre of the sounding body.[17]

Any further definition of melos is difficult; melos is to be experienced by the musician through musical and intellectual listening to melodies. The discussion of the interval and melos is summed up in these words:

> The essence of the interval rests squarely on the fact that an unknown something (conspicuous to the eye in score form but by a long shot no "more familiar" and no "more easier to grasp") moves from one note to another as from C to D, for example, or from F to C. It does not mean, however, that two isolated pitches sound in succession or simultaneously as a sound event capable of standing by itself without that inner connection which is not possible to describe further. Briefly stated: the essence of the interval is motion. The interval is a gesture.[18]

---

17. Hauer, Vom Wesen des Musikalischen, 13. Used "with the permission of the original publisher: Robert Lienau, Berlin."

18. Ibid. Used "with the permission of the original publisher: Robert Lienau, Berlin."

Hence, melos is the motion or melodic implication which exists between two isolated pitches. Taken in its "totality," it controls both timbre and rhythm.

Since the interval, with its melic implications, is the root of atonal music, Hauer tells us that he organized and classified the melic possibilities of the twelve equal tempered tones into forty-four groups or tropes, as he calls them. What Hauer did was to consider all the possible arrangements of the twelve tones (1 x 2 x 3 x 4 x 5 x 6 x 7 x 8 x 9 x 10 x 11 x 12 = 479,001,600) and to arrange them into groups which encompass those arrangements having similar characteristics. These forty-four constellations or tropes are divided into two sets of six tones or two hexachords. Unlike Schönberg's rows, the tones in each half of the tropes are not to be construed as being locked in a fixed position, but as being more in the manner of "free agents" which, as long as they stay in their half of the row, may appear (vertically or horizontally) in any order. The concept of having an oblong box with a divider at the mid-point into which six marbles are placed on one side and six on the other side would, perhaps, not be an improper analogy. As long as the marbles stayed within the confines of the half of the box to which they were assigned, they could be extracted in any order, providing that all the marbles of one side were extracted before proceeding to the other side. Is is interesting to note that Hauer often used the trope-halves in reverse order.

In order to accommodate easy access to these tropes and their use, Hauer devised a twelve-tone notation which, he claims, aided him in the discovery of the tropes. The type of notation involved is a tablature variety in which groupings of two and three lines, with intervening spaces, upon which notes are placed, represent a pictorial view of the keyboard. In this notation, the lines represent the black keys of the keyboard and the spaces the white keys. "The octaves will be differentiated by clef signs and the octave signs in the case of very high or very low tones. The treble clef designates the one-line g-sharp or a-flat, the alto clef one-line d and the bass clef small g-sharp or a-flat."[19] To Hauer, the advantage of such a notation in his work was that it spread out the music (i.e., trope) over a larger field, making the music more easily perceived; it made the use of accidentals unnecessary; and, it lent a certain degree of equality to each note that was not possible in the "old system." In line with this, Hauer states that in his system of notation it is no longer necessary for the composer to choose between F-sharp and G-flat or D-flat and C-sharp, etc. While Hauer preferred this system of notation and worked out most of his later works in this system, few of his published compositions appear in this form.

---

19. Josef Mattias Hauer, "Zwölftontechnik: Die Lehre von den Tropen," Theoretische Schriften (Vienna: Universal Edition, 1926), II, 1.

In the course of his discussion on the creation of twelve-tone music, Hauer says that there are four general textures to which twelve-tone music is amenable, and that there are certain instructions concerning voice leading and doubling, etc., which should be observed. He is quite careful to point out, however, that no rules or conventions will be imposed on the reader: "I, who in all my life have railed against prejudice and narrow-mindedness and have had to suffer grievously because of this, will certainly not slip into the mistake of concocting inhibitive regulations which later could serve as an excuse for shop-talk."[20]

Quite briefly stated, the four general textures are as follows:

1) A trope is selected and used as the basis for the melody as well as a simple chordal accompaniment. Most examples of this style result of the series of altered dominant sevenths, passing tones and open fifths and octaves which are so apparent.
2) The second is really an incipient counterpoint which is created by tying over different notes of the trope and creating a polyphonic texture. Again, most of the examples in this category can be analyzed along the

---

20. Ibid., 4.

lines of traditional harmony because of the dominant-seventh and augmented sixth chords which are also apparent.

3) This type is what approaches true polyphony in three or four voices. Examples of this type show the trope's being divided into three or four note fragments and being rotated among the various voices in an almost stimmtausch fashion.

4) In the fourth, the division of the trope into the two hexachords is visibly apparent. This is a vertical (the word static is also applied) style in which there may be three or four voices, but the trope is spread out vertically among the voices. In this style, the trope generally occupies a regular number of beats or parts of a beat.

The three treatises which appear here in translation were written in the eight year period between 1918 and 1926. The Essence of Musicality: Foundations of Twelve-Tone Music, which appears first, is derived from a work which Hauer published at his own expense in 1918: Über die Klangfarbe (Concerning Timbre). This treatise was reworked and expanded and appeared in 1920 as Vom Wesen des Musikalischen: Grundlagen der Zwölftonmusik (The Essence of Musicality: Foundations of Twelve-Tone Music), published by Waldheim-Eberle. In 1923, the publishing house of Robert Lienau, Berlin-Lichterfelde, brought out a

second edition. The edition upon which the present translation is based is the new edition of 1966 which combines the original text of the first edition with that of the second edition.

In The Essence of Musicality, Hauer gives an exposition of the underlying philosophy of his twelve-tone system. He begins by discussing the manner in which musical sound is produced and the manner in which it is perceived or should be perceived. As a point of departure, he uses the overtone spectrum to show how music has been derived and how instruments came about. He proceeds with a discussion of the musical imagination and a technical discourse on the manner in which intervals are derived. The latter is accomplished when he gives the vibration ratios of the individual intervals of pure tuning in fractions and in decimals rounded off to the sixth place. After this discussion of pure tuning, he continues by stating that these pure intervals force the ear to listen in a sensual manner which can only be overcome through the adoption of the tempered system having twelve equal half steps. The conclusion of the work is, in part, given over to a discussion of all the intervals (octave, augmented fourth, fifth, etc.) in which he compares the timbre resulting from the melos of each pitch (keys and intervals calculated from C) to the color theories of Johann Wolfgang von Goethe as found in his Farbenlehre (Theory of Colors)

of 1810. For each pitch, he also gives specific characteristics of rhythm and overall sound as they relate to the musical repetory. In the final pages, he reiterates the idea that intervals create timbre, and that timbre is only obscured by orchestral instruments which have their own specific timbre; atonal music derives from that objectivity found in the musical intuition which finds its inspiration in equal tempered instruments (piano, harmonium, etc.).

The two other treatises, From Melos to the Kettledrum and Twelve-Tone Technique, appeared in 1925 and 1926 as Volumes I and II, respectively, of his Theoretical Writings, published by Universal Edition, Vienna. In Volume I, Hauer puts forth questions and, in the manner of a catechism, answers these questions, including, in many cases, examples drawn from his compositions as well as polemical asides which attempt to vindicate him of criticism he was receiving at that time in his life. Much of the material appearing in this volume constitutes a repetition of that seen in The Essence of Musicality but in a much more concise form. The problematic title of this work (From Melos to the Kettledrum) results from the fact that he begins the work by discussing aspects of melos and melody and concludes by stating that, of the percussion instruments, he has gone so far as to employ timpani in composing for orchestra.

The second volume of the Theoretical Writings, Twelve-Tone Technique: The Theory of the Tropes, which attempts to demonstrate the architecture of twelve-tone music, is addressed to the composer, as Hauer tells us in the "Preface." To demonstrate his point about the architectural requirements of twelve-tone music, he makes reference to the manner in which bridges constructed of different materials need different methods of construction; this he compares to the requirements of twelve-tone music and the "old" diatonic music. Different types of texture and voice leading are also discussed.

In the Preface to the present work, an allusion was made to the fact that Hauer often expressed himself in a less than clear manner, and that readers of the original text find it difficult to ascertain exactly what he meant in certain sections of his writing. The job was no less difficult in making this translation. In many instances, he wrote in a stream-of-consciousness style which is filled with parenthetical asides, polemical statements, rhetorical questions and self-importuning remarks. The majority of these are supported by innumerable modifying clauses which were intended to leave nothing to the reader's imagination but which, in fact, have the effect of clouding the issues for even skilled readers of German. Hauer also indulged in many Viennese dialectical expressions. Concerning the lack of precise writing, particularly as it applies to The Essence of Musicality:

Foundation of Twelve-Tone Music, Alois Melichar says:

> (In this regard, I would like to point out that, in fact, several sections of Hauer's writing particularly in his Theory of Twelve-Tone Music [sic], are rendered in a precise, scholarly fashion which stand out in stark relief to Hauer's prevailing manner of conversation or as he, himself, calls it, his clumsy schoolmaster German. The readable parts seen here probably stem from the collaboration with the Viennese philosopher, Ferdinand Ebner, which was requested by Hauer.)[21]

In assessing his ability as a musician-creator and his ability as a writer, it is obvious that Hauer possessed greater aptitude for the role of the musician-creator. Of the seven liberal arts, Hauer had a consuming passion for and a considerable knowledge of the quadrivium (astronomy, geometry, mathematics and music). For the trivium (grammar, logic and rhetoric), however, he showed little ability and even less concern. This, perhaps, is as fair an assessment of his abilities as is possible. It recognizes his position as a thinker while showing that he oftentimes lacked the ability to form his thoughts into readily understandable sentences and paragraphs.

In translating these three important works, the attempt has been made to provide as accurate a translation of the original German editions as possible. That is to say, the attempt was made to provide the reader of the English

---

21. Melichar, 255-256.

version with as fluid a translation as possible without destroying the abiding character of the treatises, i.e., the Germanic-Viennese quality of the language. Where feasible, I have tried to retain the format of the individual chapters, sub-sections and paragraphs, etc. found in the original editions, so that the translations could be easily compared with the originals.

In the case of the translation of the sections of Goethe's Theory of Colors, I have, in several instances, used the translation done by Eastlake. These are all so noted. Where no such note appears with the translation, it is to be assumed that I have provided my own translation.

In order to separate my footnotes from those of Hauer, I have employed numbers for mine and left Hauer's as they appeared in the German editions: i.e., they are indicated through the use of an asterisk (*) in both text and explanatory section.

Almost all the examples included in the translation are photographic reproductions of the examples appearing in the original edition. These were used in order to preserve the character of the original, particularly since the majority of the examples (i.e., those appearing in the first and second volumes of the Theoretical Writings) appear in Hauer's own hand.

Chapter II

J O S E F M A T T I A S H A U E R

THE ESSENCE OF MUSICALITY:

FOUNDATIONS OF TWELVE-TONE MUSIC

Robert Lienau Berlin-Lichterfelde

FOREWORD

In our conception of music, we are guided by two phenomena: by melody, as it is found intellectually in a musical person and by isolated sound as it is physically produced in an instrument. An interrelationship of immense power and conformity with natural laws exists between isolated sound and melody in a person. This reciprocal effect is manifested in two ways. For example, if a person wants to express a musical event as such (in order to communicate it to someone), he chooses certain pitch patterns for this purpose. Conversely, if another person perceives these pitch patterns, the same or a similar musical event is awakened in him.

Pitch	Interval
Noise	Musical sound
Rhythm	Melos
Absolute pitch	Relative pitch
Pure tuning	Well-tempered
Tonal	Atonal
Overtone spectrum	Timbre-totality
Violin, Horn, . . .	Piano, organ, . . .
Yodeling, bellowing, . . .	Singing, speaking, . . .
Rules, conventions	Statutes, Nomos
An object in motion	An object at rest

PITCH and SOUND

What we in the musical world call a pitch is in reality a complex chord: a sonority. We know from physics that any pitch of any musical instrument contains a series of overtones. Helmholtz has called our attention to these aliquot tones which stand in fixed intervallic relationship to their fundamental. (See Drawing B in the Appendix.) We can, for example, very easily differentiate a few of the stronger, more prominent overtones with the unaided ear.

Pitch (rudimentary, simple--an abstraction) is perceived through abstract (unmusical) listening and through analysis of the listening experience while musical sound (complex--a multiplicity of sound elements experienced as a unit) is perceived through concrete (musical) hearing. Musical sound is the synthesis of diversity in the auditory senses. (The senses are the intellect.) Pitch is, therefore, (abstractly heard) an element; concretely heard and experienced, a musical sound (a chord) is, in short, pitch with the simultaneous sounding of its overtones. Melody could be defined as the deployment of the sensory properties of a musical sound: the deployment of a chord in time.

That we hear a sound not for itself but as a pitch or a sonority (therefore evaluating it musically and esthetically) is based not on its physical characteristic (frequency) but on the aspect of "intellectuality" which is basic to the organic process of hearing.

THE OVERTONE SERIES AND NOISE

The timbre of a tone (instrumental) depends upon the state of its overtone series (prominence of one or another overtone--the number and height of the overtones). Every tone has a timbre in so far as it implies a chord (an aggregate of sound elements--the fundamental with its overtones--an intellectual, physical synthesis of a diversity). That it implies (foreshadows) a chord, lends it its color. Timbre is also the premonition of a melody (that is, melody is equivalent to the deployment of the diversity of sound in time).

In all instruments, noise as well plays a large part (for example: bowing, blowing and plucking, among others); it even predominates in some (the drums, for example). In the narrowest sense, timbre (for example that of the trumpet, the violin, etc.), is, therefore, caused by the fixed condition of the overtone series and by noise.

Every pitch, as it is produced in a purely physical manner on any instrument, has two characteristic features: one is the purely sensory (noise) and the other is that which demands musical evaluation (namely, the overtone spectrum). Noise would correspond to the "sense of touch" if we imagined the ear (in the same way as the eye) to be an organically modified organ of touch. Coarse, rasping, whistling, piercing, hollow, nasal, bawling, cackling, howling and an entire series of other words are

designations for noise. For a totally unmusical person, there would be only noise, for he would also have to experience the overtone spectrum as such. Unmusical natures have a preference for noise. The overtone spectrum (that is to say, the musical element of timbre) is ignored so much by most people that they simply label noise as "timbre." They look for the nature of timbre in the instrument in its physical state. It is exactly that state (wherein one has to regard timbre in a musical sense, i.e., to listen in a natural manner and thus to listen to that which musically constitutes the nature of the instrument) which, in itself, is contingent upon the timbre in its intellectual origin. That is to say, it is contingent upon that timbre which is produced by the freely created musical fantasy (which is in no way dependent upon the sound experience) that originates in the instrument. Only this timbre, in the intellectuality of its origin, made man into the creator of the sounding body. We could say that in its inner state it caused man (who had the desire) to allow the intuitively experienced timbre to become physically audible and to seek that sounding body which would make the musical experience of the sphere of intuition possible also in the sphere of sensory perception. A complete realization of the musical presentiment of timbre within the domain of the sensory experience is, perhaps, impossible from outside. That is to say, the

timbre of the instrument will always obscure that timbre which is presented in the intuition.

That primal-musical experience which the first builder of musical instruments must have had was completely forgotten. The great violin makers, for example, met with a form for the violin from which, through their genius, they created that violin which corresponds to the higher developed aesthetic requirements. This was accomplished by suppressing noise and by bringing to the fore the overtone balance which is characteristic for this instrument in its greatest purity. That violin which yields the instrumental prerequisite for Mozart's violin melodies (indeed, Mozart has, perhaps, composed essentially violin melodies) can no longer be imitated in spite of the most exact measurement of quality. This is a result of the fact that in the creation of their instruments, none of the more recent violin builders have been inspired by its intuitively perceived timbre. It is to be assumed that the situation with other musical instruments intended for artistic purposes may have been similar to that of the violin. Concerning noise (which is probably never entirely avoidable in the playing of any instrument), one could compare it with canvas upon which a color becomes visible.

THE MUSICAL ELEMENT IN MAN: MELODY

The musical ear has an intellectual (aesthetic) need for "pure tone" (which is not the same as pure pitch!).

The possibility of realizing (making physically audible) "ideal" listening (the hearing of pure tones within musical creators, which is related to an "intellectual" hearing need) is fundamental to the creation of the sounding body. In this sounding body, the struggle between pure tone and the "resistance of material" (noise) takes place. The great diversity of sounds in the musical work of art is of "phychic" origin. This is a condition stemming from "inner life" (not from external experience).

The musical element in man is not an isolated sound or pitch but melody (or surely, at least, the nucleus of it--the melos) which arises from a "creative" act. It can arise in two ways: (1) intuitively; arising completely from the intellectuality which forms the basis for the auditory experience, from the sound event in its objectivity which is subjectively anticipated--i.e., from the truly creative and productive--and (2) derivatively; dependent upon an objective sound experience, creating by retrospection, as, for example, by listening to a musical work (in principle, such is the case, no doubt, with listening to an isolated pitch with its overtone structure). Any kind of chord, physically produced, will only acquire aesthetic meaning if it is inwardly perceived by a musical person who transforms and translates it into melody. That, however, is also, at the same time, the process by which such a chord becomes timbre. The musician inserts

something subjective (the musical element), inwardly deciding in favor of color. Indeed, in Goethe's Farbenlehre it is even referred to in this manner: the beginnings of color and one's individual preference are one and the same. Most people, however, barely distinguish colors; that is to say, color per se, with its spiritual-aesthetic capacity, says absolutely nothing to them. They are not able to grasp or interpret the melos.

THE INTERVAL: THE ESSENCE OF TIMBRE

If we perceive noise as a more or less disturbing phenomenon of isolated specific timbres, we have already broadened the notion of "timbre." The essence of timbre, therefore, is based on the characteristic structure of a chord. Let us set two axioms into juxtaposition:

The essence of every timbre is a particular spectrum.

Every spectrum contains a particular timbre.

[If, for example, on the piano we were to strike firmly the contra C and the one-line D, G-sharp, and A simultaneously but less firmly, we would then have the impression of a bell-tone (the City Hall clock of Vienna, for instance). The ninth and thirteenth partials emerge strongly from the series:

C,	C,	G,	c,	e,	g,	b	,	$\overline{c}$,	$\overline{d}$,	$\overline{e}$,	$\overline{f}$,	$\overline{g}$,	$\overline{a}$,	$\overline{b}$	,	$\overline{b}$	,	$\overline{\overline{c}}$
1	2	3	4	5	6	7		8	9	10	11	12	13	14		15		16

(Since the thirteenth partial lies between the tempered G-sharp and tempered A, we strike both pitches on the piano. See Exhibit B.) If we disregard the particular sound of the piano, the essential element of the above-named timbre lies in the tri-chord sonority: C-D-(G-sharp)A.]

We can go another step further, however:
[In the experiment with the bell stated above, the (G-sharp) A is the highest of the more prominent overtones. From musical experience, we know about the decisive impact which belongs to both extreme pitches of a chord, particularly if its intervals always remain constant as is the case in the overtone series. Therefore, the simulation of the bell-tones on the piano will be successful if we strike only two pitches: the contra C and the one-line A.]

In every overtone series, one partial stands out the strongest. At the same time, this partial forms the upper limits. Its intervallic relationship with the fundamental determines the musical character of the timbre. The quintessence of any timbre is ordained, therefore, by two pitches (the diad--the simplest chord) and their intervallic relationship.

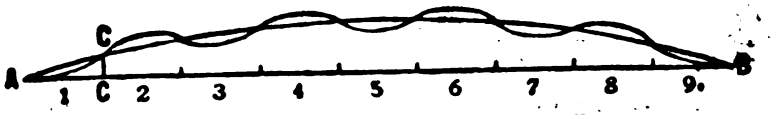
The most essential element of any timbre can be heard in the interval which is formed by the fundamental and the highest of the more prominent overtones of a series. Each interval conceals the nucleus of a timbre. The interval lends to music the effect of color. Interval = color.

Hence, that which leads us to "music" through various sounding bodies (instruments) and that to which we conversely lend a musical "meaning" through musical, creative listening is the overtone spectrum with its variations which can, in a certain sense, be designated as noise. However, through its intervallic relationships and through the "musical" in the listener (i.e., the timbre -, melody-creative element whose intellectual meaning is grasped by him in the interval), that overtone spectrum is detached (even to the timbre which is the pure color) from the body, from the substance, from the material: from noise.

Many may now say that the overtone series is always the same (1:2:3:4:5 etc.); how can it imply different colors? True! The overtone series, for instance, does resemble the major triad in its various positions. This results from the accentuation of different overtones in different timbres. As an example, we speak of the fifth of a given chord, thereby thinking about the outer pitches. These play a great role in the individual overtone spectrum. The fifth, however, designates an interval and this leads us directly to the musical, to melody and to color. This results from the fact that we inwardly "determine" that the physical fact of the distance existing between two pitches (vibration ratio), hence, the interval, obtains a musical "meaning." The essence of tone color lies precisely in the interval.

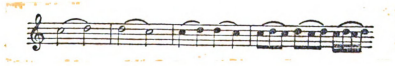
One's individual preference for color, through which color itself is given specific aesthetic meaning for the first time, is actually nothing other than the "doctrine of aesthetics" (which cannot be more closely delineated) applied to the listening process.

If that is really the case, then the specific timbre of an instrument (untroubled by "noises", naturally, and, therefore, appearing in its intellectual purity) must also be audible on the piano. For technical reasons, the hammers of the piano must strike different places on the strings (in the seventh to the thirteenth segments). In this manner, various overtones stand out more strongly, and produce all the imaginable timbres particular to the instrument. At first glance, this phenomenon is a shortcoming and causes difficulties even for the tuner in his work (particularly at the register changes). Since the individual timbres of the strings crop up again in the correct positions, however, this absolute "temperament" can also be employed in an aesthetically useful manner (for example, by striking the string in the ninth segment, the eighth overtone stands out more strongly and, thereby, produces the violin tone in the register between the one-line and two-line A). Pay attention to the vibrations of the string which are indicated in the drawing.



The straight line $\overline{AB}$ is the string at a state of rest which is struck by the hammer at C ($\overline{AC}$ = 1/9 $\overline{AB}$). What results is the primary vibration which yields the fundamental and the secondary wave-form vibrations which in turn yield the major second, thus allowing the eighth overtone to come to prominence. Similar to the harmonics on string instruments, the secondary wave-form vibrations emerge through the "node formations" which, in this case, are brought about by the impact of the hammer. Naturally, only the "musical ear" will actually hear the "violin tone" which arises from the piano tone. Such an ear could be described as one which, in itself, has creatively and intuitively comprehended timbre in its intellectuality, and which, therefore, even in listening to the sound of the violin (produced on the violin and not on the piano), hears this in its musically "noise-free" reality. It does not listen, therefore, to the instrument in its objective physical state (in which the disturbing element of noise is always present) but puts it and its color aside in the creative manner already alluded to. There are only two kinds of "ears": ears which precede "reality" (the "event") and those which tag along after it.

If I were to sing the interval of the major second, I would sing the most idiomatic melody of the violin: the germinal melody which forms the basis of a host of works. In addition to that, it is necessary that we become "pathologically affected", as Goethe said, when viewing an isolated color. Therefore, in our case, we must imagine the interval, its character, its inherent rhythm: its melos. We must imagine it in its fluid, soaring state. For example:



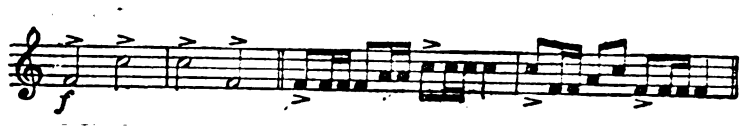
If we now imagine the overtone series of an open string on the violin, we have a conception of the melody of the "Queen of Instruments":

Every note of the violin is subject to these vibration ratios. Therefore, G-, D-, A- and E-major and minor, corresponding to the open strings, are the true violin keys, for they approximate the natural ratios of the instrument (bearing in mind the violin melody per se). They do not disturb the vibrations with intervals which are foreign to the violin. They advance the "music" of the violin but not

the possibilities of noise which many people designate as "unusual timbres" arising therefrom.

The discourse on the "violin melody" is at this point: it is just as if only one melody exists in this instrument and, perhaps, that is in fact so. However, the great composers (Mozart, for example) who have composed the true melodies for the violin (N.B. the D major passage in the renowned C minor Fantasy for Piano by Mozart) have done nothing other than extract and realize the creative "possibilities of development" plainly existing in the violin melody. These possibilities, however, are undoubtly limited and, in the course of the history of music, the time had to come when they all were, so to speak, extracted and thoroughly exhausted. At this point begins the "rape" of the violin; melodies which are foreign to its timbre character are forced on the violin. It is just as if a sculptor executed in wood an idea which was originally conceived in marble.

The "spirit" of an instrument lies in one interval or another. For example, if we strike a "pure" fifth on the piano in the middle range, we are reminded of trumpets. Indeed, the mere notion of the fifth is sufficient. Thus, it shows the character of this interval (naturally, that of the melody with its "inborn" rhythm as well) to be somehow coalesced with the character of the trumpet. For example:



(Perhaps in the trumpet, the second overtone, the fifth, stands out more strongly.) From the trumpet we hear its melodies and, vice versa, we give a melody having certain qualities to the trumpet. In any case, however, the trumpet melody came about before the trumpet. Perhaps a "soldier" searched long enough until he found that tube from which trumpet sounds could be produced: fanfares.

To which interval the character of an instrument is bound is actually immaterial. We must not think of a melody (i.e., of this or that interval) as belonging to this or that instrument (to the object--to "noise") but rather about the interval per se, as making a purely musical (i.e., a "color") impression upon us. Just in the mere notation of it, the interval, with its decisive musical character, is a specific timbre.

Goethe in his Farbenlehre:

> Since color occupies so important a place in the series of elementary phenomena, filling as it does the limited circle assigned to it with the fullest variety, we shall not be surprised to find that its effects are at all times decided and significant, and that they are immediately associated with the emotions of the mind. We shall not be surprised to find that these appearances presented singly, are specific, that in combination they produce an harmonious, characteristic, often even an inharmonious effect on the

> eye, by means of which they act on the mind; producing this impression in their most general elementary character, without relation to the nature or form of the object on whose surface they are apparent. Hence, color considered as an element of art, may be made subservient to the highest aesthetical ends.[1]

THE MUSICAL IMAGINATION

We have already entered the domain of the musical psyche, of the power of imagination: of fantasy. That notwithstanding, reality remains crowded within the narrow confines of its borders. (Reality is the sounding body, the instrument: the intractable material.) We have to go on to the "conception" of timbre, however, in order to gain an aesthetic footing. Starting with the interval, we can survey the entirety of the world of musical color; we can assign isolated phenomena their proper place within the circle and separate the non-essential from the essential and the simple from the compound. Without the well-honed sense for intervals and rhythms which dwells in our psyche, all music would come apart and fall into oblivion (into a din). Music is the conversion of the innermost flow of life into intervallic and rhythmic gestures.

Ideally, the musical imagination has to do with "pure sounds" (with sounds and their colors, undaunted by the

---

1. Johann Wolfgang von Goethe, Theory of Colours, trans. Charles Lock Eastlake (London: John Murray, 1840), new ed. with introduction by Deane B. Judd (Cambridge, Mass.: The M.I.T. Press, 1973), 304.

"resistance of the material") whose realization is sought in the sounding body. (Always only an approximate realization!)

Is musical imagination fertilized by the timbres of the sounding bodies? No. It creates these timbres by itself. Out of the need to make them audible in a physical sense (in the realization of the "ideal" sound), it searches for the sounding body. The sounding body itself was created only through the aid of this musical imagination. Nature did not place it at the disposal of man; it met him only part way at the very most.

The "timbre-creative" musical imagination is necessary not only to create musically but also to listen musically. The reason for this is that the "realization" of "ideal" sounds by sounding bodies is never perfect. The person possessing musical imagination (timbre-creative imagination) is the only one to be called musical. The aesthetic satisfaction in listening rests on the fact that the person hears whatever his musical imagination demands him to hear (valid, naturally, in all matters of aesthetics).

Goethe has this to say about the eye:

> The colors which we see on objects are not qualities entirely strange to the eye: the organ is not thus merely habituated to the impression; no, it is always predisposed to produce color of itself, and experiences a sensation of delight if something analagous to its own nature is offered to it from without; if its susceptibility is distinctly determined towards a given state.[2]

---

2. Goethe, 305.

There are also composers whose musical imagination (because it is secretly non-creative) is stimulated and fertilized by the timbre of the sounding bodies. These are "mechanical", "musical engineers": "unmusical" people. They create a type of music which drives forward to the noise of the material (instead of wanting to overcome that noise). This is nothing but materialism in music and such materialistic music can "enthuse" musically unfamiliar people (Wagnerians). The joy of chaos--the joy of noise--even Beethoven was quite noisy at times (note the Fifth Symphony and the Finale of the Ninth!!!).

The "rebirth" of music is the return to original musical experience in its intellectuality. Look for this intellectuality, however, not in the realm of falsehood but in the domain of the idea.

The theory of musical color gives the real meaning which, quite plainly, is the primal-musical meaning of the intervals and, thereby, the sense and meaning of melody.

INTERVAL AND RHYTHM: GESTURE

In the interval lies not only the nucleus of timbre (the melos) but also that of rhythm.

As soon as we sing an interval (i.e., sing its melody) we make a "musical" gesture. This expresses itself in a certain rhythm and conveys to us the "meaning" of color: of the interval. On the other hand, melody (as it arises creatively in us), with its rhythm (expression), is

unfolded in the interval and, consequently, in the timbre of the sounding body. The interval is a "melody:" a "music." At the same time, however, it is something also capable of physical measurement. Everything purely musical is contained in the interval--everything. The essence of the interval rests squarely on the fact that an unknown something (conspicious to the eye in score form but, by a long shot, no "more familiar" and no "more easier to grasp") moves from one note to another as from C to D, for example, or from F to C. It does not mean, however, that two isolated pitches sound in succession or simultaneously as a sound event which is capable of standing by itself without that inner relationship which is impossible to define further. Briefly stated: the essence of the interval is motion. The interval is a gesture.

Each gesture means something; through the fact that a motion means something, it becomes gesture. The meaning of a motion rests upon the intellect. The interval is intellectual movement (movement of the intellect); therefore, it means something by itself.

In the interval is the pitch (the sound)--not something subject to motion but motion itself. For natural scientists, movement in a sound equals motion of the mass (the theory of frequencies).

At this juncture the symbolic and allegorical usage of colors may also be pointed out. The fire alarm, for example, is an allegorical application of the fourth which is

similar to the way colors are used as signs or signals, etc. The excitement of the fire alarm does not stem from the fourth but from the fact that we are reminded by its sounding that there is (perhaps in our immediate vicinity) a fire or that some other catastrophe has taken place. It also stems from the fact that it is produced by a trumpet, a blatant fifth-colored instrument. However, in its musical nature, the fourth is a cadential interval which implies rest and has, since time immemorial, been so employed (symbolically) in real music. The Wagnerian leitmotiv is an allegorical combination of notes and chords similar to the color of flags.

The interval has a musical "meaning." In the "meaning" lies something infinite; if it becomes finite, it is transformed into a purpose. The fire-alarm fourth has a purpose, but when it became connected with the fire alarm, the musical meaning of the interval was lost.

Goethe discusses the application of colors in this manner:

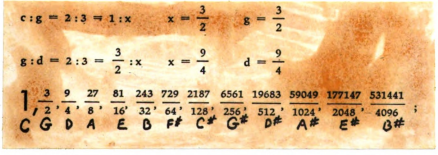
> It has been circumstantially shown above, that every color produces a distinct impression on the mind, and thus addresses at once the eye and feelings. Hence it follows that color may be employed for certain moral and aesthetic ends. Such an application, coinciding entirely with nature, might be called symbolical, since the color would be employed in conformity with its effect, and would at once express its meaning. Another application is nearly allied to this; it might be called the allegorical application.
>
> That, lastly, color may have a mystical allusion, may be surmised, for since every

> diagram in which the variety of colors may be represented points to those primordial relations which belong both to nature and the organ of vision, there can be no doubt that these may be made use of as a language, in cases where it is proposed to express similar primordial relations which do not present themselves to the senses in so powerful and varied a manner.[3]

The doctrine of musical color (timbre theory), consequently, results completely from the theory of intervals.

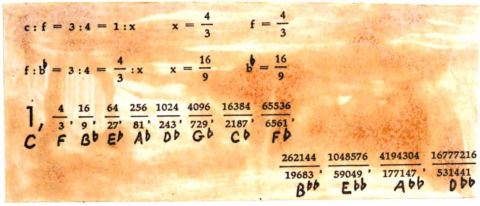
DESCRIPTION OF THE INTERVALS

Of the pure intervals, we know the octave with its vibration ratio of 1:2, the fifth at 2:3 and the fourth at 3:4. With these pure intervals, an entire system of nothing but pure intervals ("mathematical" temperament) may be constructed. If we take C, corresponding to our notation (C major without key signature), as a point of departure, and assign 1 (one) to its rate of vibration, and, if we compute the series successively, we obtain the relative pitches of the circle of fifths:



3. Goethe, 350.

In like manner, we compute the circle of fourths:



These resulting vibration ratios extend over seven octaves, if figured by fifths, and five octaves, if figured by fourths. In order to get all the intervals in the space of an octave, let's accordingly divide by 2, 4, 8, 16 . . . (fundamental to octave is 1:2).

The relative pitches as they appear in chromatic succession:

Converted to six-place decimals, they appear in this manner:

C	1	1	C 1
C♯	1.067871	1.059463	D𝄫 1.053497
D	1.125	1.122462	E𝄫 1.109857
D♯	1.201354	1.189207	E♭ 1.185185
E	1.265625	1.259921	F♭ 1.248590
E♯	1.351524	1.334838	F 1.333333
F♯	1.423828	1.414213	G♭ 1.404663
G	1.5	1.498306	A𝄫 1.479821
G♯	1.601806	1.587399	A♭ 1.580246
A	1.6875	1.681792	B𝄫 1.664278
A♯	1.802032	1.781795	B♭ 1.777777
B	1.898437	1.887744	C♭ 1.872885
B♯	2.027286	2	D𝄫 1.973080

In Example B, we have taken a line which has the designation one (1) and represented these relationships of size by means of a system of coordinates.

We see a curve having various bulges. If we think of the dotted line as an ideal mean (as an evenly bent curve leading from C to c), we see from this inexact construction that the further the corners of a bulge are removed from the dotted line, the further their intervallic relationships are removed from C.

We can also find the dotted line through calculation. Thus: [We call the point which is to be determined somewhere between F-sharp and G-flat simply "F-sharp"]; therefore:

C:F-sharp = F-sharp:C (octave) $x^2 = 2$

1:x = x:2 $x = \sqrt{2} = 1.414213$

The dotted line moves in geometric progression (see the boxed numbers above).

The points of the circle of fifths are equidistantly removed from the dotted line when moving upward in this sequence: G, D, A, E, B, F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp, B-sharp. The same happens to those of the circle of fourths when moving downward, as in this sequence: F, B-flat, E-flat, A-flat, D-flat, G-flat, C-flat, F-flat, B-double-flat, C-double-flat, A-double-flat, D-double-flat.

In order to make the relationships of size even more explicit, we draw the dotted line as a straight line and as a circle, and superimpose on them the distances of the fourth and fifth points from them. Instead of an increase in the distance as we ascend, let's assume equal distances. (Look at Drawings A and C.)

The agreement of the number of accidentals of the keys (G major, one sharp; D major, two sharps; F major, one flat. . .) and the number of divisions should be noted next. The dotted line represents the mean of the temperament.

In order to become better acquainted with the overtone series (the natural pitches), let's again take our point of departure as C and fix its rate of vibration at 1.

(Compare the following with Drawing B.)

1:2 = C:C (perfect octave)

2:3 = C:G (perfect fifth)

3:4 = G:C (perfect fourth)

4:5 = C:x; x = 5/4 = 1.25 (comes close to the pure F-sharp)

4:6 = 2:3 = C:G (perfect fifth)

4:7 = C:x; x = 7/4 = 1.75 (still lower than the pure B-flat)

4:8 = 1:2 = C:C (perfect octave)

8:9 = C:D = ("pure" major second)

8:10 = 4:5 (see above)

8:11 = C:x; x = 11/8 = 1.375 (higher than the pure E-sharp)

8:12 = 2:3 = C:G (pure fifths)

8:13 = C:x; x = 13/8 = 1.625 (lower than the pure B)

8:14 = 4:7 (see above)

8:15 = C:x; x = 15/8 = 1.875 (comes close to the pure C-sharp)

8:16 = 1:2 = C:C (pure octave) etc.

MAJOR AND MINOR

The overtone series is the natural color spectrum from which the diatonic major scale emerged.

The "natural" melody is the scale. Every pitch contains within itself a scale in its overtone series. Every pitch also has a scale on account of its relationship to C (relationship of the overtones to their fundamental)--as with the Greek modes. The "sounding" of a pitch forces a scale: the melody. Melody is the synthesis of a multiplicity. The "timeless" inner life wants to display itself

in time. This, however, requires space: namely, the sounding body present in the space.

Major triads and scales are natural phenomena. Their exclusive use constitutes the natural state of music (imitating nature). Minor is, contrary to major, already a phase of spiritualization. The highest step of spiritualization in music, however, is reached when the entire interval- (timbre-) circle is employed in an equal manner.

Mathematically pure tuning (which is based on the "pure" intervals of the harmonic series) gives us an excellent picture of the diatonic major and minor system and the old diatonic notation. In practical music making, however, the natural, pure and tempered were used, until now, in an alternating fashion and even simultaneously.

TEMPERAMENT: THE TOTALITY OF TIMBRE

The infinite number of intervals in an octave (the others are only repetitions) form the intervallic- (color-) totality in music.

Every equal temperament divides the circle of intervals (colors) within the octave into equal parts. By this means, a representative of each color ("interval complex") is selected. (Look well at the illustrations.) We are reminded of a color spectrum in which all colors are contained in equal proportion in an endless variety of degrees. As soon as this circle is divided into equal parts, a representative of each color must be present.

Every equal temperament is, therefore, a totality of timbre.

For the realization of all "pure" timbres, we would need an instrument having limitless pitches. However, they would have to be absolutely devoid of overtones and noise and be so constructed that one pitch would be differentiated from another only by the pitch level (i.e., similar to the piano or harmonium only infinitely more perfect). These tones would also have to have the capacity of being able to be played as loud and as long as desired. Let's envision this absolutely perfect, ideal instrument with which we can totally realize any intuitively experienced music. Since pitches devoid of overtones and noise cannot be produced, we immediately have problems. What's left? One must be content to produce pitches with the same noise and with the identical overtone series. Yet not even that is possible! With the piano, for instance, think about the transition from the register which is double strung to that which has single strings bound with wire. Just ask any piano builder what kind of difficulties that creates. Furthermore, if we have an infinite number of pitches, who will tune them? How many hands would it take to play them and how would they be notated? What can be done? Let's use the term "infinite" as the mathematicians do (just as they calculate the area of a circle from the infinite number of isosceles triangles whose sides equal the radius

and whose base equals the circumference; in this manner, we have to imagine a circle from whose middle point so many radii emanate that one lies immediately adjacent to another). Therefore, infinite numbers of intervals are all intervals and, consequently, all colors. Using all the intervals, one can construct any timbre, even that of any orchestral instrument one chooses, naturally. We must not forget that noise is also important for exact sound reproduction (that of the tuba, for example). However, it was our intention to overcome noise (or shall we also set up a "noise-totality" in the form of a "noise-temperament" for certain composers?) in order to arrive at real "music." In as faithful a manner as is possible, we want to arrive at a reproduction of "pure timbres" as they emerge from the musical intuition and from melody, and as they are envisioned in the mind of the creator and also, naturally, the "musical" listener. We should bear in mind how disturbing it is that every note produced has a series of overtones (which is unavoidable) and also a particular noise! Hence, we take like ratios, in order to push the particular noises and overtones (physical "timbres") into the background and move the interval (musical color), which is the difference in the (relative) pitches, into the foreground.

Let us further contemplate the term "infinite" in the mathematical sense: in an infinite number of equal parts.

(We count the radii in the circle mentioned above.) Therefore: a temperament, having 1200 pitches. One thousand, two hundred equal steps in the octave! For these nuances, we hardly have the powers of discrimination. [Following the experiments of Ellis and Stumpf, we know that a "cent" (i.e. the hundreth part of a tempered semi-tone) can be discriminated by the human ear only through the aid of beats.] Now a lesser number: one hundred. That would yield seven hundred pitches in seven octaves. Who could play in such a manner or, for that matter, write? Still fewer: thirty-six sixth-tones or twenty-four quarter-tones. Busoni and other disdainers of temperament will now surely bestir themselves. Occidental music has been satisfied with twelve semi-tones up until now (the question is whether this is the result of mere self-contentment), and it certainly requires a great musical capacity* to comprehend this as a formal unit. These twelve semi-tones must

---

* With every piano builder and piano tuner, this capacity is actually the prerequisite of his art-serving craft. How could one even imagine a genuine, legitimate builder without immediate reference to "musical intuition:" i.e., basically to the totality of the timbre circle. Why we have selected this particular sequence of twelve semi-tones can never possibly be determined with certainty, as it is not conditioned by physiological reasons alone. Perhaps it stands in a relationship to the twelve-stepped color spectrum which is difficult for us to grasp. Sound and light are not only related as words (etymologically). There exists a remarkable agreement (which certainly cannot be taken as being arbitrary) between the circles of refraction and timbre. To mention just one aspect: if one orders the twelve steps of the

comprise a formal unit within themselves because, without them the creation of a melody and, indeed, the mere singing of a specific interval would not at all be possible.

The continuation of our path would then be the reverse of the ones followed thus far: namely, from the twelve equal steps to the circle (to mathematical infinity) and from there to spiritual infinity (to "inner movement" in the "totality") and from this to movement of the intellect in the interval (in the color), to imagination, to intuition: to "music." "Totality" (infinity but also self-sufficiency of the intellect) thus needs something new analagous to physics in order to be able to reveal itself. Here, this analogy is the circle: equal temperament. The overtone intervals and pure tuning divide the "circle" (if this term can still be used here) within the octave into unequal parts thereby destroying the unity of the circle of intervals, the symmetrical distribution of colors: the "totality." By this means, the musical imagination is "localized" and shackled.

---

scale of refraction under the supposition that each single one complies with a particular timbre (interval) in the succession of the chromatic scale (C, D-flat, D, E-flat, etc.), it yields an extraordinarily beautiful color harmony.

The pitch systems of all peoples of the earth vacillate between the harmonic series and the tempered systems which are often differentiated as far as quarter tones. (Note the exhaustive studies of Stumpf, Ellis, Land, Baglioni, Engel, Fleischer, et al.) Through a thorough-going inspection of Example B, one will see one's way in the pitch universe more easily. It should be

A parallel to the distribution of light rays in the sun's spectrum could also be made. Within it, 110 of the 170 possible degrees are assigned to the cool colors green blue, violet and only 60 degrees to the red and yellow. Likewise, in the third octave of the overtone series, which has the still distinctly audible overtones of keynote, major third, fifth, minor seventh (4:5:6:7), the "falling principle" is expressed through the minor seventh. Perhaps the light spectrum visible to us is equivalent to this overtone octave, particularly if we imagine the deployment of separate octaves (spectra) and "intervals" (wave forms with their particular colors) from the "fundamental" (light source) according to the overtone series. The prominence of individual overtones in various timbres of instruments would then conform to the spectra of potassium and sodium,

---

noticed, for example, that the eleventh and thirteenth harmonics are decidedly quarter tones, the thirteenth, thus, creating a "neutral sixth" with the fundamental. The "evolutionary optimists" believe by this that our twelve-tone system has realized no limits and it therefore could, through education and acclimatization of the ear, one day come to a temperament having so many intervals that all systems of the world could be accommodated within it. Well, about this each may have his own ideas and may judge by his own capacities how far it is possible to join simultaneously an inner psychic, spiritual, "musical" gesture with a particular interval (quarter-tone, sixth-tone, etc.). In other words: whether the finer nuance of the intervals in temperaments having more than twelve tones kindles (in a purely musical fashion) something more in him. My explanations will not touch upon this further.

and so forth. Thus, while the natural phenomenon one-sidedly stresses the "falling" principle, "tempering" of intervals and colors establishes a balance. (Look at the unequal distribution of overtone intervals in the octave as shown in Drawing B.)

Goethe in his Farbenlehre says:

> We stated before that the eye could be in some degree pathologically affected by being long confined to a single color; that, again, definite moral impressions were thus produced, at one time lively and aspiring, at another susceptible and anxious--now exalted to grand associations, now reduced to ordinary ones. We now observe that the demand for completeness, which is inherent in the organ, frees us from this restraint; the eye relieves itself by producing the opposite of the single color forced upon it, and thus attains the entire impression which is so satisfactory to it.
>
> Simple, therefore, as these strictly harmonious contrasts are, as presented to us in the narrow circle, the hint is important that nature tends to emancipate the sense from confined impressions by suggesting and producing the whole, and, that in this instance, we have a natural phenomenon immediately applicable to aesthetic purposes.
>
> While, therefore, we may assert that the chromatic scale, as given by us, produces an agreeable impression by its ingredient hues, we may here remark that those have been mistaken who have hitherto adduced the rainbow as an example of the entire scale; for the chief color, pure red is deficient in it, and cannot be produced, since in this phenomenon, as well as in the ordinary prismatic series, the yellow-red and blue-red cannot attain a union.

> Nature, perhaps, exhibits no general phenomenon where the scale is in complete combination. By artificial experiments such an appearance may be produced in its perfect splendor. The mode, however, in which the entire series is connected in a circle, is rendered most intelligible by tints on paper, till after much experience and practice, aided by due susceptibility of the organ, we become penetrated with the idea of this harmony, and feel it present in our minds.[4]

Our ideal instrument, therefore, shrinks up to a pitiful box having notes which are produced through the same noise, which have, as far as possible, the same overtone series and which are equi-distant from one another in pitch (tempered--an attempt at infinity!). The last condition, however, wherein the pitches can be played as loudly and held as long as the player desires is fulfilled neither by the piano nor the harmonium if each is played by itself. These two instruments, nevertheless, represent two extremely characteristic aspects of sound production: the attack and the setting of air into motion.

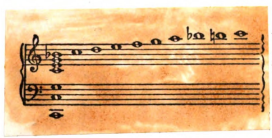
THE ORCHESTRA: DIATONIC AND ATONAL MUSIC

Melody--the intervallic color-game--is intimately intertwined with its contours and with rhythm, and the entirety shapes the form. Viewed from the purely musical side, a chord is a melody whose pitches sound simultaneously, and, for this reason, we "arpeggiate" a chord in

---

4. Goethe, 319-320.

order to understand its "musical meaning." Accordingly, if the overtone spectrum as such (arpeggiated) resembles the diatonic scale with its triads, and if orchestral instruments with their pitches (intervals) are subjected to the overtone series (frequencies similar to the growth rings in wood), it can be seen that the apex of diatonic melody coincides with the apex of orchestral music. Haydn and Mozart! One should compare the "genuine orchestration of a Mozart score with the overtone series:



Hand in hand with the decline of this melody went the decline of the orchestra (many say the "further development"), which was only hastened by "technical progress." (Thus, we witness in music the same process which we witness in other areas of intellectual life.) Instruments, which were, at first, intimately bound up with melodies (that is to say, with the "music" itself which was recumbent in them), were more and more robbed of their individual character. By this means, their colors were "counterfeited," "falsified" and "parodied." They were utilized only from their "physical" standpoint: i.e., for

their technical possibilities. This developed into "noise" effects, sensuousness and speculation. Music became a "utilitarian" object in the service of "poetic" creation--the idea--as with Beethoven, Wagner and their many imitators. The goal was the synthesis of all the arts--actually, the coupling of all technical aspects of the arts (freely cloaked under a "metaphysical" get-up) to sensual enjoyment. What also came about, however, was the "rebirth" of pure music which is free from all non-musical matter (from the desire "to shape" and "paint") and which grows directly out of the inner "musical" life of man.

Thus, the more music was alienated from its nature (i.e., departed from melody which was displaced by the "leitmotiv") the more the notes (with their "timbres" attached to the material, the noise--the object) were merely juxtaposed in a "concrete manner." In this way, the "intervals" and their ability to be heard (the point at which movement takes place in the interval in its "inner nature") stepped more and more into the background. The perception of individual pitches stated by different instruments as being an "organic" totality of melody became more and more difficult (yes, melody itself became questionable) and finally was lost altogether. The quest for it, however, is the secret yet more and more evident tendency of musical creation at the present time. It would certainly not occur to any musician to contemplate

musically bringing about a melody in which every note is played by a different instrument.*[5] The interval (its "movement") requires that the concrete quality be removed from it as far as possible in order (hemmed in as it is by the "resistance of the substance") that it not stumble and trip over noise. The characteristic phenomena of musical life at present are not isolated symptoms but are part of the crisis through which the entire European intellectual life is apparently going at the moment. That can no longer be denied; the end of "idealism" is at hand, even if the philosophy professors and Wagnerians still don't quite want to believe it.

From atonal melody, which, as a structural principle, forms the basis for today's musical creation, everything (forms, expression and means of sound) must be born anew. In several works, atonal melody is already visible (audible). The "musical" perception of it is, at the same time, the musical comprehension of new music. Of course, if one wants, one can even establish an evolutionary

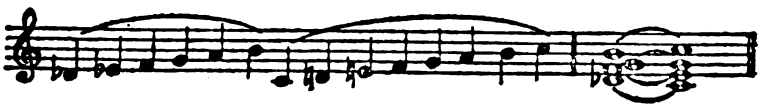
---

* In the Fifth Symphony of Beethoven, some chords occur in the first movement before the recapitulation which are played alternately by strings and woodwinds. Only a first class orchestra can interpret them in such a manner that they can be comprehended in their musical continuity. For the most part, the sequence of these chords sound totally wrong when played by the orchestra but, strange to say, not when played on the piano.

5. Hauer could also be referring to Schönberg and his concept of Klangfarbenmelodie which he proposed as early as 1911 in his Harmonielehre, p. 470f.

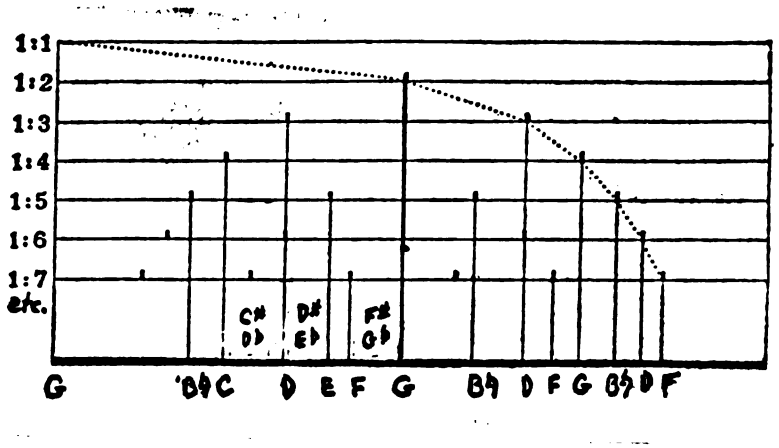
sequence for its "tonal connections" (i.e., its external aspect) in the modulation "melody" of, for instance, Reger and others. But, as was said before, only externally. It is as difficult to define the general essence of "melody" (which, after all, is something purely spiritual, and which occurs in the innermost part of a person), as it is to be able to find a particular definition of the essence of atonal melody. The laws of diatonic melody can easily be derived from the structure of the overtone series with its fundamental (tonic), dominant, tonic triad, and major scale, but they can be derived even better from the system of pure tuning. The triads of the tonic, dominant and subdominant (with its closest relative) from the cadential basis of all diatonic melodies. They are always led into these triads through the use of the leading-tone (or also passing tones). When a modulation takes place, the new tonic is always achieved through the displacement of the fundamental and its related groups ("overtone series"). (Until recently, this process was handled strictly in a "mechnical" manner and led to an accumulation of these "deceptive progressions.") Atonal melody, however, completely ignores these old "resolutions" and "progressions" into triads. As a simple example of an atonal melody, we could take the whole-tone scale which, right at the outset, does away with the tonic triad in major or minor, with the dominant and subdominant and with the leading tone of the

seventh degree. However, the whole-tone scale must not be thought of as having this "resolution":



The laws of consonance and dissonance, as they are expressed in the diatonic system with the "resolutions" into triads, are no longer valid for atonel melody. Atonal melody creates its points of tension and relaxation entirely by itself, from out of itself and independent of the physical-physiological ("natural") relationships of the overtone series, its triads, consonances, and dissonances. The physical ear (not the intellectual ear, however) is, in a certain sense, dominated by these things, for it clings to the overtone series: i.e., to nature. That ear, in its "objective" existence of élan vital, is in a certain sense, bogged down in the physical. Atonal melody is certainly far removed from "nature" but, on the other hand, if it is genuine, it constitutes something purely intellectual and musical: "melody" kat exochen. Since it defies all "natural" relationships and since orchestral instruments are subject to the overtone series and its laws of vibration, it may, therefore, be played neither on flutes, oboes and horns nor on violins. Under such conditions, the "hearing" of the "melody"--the "music"--would be difficult for the auditor. It may be totally impossible.

As was said before, "natural colors", which are subject to the intervals of the natural overtone series, predominate in the orchestra. All stops, harmonics, partials and overblowing of the octave, etc. by the various orchestral instruments are dependent upon the kind of oscillations of the "nodal vibrations" of the open strings and of the air columns within a tube. The further removed the notes of the orchestral instruments are from the simple vibration ratios of the overtone series as represented in open strings and air columns, the more difficult it is for them to speak and the more they approach the ("dissonant") noise which comes about through the "interrupting" of the oscillations. An impure "tempered" fifth played by a flute, for example, will cause the entire instrument actually "to beat", tremble, and shake, whereby the tone quality goes from a state of incipient noise to a state of almost total disappearance. On the G-string of the violin, for example, the C-sharp (as opposed to the open G which vibrates "freely") is, properly speaking, a "dissonant" noise-pitch which, "by nature", has the tendency "to resolve" to the D (simple vibration ratio of 1:3). (Look at the illustration.)



In the clarinets and other wind instruments, the "chromatic," "enharmonic" notes are, in the manner of the stops on the violin, fitted in between the "nodal vibrations" of the natural overtones ("unequally tempered"). Each note of an orchestral instrument has a quality and quantity which is either closer to or further removed from the "free" vibrations of the strings or air columns and over which the player has absolutely no control in tempering. Even the best instruction and the greatest virtuosity is of no help in this matter. Thus, in many respects, it is absolutely out of the question to speak of an "equal" tempering of the orchestral instruments. Not only the C-sharp on the violin but also minor seconds, augmented primes, major sevenths, augmented fourths and diminished fifths on violins and orchestral instruments in general are "dissonant" intervals which press toward "resolution." Hence, in the orchestra, they can be used correctly only in diatonic music. An atonal melody (which can never be a violin, flute or horn melody, etc!) is

disturbed by these "track-like" intervals of orchestral instruments with their "natural" "resolution tendencies" which are rooted in the "substance." On an orchestral instrument, it sounds just like an "out of tune" diatonic melody which, in a certain sense, is a "natural" melody: i.e., one growing out of the "natural" overtone series. Atonal melody, however, takes its point of departure not from the "natural," "senuous" relationships of the overtone series (for instance, of the horns and violins, etc.), but from the interval itself in its purely intellectual, i.e., strictly "musical" meaning. Underlying each of the intervals (apart from their "natural" relations to one another as they emanate from "nature"--from the "concreteness" of the overtone series) is a moment of color and rhythm which pertains only to the interval concerned and which comprises the "intellectual," "primal-musical" meaning of the interval. For example, the person who conceives of a major seventh only as a "dissonant," transitional interval with the tendency to resolve to the octave still hears only "naturally," "sensuously," "diatonically" and not "intellectually," "musically" and "atonally." If a person wants to hear "intellectually" and intuitively, he must be capable of perceiving each single interval, independent of the others, as a specific timbre and a basic rhythm: that is, to "intellectualize" it, to "demechanize" it, by freeing his ear from the compulsion for "objectivity." This

compulsion was forced upon him by the unmusical and musically foreign "evolution" of the orchestral music of the nineteenth century. With their "natural pitch tracks," orchestral instruments seduce the ear again and again into listening diatonically and "concretely," while "equal"-tempered instruments express intervals in the most "spiritualized" form imaginable. This is made possible by the fact that, in the "equal"-tempered instruments, the twelve semi-tones (since each individual note is able to vibrate "freely" and is independent from the others) are evenly graduated and smoothed out. Many people hear (even from the piano, for example) nothing other than the orchestra. They have not yet grasped the "meaning" of equal temperament and of the immense importance of the piano as compared with the orchestra. Whatever is to be played and heard on the piano cannot be perceived as long as this instrument is used exclusively as a substitute for the orchestra (a situation which is becoming more and more inadequate).

The "tracks" emanating from the overtone series have, perhaps, lost their usefulness for our physical ears (i.e., ears which become "bogged down in the substance") as well as, for our mind. There are "listening habits" which are rooted in the "natural" relationships of the overtone series: in the "inertia of the mass." They can be overcome only by the "intellect": that is, by musical intuition

(by "unsensuous," "nonhabitual" and, therefore, creative listening to intervals, which, from out of its greatest purity, has brought forth atonal melody as its very own creation). In a certain sense, the "intellect" shapes the "material aspect": i.e., the physical ear. The only person who actually "hears" is the one who is able to perceive intervals per se, independent of their "natural" functions as "melodic germs." The ears of a person who can hear only "sensuously," "naturally" and "mechanically," are "dead." What the nineteenth century inherited from Beethoven were his "dead" ears. Ears which found the fulfillment of their aesthetic longing in the music of Wagner were certainly not musically alive. On the other hand, Beethoven's intellectually alive ear, which came to the fore in the last quartets and sonatas, if even only sporadically, finds its continuance and its "goal" only in the atonal melody of our time. In Beethoven, the struggle between the purely intellectual, musical act of listening and the merely sensual, natural hearing process (this continually "wanting to return" to "nature"--to "sensuality"; this "turning away" from the purely musical in the "spell of the idea"--in the service of the "program"; this struggle, which finally degenerated into "ranting and raving"*) led, on the one hand--with the

---

* Death [Taub] and losing control [Toben] are etymologically related by their roots.

complete demolition (overstimulation) of the physical, "sensuous" hearing--to "noise" (look at the passage in the Ninth Symphony just before "O Freude, nicht diese Töne," among others). On the other hand, it led to the rich chromatic (one could say "atonal") passages of his last works which point to our own time. Perhaps, for the first time, we correctly understand that the criticism, which the violinists of Beethoven's time made because of the unplayability of these passages, was not totally unfounded, and that it certainly was not rooted in the inferiority of their technical abilities. It is, rather, that an atonal melody, even one which approximates it, can not be played on a violin nor on any orchestral instrument in general. Beethoven's retort, however, was characteristic: "Does he believe that I think about his miserable violin when the spirit speaks to me?" To a certain degree, diatonic melody must take into consideration the "natural" relationships of violins, horns, etc. In so doing, the "musical" fantasy of the artist is, of course, shackled. The more diatonic melody approximates the atonal (i.e. the more "the intellect speaks"--the musical premonition), the more it comes into conflict with these "natural" relationships. Aesthetically, it is absolutely unacceptable to allow a pure atonal melody to be made physically audible through the means of an orchestral instrument.

Beethoven was never able to overcome entirely the "sensuousness" of music, and towards the end of his life, he even lost command over the "substance." With him begins the "rape" of the instruments. It was reserved for the pure atonal melody to do away with course sensuality and with the "concrete" effect of the orchestra, program music and music which imitates nature.

OVERTONE BEATS

With the tempered instruments (piano, harmonium and organ), the color-effect of single intervals is increased considerably through the overtone beats. For that reason, one speaks of an "equal-beated" temperament, that is, of one in which all fifths, all fourths, all major seconds, etc. exhibit the same beats.

On the piano, for example, we play the fifth, C-G. The second overtone of C is G which lies one decimal point above the dotted line as a "pure" fifth. (Refer to Drawing B.) The first overtone of the "tempered" G (its octave, G) lies on the dotted line (consequently, one decimal point lower), and hence will enter into vibration with the overtone of C. One can imagine a similar process on the piano with all other intervals with their tones and overtones. Through temperament, these overtone beats are equalized according to the rules. They differ for each interval but characteristically for each interval, so that they strengthen the sensuous effect of the colors. Just

think of the "charm" of the beats on the vox celesta.

The physical explanation of these facts (phenomena of interference) can be found in any book on physics.

Thus, even in atonal music, "sensuality" (admittedly refined, intellectualized and "aestheticized") does not need to be left empty handed.

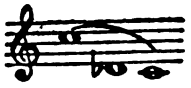
LEADING-TONE TRACKS

"Pure" intervals (and natural pitches as well) force the ear in certain "tracks" which resemble growth rings in wood. In equal temperament, however, these tracks are completely removed, therefore allowing the connection of all notes with all others. This is similar to marble (in contrast to wood) and its ability to split in all directions. Up until now, this preeminent property of temperament was not recognized and, perhaps, not even needed, since one composed almost exclusively in major and minor (that is, in the realm of natural pitches with their dominant effect). There are people who still have the "natural" progressions and resolutions (which are bound up with mechanics, technics and the construction of orchestral instruments) in their ears, and who are still not able to overcome the "enertia of the mass" in a listening situation. These people refer to temperament as "a necessary device with passably sericeable intervals," a "compromise," a "standoff" and the like without thinking that "modern," normal "voice-leading" and modulations

were, in general, possible only through the despised "temperament."

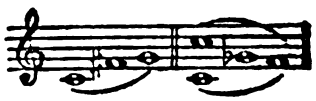
The "tracks," however, are still derived from diatonic consonances and dissonances (from the overtone or natural-tone series). The strongest among them is the seventh note (leading tone!) of a major or minor scale. It presses toward complete consonance, i.e., to the octave: to the first overtone. Taken in the "pure" form (note the illustrations), there is no escape for the sensuous ear; it (the seventh) allows no other interpretation than this:

Its closest relative is the minor second which can be regarded as its inversion:



(Guided by Illustration D, observe the connection between the "leading-tone affinity" of the individual intervals and the "evoking" of complementary colors, and compare what was said above the order of colors found in the tempered chromatic scale.) Atonal music has come into complete conflict with this, the strongest of all sensuous (diatonic) tracks. In the atonal system, the major seventh has become an independent interval which occupies the same position as all others. In the old style, one had to say:

it must be resolved to a consonance. Now look at the drawings and see how temperament divests this interval of its leading-tone implications! It is "broken" to such an extent that it is almost a C-flat. In this manner, the strongest of all tracks has been done away with. The fracturing of the minor second is similar in nature. The next strongest leading tones lead into the fifth and into the fourth: i.e., into the next consonant intervals of the overtone series. The tritone:



Observe how temperament removes the sensuous single-mindedness (the pronounced F-sharp or G-flat implications) and leads it directly to the mid-point of the octave. If these "tracks" were not disposed of, not one measure of a pure atonal piece of music could be performed correctly. The other leading-tone tracks of pure intonation, with their "resolution tendencies" inclining either to the fifth or to the fourth, are now understandable. In atonal music, their "natural" progressions are violated hundreds of times.

Having reached a compromise between noise and the overtone series, there are no longer any consonances or dissonances with the equi-distant pitches of equal temperament. Starting from any note, one can describe a complete circle of intervals while in pure tuning, as with a gully

(a spiral!), there are only two ways out and thus, the "mechanical" means of enharmonic exchange must be adhered to. As an example, we see that with the whole-tone scale in pure intonation (C, D, E, F-sharp, G-sharp, A-sharp, B-sharp, C-double-sharp, D-double-sharp, etc. or C, B-flat, A-flat, G-flat, F-flat, E-double-flat, D-double-flat, etc.) it is impossible to return to C without aiding (unfortunately, this has to be done when composing in the old diatonic system!) the situation by, for example, allowing an A-flat to be used directly after an F-sharp or vice versa. If this was done, however, the whole-tone scale would no longer consist of equi-distant pitches but would be disorganized: i.e., it would receive an entirely different meaning. (in such a case, the ear would expect a G [a "resolution"] between the F-sharp and the A-flat and the like.) Therefore, we conclude that the whole-tone scale can be played properly only on an equal-tempered instrument (a piano, harmonium or organ). Stated in other terms: a diminished seventh chord played on the piano can be re-interpreted as often as one wants. With "pure" intonation (in a good orchestra, for instance), this would not be possible. Think about the enharmonic exchange (of a pure A-flat to the pure G-sharp, for example) and also compare it to the illustrations:

Strictly speaking (in "pure" tuning), there would actually have to be an audible change between A-flat and G-sharp in such a situation (atonal music constantly encounters similar ones).

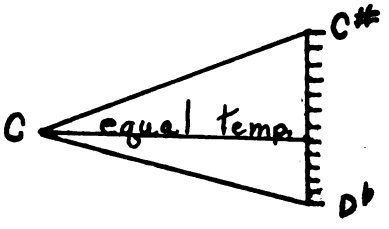
The physical existence of a chord in equal temperament (on the piano, for example) is probably unimportant per se, but, by the same token, it ensures to the "musical" imagination, i.e., to the "intellect" (in its entirety), the greatest possible freedom of movement in all directions. Physical temperament is a neutral, harmless, indefinite, nonsensuous and, as was said, a "tempered" noise which receives its meaning only through the "music": i.e., exclusively from the intellect. In the orchestra it's different, for, in that case, there are "tracks" which cannot be avoided. To be sure, the orchestra also has to be tempered (if only to make the above-quoted enharmonic exchanges as "unmechanical" and, hence, as melodic as possible) but this tempering is unequal, arbitrary and too strongly subject ("chaotically") to "chance," to the physical, to the overtone laws and to the mechanical. Therefore, if need be, it might still be used in "diatonic-modulatoric" music, but not in atonal music. Apart from that, atonal music also ignores its [orchestral temperament] inner musical feature as regards the so-called "localized," "perspectivized," "steotyped" properties of orchestral instruments (trumpet fanfares, violin glissandi,

kettledrum rolls, etc., etc.). Through the "development" of the orchestra, music, which after all, is the typical "abstract" art, became more and more "representational": i.e., estranged from its real nature.

In its complete purity, atonal melody is the embodiment of absolute objectivity of melody. Consequently, it proceeds from the "abstract quality" of music by completely laying hold of this "inner" object which is apparent in the music of Bach, Haydn and Mozart, but which was in the process of changing into an externalized object in the music of Beethoven. To use music merely as a means of expression and representation, is contrary to the nature of music--something which was understood less and less in the course of the nineteenth century. Only atonal melody is capable of rehabilitating it. Absolute objectivity in melody, after all, demands the sacrifice of the personality, for, in realizing a melody in that utter objectivity, the personal element (in its aesthetic transposition, naturally) no longer plays a role. Thus, the net result of atonal music is that it points to an essential contrast existing in the entirety of European intellectual life to the present time. This opposition is between musical intuition and the conception of the idea, the latter of which governed the intellectual life of the Western world both B.C. and A.D. Simply stated, it was aimed at the display and the resulting effect of the personality.

INTERVAL COMPLEXES

By "modifying" the "pure" intervals in our temperament, the "sensuous leading-tone tracks" are removed and, through this means, the intellectual, purely musical character of the individual "interval complexes" finds true expression for the first time. In the following illustration, the pure C-sharp and D-flat form the outer limits of the interval complex: augmented prime-minor second. Beyond these limits, the pitch progression sounds completely "wrong" to our ears.



Thus, certain overtones (natural pitches) are, in fact, musically totally unsuitable, because they transcend these limits too far (look at Illustration B: pitches 11, 13 and 7.) "Tempering" takes place within the "pure" intervals. At one particular point this tempering is "equal tempered" or, at least, so tempered that the twelve pitches are equi-distant from each other. At all other points, however, it is "untempered" and approximates pure tuning, thus making it unusable for atonal music (which comes from "totality"). The point at which equal temperament occurs is, so to speak, the "center of gravity" of

the entire interval complex. (Check this with Illustration A.)

THE LAW OF INTERVALS AND TONALITY

What a person receives from an interval and what he puts into an interval, is a matter of intuition and naturally not an arbitrary one. From the drawings and from music literature of all periods, we will see that it is possible to deduce a law for the musical meaning of intervals and, in connection therewith, of transpositions and diatonic keys; in other words, a "doctrine of tone color" in its truest sense.

It goes without saying that, in singing a melody, for example, one must proceed from a certain pitch or that the piano tuner sets the temperament from a certain pitch (A) or that, in putting the notes in alphabetical order, one would likewise have to begin with a particular note. These are things which are easily understood, but which mean little by themselves when considering "musical" things. Agreement has been reached on them. A greater significance must be ascribed to them (placing us immediately in the realms of the intellect), however, since we derive our keys (through the employment of flats and sharps as accidentals) from a fundamental key (C major). The intellectual (formal) significance of this process is seen in the fact that the particular pitch from which we proceed is totally irrelevant. This means that if we once accept a key (let's take

C major) as a fundamental key (at any pitch level), all the other keys will immediately group themselves according to the intervallic laws, somewhat in the manner of crystal, coral or plants around the parent stalk. (Look at Illustration B.) This musical but also mathematically demonstrable process takes place inwardly or "intellectually" in every musician, from childhood on without influence from the outside. In this manner, each key obtains its character from its relationship to the basic key and through its place in the "system". All keynotes of the keys stand in a fixed intervallic relationship to the keynote C (independent of absolute pitch) as well as in a tension relationship which contains an "intellectual" significance within itself. Since time immemorial, this was essential for the "musical element," and it is, eo ipso, the "intellectual" character of the key in question. (Only in "genuine" music, of course.)

The internal law, according to which the keys "organically" sprout out in the direction of the circle of fifths and fourths (comprising all the intervals) from a basic key which assumes the desired pitch, is nothing other than the "transcendental" law of musical listening. Even in musical people there exists some doubt on this point. This doubt is incomprehensible to me, and it is for this reason that I want to set forth a few words about the manner in which I myself came to the discovery of the law of the interval

and key. Through extensive study of classical works, it struck me that a certain conformity prevailed among the expression-forms of the individual keys, particularly in the compositions of Bach and Mozart. All pieces in D major, for example, have a light-winged, jubilant (allegro) character while those in A-flat major have a sustained, flowing (andante) character, etc. But the question still remained as to what moved composers to set a piece with this or that character in this or that key. Physical elements, which play an important part in the orchestra (that A-flat major, for instance, sounds very dark as a result of the strange conditions in the "natural pitch tracks" of the instruments) cannot be the only ones of any consequence, since this practice was followed even with the piano where relatively similar physical relations prevail among the keys. This phenomenon, which lasted for centuries and, in spite of varying external circumstances, always remained the same with all "genuinely" great musicians, must have a deeper "intellectual" root. And then, I slowly came to the fact that the musical character of a composition in D major, for example, was in agreement with the "gesture" of the major second. Similarly, the character of a piece in A-flat major was in agreement with the "movement" of the minor sixth and that of one in C major was in agreement with the octave, etc., etc. The step from this realization to the act of classifying all

twelve intervals of the circle of fifths and fourths with their "complementary" counterparts was only a small one. Thus, the formula for the law of intervals and keys was found.

CHARACTERISTICS OF INTERVALS (KEYS AND TIMBRES)

Confronted once again with the "primal-musical" meaning of the interval, we come to the realization that real musicians of all times have utilized particular intervals and tone colors as well as suitable keys and instruments, in order to achieve a particular character in their music.

Goethe states:

> From the concept of the contrary image and from the knowledge we have gained from the particular processes themselves, we can conclude that, in the active organ, the individual impressions of color can't be confused and that they specifically produce and are obliged to generate conditions which are both definite and specific.
>
> The same pertains to the mind. Experience teaches us that individual colors yield particular states of mind.

We are musically and theoretically accustomed to thinking of starting from C. Our notation, the system of pure intervals, the old keys, the ranges of the human voice (bass and soprano can reach one-line C--C clef), the formation of the keyboard (white keys are C major) and so forth, have resulted in the fact that our feeling for intervals takes its point of departure from C. If we now employ the circle of intervals (circle of fifths and

fourths) beginning from C, every pitch will receive its identity from the interval it forms with C. Therefore, the character of the octave is identified with that of C major, that of the fifth with that of G major, and that of the fourth with that of F major, etc. (Refer to Illustration D.)

It has already been pointed out that absolute pitch does not play the important role which many believe. It is simply the convention and habit of the "physical" ear of the respective period, country and so forth. The keys with their character (intervals beginning from a point of concentration [C]), however, exist in the "intellectual" ear first--or they don't exist at all--and then they are introduced and engraved into the sounding body (through performance, execution, expression, etc.). This certainly is comforting to our nerves, particularly if we adhere to a traditional system of tuning.

The octave is the sole "pure" interval in equal temperament. It is the musical manifestation of freedom and light as well as being the place where intellect and nature come in contact with one another. In the octave, pitch returns to itself at a higher level. Since it has no beats--therefore exhibiting no "refraction" (see above as well as the Illustrations)--it could well be compared to white light. (We are also reminded of the passage in The

Creation by Haydn where the "Es werde Licht" rings out in the C major chord played by the entire orchestra.)

Goethe states:

> Colors are the deeds of light, deeds and misfortunes. The origination of colors and the decision making process are one and the same.
>
> Generally speaking, it (color) is determined according to two factors. It exhibits a contrast called polarity, which could very well be indicated through a plus or a minus sign. Plus is to minus as: yellow is to blue; action is to rest; light is to shadow; bright is to dark; strength is to weakness; warmth is to coolness; proximity is to distance; repulsion is to attraction; the affinity for acids is to the affinity for alkalies.

The intervals classed with the fifths (fifths, major seconds, major sixths, major thirds, major sevenths and augmented fourths) gravitate upwards, i.e., they have the tendency toward motion and were always used according to the ascending principle. According to the degree of their "refractions" (note the Illustrations and the number of decimal points), we can compare them with the vivid, warm colors "of the plus-sided" yellow and red in which Goethe felt vivacity, energy and purpose.

The intervals classed with the fourth (fourths, minor seconds, minor thirds, minor sixths and diminished fifths) have the tendency toward repose: i.e., they follow the falling cadential principle. They correspond to the quiet, cold colors "of the minus-sided" green and blue

which, according to Goethe, relates to a mood of soft and longing sentiment.

In this way, we can even put the color spectrum on a par with the circle of intervals (beginning from C). The basis for doing this is probably to be found in the intellectual identity of the acts of seeing and hearing. (See Illustration D.) Pitches per se (abstractly thought of as points) cannot be compared to colors. Intervals, sounds and chords (pitches being sounds together with the overtone spectrum), however, can be compared with colors. We will take C (white) as the dividing line between green and yellow and, in like manner, take the other notes of the circle of fifths and nuances, as in this manner: yellow--G--orange--D--vermilion--A--carmine--E--purple red--B--purple violet--F-sharp--blue violet--D-flat--ultramarine blue--A-flat--turquoise blue--E-flat--blue green--B-flat--vermilion green--F--light green. F-sharp (G-flat)--actually black--stands, therefore, as the greatest contrast to C.

We said above, that minor signifies the first step in the spiritualization of music. Since the major triad is present in every pitch of the harmonic series, major remains physically unbroken. A timbre in major, therefore, appears to us as the most natural (obviously sensual). Beside the "color" of the fundamental (its intervallic relationship to C), the interval of the minor third (to C) also plays a role in the minor mode.

We will now proceed through the circle of fifths, and look at all manifestations of color-effects in music (and, in connection with them, the rhythmic manifestations as well) as they are found in the appropriate pitches (keys and intervals calculated from C). Compare Illustration D with the other illustrations and with the following classification. With each pitch, first of all imagine the interval in question as being reckoned from C and, in addition, pay attention to the nucleus of its "motion:" i.e., to its "gesture". (Intuitive listening!)

The Melos of the Octave.

C: The Jupiter Symphony of Mozart.

First Prelude of the First Book of the Well-Tempered Clavier by Bach.

Victory and wedding marches. Solemn and festive hymns.

The virgin-like pure sound of the oboe with its dominating position among the woodwinds, its conical bore, the over-blowing of the octave; therefore, its definite C character.

In C minor, the solemn C is fractured by the pathetic E-flat.

Fantasy in C minor by Mozart.

The old Lydian mode (Ionic style).

The Melos of the Augmented Fourth or Diminished Fifth.

F-sharp: The Promethean pitch: complementary to C (also notice the comparisons of the colors in the following).

Right on the line between G-flat and F-sharp, i.e., "pure" (note Illustrations A, B and C);

> in the middle between the dominant G and the subdominant F; perceived more as a vivacious pitch (interval of the fifth) by our intellectual ears.
>
> This color appears in the orchestra very seldom; the usual orchestral keys of E-flat, B-flat, F, C, G, D and A comprise, therefore, only about half of the color circle; in the orchestra, the circle is not completed (see above).

Assistant Professor Dr. Wilhelm Fischer has called my attention to the following: In the St. Matthew Passion of Bach, the second part ("Eröffen den feuerigen Abgrund o Hölle") proceeds from the first part (at the chorus, "Sind Blitze, sind Donner in Wolken verschwunden") in the key of F-sharp.

Goethe says:

> Increasing the depth and hue of the red-blue increases the unrest, and it can be well assumed that a tapestry saturated entirely with blue-red would represent a kind of unbearable presence. Crimson is a color which must be very much hated by the French since they use the expressions sot en cramoisi, méchant en cramoisi to represent the extreme of the tastless and noxious.

(Note also what Goethe has to say about purple in the section on the note B below.)

The Melos of the Fifth.

G: Biedermeier pitch; somewhat blaring as with trumpets (emphasizing the second overtone--beats of the interval of the fifth); somewhat trivial.

Chamber music in G by the classical composers (popular hymns originally in the Biedermeier pitch now often transposed to E-flat major [look at that section] and presented with military pathos).

The one which is emphasized when articulating, mostly on the heavy first beat; solemn rhythms.

In G minor, the color is rent by the pious, somewhat awkward B-flat.

From the Requiem of Mozart: Rex tremendae . . . "Herr, dess' Allmacht Schrecken zeuget, der sich fromm den Frommen neiget, rette mich, Urquell der Gnade!" Quam Olim Abrahae . . . "Das Panier des heiligen Michael begleite sie zum ewigen Lichte, welches du verheissen hast Abraham und seinem Geschlechte."

In the Symphony in G Minor by Mozart, the sunny, light G is overshowed by the autumnal, misty B-flat.

The old Ionian mode.

Goethe says:

Yellow is the closest color to light. It comes about through the slightest moderation of light. In its greatest purity, it always bears with it the essence of light and always possesses a cheerful, enchanting, slightly stimulating quality.

In this state, it is like a background, be it on clothing, draperies or carpeting. In its totally unmixed state, gold gives us a fresh and better idea of this color, particularly if we consider the luster. Thus, as a deep yellow, it produces a splendid and noble effect if it appears on shiny silk (on satin, for example).

Thus, it is in keeping with our experience that yellow would make a thoroughly warm and comfortable impression.

In its purity and its propensity for brightness, this color is enjoyable and has something cheerful and noble in its entire being. On the other hand, however, it is very sensitive and will create a very unpleasant effect if it is sullied or pulled somewhat to the minus side. Thus, the color of sulphur, which inclines toward green, has something unpleasant about it.

The Melos of the Minor Second.

D-flat: Works of Chopin in D-flat.

Soft, sensitive touch; leggiero.

In C-sharp minor, the D-flat is subdued by the fluctuation between E and C-sharp.

The Moonlight Sonata of Beethoven.

The "C-sharp minor Fugue" of Bach from the first book of the Well-Tempered Clavier.

Goethe states:

> Blue intensifies very gently into red and, in so doing, obtains a somewhat active character although it is to be found on the passive side. Its attractiveness, however, is of a different sort than that of red-yellow. It doesn't invigorate so much as it agitates.
>
> Just as this intensification itself cannot be halted, it is also wished that one could proceed with this color forever but not, as is the case with red-yellow, always to advance forward actively but to find a point where one could rest.

The Melos of the Major Second.

D: The violin-pitch (predominance of the eighth overtone; beats of the major second).

The Violin Concerto by Beethoven.

Innumerable melodies for the violin by Mozart.

The chorus, "An die Freude," in the Ninth Symphony by Beethoven.

From the Requiem of Mozart (Sanctus): "Voll sind Himmel und Erde deiner Ehre . . .."

In D minor, the boisterous, frothy D is dampened (pensive, reflective, sentimental) by the quiet F. Renunciation of sensuality.

The old Phrygian mode (Corinthian style).

With the Greeks, this key (color!) was used as a restorative in conditions of insanity. Furthermore, in the Viennese waltzes, most of which are in D major, one sees an increased merriment in the dancing.

Goethe says:

> Since no color can be regarded as being stationary, one can very easily heighten and increase the yellow through the concentration and darkening of the redish. The color increases in energy and appears grander and more powerful in the red-yellow.

The Melos of the Minor Sixth:

A-flat: Romantic pitch; Schumann.

Impromptu of Schubert; Romanze in A-flat by Mozart. Harp-pitch.

Goethe states:

> This color creates a peculiar and almost inexpressible effect for the eye. As a color, it is energy. Alone, it stays on the negative side and in its greatest purity is, as it were, a stimulating nothing. Because of its capacity for stimulus and repose, it is somewhat contradictory in appearance.
>
> As surely as we see the blue of the sky above or the blue of the mountains, a blue surface seems to retreat from us.
>
> As we like to follow a pleasant object which flees from us, so we like to look at blue not because it rushes toward us but because it draws us toward it. Blue gives us the feeling of coolness just as it reminds us of shadows.

The Melos of the Major Sixth:

A: Spring. Innumerable examples.

In A minor, the shooting, darting A is somewhat subdued by the solemn C.

The Confutatis from the Requiem of Mozart: "Wenn Empörung, Fluch and Rache wird gebüsst in heissen Flammen . . . ."

The Aeolian Mode (Corinthian style).

Goethe says:

> Everything that we have said about yellow also pertains here but to a higher degree. Since it represents the color of the fiery blaze as well as the softer reflection of the setting sun, orange actually gives the eye the feeling of warmth and joy.

The Melos of the Minor Third.

E-flat: Third Symphony of Beethoven.

From Mozart's Requiem: Hostias . . .: "Opfer und gebet bringen dir, Herr, lobsingend wir dar."

[Observe the fine difference between Beethovenian and Mozartian pathos. One can be seen from the standpoint of dominance and the other from the standpoint of the contrite congregation which submits itself to the Lord.]

Goethe says:

> It is not unpleasant if the blue of the plus side participates to some extent. Sea-green is a rather lovely color.

The Melos of the Major Third.

E: "Prelude in E major" from Book I of the Well-Tempered Clavier.

In E minor, the color becomes somewhat paler through the G natural.

Midsummer Night's Dream and other works of Mendelssohn.

The old Dorian mode (the first one according to its origins).

Goethe says:

> Just as pure yellow can easily progress into orange (red-yellow), so the deepening of the latter into yellow-red cannot be arrested. The pleasant, joyful sensation which red-yellow gives us increases to unbearable forcefulness in the bright yellow-red.
>
> The active side is present here in its greatest energy, and it is no wonder that healthy, robust, rough-and-ready people are especially fond of this color. The inclination to this color by uncivilized people throughout the world has been noted. If children are left to their own devices, they will not spare the vermilion and the sunlight yellow when beginning to draw. The appearance of a yellow-red cloth stimulates and agitates animals.

(Note also what Goethe has to say about purple which is included in the section on B.)

The Melos of the Minor Seventh.

B-flat: The Fourth Symphony of Beethoven.

Masses and symphonies in B-flat by Haydn.

From the Requiem of Mozart: "Tuba mirum spargens sonum . . . ." Benedictus . . . "Gesegnet sei, der da kommt im Namen des Herrn!"

"Prelude in B-flat minor" in the Well-Tempered Clavier (the pious, reflective B-flat is broken by the melancholy D-flat).

The B-flat clarinet, the most favored of this family (dominance of the sixth partial; beats of the minor seventh).

Goethe:

> Our eyes find great satisfaction in it (green).

The Melos of the Major Seventh.

B: Preludes and fugues from the Well-Tempered Clavier. The Unfinished Symphony in B minor by Schubert (the desperate, unsatisfied B is fractured by the sensuous D which yearns for life; no finale could come after this).

B minor Mass of Bach (doubt--faith). The old Mixolydian mode (Dorian style), according to the old tradition discovered by Sappho.

Goethe says:

> The effect of this color (purple) is as unique as its nature. It gives an impression of seriousness and dignity as well as grace and élan. It produces the former in its dark, dense state and the latter in its bright, thinned-out state. Therefore, the dignity of old age and the charm of youth can be clothed in one color.
>
> History often tells us about jealousy on the part of sovereigns for purple. A background of this color is always serious and sumptuous.
>
> Purple glass shows a well illuminated landscape in a fruitful light. Thus, this hue will have to be spread over heaven and earth on the day of judgement.

The Melos of the Fourth.

F: The Pastoral Symphony of Beethoven.

In F minor, the tranquil F is further emphasized by the plaintive A-flat.

Appasionata Sonata of Beethoven.

The natural horn (among all horns, the F horn has existed the longest).

The old Hypodorian mode (Ionian style).

Goethe states:

> . . . thus the eye and the mind rest. One does not want to proceed further and, indeed,

> one can not proceed further. Therefore, in rooms in which a great deal of time is spent, the color green is the most often selected for wall coverings.

The examples, naturally, may be extended considerably in which case the entire explanation is only that much better for it. The catchworks used to indicate the character of the individual keys and intervals in Illustration D must not be interpreted too narrowly. Aside from the fact that it is nearly impossible to express something purely musical with words, it is very difficult to delimit the character of the individual keys. Everything musical must be thought of as being in motion (no color may be regarded as being in a state of rest, says Goethe) particularly as it applies to the motion of fifths and fourths. For example, G major often is only an intensified C major, and E major is an intensified A major. On the other hand, F major is often derived from C major and D-flat is often derived from A-flat. With some attentiveness, it is not difficult to recognize the connections. Particular progressions of intervals often play a large role in melodies. In the first piece of the Kinderszenen (written in G major) by Schumann, for example, the "romantic" minor sixth appears three times in succession and lends the composition the flowing, soft A-flat major character. Schumann could have written nearly every one of his compositions in A-flat major. Chopin, on the other hand, was definitely a D-flat person,

(Dr. H. Riemann has already pointed out this situation in one of his writings.)

In atonal music, however, which is derived from "totality," only the intervals play a role. Musical character is no longer expressed through a major or minor keys and through characteristic instruments (i.e., through a color), but only through the totality of the intervals and the timbres which is heard in its purest state on an equal-tempered instrument. In atonal music, there are no longer any tonics, dominants, subdominants, degrees, resolutions, consonances or dissonances: only the twelve intervals of equal temperament. Its "scale," therefore, consists of the twelve tempered semi-tones. In atonal melodies, the purely physical and sensuous as well as the trivial and sentimental is excluded as far as possible. Its "law," i.e. its "nomos," consists of the fact that, within a certain pitch series itself, no pitch may be repeated and none may be left out. (The basic law of "melody" in general states that no pitch is to receive physical predominance [a dominating importance of fundamental character] and that no implications of degree and no leading-tone tracks are to arise. Through this means, the creator and the listener are left to cope only with the purely musical matter of the interval in its "spirituality." In order to calm those who see an "impoverishment" in twelve-tone music, it must only be mentioned that

these twelve tones harbor 479,001,600 possibilities of melos (compared with the 5,040 for seven-tone music), and that, in each of these possibilities, there is a correct and genuine melody which can be extracted. This is the task of the musician. Once again we shall see that intuitive listening to the interval--the purely melodic listening--is the condition for understanding atonal music. There is a great difference between intuitive "hearing" of the intervals and hearing the "natural" pitch progressions.

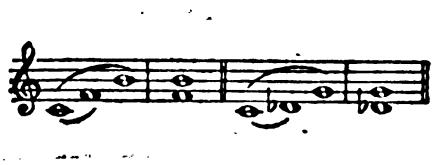
To us Europeans, this kind of creating and listening is still foreign and it is truly not easy to place our "individuality" entirely in the service of an "object" (this time, the musical object of the interval); i.e., to be absorbed in it, as it were. In the composing of atonal melodies, the "originality" of the individual consists only of correctly "resolving" one "event" (in our "atonal school," we call it a "building block"). This, however, requires the subjugation of the entire "personality" for the sake of the "object." We realize that in our works it still is more difficult to obey the primary laws of the interval in its intellectuality and to restrain our own "emotional life" (to put it aside) than "to live a high life" and "sow wild oats" in an "emotional art" expressed in personal rhythms and "manuscript." Hence, we surmise that in each of the 470,001,600 "cases," there is only

one single possibility of a "correct" solution. It is the object and aim of composing to find and to realize musically this "correct" solution.

Whether musicians of all periods consciously or unconsciously used intervals (timbres and keys) in a correct manner is unclear when evaluating all these questions.

COMPLEMENTARY INTERVALS

Complementary colors mutually supplement each other with "white." With complementary intervals (see the classification and Illustration D), if one "subtracts" the smaller from the larger (for example:



the fourth, C-F, from the seventh, C-B, or the second, C-D-flat, from the fifth, C-G), the augmented fourth (diminished fifth)--actually "black," i.e., a nothing, no color--always remains. Therefore, that which emerges negatively in intervals (timbres) is the same as that which proceeds in a positive manner in colors.

THE SEVEN OCTAVES OF THE PIANO

Perhaps the higher (shrill) and the lower (muffled) pitches in music correspond to the stronger and weaker sources of light. This comparison is even valid if one bears in mind that with the lower pitches, larger "masses"

will be set in motion, and that "bodies" most certainly cast "shadows." Thus, the seven degrees of brightness of colors which painters employ when painting could be compared with the seven octaves of the piano. In this way, the bright side of the spectrum, which tends toward white light, could be compared with the higher range of the piano, and the gradations on the dark side, which tend toward black, could be compared with the lower ranges of the piano. The middle step in the gradation of hues between the three bright and the three dark colors represents, as it were, the shade itself in an intensity which the color-tone can clearly follow up in the circle (intervals!). This could be compared with the middle range of the piano, which piano makers simply refer to as "the temperament." From that point outward, the piano tuner begins to tune and to temper. Once he has firmly established the temperament in this mid-range, he tunes the other ranges from there in octaves. Similar to the continuation of the degree of brightness (toward the light as well as the dark side), the individual colors become more and more indistinguishable, losing their color character by closely approximating either white or black. In the same way, one can establish an octave on the piano (either below or above), the individual pitches of which could realize the color character of their intervallic relationships. Individual colors emerge most clearly and most pleasantly in the mid-range of the color circle.

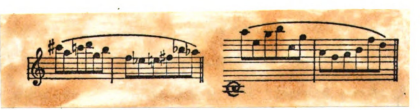
In like manner, the timbre-character of intervals is heard to be most decidedly sensuous in the middle range of the piano.

NOTATION

In order to notate atonal music, a notation is needed which has an individual symbol (point) for each pitch of the temperament (let's call them C - D-flat - D - E-flat - E - F - F-sharp - G - A-flat - A - B-flat - B).

Consequently, it isn't "temperament" which is "makeshift," a "compromise," or a "standoff" but the "diatonic notation."

At this juncture, I would like to point out that I have invented an atonal notation for my private use which is simpler than the tonal notation and which has considerably facilitated my work. After the first draft, the clean copy is finished in the old notation with a footnote stating that the accidentals are only valid (even within the barlines) for the notes before which they appear. The "building-block" of a purely atonal melody in the old and new notation would look like this:



ATONAL INSTRUMENTS

The sound media suitable for atonal music are the atonal (well-tempered) instruments (piano, harpsichord, harmonium, organ and celesta) and the human voice.

The piano arose from the ear-desire for the totality of tone color. From a few pigments and through adroit mixing, the painter prepares a color circle to the best of his ability which, to a certain degree, corresponds to the "ideal of totality." In a similar manner, the piano maker builds (from various intractable materials) a sounding body in which the overtone series, noise and the strength of the pitches are so evenly graduated that the "intervals" with their characteristic beats are able to come to the foreground. Through the effect of the pedal, moreover, the piano is far superior to all other instruments, even the orchestra itself. The piano is the most spiritual instrument, for it is that instrument which has overcome the resistance of the material of the sounding body to the highest degree. The piano trains the ear to "intellectual" listening (listening to "pure sounds"--to "pure timbres") but it also lures unmusical people, who listen "abstractly," to this abstract, unmusical listening.

The human voice is exceedingly adaptable (elastic) and can thus express all intervals and timbres prescribed by the musical "intellect." It simply comes down to the fact that the singer has to have a mental grasp of temperament

(the "totality"), and that he proceed with his art in such a way that the art is freed from any suggested or actual moments of sexuality. It is beyond doubt that the human voice, particularly when singing, somehow speaks to sexuality in ways which are vague and not easily understood. The primal-musical element, however, in its pure intellectual state, is, like all things intellectual, sexually neutral. The sexual element is a fact of nature but certainly not of the intellect. What should one think of a type of music which, as a final result, releases in the listener the need to further the "horizontal trade?" There is such music (there really is--in the "exalted temples" of the art of our time--the present time!!) being played, and not just in nightclubs or taverns.

Atonal melody, in its absolute musical purity, even here will bring about a change. It should be mentioned, by the way, that atonal melody moves on that musically basic level upon which Gregorian chant has maintained itself to our own day despite many misinterpretations.

Atonal melodies cannot and may not be yodeled or warbled. In so doing, we approach, in vocal technique, the "color singing" of the Orientals which shifts the voice placement toward the upper register.

Underlying touch (bearing in mind that the typical and most noble keyboard instrument is the piano), perhaps, is something analogous: the striking of the hammer in marble

by the sculptor (yes, something truly analogous, such as the spiritual act of conceiving a three-dimensional object in this material).

Perhaps the application of color to a surface corresponds to the setting of air into motion. The attack brings contour and rhythm into the "color." A color without contour and a contour without color can be contemplated abstractly but cannot be concretely represented. The same is the case, naturally, in the sphere of music. Rhythm must emerge directly from the "motion" of the color (melos). On the other hand, if this is composed into it only in retrospect, the entire thing gets an air of the "abstract."*

MUSIC AND PAINTING

When Goethe wrote the following passage in his Farbenlehre, perhaps he was thinking about the interval which is a musical as well as a physically mathematical "element":

> It has always been felt that there is a certain relationship existing between color and sound as the frequent comparisons, which

---

* For that reason, even the proper conception of agogic and dynamic shadings of a melody come about by themselves and therefore overloading the manuscript with interpretive marks is superfluous. Bach used almost no marks of interpretation in his Well-Tempered Clavier. Only the "tone poets" found it necessary to write an entire "novel" for each note. In my compositions, I simply write the following: "expression according to the melos."

were reached partly in a cursory and partly in a detailed fashion, prove. The mistake which is made in this regard touches on the following:

In no way may color and sound be compared to one another. However, both of them refer to a higher order; both of them derive from a higher order, yet, each for itself alone. Color and sound are to each other as two rivers which originate on the same mountain, but under entirely different conditions, run to two opposite regions of the world so that on their individual journeys, not one single place could be compared with that of the other. Both are general, elementary effects which work according to the general law of separation and amalgamation, of undulation and oscillation, though in entirely different directions, in different ways, to different intermediate elements and for different senses.

If someone could rightly grasp the manner and way in which we connected the doctrine of color with the general doctrine of nature and, through good fortune and intelligence, restore to us that which escaped us or that which we missed, it is our belief that the doctrine of sound could be perfectly connected to general physics. As it stands now, it remains isolated, as it were, within the latter only in an historical sense.

But therein might lie the greatest difficulty, i.e., that of overthrowing music which became something positive for us and which originated in peculiarly empirical, accidental, mathematical, aesthetical and intellectual ways. We would throw this over in favor of a physical treatment and would reduce it to its primary, physical elements. Perhaps, after so many good preliminary studies, there would be the time and opportunity to investigate the point where science and art come together.

It is still not necessary to mix music and painting together (although it can be assumed that one and the same

unknown root forms the basis for the intellectual acts of seeing and hearing). Both arts are, by themselves, completely understandable and independent of one another. If there is agreement on many issues (not only in the sense of an arbitrary analogy but according to a secret indentity, which is actually the case), it is a good omen for both theories. Perhaps the nature of both arts could be characterized in the following manner: the painter (the sculptor and the architect also) brings "motion" in space to rest while the musician recovers it anew from the geometric quantities of the "intervals." (Music conquers space and the visual arts conquer time, if one wants to put it that way.) Through exact measurements of great works of art in the fields of sculpture, architecture and painting, it has been established beyond doubt that the proportions of lines, curves, angles and colors, etc., very often coincide with the vibrations ratios of equal-tempered intervals.

In order to understand tone colors, a creative, musical imagination is always necessary because, in the person himself, "color-hearing" takes place in a strictly spiritual manner. With colors, one can decide more easily: for instance, this stone is violet or this one is red or blue, etc. With timbres in music, it is not so easily understood if one decides, for example, that the horn is colored toward the fourth and that the trumpet is colored

toward the fifth. Simply to explain horns and trumpets, etc., as tone colors, would be nothing other than regarding stone, metal and wood as colors. In music, of course, a much broader approach to the essential nature of "color" is an a priori necessity. However, what would "tone" color be if it were not a chord: an interval? Would it, perhaps, be noise--the color "body" itself: the substance? Doesn't the painter also have to grind the pigments down as independent of the material as is possible and to be able to apply blue, green and yellow, etc., in a uniform fashion? Would he be a painter who would, more or less skillfully, cover vacant walls with all the rubbish (colored materials, etc.) imaginable? Is he a musician who, in order to amuse a bored, spiritless public which hungers only for the "sensational" (if even in the subtlest sense) and in order to stimulate the "nerves" of this public, allows different noises to whirl around pell-mell under the quise of a "noble ideal"? Or is he a decorator?

Or is it possible that someone should really so comprehend the concept of "timbre-melody" that with each pitch of a melody he introduces different noises (applied to the field of painting, this means that with every color there would be different substances such as stone, plants, coal and metals etc.)? As the painter has his analogous pigments, which are gathered from all possible substances, so we, in a similar fashion, "pulverize" our

"tone-color body" in the temperament. We take out the characteristic overtone interval (the quintessence of its tone color) from the particular instrument. That is to say, we separate the "color" from the "body" as far as possible, disassociating it from everything non-essential and thereby "immortalizing" it. Rather, we have been anxious up to now, to equalize the differences between noise and overtones even within the same instrument or to exaggerate them (hence, the virtuosi of dexterity among violinists, of register with singers and of intonation with wind players, etc). Because of the peculiar (one could say "diatonic") overtone vibrations owing to the "cyclic" vibration ratios, this tempering can never be "equal-tempered." As an example of this, we know that an atonal melody played on the violin sounds (even if the performer tempers it in the most exact manner) like an out of tune diatonic melody. However, with tempered instruments (piano, harmonium and organ), a pitch is independent of the others (and from its intervallic relationships)--each pitch, in reality, being an instrument in its own right--and hence, only with tempered instruments is it possible to equalize noise and overtones and, thereby, push the "effect of the intervals" to the foreground. It is precisely because of their purely sensuous effect that noises of various kinds separate the "spirit" from the "music."

According to this concept of "tone colors," which secretly clings to noise (to the substance) and which consistently subjugates the ear to the position of a mere "organ of touch," we have, properly speaking, always had "timbre melodies," particularly with poorly built and poorly played instruments. From the "musical" standpoint, however, timbre melodies are those in which the colors are expressed through intervals and which move within the "totality." Perhaps we are finally speaking of "tone-color melodies," for atonal melody, as contrasted to the diatonic melody, actually uses the entire color circle and only then becomes, thereby, a "color" melody: i.e., a melody with various colors. (With the help of Illustration D, compare the intervals of the whole-tone scale beginning on C with that of the C major scale. While the whole-tone scale spreads out over the entire circle, the C major scale moves only within half of the circle, thus reminding one of "red-yellow." All other major and minor scales, as well, occupy only half of the circle: for example, A minor: A, B, C, D, E, F, G, A.)

Bach, Haydn, Mozart and Beethoven have entrusted their most intimate, most intellectually refined and most musical works to the piano. If anyone were to believe (concerning the truly great "polyphonic" works), however, that individual voices are "distinguished" by various noises (tone colors?), he should keep in mind the greatest polyphonic work: the Well-Tempered Clavier.

From Goethe's theory of sound:

> Perhaps we can't escape from this dilemma once again through an artistic procedure. A comparison of notes which always progress naturally with those of equal temperament reveals that a decidedly effectual, higher order of music is, to the defense of nature, really only possible in the latter.
>
> What is a string and all other mechanical devices themselves when the ear of the musician is considered?

CLOSING COMMENTS

We are discussing tone colors. One might well ask how we came to this point. What does the expression tone-color (color of tone) actually mean? Doesn't the creation of this compound form the basis of the idea, so that the sound (pitch) is something which assumes a color? By what means is it colored? For example, noises, which are never totally avoided and which lie in the physical condition of a particular instrument, arise when a pitch is produced on this instrument. Besides, one does not need to debate that these noises are not somewhat musical. In spite of this, it must be said, once again, that the coloration of a tone (pitch) by noise has no musical, aesthetic significance. At best, it is a "tone-painted" element in program music; but is this still music? The remarkable thing is only that this self-evident issue is, nowadays, not self evident to every musical person, and that timbre is heard in nothing other than that noise.

In the final analysis, did tone color in general have no musical, aesthetic meaning? It could be, then, that the meaning involves something entirely different from that noise produced by the instrument's material which vibrates but does not actually resonate. Again, what characterizes the sound of the instrument? The emergence of a particular pitch of the overtone series: consequently, the interval. Pitch receives its color (coloration) through the fact that it is heard in relation to another pitch; hearing a pitch musically means nothing other than hearing it in this sense. Hearing a pitch in relation to another pitch means audibly perceiving it as an organic member of a melody (and a rhythm, since melos contains rhythm). That and nothing else is "musical intuition."

The more a composer listens to his melodies on an instrument having limited possibilities of tone color, the more the nature of sound and timbre of this instrument (which, of course, conceals a particular fixed but limited number of melodic possibilities) approaches and, therefore, aids his creative listening. He produces whatever music and melody is contained in the nature of the instrument and whatever can be created. However, the more a melody is creatively listened to for its innermost being, i.e., gaining insight into the totality of the tone color (therefore, listening not for the nature of a particular instrument), the more the musically productive element in the

creation is referred to entirely for itself alone, and the more it is, so to speak, put to the test.

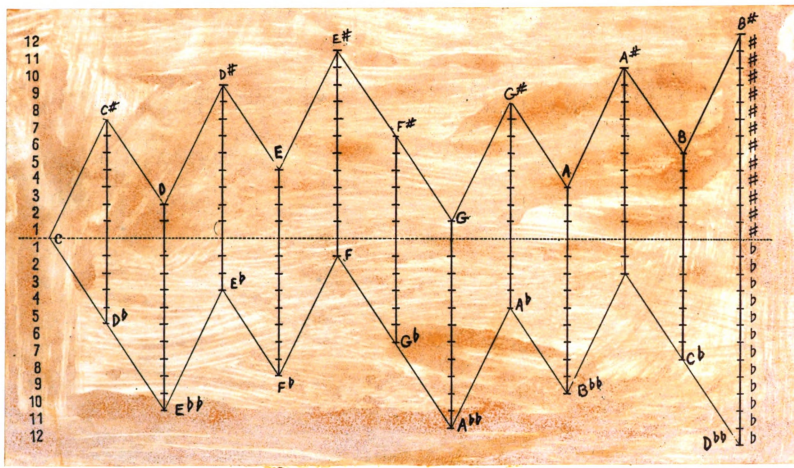
Atonal melody must be created entirely "on its own." However, that says nothing about the fact that it can be played only on equal-tempered instruments (piano and harmonium) and that it would be somewhat of a particular piano or harmonium melody in the way that one speaks of a violin melody. However, there is no piano melody (or, indeed, melodies) which is musically audible only on the piano (harmonium). The piano has no timbre character (as the horn does) precisely because it is a tempered instrument: i.e., the totality of timbre. In order to be receptive to a melody on the piano, one must listen musically (which, through the "development" of orchestral music, was entirely forgotten in the course of the nineteenth century). As atonal melody puts the creativity of composers to the test, so it also tests the musical listening of the auditors when it is played on the piano. Naturally, no music can be received from an atonal melody by anyone who has never had anything to do with musical intuition. It should also be noted that there is only a slight difference between the creative and derivitive musical intuition.[6]

The articles were, in part, written in collaboration with Ferdinand Ebner.

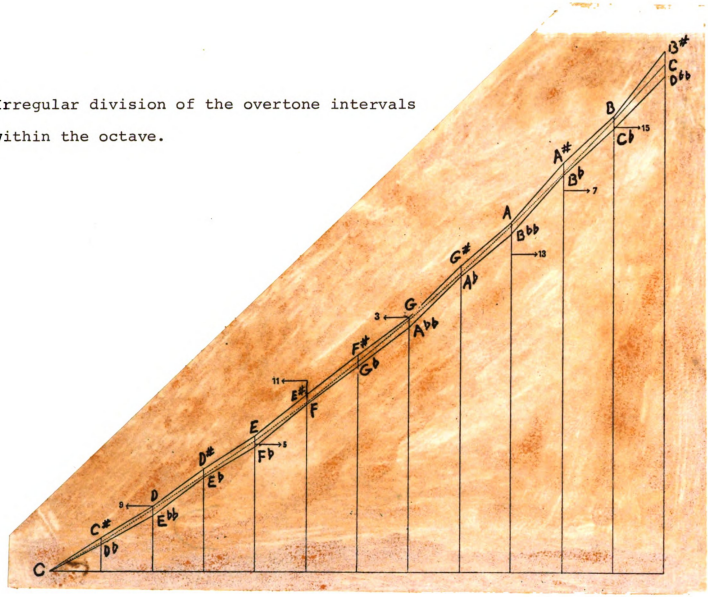
---

6. This work is used "with the permission of the original publisher: Robert Lienau, Berlin."

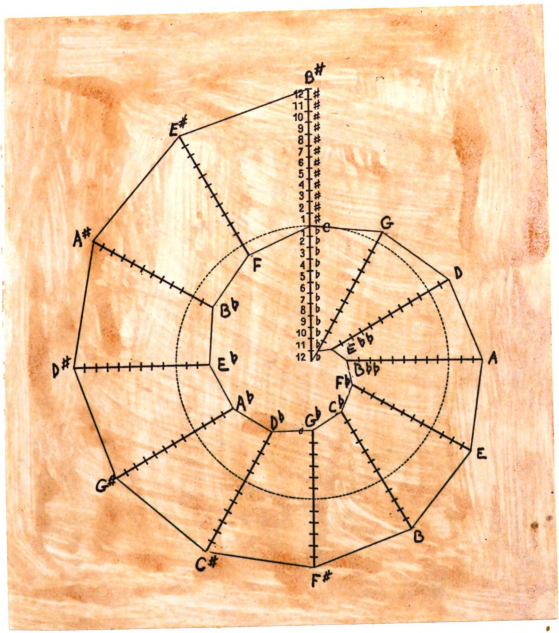
A. Temperament as it relates to the circles of the second and seventh.



B. Irregular division of the overtone intervals within the octave.



C. Temperament as it relates to the circles of the fifth and fourth.



D. Characteristics of intervals.

D. Characteristics of Intervals

No sharps or flats	Victory, pure, free, Olympian, chaste, glorious and festive.
One sharp	Solemn, outward-going, heavy, powerful, formal and impressive.
Two sharps	Joy, triumphant, sensuous, allegro, effervescent, high-spirited and frothy.
Three sharps	Growing, blossoming, evolving, the precious one, the loved one, life and grace.
Four sharps	Ghostly, fairy-like, fluttering, hazy, the spirits and the spell.
Five sharps	Doubt, despair, passion, struggle, eroticism, longing and discontentment.
Six sharps	Impure, constrained, Promethian, satanic, volcanic, torment and servitude.
Five flats	Leggiére, inward looking, secluded, sensitive, submissive and delicate.
Four flats	Sorrow, melancholy, austere, andante, smooth, long-suffering and plaintive.
Three flats	Liberating, dominating, sacrificing, humility, the sea, death and pathos.
Two flats	Rustic, coarse, dull, artless, rigid, the mist and reality.
One flat	Rest, relaxation, shadows, the hunt, shepherds, the forest and country life.

Chapter III

J O S E F M A T T I A S H A U E R

T H E O R E T I C A L W R I T I N G S

VOLUME I

F R O M M E L O S T O T H E K E T T L E D R U M

AN INTRODUCTION TO TWELVE-TONE MUSIC

Universal-Edition, A.G.

Vienna Nr. 8395 New York

FOREWORD

"People argue" whether or not there is such a thing as atonal music.[1] Erudite minds speak of a "soulless" music and characterize melos as "a purely mechanical product" which represents "a contradictio in adjecto, an absurdity, since it is impossible for the comprehending mind not to hear a relationship between individual pitches". They call atonal melody a "purely negative principle with which no music can be created," etc. Briefly stated, in their impotent frenzy and despair, these men write against themselves and in contradiction to their own "works." From a good musician, their "problems" elicit a sympathetic smile at best. My friends are angered by these bloated, mendacious "critics" and they've encouraged me to ward off at least some of these tormentors once and for all through a frank and lucid discussion. I'm convinced, of course, that absolutely nothing is accomplished with words and that those who are incapable of hearing a melody do not become musical even through logical "reasoning." However, perhaps there may still be a few unspoiled musicians left who are able to penetrate my clumsy schoolmaster German in order to reach that point where an interest in twelve-tone music

---

1. Hauer employs the often quoted phrase "Da streiten die Leut' herum" which appears in the singspiel "Der Bauer als Millionaire" composed by Wenzel Müller on a libretto by Ferdinand Raimund.

could set in. In this spirit, I dare to talk about the craft and about the potentialities thereof. At the beginning of every paragraph I will pose those questions with which my esteemed comtemporaries pester me over and over again. I beg my readers (whom I esteem even more highly than the aforementioned contemporaries) for at least the grace and consideration (even while maligning me with their scathing discussions, sarcastic remarks, malicious distortions, false quotations, lifeless polemics and condescending assessments) which every schoolmaster has the right to claim, namely, that of not having to begin over and over again from the very beginning when explaining some particular aspect or, so to speak, of having to teach the multiplication tables at the college level.[2]

Is there a purely tonal music? This question can be answered conclusively and quickly by any negro who has ever played in a jazz band. He boxes, tramples and pummels any "note" and therefore produces a genuine tonal music. Children also carry on in this manner and since we grownups are more or less childlike or childish, thumping on a single note (the purely rhythmic aspect) often gives us pleasure. We gratify our moods, affections, our ideas and our personal rhythms as we teeter (similar to a sloth on a branch) on a note (tonic) for a period of time. A

---

2. The construction of this sentence as Hauer wrote it in German demonstrates the level of writing found in many of his works which he called his "clumsy schoolmaster German."

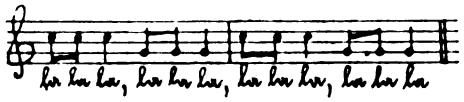
purely tonal music is a pleasure and an escape valve for temperamental people. I can quite well imagine how a modern composer somehow manages to assemble various noise instruments (percussion) and allows them to be beaten in a variety of complicated rhythms. Composing such a percussion orgy is "child's play" but for the performers it should occasionally be quite difficult so that they can demonstrate their virtuosity. This, however, produces a barbaric and wild effect upon the public. This sensuous stimulation is to the framework of music as pepper and paprika are to the art of cookery. If food is seasoned in such a manner that it is not too noticeable and if the soup is not oversalted, there can be no objection to it. Eating only paprika and pepper may not, naturally, please all people. In music there are also those for whom the constant drumming on a single note is either too diverse or too "monotonous."[3] Therefore, people long for a second and a third note, for melody, for the melic.

What do you understand by the word "melody"? Since I don't have a definition for the concept of "melody," I'm in a real fix. Knut Hamsun speaks very ingeniously of the melody in the flight of the vulture, of the melody in the arrangement of the boughs and branches of a tree and of the melody of a waterfall. In like manner we could also

---

3. Hauer makes a play on words here by employing the word "eintönig" which could be construed to be either monotonous or singled-pitched (monotoned).

talk of the melody of the teetering sloth discussed above. However, I can't approach my philosophically trained reader with poetic matters. He, who can only hear a melody or sing one in an approximate manner, knows that better than I do. Indeed, the manifold arrangement and order of various pitches does not constitute melody but is the prerequisite of the melic element in music. An ordinary mortal with a healthy amount of horse sense does not refer to even the most interesting drumming on a note as melody. On the contrary, he calls such purely rhythmic noise just unmelodic. Melody is a fortuitous blend of the rhythmic with the melic. It takes at least two pitches, however, to bring about the melic. It is often very interesting to observe the manner in which melos develops in small children. In the first stages, which are purely rhythmic, they tap on objects and always sing one and the same note to it. One day, however, it's different as the melic side breaks through. The most beautiful memories of my life are of the way my children began to sing melodies. It was particularly striking with my oldest daughter. For a long time she only sang on one note but all of a sudden she came out with the first melody of her own creation:



A scholar explained to me later that the war-song or better yet the battle cry of certain Indian tribes supposedly sounds quite similar. We mortals standing on the high plateau of art music, however, know enough to speak of the birth of the first melody (tonic--dominant--tonic) and affirm the appearance of a particular fundamental with the gradual unfurling of the individual overtones. The melic in man grows quite naturally out of the note itself. With my children, it went quite quickly once they were fortunate enough to find the first notes of the overtone series. Melic development in man is the crucial factor which decides the level or height of his musicality. In their melic development, most people scarcely rise above the physiological stage of animals. The unfortunate thing about this is that it is just such noise fanatics who, as it happens, become composers, thereby displaying their unfortunate love of music, so to speak. The twelve notes of the closed circle of fifths and fourths of equal temperament represent the extreme limits of pure melic listening. The 479,001,600 combinations of these twelve notes contain an immense profusion of magnificent melodies and sounds as well as musically logical harmonic and polyphonic possibilities. All these can come about, however, only if a musician hears them, if he breathes life into them, if he shapes them musically and if he can interpret them. For the "circus horse" with his mere feeling for the drumming

noise as well as for the "dancing bear," these combinations and permutations, these arithmetical possibilities, these constructions always and forever remain a scheme, a pattern, something negative, something disjointed, a random and arbitrary series of notes--a "nothing." In the human world this applies to unmelic people and to those who are only half developed melically.

Is there a purely atonal music? Just as we found the purely tonal, the purely rhythmic pole of music above, we can use the same logic and also find the opposite, which is the purely atonal, the purely melic pole of music. We call melos the musical event and activity--the tension existing between notes of various pitch. Mind you, the event and activity and the tension which take place in us. Melos is a musical process in musical people which is totally intellectual. The various notes are only the physical and physiological prerequisite to this experience. The notes are earth-bound, "clay,"[4] the material. In order to be able to reach this pure melic experience in music, we must obviously exclude, as far as possible, the opposite pole, i.e., the purely rhythmic noise factor. Notes of varying emphasis and length, which originate from different noises and, what is more, which are perhaps not equally apportioned within the octave (this, the strongest

---

4. Hauer works in another play on words at this point by using the word ton with quotation marks. In this context the word could be construed as clay or as pitch or note.

pillar in the listening process) and the circle of fifths and fourths, are not well-tempered. Given such conditions, the pure melic tension, the balance, the pure melic experience in the listener will naturally occur only with difficulty if at all. "A"-tonal music is also an "a"-rhythmic music and, strictly speaking, we may talk neither of a purely tonal nor of a purely atonal music but only of the two poles of music. If there was a pole concerned only with rhythm, the other pole would concern itself only with melos. Were there to be one for spices alone--only for sensuous appeal--the other pole would be for food without spice--without stimulus. At neither of these two poles are we able to exist permanently! To which segment of civilized society would it occur to drum perpetually on one note? On the other hand, to which warm-blooded musician would it occur to always use the twelve well-tempered pitches equally without any stress, playing or singing each with the same length and loudness and thereby making it atonal? No one remains forever in the frozen waste of these two poles. However--and now we come to that which my adversaries refuse to realize--a lengthy sojourn in this rarified atmosphere, in this "mountain sun" brings about a clean and purified condition. In particular, the time spent at the melic pole of music is a discipline, a bolstering of musical purity. A musician who addresses himself for a period of time to the singing of one-line

melodies employing the twelve well-tempered tones comes a long way from the banal and trivial and from false sentimentality. He escapes these perils forever no matter how much gratification he finds in the personal, rhythmic, conceptual, in tonality and in harmony and polyphony.

Why do you call your music atonal? In my compositions I proceed from the atonal, melic pole of music and, in the course of my work, move toward the tonal, rhythmic pole. Seen realistically, my music stands in the middle between the two poles for it can be spoken of neither as purely atonal nor as purely tonal. However, since I proceed from the atonal, purely melic experience of the twelve tones (only touching upon the other hemisphere, so to speak), I rightly call my music an atonal, melic music.

Where does imagination enter in your works? I have sung twelve-tone melodies from the time of my youth but not until later did I realize that all or almost all pitches of the circle were always contained in these melodies. My melic development was far advanced even in my early years. This "madness," however, was buried through training and instruction. Only later did the melodies, which were well cultivated and tended in my inner being, finally break through, and since then "it" sings constantly inside me. In order that other people could also take part in this, it was a case of finding a good or indeed the best conceivable form for my obvious musical experiences. Form is the

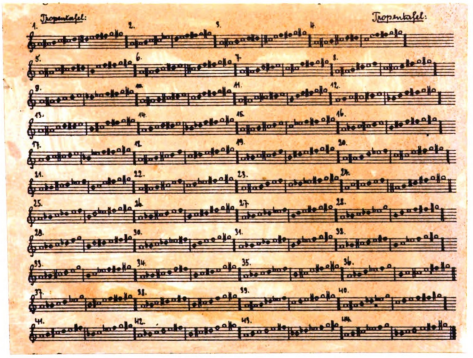
courtesy of the artist vis-a-vis the public. He strives all his life for form and for craft and, in this regard, I have certainly not made it easy on myself.

How do you actually begin your compositions? A melic motive or a melic figure was and still is the point of departure for my works. It should be noted, however, that the melic motive or figure is not to be confused with a theme or leitmotiv. At its simplest, it could even be said that it is an incipient melody but even this is not correct for not only melodies but also harmony and polyphony emanate from melic motives. The best I can do is to demonstrate this through an isolated illustration which, however, by no means exhausts all possibilities. This spring I was once again touched by the charm of the Austrian landscape. I was at Traunsee at Easter and for once it didn't rain even on the nice days. Traunstein, the lake and the fields all conspired against the "absolute" musician. I thought to myself at the time that if I were to find the correct melic figure or the appropriate "trope," the composing of a romantic fantasy for orchestra (without program!) would be a thing of pure musical craft. As it turned out, I found it soon after and in eighteen days Opus 37 was down on paper. Here, however, I must insert something which will perhaps puzzle many people. Some time ago I classified and organized the melic possibilities of the twelve tones into forty-four tropes and, through many years practice, I know my way about these phrases as well as

others find their way easily among keys and modulations. Actually, it is virtually the same only incomparably more complicated. More important, however, I've gotten to know the pitch content of these patterns better over a period of time. This proved useful to me in the construction of a work. Previously, composers had to decide upon primary and secondary keys, but today that has been refined by the tropes. The study of composition in twelve-tone music is very similar to that in harmony and counterpoint, the difference being only in the greater number of possibilities and in the more subtle ramifications. The entire technique of composition in dodecaphonic music adheres to the doctrine of the tropes which demands intensive study.

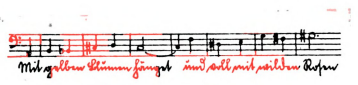
Is your musical system completed yet and can it be learned through study of the rules? An individual musician cannot fully exhaust the twelve-tone system. Several composers and several centuries would be necessary for that. Certainly, however, certain things which until now were accomplished empirically, can be learned through rules (not in a week or a month, naturally) and, on this base--on this solid foundation--it most certainly can be further developed both logically and correctly. The learning of the tropes and of the diversity of melic patterns is, as with harmony and counterpoint, linked to the personal diligence of the individual and to his powers of perception.

The path to learning the tropes is through working out many, many examples. In the following I want to explain the system by means of my table of tropes (see below).



Each of the 479,001,600 melos rows is divided by a bar line into two halves each of which contains six notes. The notes of one half remain together and maintain a positive intervallic relationship with the notes of the other half. From this point of view, if we put into groups those melos rows whose intervallic relationships are the same, we get forty-four such possibilities: therefore, forty-four tropes. As an example, let's take the first trope whose characteristic shape ("trope-image") is the chromatic scale. Right at the outset, I want to point out that transpositions of

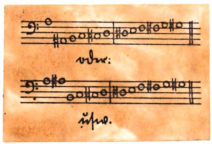
the scale to the twelve pitches[5] have no vital significance for the melic elements and, therefore, for the intervallic relationships. Were we ever to show the transpositions, we would have to take into account the 12 x 479,001,600 permutations. In my table of tropes, "A" is the lowest and G-sharp the highest pitch. We should bear in mind just how the notes are arranged in the trope image (the left half from A upwards to D, the right from D-sharp upwards to G-sharp, both halves, therefore, occupying the space of two adjacent fourths which together comprise a major seventh). Through permutations in each half, 720 x 720 or 518,400 combinations arise, of which one appears below as an example:[6]



5. Hauer would have been more precise had he said, "to the other eleven pitches."

6. The example given at this point is taken from the first eight measures of "Hälfte des Lebens," the second song of Hölderlin-Lieder which is Hauer's Opus 21 dated 1922. The words (Mit gelben Blumen hänget und voll mit wilden Rosen) are given with the bass line of the piano accompaniment.

Now, however, we have to account for twelve versions or twelve modes,[7] which can be done by placing the lowest note as the highest eleven times.[8] For example:



Each of the twelve modes has 518,400 possibilities which together make 6,220,800. Something else to be taken into consideration is the fact that, in most tropes, the two halves can be reversed so that the first will exchange with the second and, in return, the second will exchange with the first. By this means, other combinations will arise and the number of possibilities within a trope will double from 6,220,800 to 12,441,600. Only in a few tropes will the same intervallic relationships emerge as a result of the exchange of the two halves. Because of this

7. An exact translation at this point is difficult because the word Hauer uses is tongeschlechter which is a compound word contrived by Hauer for his own purposes and not seen in other writings. The closest translation would be the word "mode."

8. Since Hauer does not seem to recognize the octave equivalency of notes, he shows that he has a conception of twelve-tone music different from that of Schönberg who admitted such equivalency as a basic tenet of his system.

sameness, we call them identical.[9] This occurs in eight tropes altogether: numbers 1, 8, 17, 19, 24, 34, 41 and 44. Finally, it still must be pointed out that through the inversions in the twelve modes, twelve different melos groups also arise in most tropes. An exception is found in only a few. The eighth trope has only six modes with dissimilar groups, trope thirty-four has only four dissimilar mode-groups, trope forty-four has only two while the two exchanges (of the halves) of trope thirty-eight each have six dissimilar modes. I've said everything here that is absolutely essential for an introduction to the twelve-tone system. With careful consideration of all the characteristics of the tropes, a person of average mathematical ability can now easily prove whether 479,001,600 melic possibilities do in fact exist. I even want to help by revealing to him that in twelve-tone music there are eighty different hexads and nine hundred twenty-four modes. As was said already, nothing is gained through the knowledge of these numbers but, at most, a certain security. The musical, subjective working-out of examples is important in order to be able to utilize the tropes properly (as previously with modulations). The musical imagination must be at work in conjuction with the system

---

9. Hauer again demonstrates his linguistic inventiveness by employing another compound word (wiedergleich) of his own making. The seemingly most appropriate word to be used in this instance is the word "identical."

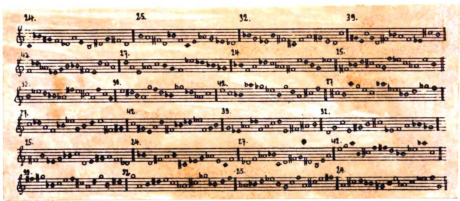
(just as was done previously with the seven notes) so that what emerges is a proper, respectable music which is well constructed.

What are the important elements of your methods of work? Once I have decided on a trope, i.e., on a category, I proceed like the old contrapuntists with their variations, imitations, canons, weaving of lines, dividing-up of material, pitch displacements, control of the texture, inversions, augmentations, diminutions, and strettos--in brief, with all means and possibilities which have been used since time immemorial. To be sure, all these geometric and constructivistic devices have no meaning in the genuine musical life of people. These details are totally immaterial to the layman who listens to music. For him, it is generally a matter of the "Musi."[10] However, employing great variety, the composer must adhere to a crystalline form having certain similar, connective and repetitive ideas for it is directly through this means that he facilitates the listening of his music. In the Romantic Fantasy, I had to provide a broadly conceived base which would correspond to its length (it's written in one movement). The basic melic idea emanates from the twenty-fourth trope

---

10. The word Musi is impossible to translate since it is a Viennese dialectical expression for music. This could be equated with the spelling "toon" for tune in English.

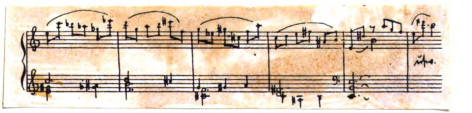
(look at the table of tropes) and goes into five other tropes through exchanges of various kinds whereby the following outline comes about:



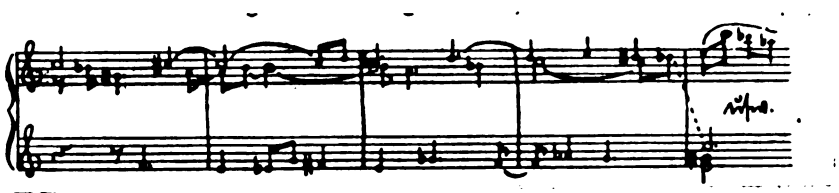
The inversions of each one of these twenty-four situations must still be added to these possibilities. The result is a total of 24 x 12 or 288 "building blocks" which are closely related to one another and which are deployed in such a manner that they balance each other. The listener repays me for the care I might spend on establishing balance for, just by taking such care, the "listening" is made considerably easier. Now the real work begins: the assessing and "assaying" of the building blocks and, hand in hand with that, the assembling, the "composing." In the outline, I have merely drawn the borderlines within which I can compose to my heart's

content. A musician will not find it difficult to feel the main melodic line or the cadential, harmonic, and polyphonic inflections. The order of the building blocks in the outline, naturally, has no bearing on the composing itself.

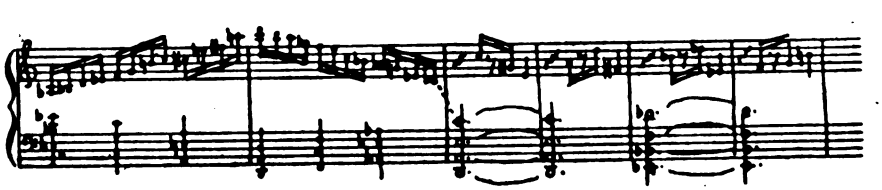
In explaining the building blocks, have you implied certain rules? I don't know if the word "rules" can be applied to that which I now want to demonstrate. In any case, however, there are certain peculiarities in every building block--in every trope--which are rooted in the statical and which cannot be ignored with impunity. In the following, I can, naturally, show only a few examples, all of which I have again drawn from my Opus 37. As has already been said above, I have sung unaccompanied twelve-tone melodies for a long time, thereby making music in an almost purely atonal manner. The first step toward "improvement" was taken when I added a homophonic accompaniment to the melody. For me, the ear was thereby made the one and only authority. I have become so fond of this primitive or "neo-primitive" style of writing that I still readily use it today although by now I've learned (through it--directly through this style) completely different things.



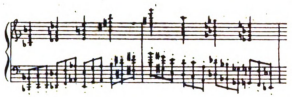
Following in the wake of this is another technique: that of sustaining the individual pitches of the melody. The first step toward polyphony was made in this way. For my wretched "concept" of music, this type of writing still holds its appeal. I even think that the syncopations and the working out of the voices borders ever so slightly on art.



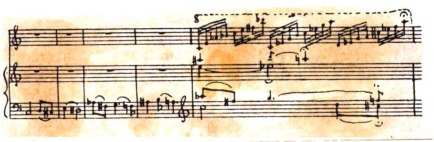
I am not only a "neo-primitive" but also an "old-fashioned" person who loves melismas, ornamentation, patterns, runs and passage work and (Oh horrors!) even fancies the things of nature (a rainshower, a bird singing . . .), naturally, always within the framework of the musical. It will not be difficult for the gentle reader who has a real interest in the subject to make the connection between the particular scenes and the building blocks of the outline. In purely musical forms which are constructed as tightly as fugues, it is hoped that musicians may still be allowed to verbalize and even "program" a little bit here and there.



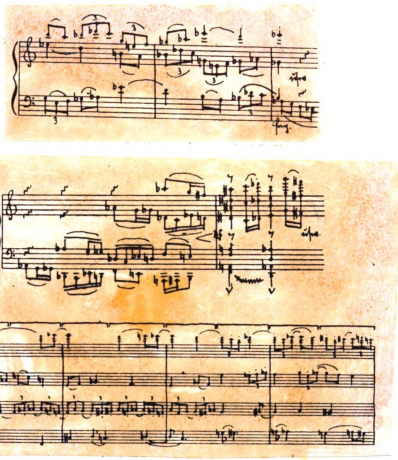
With twelve-tone passages even the basses need not be short-changed.



I still haven't given up making music with one-line melodies. In the following example, a melody (may I indeed say melody?) in the bass is taken over by the woodwinds and played in four parts with the piano sounding like a "rippling celesta." The sequence symbolizes an "echo," a "primordial" phenomenon of nature or, if we want to remain strictly musical, the singing of a "one-voice fugue."

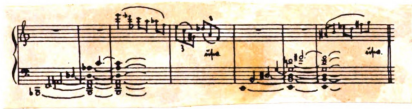


In spite of that, however, the "echo" (musically speaking, the canon--twelve-toned) can also be employed for establishing a substantial transition to a new scene. Generally speaking, polyphony of the "learned," "complicated" variety is very well suited for climactic points and the like.



In the last example, the twelve-tone units (the static elements) are indicated by brackets above the music. As you know, the static quality is the secret of "listening," not the physical but the intellectual, musical kind of listening. I emphasize that only so that the reactionary contrapuntists won't believe that one could set twelve-tone architecture aside simply for the sake of the old rules. The twelve-tone law (believe you me, it's not without good reason that I call it this) must always be adhered to in one way or another! I've constructed works with building

blocks which are divided into twelve groups of five or seven or eleven (5 x 12, 7 x 12 or 11 x 12) but always so that the cycle is completed. They sound excellent. Anyway, I take the old rules of counterpoint into consideration as far as is possible under the given conditions for I have satisfied myself that our polyphonic listening is indeed no longer geared to Palestrina but rather to Bach.



The principle of equilibrium has to be honored even in purely harmonic passages. The example above is the beginning of the Romantic Fantasy which is drawn from the twenty-fourth trope. The entire building block consists of two hexads which are repeated with short figurations in the upper part. In these figurations, however, yet a seventh note presents itself (E on the one side and A-sharp on the other) which naturally must be used jointly by the opposing sides. If the laws of equilibrium are not observed, even a neophyte notices it because he is in some way disturbed. The critics, however, always want to correct the melos and rave on about sequences because they still don't realize that identical tropes exist. Even if there was nothing else in the world but the twelve

well-tempered[11] pitches, we would have to believe in the wise Creator who built the world according to a master plan. And if there is something that at least gives an inkling of this plan, it is the melos of these twelve tones. When a composer constantly and stubbornly violates the laws of equilibrium he is, as it were, just banging his head obstinately against a brick wall. The wall won't give but his head will. If an architect doesn't observe these laws, his building will collapse and bury people.

In music, the danger (at least at the time) is not so great but in the long run its effect is really much greater. That so and so many modern composers don't become insane or haven't already become insane is only attributable to the fact that they are just plain unmusical (that is to say, melically undeveloped). Knowing the laws of stability, one can clearly see that, in the case of the architect, it's simply a question of people's lives! Musicians, on the other hand, arrange composer's symposia with nothing but "collapsing houses" and behold--not even the composers go mad as a result of it! That's a poor indication of their musicality, particularly if one knows how they operate and how far they will go in their noisemaking. A university professor demonstrates my music to his students by simply

---

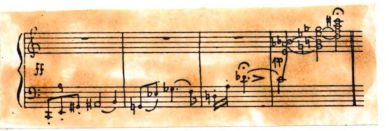
11. It should be noted here that Hauer uses the words "well-tempered" and "equal-tempered" almost synonymously: (wohltemperiert and gleichschwebend).

sitting down at the keyboard and declaring, "That's what Hauer-type music is all about." If the man only had an idea, only the slightest idea of how right, how totally right he was! But let him blame this on our Lord and leave me out of it! Did I invent the twelve well-tempered pitches? Do I force so many thousands to compose with twelve tones? Yes, it's very easy for a university professor to stand before his captive audience and make a joke which is in poor taste and which has been told for ages! This would be plausible to me if such a man had done some truly scholarly work. He could plunge into the tropes, into the melopoie and relieve us "idiots" of work which, according to his view, we don't understand anyway. Then we could pursue our profession, our difficult profession for which, unrecognized and without any recompense, we must bleed to death simply because we want to be human. The melos of the twelve tones can only be dangerous for musical people who are melically fully developed. For an ignoramus it is really totally irrelevant whether he sits down at the keyboard or in some way thumps on an instrument in a blind fury. In contrast to the university professor, there also are people (God be praised!) who call twelve-tone music beautiful and who then amend that and say, "it's not only exceedingly beautiful but pure, chaste and sacred in addition." For these utterances I could go on and state the names of authorities--authorities from well-established,

world renowned universities. I am a person who highly regards a learned man whether that man be a medical doctor, a teacher, a judge, a priest--give everyone his due! I wouldn't presume to interfere in scholarly matters. If the field of scholarship would take twelve-tone music (not mine but twelve-tone music in general) seriously for once, I would immediately shut my mouth and converse only in notes. For the time being, however, I am compelled to preserve a universal treasure, a treasure for better times. That's a difficult job for a person with my poor education. Actually, I'm waiting for a scholarly trained successor. In the meantime, however, scholars still confuse my hallowed cause with my acerbic personality. Despicably and contemptuously, they call me a fanatic and a visionary.

Do you want to eliminate entirely from music the rhythmically sharp-profiled effect in favor of the static? The statical, the possibilities for balance in the twelve tones are so enormous and so immense and diverse that we mortals, together with our "emotional states" and "demons," all find room therein. There is always an answer for him who still has his five senses about him and who does not want to stay outside the world (in an insane asylum). Of course, our modern public demands of composers that they commit "hari-kiri" in every work, but the real artists are shrewd enough only to pretend in front of the "tender-hearted" snobs and afterward go and enjoy a congenial game

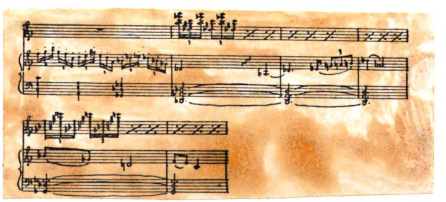
of skat.[12] The drumming and wobbling on a note, the thumping and boxing is a cheap but healthy amusement. Naturally, even within the confines of the twelve tones, one can (without disturbing their equilibrium) do this to the extent that what is heard is nothing more than a wild noise--no music, no melos. One can do it without suffering knocked-out teeth and eyes: i.e., without injury. For the following example I have extracted a passage from my Romantic Fantasy which strongly emphasizes the rhythmic element. Its melic stability emanates from the subsequent three chords marked pp which bring back the melic content as an "echo."



As said already, the wobbling, drumming, trilling and arpeggiating on or with a few notes is an amusement fit for a king. It arouses "feelings" in us although it may not be "cheap." The following example shows how a passage of such a nature can be held in balance; in "contenance." The cello (the instrument of the romantics) plays a twelve-tone melody and the basses hold the lowest notes. The

12. This is an obvious reference to Richard Strauss.

setting of proper basses in twelve-tone music is much more difficult than it was previously with seven notes. The setting of artificial basses, on the other hand, however, has become child's play. At the present time, our public is still naive enough to consider the setting of artificial basses as a "joke." Above all this, flutes, clarinets and piano trill with four and eight-note sonorities respectively. The entire trilling incident takes place in conjunction with the cello melody so that, in the interplay, the first and second four-note chord comes in the second half. Every building block has its "medial line" from which forward and reverse are "carefully judges." This is similar in nature to the venerable and familiar practice of having a beginning and ending [i.e., two stollen and an abgesang] of a song or of inhaling and exhaling. Each building block, therefore, is a small, self-contained piece of music, a cell within an organ with the body being built from organs.



Why do you really write for orchestra when you yourself say that genuine atonal music can be played only on an atonal, well-tempered instrument? I explained above that a pure atonal music does not exist because it would be monophonic and devoid of rhythm and that both rhythm and melos belong to a real melody. In the course of the developmental process, harmony and polyphony once more emerge by themselves from rhythm and melos. In spite of this, however, I am all in favor of having the temperament and intonation of the orchestra adjusted as well as possible. No separation of or differentiation between f-sharp and g-flat in the strings! The proper valve for the brasses! The woodwind instruments are well-nigh equal-tempered without any adjustment. Our musicians learned a long time ago to play with twelve tones if they were forced to do so. In addition, the instruments could still be improved. The instrumentation of twelve-tone music is not difficult; it only requires practice and some thought. The ear, the ear and again the ear is the best teacher. As is well known, there are also timpani, drums and percussion instruments of indefinite pitch in the orchestra. I've gone as far as to use the timpani because they are capable of being tuned. I employ them very sparingly but, in spite of this, I don't treat them shabbily.

Vienna: July 1925.

Chapter IV

J O S E F M A T T I A S H A U E R

T H E O R E T I C A L W R I T I N G S

DEDICATED TO HERMANN HEISS

VOLUME II

T W E L V E - T O N E T E C H N I Q U E

THE THEORY OF THE TROPES

PREFACE

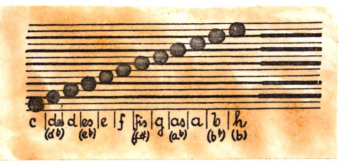
This book presupposes knowledge of Volume I (Vom Melos zur Pauke) of this series of my theoretical writings without being a continuation of that volume.

This work is not written for the musicologist, nor for the performing musician, nor even for the amateur, but primarily for the composer of twelve-tone music. No "rules" and "conventions" have been propounded here; I have written down only laws which I have found in my own work and which need to be adhered to, it seems to me, as an absolute necessity by any twelve-tone composer.

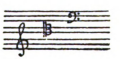
My task in this book, as I see it, it not to show the tonal application of the twelve tones, the realization of bass lines and the like (in the sense of a textbook on harmony), but to give a practical introduction to the architectonics of "twelve-tone construction." There are many musical examples in the book which, in a practical manner, explain the most important aspects of the written portion. The study of these examples will make greater amplification of the accompanying explanations unnecessary and therefore the book has been kept to a concise form.

J.M.H.

For the thorough study of composition in twelve-tone music, a notation is necessary in which the twelve notes are arranged in concise, discernable, even intervals so that one can read the melodic movement with speed and accuracy. The notes of the twelve tones must, therefore, be arranged in the following manner:

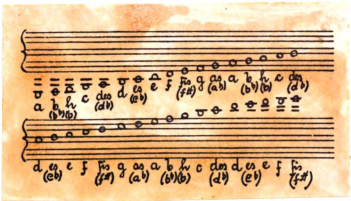


The system of lines which makes this arrangement possible is, in and for itself, of slight importance but it obviously allows one to relate to obvious and commonly known things: namely, to the arrangement of the keyboard of the piano through which the twelve notes are easily comprehended.



The notes on the lines designate the pitches of the black keys and the notes in the intervening spaces designate those of the white keys. Octaves are differentiated by clef signs and by octave signs in the case of very high or very low notes. The treble clef designates the one-line G-sharp or A-flat, the alto clef designates the

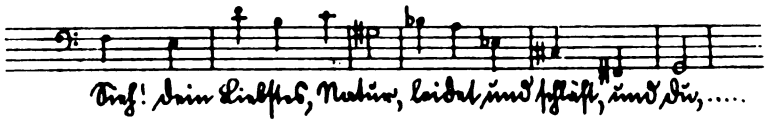
one-line D and the bass clef designates the small G-sharp or A-flat. Otherwise, everything remains as in the old system.



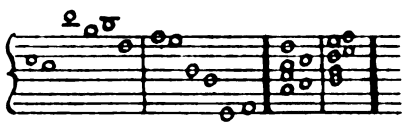
This twelve-tone notation is a shorthand manner of writing which substantially facilitates the mastery of the twelve-tone technique. For the formulation of the twelve-tone buildingblocks, it is simply indispensable. Obviously, it could be employed for all instruments and for full scores and the like, but reading and writing in the old seven-note notation can also be simplified by observing the following rule: accidentals are valid only for those notes which they precede, even within the barline.

Twelve-tone notation has proved to be of the greatest service to me in the discovery of the tropes. The surveying of the 479,001,600 possibilities of melodic shape would not otherwise have been possible for me. In the twelve-tone notation, however, it is easy to acquire an accurate comprehension of different intervallic relationships because they are made visible. The patterns can be comprehended at a glance and the result, therefore, is a quick and assured working process.

In the twelve appended tables, I have written out the tropes in all twelve transpositions and these comprise all the conceivable possibilities of melos. Consequently, any twelve-tone melody whatever can be reduced to one of the prescribed tropes.



The foregoing melody[1] is sketched out below in twelve-tone notation and followed by the trope-image. It can be seen that in the first half of the trope the two fourths[2] move in half steps which stand in fixed intervallic relationship to the diminished fifth, D to A-flat, while in the other half two minor thirds move in half steps which again stand in fixed intervallic relationship to the major second, d-flat to e-flat. The reciprocal position of the intervals of the two halves is also of significance.



---

1. The example is drawn from the first six measures of the second song ("Ihre Genesung") of the Hölderlin-Lieder, Vol. 4, Op. 40 dated 1925. It was printed by Universal Edition in 1928.

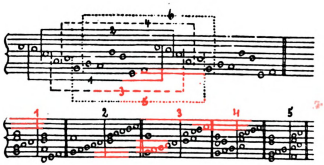
2. Hauer is in error on this point for the example clearly shows that two fifths (F-C and E-B) and not two fourths are involved.

We do not have to look very long before finding (in Table IV) the thirty-first trope in which not only the intervallic relationships but also the positions of the notes are the same as they are above. Therefore, we say that this melody is in the thirty-first trope (just as one used to say that a melody was in a certain key).

Only through the study of the tropes is the value of their melodic and harmonic pecularities revealed, and it is precisely these pecularities which have such a decisive meaning in twelve-tone technique. The point is not to commit the forty-four tropes and their numbers to memory, but to have the trope-image so well imprinted on the mind that it is quickly and positively recognized in any case of melos whatever. In this way it can be worked with in a free and systematic manner.

In the following example I have written out the above-cited melody twice (one after another) and revealed its "phases" through regrouping the notes. Underneath, I have written the trope-images belonging to the phases which can be located in the tables. The sixth phase of the melody is again found in the thirty-first trope from which we began. It is obvious that this entire twelve-tone melody moves within six tropes. I must expand upon what has been said by stating that this melody is in the thirty-first trope with which (in this case) the fortieth, second, fifth, fifteenth and thirty-fifth tropes are melically

integrated. With certain melic constellations, it can happen that two and more phases remain in the same trope. Each twelve-tone melody, however, moves (with its phases) within six tropes at the most. The relationships (tropes), naturally, remain the same if the melody is sung in retrograde (from the end to the beginning) and, obviously, also if it is transposed to the twelve pitches and is employed with all inversions (modes).



From these immutable facts I have cited, certain "rules of thumb" may be deduced for the composer giving him craftmanship which will enable him to work easily and freely so that he can turn his individual attention to the purely musical: i.e., to the music. No "rules" or "conventions" will be advanced here. I, who in all my life have railed against prejudice and narrow-mindedness and have had to suffer grievously because of it, will certainly not slip into the mistake of concocting inhibitive regulations which later could serve as an excuse for shop-talk. For genuine and real laws, however, I myself have always had the greatest respect.

In music, there are two important laws which I want to explain allegorically by discussing the principles of bridge construction. A construction engineer has to deal mainly with two "forces": with the specific gravity of the material on the one hand and with its tensile strength and atomic structure on the other. The infinite possibilities of the interrelationship of these two forces condition the method of construction. With stone bridges, for example, he must give more consideration to the specific gravity; he must sink numerous strong pylons because he can count on only relatively short arches in the span. However, if he uses concrete or even steel in his construction, he can attain immense stretching and bracing power for which support he requires few and often only slender piers. This is just as it is in music where we find the principle of specific gravity in the pitch with its overtone series: i.e., in the law of the overtones. The principle of spans and braces, however, we find in the integrated circle of the twelve tones: i.e., in the twelve-tone law. Both laws must always and under all circumstances be respected, even if in an infinite number of variations. Both "forces" impinge upon each other and mutually maintain themselves in a state of equilibrium. Practically speaking, if a composer interferes with the "steel" struts of the twelve tones and, thereby, their balance so that he "weights" a single note (that is to say, he accentuates the rhythmic aspect, thus

"loading it down" by emphasizing it, etc.), he immediately comes under the overtone law. In so doing he must become tonal and he must embrace the law of gravity and set a strong supporting pillar in place: i.e., a fundamental or a suitable bass which will support the "weight." In such a situation, my compositions always contain basses in fifths, the lowest note of which is strengthened by octaves just as in the pattern of the overtone series. However, if the arches and supports of the twelve tones are balanced to the greatest degree as in a steel structure conforming to the twelve-tone law (hence atonal), single tones may not be emphasized!

With that, I have come to the focal point of my comments. My task does not consist in showing the tonal application of the twelve tones, the setting of basses and the like. That has been done exhaustively or well-nigh exhaustively by others before me. I refer to the many textbooks on harmony in which all conceivable cases of the "vertical," i.e., of the bridges of stone-construction, are taken into account. My task consists of much more: giving a practical introduction to the horizontal supports of the twelve tones--to the "bridges of steel construction." I am forced to write a new theory of conterpoint. The old theory of counterpoint is, through my practical instructions on the twelve-tone technique, by no means overturned or abandoned but prevails in my system in a stricter and more

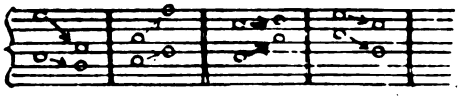
refined form. My instructions shall show how one can freely and easily handle counterpoint in the twelve-tone system.

I have discovered two "rules of thumb" with which the goal can be quickly realized and which also contain everything that is important to the practice. I call them the canon technique and the ostinato technique. Before I go into this matter itself, I want to point out a few general aspects of the structural-melodic voice leading to which I subscribe.

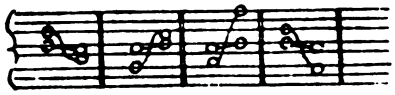
My chief principle in counterpoint is, naturally, note against note--hence, movement by contrary motion. I avoid parallels wherever possible. If I must employ parallels, I favor parallels in thirds and sixths though also parallel diminished fifths (i.e. augmented fourths) which sound lovely in twelve-tone music. Hidden parallels, which would be terrible in twelve-tone music, I have not yet found. The octave is entirely eliminated as a means of construction, that is to say, in a purely polyphonic texture the perfect octave or the perfect prime may never be reached by leaps. That arises entirely by itself from the twelve-tone law and from the "law of stresses" of individual pitches. In the case of a mixed style and at cadences (see below), it is somewhat different. There it can be admitted. However, we do stick strongly to the buttressing technique of the twelve tones. In spite of this, however, it is possible to double or to triple all voices in octaves.

That really has nothing to do with voice leading, per se.

In connection with leaps of intervals in the same direction, I rely on the following:



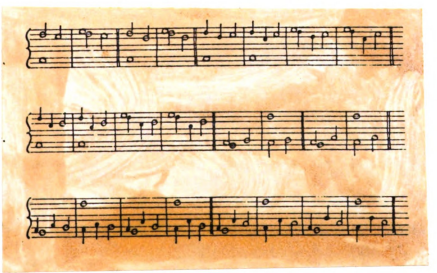
Harmless, once again, are thirds, sixths and diminished fifths (i.e. augmented fourths); if there is no other possibility, I leap into perfect fifths and fourths from the same direction. I also avoid leaping into major seconds and minor sevenths from the same direction as long as possible. If it by all means must be, I move at least one voice by half-step. This is also a good remedy for fifths and fourths.



In principle, I reject leaps into minor seconds and major sevenths in the same direction (only in a strictly polyphonic texture, naturally).

Now to contrary motion, to the real counterpoint. In true contrary motion, every interval (with the exception of the perfect octave and prime) and every conceivable chord can be approached by leap. Cross relations don't exist for twelve-tone music since there no longer is a leading-tone

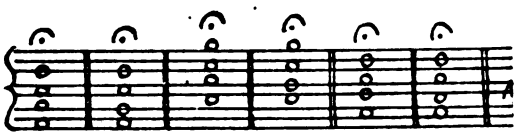
tendency. Furthermore, all chords are equal in status and need not be treated cautiously in any way (as was the case, for example, with the six-four chord). Also, we no longer differentiate between simple and double counterpoint, etc. Leaping into intervals, therefore, has become easy but leaving them is not so easy. In leaving chords containing no minor seconds and no major sevenths, one can move each voice wherever one wants. With chords which contain minor seconds and major sevenths, however, I observe the old rules concerning those notes which form these intervals. These old rules are clearly shown in the following illustration:



The notes of the minor second and the major seventh "grate" together so strongly that the ear can be pacified only through the melodic progressions demonstrated above. Combinations of these progresssions are also possible

without the ear losing the melodic thread. For example:

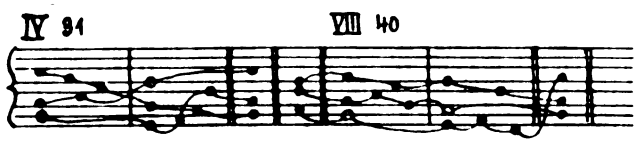
In purely polyphonic twelve-tone music in three-voice texture, a close can be made either with a major or a minor triad which, however, must somehow result from the trope construction. In four-voice texture, a close can likewise be made with a major or minor triad (through falling into an octave in contrary motion) or with one of the two major seventh chords in major or minor. In twelve-tone music, these are entirely satisfactory when used as closing chords.



With program music (the tone poem and tone painting) cadences are dependent upon principles other than the purely musical and for that reason they often turn out differently.

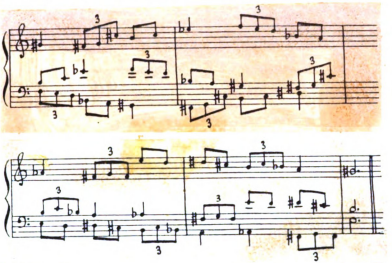
With syncopations, I generally rely upon the principle that the note which is tied over the barline into a new measure shall not last longer than that found before the barline. In particular, however, the following examples demonstrate how I handle such situations.

Canonic technique arises directly out of the tropes, that is to say, from the twelve-tone complexes; what comes first is not a theme or a motive but (to be exact) the trope. He who learns to master canonic technique through exercise and practice will soon find out that, in so doing, the motivic and thematic elements are by no means neglected, that they reveal themselves during the working process and, that with increased expertise, one can plan to work out certain of the motivic and thematic characteristics. A general principle concerning the juxtaposition of the tropes must still be mentioned: identical pitches should be separated from one another as far as possible. That is to say, if a building block, for example, closes with the notes D, F-sharp, A and B, the next phrase should not begin with these notes. This, however, is valid only in general; in particular, exceptions do exist.

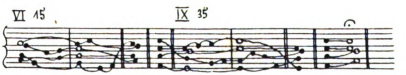


In the foregoing manner I have notated two three-voice canons which are joined together in the thirty-first and fortieth tropes. The sketch, written in twelve-tone notation, also serves to demonstrate to the fullest measure the advantage of the twelve-tone notation as an extremely clear "stenography." A transcription into the

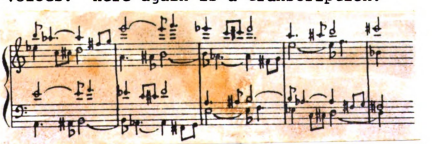
old seven-note script follows:

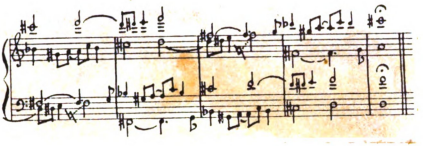


In this technique, the stretching and bracing (the balance, the stratic quality) of the twelve notes are distributed and balanced in the most refined manner. The complexes as well as the structural melodies are in twelve-tone. The tropes, from which the melodies are derived, can be located in the tables. It is very important for the "builder of music" to know always where he is going in these marvelous possibilities.

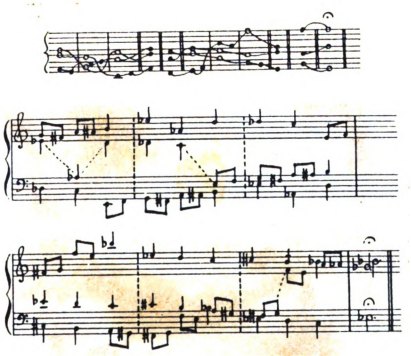


The example shown above is in the same format, only in four-voices. Here again is a transcription.

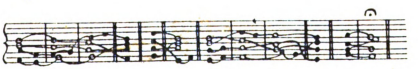


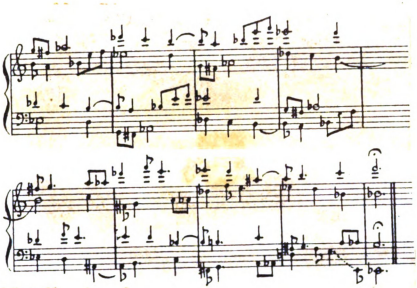


The following canon is drawn from a triple division of the thirty-first trope:

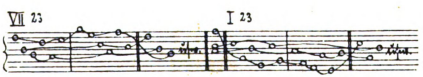


The following four-voice canon could also be built with the same melic configuration.



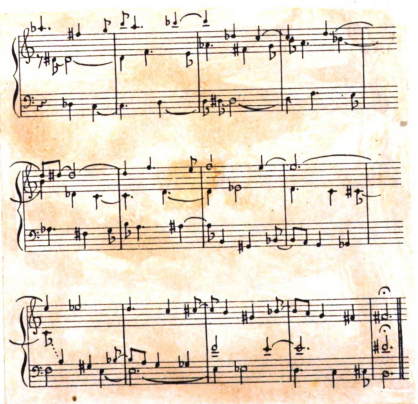


In the preceding, I have shown how one is able to divide a melody into its phases and, as has been proven, that at the very most, six tropes come into question. Therefore, it is immaterial whether the melody is sung from beginning to end or the reverse (retrograde). The rearrangement of the two halves of the trope and the transposition to other pitch levels changes nothing. With the following (second) canon technique, we shall no longer proceed from the tropes alone but from a melic cell within a trope which, in this manner, can be displayed in a multitude of ways.



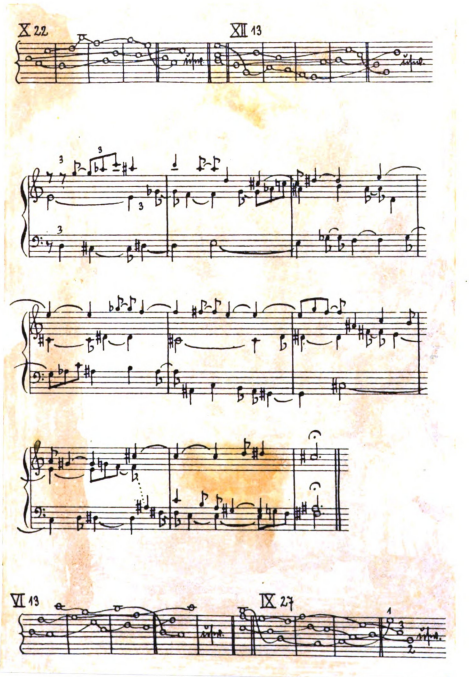
This technique is also differentiated from the foregoing in that the placement of each new pitch is assigned

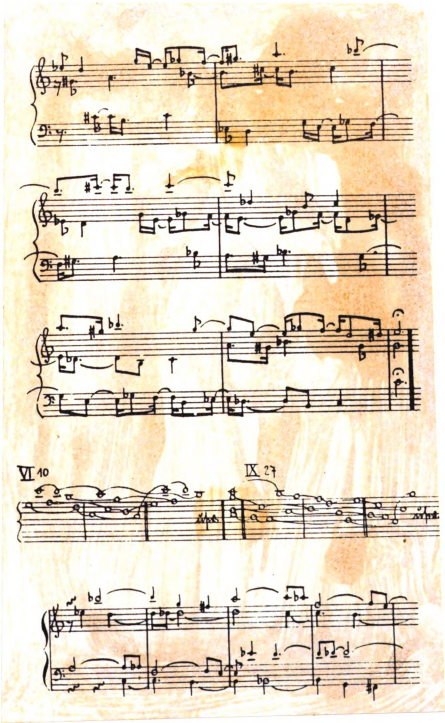
a unit of time by itself (no two pitches being struck simultaneously). Syncopations, in addition to all the principles of structural voice leading explained above (primarily the principle of atonality stated already), must be taken into account in the original conception in order that a new building block does not begin with the closing notes of the preceding. This kind of canon allows broad cantilenas in slow movements and produces rhythmic effects which are very interesting. Following is the transcription into the old notation:

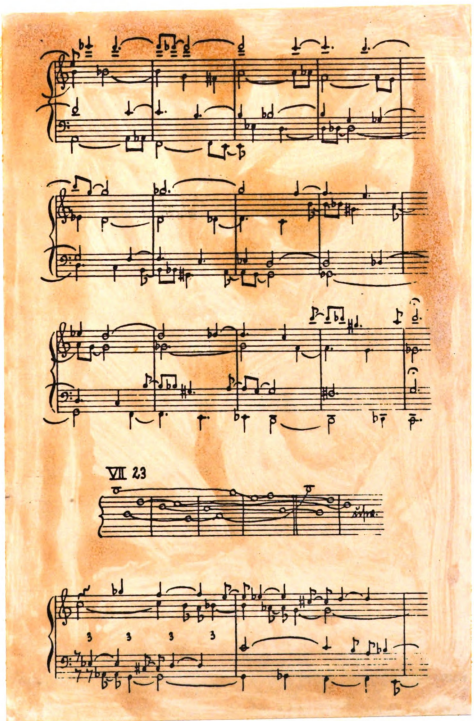


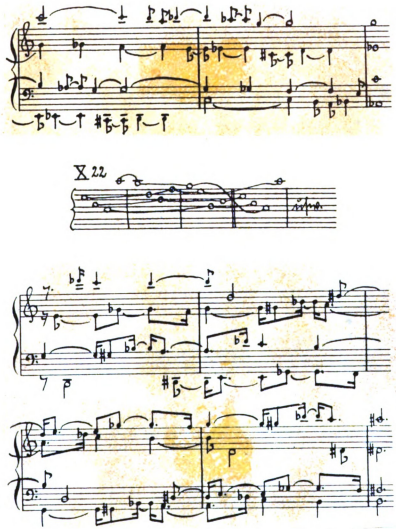
The next three-voice and four-voice canons are constructed from the same melic configuration as the foregoing.

They are invented according to the two, three and four divisions of the building block so that different rhythms are revealed. In the examples, care must again be given to the syncopations, to the joining of the second building block and to the endings.



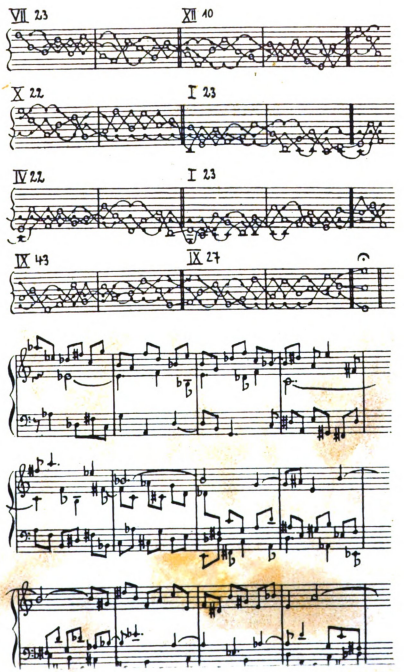

VI 10
IX 63

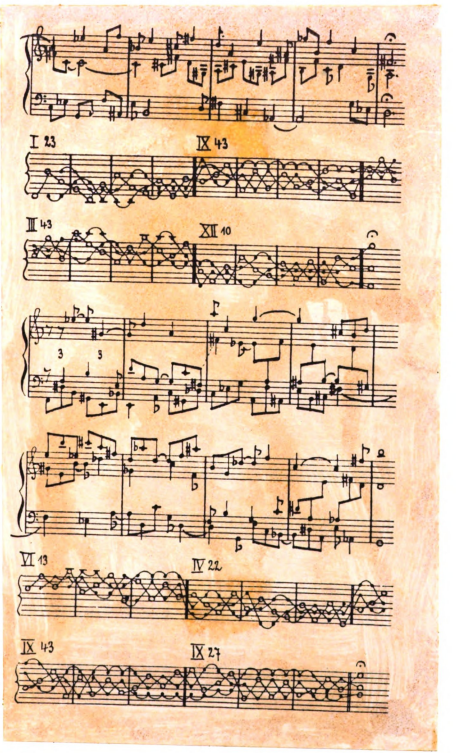

VII 23

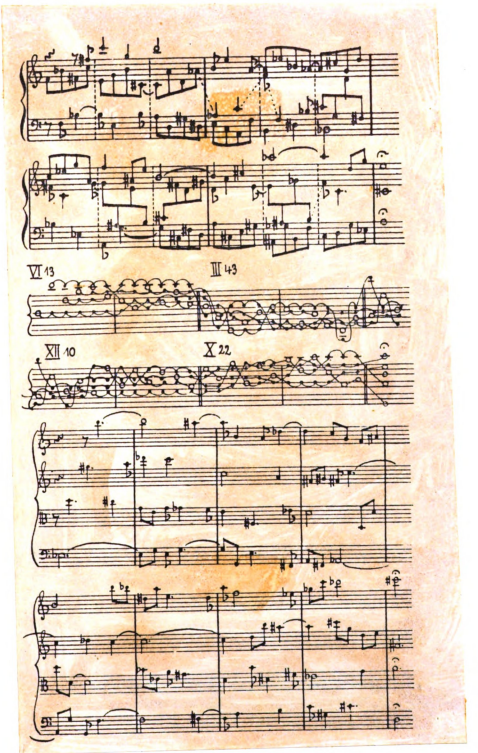


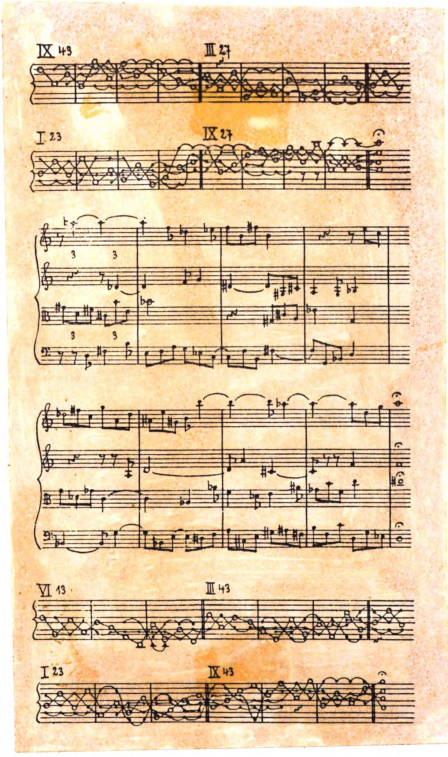
Ostinato counterpoint is a further development of the second canonic technique treated above. It arises directly from the melic configuration, i.e. from the basic melic shape. The difference exists in the fact that in this type of counterpoint the voices move more vigorously, no longer lyrically as in the canon technique but in a disjunct,

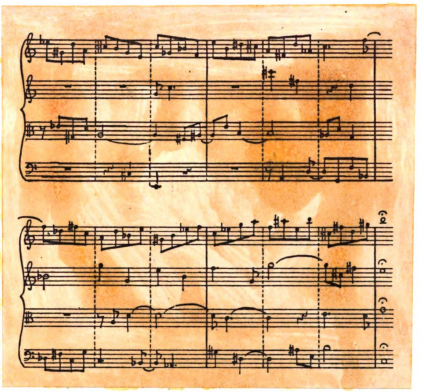
intransigent and "obstinate" manner. Following are six examples employing three and four voices as well as various rhythms:




I 23
IX 43
III 43
XII 40
3
3
VI 13
IV 22
IX 43
IX 27


VI 13
III 43
XII 10
X 22


IX 43
III 27
I 23
IX 27
VI 13
III 43
I 23
IX 43



Vienna: July, 1925.

TABLE I

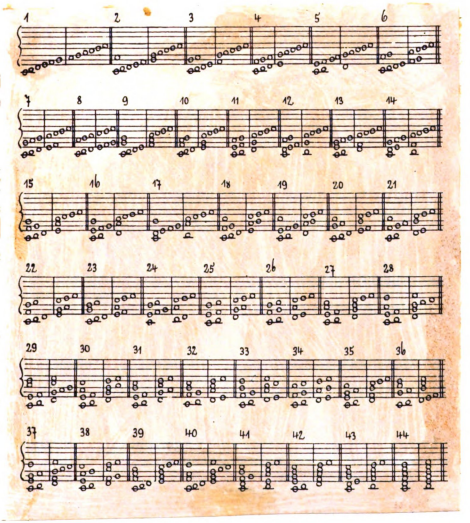

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE II

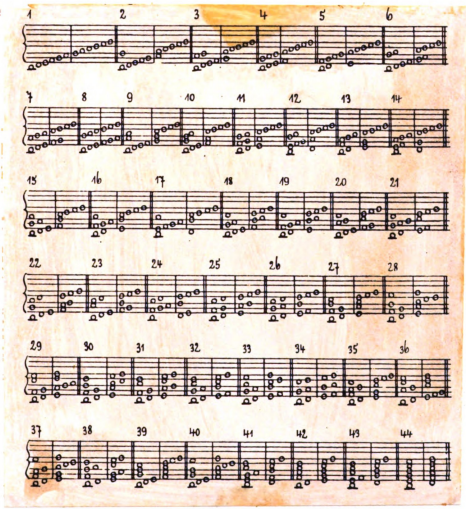

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE III

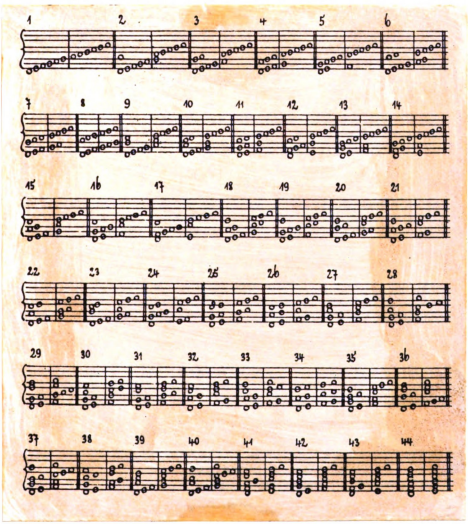

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE IV

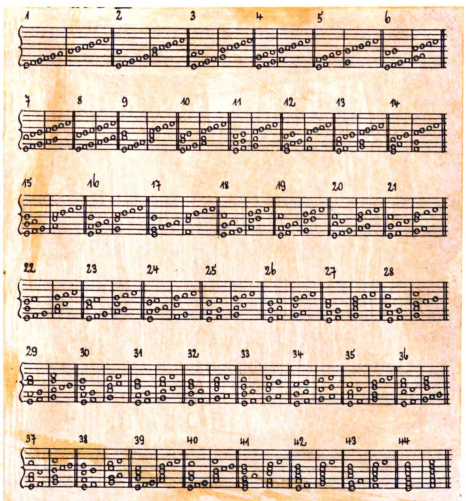

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE V

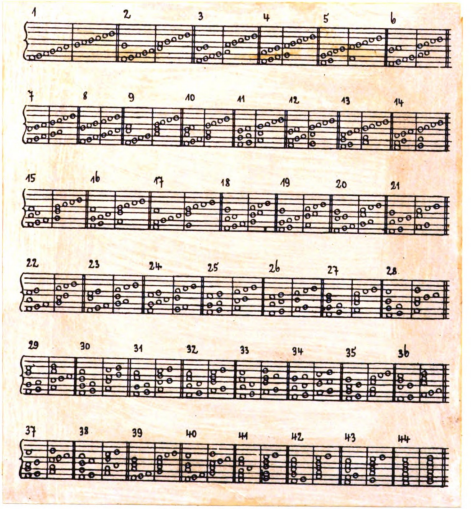

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE VI

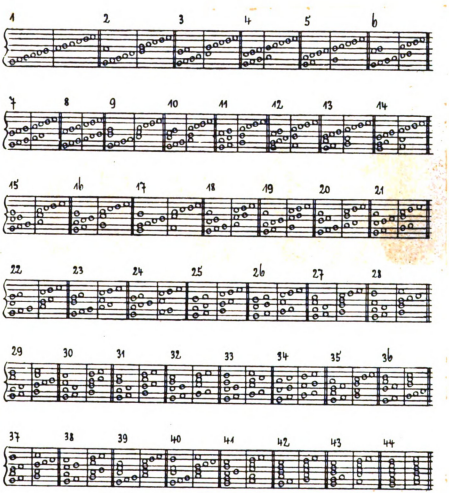

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE VII

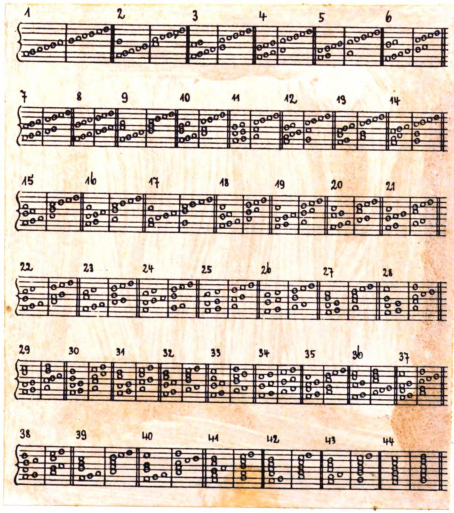

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36 37
38 39 40 41 42 43 44

TABLE VIII

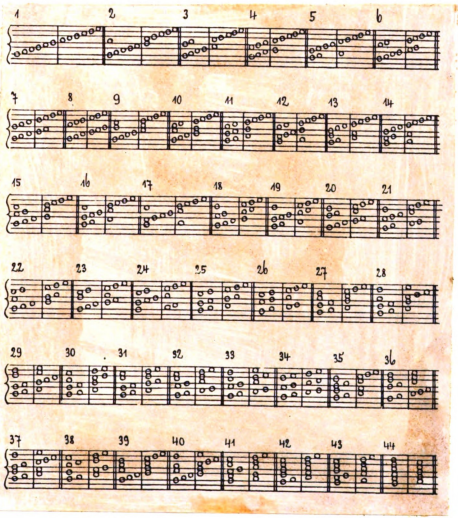

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE IX

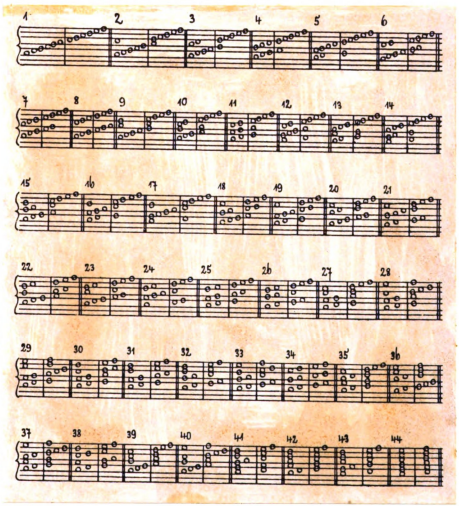

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

TABLE X

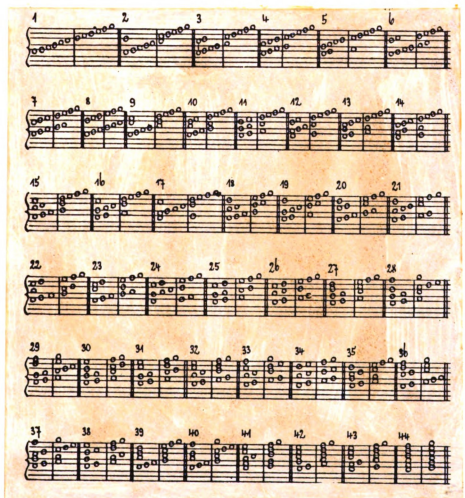

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE XI

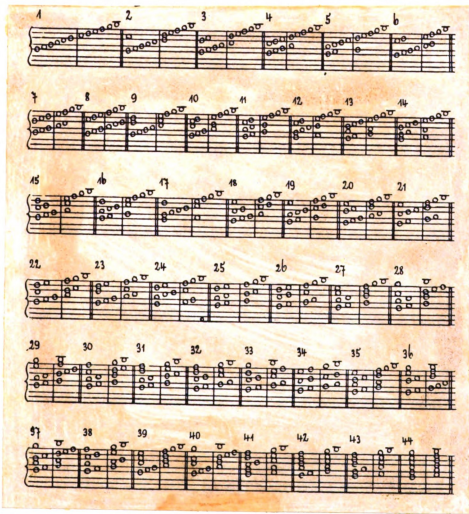
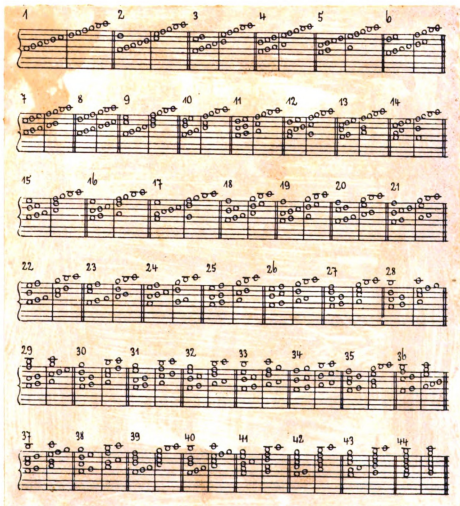

1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

TABLE XII


1 2 3 4 5 6
7 8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44

Chapter V

CONCLUSION

A perusal of the three treatises appearing here in translation clearly demonstrates that Hauer possessed an original mind which attempted to reconcile the problems brought about by the extreme use of chromaticism in the late nineteenth and early twentieth centuries. The solution which he advocated was avowedly opposed to the sensual use to which the diatonic-chromatic system had, as he thought, been put. In its place, he urged that the twelve pitches of the equal tempered system, along with their inherent intervals, be placed in the almost "holy" service of twelve-tone music which, when played on an equal tempered instrument, exhibits a pure, abstract music, something which the tonal system could never provide. In so doing, he openly advocated the use of the term "atonal" saying that, even at its zenith, the system known as tonality was an ill-conceived and misguided mode of composition upon which to construct any music. Even the best of composers (Beethoven, for instance) are open to biting criticism for their improper attitude toward music.

In his music and in his theories, Hauer manifests an ever-increasing concern for an objective kind of music which is immune to the sensuous pull of the "leading-tone

tracks" and which follows "the laws of the cosmos." This kind of music was not necessarily considered as having the potential of forming great works of art, but of instilling in the creator, at the point of creation, a peace of mind and a feeling of being in harmony with nature. In the final stages of his life, Hauer increasingly looked upon the moment of creation as a spiritual act which was meant for the creator (the manipulator of the musical materials and the one who solves musical problems) rather than for the enjoyment or edification of some unknown audience. His intentions are stated quite clearly in the short preface to his Zwölftonspiel-Neujahr 1947: "Twelve-tone music is not an art in the Classical, Romantic or modern sense but a cosmic game with twelve tempered half steps."[1] Briefly stated, composition for Hauer was a problem-solving venture which depended on the employment of the proper trope for its success.

In taking the attitude that he did, as well as in openly embracing the term "atonal," a term which Schönberg detested, Hauer, like his contemporaries Yefim Golyshev, Nicholas Obukhov and Herbert Eimert, as William W. Austin reminds us, was "more concerned with theoretical formulations of the new technique and with its significance for

---

1. Josef Mattias Hauer, Zwölftonspiel-Neujahr 1947 (Vienna: Fortissimo Verlag, 1962).

the future development of a common musical language than with its application to such forms and media as minuet and trio, sonata, cantata and opera."[2]

In spite of this semantic dilemma, in which Hauer advised the use of the word "atonal" while Schönberg repudiated its use, it is the music of Hauer which sounds tonal (almost capable of being analyzed according to traditional methods of analysis), and it is the music of Schönberg which sounds truly atonal. Concerning this situation, Hans Redlich says:

> The actual sonorous impact of Hauer's music is much less forbidding than his theory. Its repetitive harmonies are sometimes vaguely reminiscent of Skriabin, its pianoforte style resembles that of Satie (who in many ways is a kindred phenomenon as a theorizing artist and precursor of new styles more successfully championed by others), as well as that of Chopin.[3]

In comparing the music of Schönberg and Hauer, Redlich further states:

> Finally, the fact seems worth recording that Hauer's music never resembles the more dissonant idiom of Schönberg, to whom, however, he seems linked by common artistic and technical convictions.[4]

---

2. William W. Austin, Music in the Twentieth Century (New York: W. W. Norton, 1966), 303.

3. Hans F. Redlich, "Hauer, Josef (Mattias)," Groves Dictionary of Music and Musicians, 5th ed., 10 vols., ed. Eric Blom (London: Macmillan, 1954-1961), IV, 136.

4. Ibid.

Hauer attempted to construct a type of music that was objective in nature (i.e., eschewed all programmatic elements), but because of the tertian format (chords of the seventh and ninth which usually resolve to a consonance), it sounds like the music of many late nineteenth-century composers. The difference to Hauer was that it is built out of "totality" (the forty-four tropes which take into consideration all possibilities of melos--the intervallic element which is so important to Hauer), and that it is not meant for eternity but for the present. In his appraisal of the situation, Herbert Eimert has this to say:

> ...the cloak of mystical abstruseness, which characterizes poets, philosophers, and eastern philosophies as well as the author under discussion, surrounds Hauer's unexciting, static, twelve-tone music. His music is consciously anti-historical, intentionally primitive, and, despite the absolute atonality, almost always sonorous. In its meditative character, it avoids subjective differentiations and logically turns to the objective, impersonal set of twelve tempered tones.... In the development of new music, Hauer stands as the typical outsider and individualist. In accordance with the trends toward true objectivity, his twelve-tone music can be appraised as the first (almost premature) undifferentiated attempt at a reshaping of the materials of music.[5]

In proposing his system, Hauer returned to the very fundamentals of music (the overtone series and considerations of the intervals) and then sought support for his

---

5. Herbert Eimert, "Hauer," Die Musik in Geschichte und Gegenwart, 14 vols., ed. Frierich Blume (Kassel: Bärenreiter, 1949-68), V, 1824. The translation is mine.

ideas on intervals in the Farbenlehre of Goethe. This seems a strange source for support until one understands what Goethe was doing when he wrote his treatise on color and the manner in which it is perceived. At the time that Goethe wrote this work (1810), the wavelength theory of color was firmly established. Goethe chose to disregard this commonly held theory and, instead, based his explanation on a philosophical premise saying:

> The theory of colors, in particular, has suffered much, and its progress has been incalculably retarded by having been mixed up with optics generally, a science which cannot dispense with mathematics; whereas the theory of colours, in strictness, may be investigated quite independent of optics.[6]
>
> From the philosopher, we believe we merit thanks for having traced the phenomena of colours to their first sources, to the circumstances under which no further explanation respecting them is possible.[7]

Goethe believed that his theories concerning color and light would be widely accepted by all segments of society. This however, was not to be. Instead, Goethe's Theory was taken seriously by few people and today it is read mostly "for the beauty and sweep of his conjectures regarding the

---

6. Johann Wolfgang von Goethe, Theory of Colours, trans. Charles Lock Eastlake (London: John Murray, 1840), new ed. with introduction by Deane B. Judd (Cambridge, Mass.: The M.I.T. Press, 1973), 287.

7. Ibid., lviii.

connection between color and philosophical ideas, and for the flavor of life in Europe"[8] at that time.

> The advantage of trying to follow Goethe's explanations of color phenomena is that, by by the time you have succeeded in doing so, your thoughts have become so divorced from the wavelength explanation of color, that you begin to think about color theory relatively unhampered by prejudice, either ancient or modern.[9]

Hauer, with his spirit of eclecticism which sought support for his ideas in all areas of human endeavor, did for music (gradations of sound) what Goethe did for the field of art (gradations of light). To paraphrase the statement quoted above, it could be said that when one reads the latter sections of Hauer's The Essence of Musicality in which he meticulously discusses each pitch and its relation to the note C and quotes extensively from Goethe, one's thoughts become divorced from the traditional explanation of musical sound which depends on vibrations, ratios, and the like. One also begins to think about the theory of sound (timbre) relatively unhampered by preconceived ideas, "either ancient or modern." While some of Hauer's analogies appear to be somewhat naive, they were necessary to illustrate his conception of the interval and everything (melos, rhythm and timbre) that arises from the interval.

The discussion of color as Hauer employed it, reveals an important side of Hauer: a side which is, perhaps, not

---

8. Ibid., xi.

9. Ibid., xv.

revealed entirely in the music and the treatises, but which is important for an understanding of Hauer. The side referred to here is the "totality" of the man. Hauer was interested in many things. He had a mind that ran to speculation, one that tried to incorporate the ideas of the East with those of the West, the thoughts of the ancients with those of modern day thinkers, and in general, amalgamate religion, philosophy, mysticism and art in a grand scenario. In relation to Hauer, Schönberg and others appear as highly creative but practical musicians who concerned themselves with the creation of works of art and their performance as well as the ultimate reception of those works by the musical public. Hauer, on the other hand, was the idealist, never brooking the slightest compromise, constantly adding to his arsenal of ideas concerning twelve-tone music. In a general sense, the juxtaposition of Hauer's treatises with his considerable number of works, demonstrates that Hauer was a philosopher-theorist first and a composer second. In many cases, it can be seen that the composition was written to illustrate a theory. Perhaps it is on this level that the troubles existing between Hauer and Schönberg existed and not the more obvious level of two composers of twelve-tone music and the problem of the "inventor" of the system. The conceptions of twelve-tone music held by these two men were different enough that no problem should have arisen from this area. It is, perhaps, conceivable that at the

root of the dichotomy was the centuries-old difference between musica practica and musica speculativa. This is not to say that these two poles are mutually exclusive or incompatible, but only that in the case of these two individuals, it was, perhaps, significant enough to estrange two otherwise compatible creators.

It would not be too strong a statement to say that twelve-tone music was the very mind and soul of Hauer: i.e., that this mode of composition and, indeed, composition itself, was a way of life, a meditative and contemplative manner of expression through which one pursued the meaning of life, the world and its Creator. It is apparent that Hauer was as serious about the redemption of the person through twelve-tone music as Wagner was about the redemption of mankind through his works for the stage and their accompanying philosophy. Found among a group of aphorisms is the following statement which quite adequately illustrates what has been said:

> Immutable, absolute music is the link with eternity, religion, with spiritual reality and the sacred tongue of the Father. This stands in contrast to the diverse creeds, philosophical systems, political ideologies, and national tongues which are mutable and ephemeral elements.[10]

The "absolute music" referred to by Hauer is, of course, twelve-tone music.

---

10. Taken from a printed list of Hauer's aphorisms given to me by Bruno Hauer. The translation is mine.

The refinement of this theory of musical composition to a state of near religion was something that occurred toward the latter part of his creative career, but it must be realized that it was in a state of formation for a long period of that career. That is to say, many of the works which have opus numbers (1939 and before) have these traits, but it is really through the Zwöltonspielen (1940 and after) that the culmination of many of these ideas took place.

Hauer, although little known in the non-German world, has, like his compatriot Schönberg, been an important force in twentieth-century music. That he is not widely recognized as a composer and theorist is due to many reasons, principal among them being the problem of language. The translation of these works will, perhaps, help to rectify a part of this problem.

APPENDIX

APPENDIX

LIST OF WORKS

Because of the fact that he wrote so many compositions (ninety-two works with opus numbers and literally hundreds without), and because so many of these compositions are considered to be either lost or destroyed, a complete works list will probably never be possible for Hauer. There have been several works lists published but they are, understandably, somewhat out of date. The present list was compiled from many sources, the most helpful of which was the list of works found in Walter Szmolyan's J.M. Hauer.[1] Also of help, but containing inaccuracies, was the list of works contained in the study of Hauer's theories by Monika Lichtenfeld.[2] New information about Hauer's works was made possible through several lists and information given to me by Bruno Hauer. One list consists of a descriptive exposition of the Mss. and first editions of Hauer's works which are still in the possession of the Köchert family in Vienna. The list reveals that they own almost all the Mss. of Op. 1 to Op. 92 (1912 to 1939).

---

1. Walter Szmolyan, "Josef Mattias Hauer," Österreichische Komponisten des XX. Jahrhunderts (Vienna: Österreichische Bundesverlag), VI, 70-77.

2. Monika Lichtenfeld, "Untersuchungen zur Theorie der Zwölftontechnik bei Josef Mattias Hauer," Kölner Beiträge zur Musikforschung, ed. Karl Gustav Fellerer (Regensburg: Gustav Bosse Verlag, 1964), XXIX, 191-201.

The other list given to me by Bruno Hauer contains information about works written after 1939 which are unpublished and for which he possesses the Ms. This list has added greatly to the accuracy and, indeed, the number of works known to have been written by Hauer. The accuracy of all sources was, of course, corroborated by information provided by the music itself, whether in published or manuscript form.

The list includes as much pertinent information as is possible, in order that individual compositions can be readily distinguished from one another, particularly in the case of the works written since 1939, almost all of which share the same title: Zwölftonspiel. In addition to the basic information such as opus number (where applicable), title, instrumentation and any dedicatory statement, the list provides information relative to the date of composition and the availability of the work (publisher, publisher's catalog number and date of publication). If the work exists only in Ms., the name of the person or institution known to possess the Ms. is given, wherever possible.

In order to keep the bulk of the list to a minimum, a few abbreviations were used. These abbreviations apply both to publishers and to persons known to possess the Ms. of a particular work. The abbreviations are as follows:

D. = Doblinger Verlag, Vienna.
F.V. = Fortissimo Verlag, Vienna.
S. = Schlesinger Verlag, Berlin (Haslinger, Vienna) which is now under the aegis of Robert Lienau, Berlin-Lichterfeld.
J.H. = J.M. Hauer.
U.E. = Universal Edition, Vienna.
V.S. = Victor Sokolowski, Director of the Hauer-Kreis, Vienna.
B.H. = Bruno Hauer (son of the composer) who lives in Vienna.
K. = The Köchert Family in Vienna.

I. Works with opus numbers.

Opus 1 — Nomos. In seven sections for piano two and four hands (harmonium). Dedicated to Ferdinand Ebner. Late fall, 1912. Published by Hauer (J.H.4). F.V. 1008 (1964).

Opus 2 — Nomos. In five sections for piano two and four hands (harmonium). Dedicated to Adolf Deutsch. Easter, 1913. Published by Hauer (J.H.5). F.V. 756 (1964).

Opus 3 — Sieben Kleine Stücke. For piano (harmonium). Dedicated to Wondracek. Spring, 1912. Published by Hauer (J.H.10). U.E. 8380 (1925).

Opus 4 — Lied des Letzten. On words by Josef Räuscher. For men's voices and piano. September, 1913. K.

Opus 5 — Apokalyptische Phantasie. For chamber orchestra. Dedicated by Marie Therese. September 16 - October 23, 1913. Published by Hauer (J.H.9). F.V. 883.

Opus 6 — Lieder von Friedrich Hölderlin. For solo voice (baritone) and piano. Five songs. Dedicated to Anna Bahr-Mildenburg. May 23 - June 3, 1914. Published by Hauer (J.H.1). U.E. 9443 (1928).

Opus 7 — Chorlieder aus der Tragödien des Sophokles. For men's voices. On a translation by J. J. C. Donner. Dedicated to Josef Räuscher. June, 1914. Published by Hauer (J.H.3). S.

Opus 8 Kyrie eleison. For chamber orchestra and voice. Dedicated to Georg Zissler. October, 1914. Published by Hauer (J.H.7).

Opus 9 Morgenländisches Märchen. For piano two and four hands (harmonium). Dedicated to Leopoldine Hauer. January, 1915. Published by Hauer (J.H.8). U.E. 8380 (1925).

Opus 10 Tanz. For piano. Dedicated to Else Altman. February 3-10, 1915. Published by Hauer (J.H.2). U.E. 8380 (1925).

Opus 11 Prometheus von Goethe. For baritone and piano. February, 1915. K.

Opus 12 Hölderlin-Lieder. For baritone and piano (three songs). Dedicated to Frau Marianne Hall. November 25, 1914 - February 22, 1915. Published by Hauer (J.H.6). U.E. 9443 (1928, as Band I of Hölderlin-Lieder).

Opus 13 Über die Klangfarbe. Dedicated to Dr. R. V. Bauer. Published by Hauer in 1918 (E.P. Tal & Co., Vienna). (Theoretical writing which provided the basis for his further writings, particularly Vom Wesen des Musikalischen.)

Opus 14 "Bange Stunde". Song on words by Karl Kraus. 1918. Lost.

Opus 15 Fünf kleine Stücke. For piano (harmonium). Dedicated to Dr. Wilhelm Fischer. April 30 - May 4, 1919. Published by Hauer (J.H.12). F.V. 852 (1970).

Opus 16 Nachklangstudien. For piano. Dedicated to Anna Hollering. May, 1919. Published by Hauer (J.H.11). U.E. 8380 (1925).

Opus 17 Phantasie. For piano (harmonium). Dedicated to Frau Hildegard Itten. July 21 - August 4, 1919. Published by Hauer in twelve-tone notation (J.H.14).

Opus 18 Der gefesselte Prometheus (Schluss der Tragödie des Aischylos). For piano and voice. Dedicated to Johannes Itten. August 10 - 11, 1919. Published by Hauer in twelve-tone notation (J.H.13).

Opus 19 Nomos. For piano (harmonium). Dedicated to Frau Agathe Korngold. August 25 - 29, 1919. Published by Hauer in twelve-tone notation (J.H.15).

Opus 20 Atonale Musik. Pieces for piano in two volumes, 1922. Dedicated to friends and patrons. S. 10182 (1923).

Opus 21 Hölderlin-Lieder. For baritone and piano. Eight songs. June, 1922. S. 10361.

Opus 22 Etüden für Klavier. Two volumes. Dedicated to Arnold Schönberg on his fiftieth birthday. 1922 - 1923. U.E. 8381 a/b (1926).

Opus 23 Hölderlin-Lieder. For baritone and piano. Four songs. Dedicated to Hugo Breuer (songs 1 and 2) and Gertrud Köchert (songs 3 and 4). 1923-24. U.E. 9444 (1929; as Band II of the Hölderlin-Lieder.)

Opus 24 Lied der Liebe. For three part women's choir, piano and harmonium. On poetry by Friedrich Hölderlin. Whitsuntide, 1923. K.

Opus 25 Sechzig kleine Stücke. For piano with titles taken from the words of Friedrich Hölderlin. Dedicated to Erich Köchert. August 22 - October 11, 1923. (Sixteen pieces were published by Schlesinger in 1924 and are now available from Robert Lienau: 10348.)

Opus 26 Quintet. For piano, clarinet, violin, viola and cello. Dedicated to Gertrud Köchert. February 27, 1924. S. 10369 (1924).

Opus 27 Schalmeien. For clarinet and piano. March, 1924. Willi Reich. K.

Opus 28 Vier Stücke. For violin and piano. Dedicated to Rudolf Kolisch. May, 1924. S. 10367 (1924).

Opus 29 Stücke. For cello and piano. April, 1924. Joachim Stutschewski. K.

Opus 30 Fünf Stücke für Streichquartett (First String Quartet). Dedicated to Frau Köchert. April 18 - 24, 1924. S. 10368 (1924).

Opus 31 Erste Suite für Orchester. Dedicated to Erich Köchert. June, 1924. S. 10419 (1925).

Opus 32 Hölderlin-Lieder. For baritone and piano on poetry by Friedrich Hölderlin. Seven songs. Dedicated to Gertrud Köchert on her birthday. October 25 - 29, 1924. U.E. 9445 (1929; as Band III of the Hölderlin-Lieder).

Opus 33 Zweite Suite für Orchester. Dedicated to Julius Lienau. November - December, 1924. S. 10503 (1925).

Opus 34 Stücke für Streichquartett (Second String Quartet). R. Kolisch. K.

Opus 35 Sextett. For flute, clarinet, violin, viola, cello and contrabass. Lost.

Opus 36 Dritte Suite für Orchester und Baritone. On the poem, "Mein Eigentum," by Hölderlin. Dedicated to Prof. Dr. Johann Salzer. May, 1925. K.

Opus 37 Romantische Phantasie. For orchestra. June, 1925. B.H.

Opus 38 Stücke für Streichquartett (Third String Quartet). July - August, 1925.

Opus 39 Phantasie für Klavier. Dedicated to Albert Linschütz. Hermann Heiss.

Opus 40 Hölderlin-Lieder. For baritone and piano on poetry by Friedrich Hölderlin. Five songs. Dedicated to Fritz Lampl. September, 1925. U.E. 9446 (1929; as Band IV of the Hölderlin-Lieder).

Opus 41 Stücke für Violine und Klavier. Dedicated to Prof. Gottesmann. December, 1925. K.

Opus 42 Stücke für Streichquartett (Fourth String Quartet). Otto Breuer. K.

Opus 43 Vierte Suite für Orchester. Dedicated to Dr. Emil Klein. January, 1926. K.

Opus 44 Lateinische Messe. For mixed choir, organ, flute, oboe, clarinet, horn, trumpet, trombone, and string quartet. Lost.

Opus 45 Fünfte Suite für Orchester. Dedicated to Wolfgang Köchert. Ms. Lost.

Opus 46 Lateinsche Messe. (Unfinished). Stephanie Schiffmann, Vienna.

Opus 47 Sechste Suite für Orchester (Sixth String Quartet). Dedicated to Gottfried Köchert. U.E. 8686/8687 (1926).

Opus 48 Siebente Suite für Orchester. Dedicated to Erwin Lang. September, 1926. U.E. 9429 (1928).

Opus 49 Symphonische Stücke. For string orchestra, piano and harmonium. December, 1926. B.H.

Opus 50 Sinfonietta: Symphonische Stücke für grosses Orchester. Dedicated to Frau Elly Kleinschmidt. 1927. U.E. 9759 (1929).

Opus 51 Musikfilm, eine Folge von 21 charakteristischen Klavierstücken mit Überschriften. Dedicated to Frau Gertrud Köchert. April 30, 1927. K.

Opus 52 Achte Suite für Orchester. Dedicated to Hermann Scherchen. April, 1927. B.H.

Opus 53 "Wandlungen:" kammeroratorium für Bühne oder Konzert. On words by Friedrich Hölderlin. For six solo voices, mixed choir and orchestra. December 5, 1927. U.E. 9705 (1929).

Opus 54 Violinkonzert in einem Satz. March 9 - April 6, 1928. B.H.

Opus 55 Klavierkonzert mit Orchester. April 13 - May 8, 1928. B.H.

Opus 56 Sieben Charakterstücke mit Überschriften für Violine allein. May, 1928. D. 16.642.

Opus 57 "Vom Leben:" eine poetische Lesung mit Musik nach Worten von Friedrich Hölderlin (oratorisches "Hörspiel"). For reader, small mixed choir and small orchestra. September, 1928. B.H.

Opus 58 "Emilie vor ihrem Brauttag." Cantata on words by Friederich Hölderlin for alto solo and orchestra. November 8 - 21, 1928. B.H.

Opus 59 Vier Charakterstücke für Violoncello allein. The Amar-Quartett. D. 14.627

Opus 60 Salambo. An opera in seven pictures after the novel by Gustav Flaubert. May 19 - August 3, 1929.

Opus 61 Divertimento für kleines Orchester in einem Satz. Dedicated to Othmar Steinbauer. May 5, 1930. B.H.

Opus 62 "Die schwarze Spinne:" deutsches Singspiel nach der Erzählung von Jeremias Gotthelf. Arranged for the stage by Hans Schlesinger. July 27, 1932. K.

Opus 63 Konzertstück für Orchester. Conceived as a prelude to the second part of Die Schwarze Spinne. August 10, 1932. K.

Opus 64 "Diablo:" Walzer für Kammerorchester. Hermann Scherchen. K.

Opus 65 Erste und Zweite Tanzphantasie. For soprano, alto, tenor, bass and large orchestra. December 28, 1932 and January 23, 1933. K.

Opus 66 Dritte, Vierte, Fünfte, Sechste und Siebente Tanzphantasie. Dritte: November 21, 1933; Vierte: December 6, 1933; Fünfte: December 17, 1933. K.

Opus 67 "Der Menschen Weg." First version: "Cantata in Seven Parts for Solo Voices, Chorus, and Orchestra on Words by Friedrich Hölderlin." 1934. Second version: "Cantata in Five Parts for Four Solo Voices, Mixed Choir and Orchestra on Words by Friedrich Hölderlin." 1952. U.E. 12159 (1953).

Opus 68 "Empedokles," dramatische Gesänge in zwei Teilen. For solo voices, men's choir and orchestra. June - September, 1935. K.

Opus 69 Quintett. For violin, viola, cello, contrabass and piano. Fall, 1935.

Opus 70 Erste Tanzsuite für neun Soloinstrumente. For flute, oboe, clarinet, bassoon, two violins, viola, cello and piano. May, 1936. B.H.

Opus 71 Zweite Tanzsuite für neun Soloinstrumente. For flute, oboe, bass clarinet, bassoon, two violins, viola, cello and piano. Dedicated to "my son Bruno." October - November, 1936. K.

Opus 72 Dritte Tanzsuite für neun Soloinstrumente. For flute, oboe, bass clarinet, bassoon, two violins, viola, cello and piano. 1937. K.

Opus 73 Vierte Tanzsuite für neun Soloinstrumente. 1937. K.

Opus 74 Zwölftonmusik für Orchester. October 19, 1937. K.

Opus 75 Zwölftonmusik für Orchester. Dedicated to the intellectual nobility of all people. February 15, 1938. K.

Opus 76 1. Rezitativ für Baritone und Klavier. Based on "Die Eichbäume" of Hölderlin. March, 1938.
2. "Frühling." On words of Hölderlin. For mixed choir, violins and cellos. March, 1938.
3. Quintett. For two violins, viola, cello and piano. March, 1938.
4. Zwölftonmusik für Orchester. April, 1938.
All works are in the possession of the Köchert family.

Opus 77 Zwölftonmusik für Orchester. K.

Opus 78 Zwölftonmusik für Orchester. K.

Opus 79 Zwölftonmusik für Orchester. October - November, 1938. K.

Opus 80 Zwölftonmusik für Orchester. December, 1938. K.

Opus 81 Zwölftonmusik für Orchester. January, 1939. K.

Opus 82 Zwölftonmusik für Orchester. May, 1939. K.

Opus 83 Zwölftonmusik für Orchester. June, 1939. K.

Opus 84 Zwölftonmusik für Orchester. September, 1939. K.

Opus 85 Zwölftonmusik für Orchester. September, 1939. K.

Opus 86 No composition assigned to this number.

Opus 87 No composition assigned to this number.

Opus 88 Zwölftonmusik für Orchester. August, 1939. K.

Opus 89 Zwölftonmusik für Orchester. Dedicated to "my friend Hans Muschik." August 4, 1939. (The Ms. is in twelve-tone notation.) Prof. Johann Muschik.

Opus 90 Zwölftonmusik für Orchester. October 8, 1939.

Opus 91 Zwölftonmusik für Orchester. Juen 29, 1940.

Opus 92 Zwölftonmusik für Orchester. August 19, 1940.

Opus I The same as Op. 53

Opus II The same as Op. 67.

Opus III Labyrinthischer Tranz. For piano four hands. November 16, 1952. U.E. 12166 (1953).

Opus IV Chinesisches Streichquartett. 1953.

Opus V Langsamer Walzer für Orchester. 1953.

II. Works without opus numbers.

Präludium für Celesta. September, 1921, F.V. 972 (1974).

Präludium für Celesta, May 9, 1922.

"Traurigkeit der Abendglocken." For mixed choir and piano. On a poem by L. Rochowanski. Possibly 1946. B.H.

"Meine geliebten Tale lächeln mich an." For female voice on words by Friedrich Hölderlin. 1949. F.V. 854 (1974).

Hölderlin-Rezitationen. For female voice and piano. Dedicated to Grete Kammerlander. April 30, 1949. Dr. Wolfgang Kammerlander.

Hausmusik. For two violins and piano. April 6, 1955. B.H.

Kaleidoskop. For orchestra. August 20, 1956. B.H.

Streichquartett. August 27, 1956. B.H.

Klavierquintett. September 17, 1956. B.H.

Musik für Schule und Haus. For two violins and piano. September 22, 1956. B.H.

Musik für Schule and Haus. For violin, viola and piano. September 22, 1956. B.H.

Langsamer Walzer. For two violins, two violas and piano four hands. October 8, 1956. B.H.

Langsamer Walzer. For orchestra. November 27, 1956. B.H.

Langsamer Walzer. For orchestra. January 10, 1957. B.H.

Langsamer Walzer. For orchestra. January 19, 1957. B.H.

Kammermusik. For four woodwinds, four strings and piano four hands. January 24, 1957. B.H.

Langsamer Walzer. For orchestra. February 9, 1957. B.H.

Sakraler Tanz. For orchestra. March 2, 1957. B.H.

Tanz. For piano four hands. May 26, 1958.

Tanz in langsamen 3/4-Takt. For two violins, two violas and piano. June, 1958. F.V. 607 (1958).

Tanz in langsamen 4/4-Takt. For two violins, two violas and piano. August, 1958. F.V. 607 (1958).

Hausmusik. For piano four hands. September, 1958. F.V. 608 (1958).

Tanz. For violin, viola and piano four hands. September 6, 1958. B.H.

III. Twelve-Tone Games.

(A) With date of composition.

1940
Zwölftönespiel I. For orchestra. August. K.

Zwölftönespiel II. For orchestra. September. K.

Zwölftönespiel III. For orchestra. September - November. K.

Zwölftönespiel IV. For orchestra. Twelve-tone row taken from Salambo. K.

1942
Zwölftönespiel I. For orchestra. With a twelve-tone row which is found in six different tropes. February. B.H.

Zwölftönespiel II. For orchestra. With a twelve-tone row which is found in six different tropes. Late fall. B.H.

Note. All of the compositions which follow are titled Zwölftonspiel (twelve-tone game) and, therefore, instead of repeating this one-word title for every entry, the information for each work will begin with the date and continue with the instrumentation and the name of the publisher and the catalog number (if any) or the name of the possessor of the manuscript (see above for abbreviations). In some cases there will be other information included which would help to indentify the work (that it was built on a particular row, etc.). In still others, there will be a Roman numeral which Hauer applied to these works in a rather irregular fashion. Some entries have no date but there is reason enough to believe that the work in question was written in the year under which it is listed.

1943
May-June. For orchestra. Dedicated to Mattias Winkelmayer. Österreichen Musikzeitschrift.

May-June. For orchestra. V.S.

1945
March 26. XIX. For orchestra. V.S.

_____. XXII. For piano quintet. B.H.

July 16. XXII. For orchestra (first setting). B.H.

August 7. XXII. For orchestra (second setting). B.H.

September 19. XXIV. For orchestra. B.H.

September 19. XXIV. For piano. B.H.

1946
February 1. XXIV. Setting for string and wind quintet. B.H.

_____. XXII. For piano. U.E. 12046 (1951; in an album for piano).

_____. For piano quintet. Bibliothek des Internationalen Musikinstituts, Darmstadt.

March 11. XXVII. For string quartet and harpsichord. On a row by Victor Sokolowski. V.S.

July 24. For orchestra. On a row by Victor Seroff. B.H.

November 29. For orchestra. On a row by Victor Sokolowski. V.S.

Christmas. For piano. F.V. 711 (1965).

Christmas. For violin and clarinet. Dedicated to Friedrich Wildgans.

_____. XXXII. For violin, two violas and piano. B.H.

1947

_____. For clarinet, violin, viola and piano. On a twelve-tone row by Friedrich Wildgans. B.H.

New Year's. For piano four hands. On a twelve-tone row by Ernst Hartmann. Ernst Hartmann, Mödling.

New Year's. For piano. F.V. 700 (1962).

January. Three Zwölftonspiele for two violins, viola and cello. On a twelve-tone row by Ernst Hartmann. Ernst Hartmann, Mödling.

January 16. For two violins, viola, cello and piano. On a twelve-tone row by Ernst Hartmann. Ernst Hartmann, Mödling.

January 21. For orchestra. On a twelve-tone row by Ernst Hartmann. Ernst Hartmann, Mödling.

March 16. For clarinet, two violins, viola and cello. V.S.

April 24. For cembalo and viola. V.S.

Easter. For small choir and piano. On a twelve-tone row by Ernst Hartmann with words dealing with ancient Chinese traditions: "In eine verlogene heucherische Welt." Dedicated to Ferdinand Grossmann. B.H.

May 9. For zither and guitar. On a twelve-tone row by Franz Lemp. V.S.

May 17. For clarinet and piano. Dedicated to Friedrich Wildgans. Friedrich Wildgans, Vienna.

July 3. For four strings and piano. B.H.

July 30. For two female and two male voices and piano. With the subtitle: "Oh, diese Ideologen." V.S.

Christmas. For clarinet, violin, viola, cello and piano. On a twelve-tone row by Friedrich Wildgans. Friedrich Wildgans, Vienna.

1948
January. For two violins, viola and cello. B.H.

January. For two violins, viola and cello. K.

July 22. For harpsichord and violin. On a twelve-tone row by Marie Panzer-Spetlich. V.S.

August 26. For violin and harpsichord. D. 14.844 (1975).

August 28. For violin and harpsichord. D. 14.845 (1975).

August 31. For violin (flute) and harpsichord. D. 14.843 (1975).

September 17. For string quartet. B.H.

1949
October. For five violins. Dedicated to Frau Gertrud Köchert on her birthday. K.

1950
May. For five violins. Dedicated to Herrn Burgermeister Theodore Körner. Wiener Stadtbibliothek.

May 24. For five violins. Prof. Leo Walter Reichl, Vienna.

June 10. For orchestra. Prof. Leo Walter Reichl, Vienna.

1951
August. For five instruments. Dedicated to Victor Sokolowski.

November 28. For string quartet and piano four hands. B.H.

1952
March 21. For piano four hands. Dedicated to Dr. Wilhelm Waldstein. Dr. Wilhelm Waldstein, Vienna.

April - May. For piano four hands. Dedicated to Kulturreferenten Wiens, Stadtrat Hans Mandl. Wiener Stadtbibliothek.

June 24. For piano four hands. Dedicated to the memory of Käthe Waldstein. Dr. Wilhelm Waldstein.

June 28. For piano four hands. With a poem by Else Lasker-Schüler: "Ein alter Tibetteppich." Dedicated to Laetitia Glass-Lilienberg. V.S.

July 10. For piano four hands. Prof. Leo Walter Reichl, Vienna.

July 16. For four-hand piano and harmonium. Prof. Leo Walter Reichl, Vienna.

July 28. For piano four hands. B.H.

July. For piano. B.H.

July 31. For four-hand piano and harmonium. Wiener Stadtbibliothek.

August 4. For piano four hands. B.H.

September 27. For piano and harmonium. Prof. Leo Walter Reichl, Vienna.

November 2. For Harpsichord. V.S.

1953
March. For piano. F.V. 712.

June 15. For mixed choir and piano. Words by Schiller and Goethe ("Ehret die Frauen"). B.H.

July 31. For two violins, viola and cello. B.H.

October 13. For orchestra. B.H.

1955
February 25. For "Hausorchester" (four-hand piano, violin, cello and accordion). Dedicated to the Bürgermeister der Stadt Wien, Franz Jonas. Wiener Stadtbibliothek.

February. For two violins and harpsichord.

March. For "Hausorchester" (four-hand piano and accordion).

March 29. For harpsichord. V.S.

April. For piano four hands. Dedicated to Leo Walter Reichl and Victor Sokolowski.

May. For piano four hands. F.V. 485

June 2. For piano. F.V. 712.

June 5. For harpsichord. B.H.

June 11. For harpsichord (piano). Dedicated to Victor Sokolowski. F.V. 713 (1963).

1956
January 13. For four-hand piano. Dedicated to Bruno Hauer. B.H.

February 14. For four-hand piano. B.H.

April. For four-hand piano. D. 9268 (1956).

April 13. For four-hand piano. B.H.

May 20. For flute, oboe, bass clarinet, bassoon, two violins, viola, cello and four-hand piano. B.H.

May 24. For four woodwinds, four strings and four-hand piano. B.H.

July 10. For piano four hands. F.V. 532 (1956).

July 24. For flute, oboe, bass clarinet, bassoon, two violins, viola, cello and four-hand piano. B.H.

July 25. For piano four hands. B.H.

August 6. For two violins, viola, cello and piano four hands. B.H.

August 9. For piano four hands. B.H.

August 23. For twelve-tone orchestra. B.H.

September 2. For violin and piano. F.V. 851 (1974).

September 8. For String orchestra and piano. ("In kristallischer Bindung im vierfachen Kontrapunkt." "Tanz tibetanischer Mönche im langsamen 3/4-Takt.") B.H.

September 13. For violin, cello and piano four hands. B.H.

September. For piano. F.V. 540 (1956).

October. For piano four hands. F.V. 549 (1957).

October 2. For piano four hands. B.H.

October 11. For two violins and two violas. ("In kristallischer Bindung in vierfachen Kontrapunkt.") B.H.

1957
January 30. For two violins, viola and cello. F.V. 556 (1957).

April 7. For two violins, viola, cello and piano four hands. F.V. 565 (1957).

June 15. For four woodwinds, four strings and piano four hands. B.H.

July 8. For piano, four hands. F.V. 567 (1957).

July 26. For four woodwinds and four strings. B.H.

August 3. For violin, cello and piano four hands. B.H.

August 9. For orchestra. B.H.

August 13. For violin, cello and piano four hands. B.H.

August 17. For two violins and piano four hands. B.H.

September. For orchestra. B.H.

September. For violin, viola and piano. B.H.

September 5. For violin, viola and piano. B.H.

September 9. For four solo voices, violin, viola and piano (or harpsichord). B.H.

September 22. For orchestra. D. 14.862 (1974).

September 11. For flute, clarinet, bassoon and four strings. B.H.

October. For "Heimorchester" (Violin, cello, accordion and piano four hands). F.V. 572 (1957).

October 10. For two violins and piano. B.H.

1958

January. For flute, bassoon (bass clarinet) and string quartet. F.V. 584 (1958).

March. For chamber orchestra. F.V. 595 (1958).

April 16. For two violins, viola, cello and piano four hands. B.H.

April 26. For two violins, viola, cello and piano four hands. B.H.

May 3. For string sextet (two violins, two violas and two cellos). B.H.

May 22. For two violins, viola, cello and piano four hands. B.H.

May. For string sextet (two violins, two violas and two cellos). F.V. 596 (1958).

June. For two violins, viola, cello and piano. B.H.

(B) Without date of composition.

XVII. For flute, oboe, two clarinets, bassoon, horn, trumpet, trombone, harp and strings.

XXIV. For flute, oboe, two clarinets, bassoon, horn, trumpet, trombone, harp and strings.

For string or wind instruments.

For flute, oboe, bassoon, piano and strings. Ars-viva-Verlag, Mainz (1954).

For piano four hands and harmonium. Published by Hauer (facsimile).

For piano. Published by Hauer (facsimile).

For orchestra. Bibliothek des Internationalen Musikinstituts, Darmstadt.

For orchestra. Bibliothek des Internationalen Musikinstituts, Darmstadt.

XXV. For orchestra (sextuple string quartet and harp). V.S.

XXVIII. For string quartet and piano. With a twelve-tone row which exists in six different tropes. V.S.

For organ. With a twelve-tone row from Victor Sokolowski. V.S.

For clarinet, violin, viola, cello and piano. With a twelve-tone row by Ernst Hartmann. For Prof. Friedrich Wildgans. Friedrich Wildgans.

For two violins, viola, and cello. With a twelve-tone row by Prof. Friedrich Wildgans. Friedrich Wildgans.

For Quintet. Dedicated to Karl Schwarz.

XXIX. (Possibly 1946.)

XXX. (Possibly 1946.)

For four violins. Wiener Stadtbibliothek.

IV. Theoretical writings.

Über die Klangfarbe, Op. 13. Dedicated to Dr. R.v. Bauer. Printed privately by Hauer in Vienna. 1918.

Vom Wesen des Musikalischen.
First edition by Waldheim-Eberle in Leipzig and Vienna in 1920.
Second edition (with the subtitle: Ein Lehrbuch der atonalen Musik) by Schlesinger in Berlin and Vienna in 1923.
New edition (edited by Victor Sokolowski) by Robert Lienau of Berlin-Lichterfelde in 1966.

Deutung des Melos: Eine Frage an die Künstler und Denker unserer Zeit. Volume 7 of Neue Musikbücher. E.P. Tal, Leipzig, Vienna and Zürich, 1923.

Vom Melos zur Pauke: Eine Einführung in die Zwölftonmusik. Dedicated to Arnold Schönberg. Volume 1 of Theoretische Schriften. U.E. 8395 (1925).

Zwölftontechnik: Die Lehre von den Tropen. Dedicated to Hermann Heiss. Volume 2 of Theoretische Schriften. U.E. 8438 (1926).

BIBLIOGRAPHY

BIBLIOGRAPHY

Austin, William W. Music in the Twentieth Century. New York: W.W. Norton, 1966.

Eimert, Herbert. "Hauer, Josef Mattias," Musik in Geschichte und Gegenwart, 15 vols., ed. Friedrich Blume. Kassel: Bärenreiter Verlag, 1949-1975, V, 1823-1824.

Eschman, Karl. Changing Forms of Modern Music, 2nd ed. Boston: E.C. Schirmer, 1968.

Goethe, Johann Wolfgang. Goethes Werke: Vollständige Ausgabe letzter Hand, 60 vols. Stuttgart: J.G. Cotta, 1827-1842, LII.

_____. Theory of Colors. trans. Charles Lock Eastlake (London: John Murray, 1840), new ed. with introduction by Deane B. Judd. Cambridge, Mass.: The M.I.T. Press, 1973.

Hauer, Bruno. Personal interviews. August, 1973 and December, 1975.

_____. Verzeichnis der in Besitz von Bruno Hauer befindlichen, ungedruckten Manuscripte (J.M.Hauer). Typed and signed by Hauer. Dated April, 1976.

Hauer, Josef Mattias. Deutung des Melos: Eine Frage an die Künstler und Denker unserer Zeit. Vienna: E.P. Tal & co., 1923.

_____. "Vom Melos zur Pauke: Eine Einführung in die Zwölftonmusik," Theoretische Schriften, 2 vols. Vienna: Universal Edition, A.G. 1925, I.

_____. Vom Wesen des Musikalischen: Grundlagen der Zwölftonmusik (Berlin, 1923), new ed. by Victor Sokolowski. Berlin: Robert Lienau, 1966.

_____. "Zwölftontechnik: Die Lehre von den Tropen," Theoretische Schriften, 2 vols. Vienna: Universal Edition, A.G., 1926, II.

Lichtenfeld, Monika. "Untersuchungen zur Theorie der Zwölftontechnik bei Josef Mattias Hauer," Kölner Beiträge zur Musikforschung, ed. Karl Gustav Fellerer. Regensburg: Gustav Bosse Verlag, 1964, XXIX.

Jacob, Julius. Wörterbuch des Wiener Dialektes. Vienna: Gerlach and Wiedling, 1929.

Melichar, Alois. Musik in der Zwangsjacke: Die deutsche Musik zwischen Orff und Schönberg. Vienna: Eduard Wancura Verlag, 1959.

Muschik, Johann. "Freundschaft mit Hauer," Österreichische Musikzeitschrift, special edition (March, 1966), 16-26.

Der Neue Brockhaus, 5 vols, Wiesbaden: F.A. Brockhaus, 1973-1975.

Pfrogner, Hermann. Die Zwölfordnung der Töne. Zürich: Amalthea Verlag, 1953.

Redlich, Hans F. "Hauer, Josef (Mattias)," Groves Dictionary of Music and Musicians, 5th ed., 10 vols., ed Eric Blom. London: Macmillan, 1954-61, IV, 136.

Schönberg, Arnold. Harmonielehre. Vienna: Universal Edition, 1922.

Searle, Humphrey. "Twelve-Tone Music," Groves Dictionary of Music and Musicians, 5th ed., 10 vols., ed. Eric Blom. London, 1954-61, VIII, 617-623.'

Sokolowski, Victor. Personal interview. December 19, 1975.

Szmolyan, Walter. Josef Mattias Hauer. Vienna: Österreichischer Bundesverlag, 1965.

Universal Edition, A.G., Vienna. Personal interviews with Oktavian von Spitzmüller, Senior Editor, Universal Edition. August, 1973 and December, 1975.

Wildhagen, Karl. Englisch-Deutsches, Deutsch-Englisches Wörterbuch, 2 vols., rev. Will Heraucourt. London: George Allen and Unwin, Ltd., 1972.