

## **Hierarchic Genesis. Steps Towards a Natural Musical Theory**

### **Musical Experience as Interference Between Expectation and Realization**

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#### **Introduction**

This study aims at forming a theory concerning the genesis of a musical work via the listener's perception. However, such a theory formation does not strive for a dualism of the following kind: »the musical work as an object« versus »music as forma formans«. The conception of music as an object is only one of the many feasible conceptions, namely the one concerning the conclusion of the work: only from the moment the final tone has sounded can the work as a whole be comprehended. The entire classical teaching on form owes its emergence and its rightful place as a living part of the phenomenology of the musical experience to this conception. But retrospection must be de-throned, if it tries to monopolize and represent all things within the scope of the musical experience. Otherwise the representation becomes reactionary and can prove fatal for the freshness of the experience and will continue to provoke attacks against traditional theory and analysis as pedagogical disciplines. If listeners can only vaguely recognize their experiences in the present music terminology, they will – with all justification – withdraw from the information offered. Gradually an – unjustifiable – scepticism of *all* music terminology and of *all* theory will arise, and the number of advocates of the supremacy of the sub-conscious, of spontaneity, will increase. The attacks deriving from this scepticism against *all* musical awareness as being academic and reactionary supports fruitless dualism, which this study intends to oppose.

The means for doing so are taken substantially from the phenomenology of perception and are based on the conception of *polarity as the basis of all musical experience*. In the realization of this polarity lies the beginning of the process of naming the areas of experience which have increasingly

isolated themselves from previous music terminology, thus promoting the above-mentioned dualism between the perception of academic theory as unauthentic, and the spontaneous experience as genuine. Such naming must begin with a realization of the common features characterizing the auditive (sensory) and mental (perceptive) processes, that is »Sensing« and »Perception« (in the following terms starting with a capital letter are referring to the glossary p. 64). If on this basis naming is carried out with conviction, an hierarchic terminology will be created<sup>1</sup>, which is capable of covering musical instantaneous impressions as well as impressions emerging on the basis of memories and expectations conditioned by time. In this way one essential characteristic of the prevailing dualism will be defeated.

Traditional dualism may also be expressed in the pair of concepts »analysis : synthesis«. Analysis consists of an increasingly comprehensive realization of the data of the object and their interrelationships, whereas synthesis in this connection consists of the collective (integrated) impression, whether or not it has occurred instantaneously or as a result of a process of perception. This contrast of concepts is another expression of the conflict present in Western cultures between »academicism« and

1. Cf. A. Koestler: »Some General Properties of Self-Regulating Open Hierarchic Order«, *The Ghost in the Machine*, London 1975 (first edition: Hutchinson, 1967), pp. 341–48. In this book as well as in *Beyond Reductionism* (Hutchinson 1969), Koestler postulates the hierarchic nature of all combined organic phenomena: »The organism in its structural aspect is not an aggregation of elementary parts [but] a multi-levelled hierarchy of semi-autonomous sub-whole, branching into sub-wholes of lower order and so on. Sub-wholes on any level of the hierarchy are referred to as *holons*.« In accepting this thesis one must consider human perception as an organic phenomenon, and in doing so, the hypothesis follows that the musical experience (and Genesis) is hierarchically conditioned. The applicability of Koestler's properties in connection with the musical analysis is often striking. In this way the chapter on »Integration and Self-assertion« is theoretically useful in that it determines that every *holon* has a tendency to assume an expression of self-assertion or integration. Transferred to a work of music one might in a similar way raise the question of a musical Gestalt's changing »self-assertive« (S-A) and »integrative« (INT) functions within a whole in which the Gestalt plays the part of *holon*. In the analysis of the theme from Mozart's piano sonata in A-major (KV 331) it is shown accordingly how the figure of accompaniment is transformed from a typical INTegrative to a Self-Assertive by being given the function of melody two bars later (although in inversion).

»spontaneity«. A musical experience which is *a priori* always a synthesis, can, of course, never be translated into a verbalized expression, but a linguistically formulated »synthesis judgment« is irreplaceable as a means of communication.

»Synthesis judgments« may be extremely simple without being »simplified«; for instance, by describing a high note on a trumpet as »sharp« or »brilliant« and a deep note on a cello as »mellow« or »dark«, one can easily be understood. Problems first arise when dealing with more complicated formations: how does one in this situation maintain the clarity of the synthesis judgment without its being simplified and consequently falsified. It is the aim of this study to suggest a line of procedure, which will satisfy both our need to acknowledge things and concepts by name and to experience them by synthesis in order to maintain respect for the freshness of the subjective impression.

The perspective in this expanded name-giving is obvious: not only would violation of the freshness of experience be avoided despite intellectual intrusion into the cause of the experience, the musical work, but this intrusion might also lead to an enhancement of the experience by means of intensified Sensing and deepened Perception.

A similar positive result is known from intuitive and thoughtful explorations into natural phenomena; in this way increased knowledge of the processes involved in the life cycle of a plant may lead to intensified Sensing of the momentary manifestations of the plant: one's eye focuses on each stage of the formation of the leaf, bud and seed and previously undetected details are discovered. Naturally, this process is also well-known to the music scholar, who has maintained his experience and had it enhanced, not in spite of but rather because of his intelligent research. In this case the problem is one of mediating the results, that is, a pedagogical problem, but also a theoretical one, as the formation of a theory is not usually aimed at combining analysis and synthesis (the latter being silently left to the »intelligent reader«).

The proposed method to be presented here is actually more eclectic than revolutionary. The novel features lie essentially in the consistent examination of polarity proposed in this study, of all Elements and of all Hierarchies of time values. Furthermore, familiar models of analysis may be applied with the understanding that an attempt is made to recognize polarity in these models as well, so that these analyses may be integrated among the others. In this way the method is brought into agreement with

the mathematical »group« concept<sup>2</sup> which has been successful in other areas of research.

It is hoped that the reader will appreciate the fact that presenting an exposition of the method has been a problem. I anticipate the possibility of mediating the basic concepts more simply and more precisely, yet until this becomes the case, it is my opinion that the following chapters ought to be studied in the order presented, which, however, does not mean that the chapters will follow a purely linear development. Threads will often run from one chapter to another, which can be seen from the theses put forward in the first eight chapters.

- I. Sensing and Perceiving are subject to analogous laws.
- II. Binariness is the basis of all registration of difference.
- III. It is possible to give an adequate verbalization of a musical experience.
- IV. All musical means of expression tend to be hierarchic.
- V. There are profound differences in the potential of expression of musical Elements.
- VI. The harmonic and the subharmonic spectra are equally perceivable.
- VII. The diatonic scale is based on auditive laws.
- VIII. A musical concept must not inhibit the recollection of a momentary experience.

The suggested program of analysis (chapter IX) follows the above, after which I give the pre-conditions for transferring the results of the analysis to generally comprehensible synthesis judgments (chapter X), and then examples of analyses with applied synthesis judgments concerning chosen fragments of works (chapter XI). As a suggestion for the practical application of the method, there are »reading« and listening exercises (chapter

2. Jean Piaget: *Le structuralisme*, Presses Universitaires de France 1968. Chapter II brings a discussion on the conception of *groups*, stating in the introduction: »The conception of a *group* has proven to be unusually applicable and fertile. We come across it again and again in almost all fields of mathematics and logic. It has acquired basic importance in physics and it is reasonable to think that some day it will play a similar role in biology.« A *group* is a system of elements »united by a law of composition . . . in such a way that if this law is adapted to elements in the system it will make up one element within the same system. The system contains a neutral element, whose nature is such that when united with another element, it will not cause a change . . . and when an inverse operation is combined with an operation, the neutral element appears as a result.« From a musical point of view we may consider »the neutral element« a *non-change element*, an operation such as *one third up* and *one third down* (which together result in the starting tone, in other words: a »non-change element«).

XII), and the study concludes with an attempt to trace the Genesis of the musical experience.

The analysis of »Greensleeves« in chapter XI (page 53) is a concise and easily comprehended example of how the method is able to reveal the »mind-expanding« and consequently sense-intensifying quality of the musical work, which is, of course, a crucial quality in a theoretical model. The fact that the suggested method has at least given *me* new – and often astonishing – insight into the examined works has been a decisive factor in motivating me to write this study. If others are able to achieve similar experiences, the study will have fulfilled its purpose.

### **I. Sensing vs. Perceiving**

(Sensing and Perceiving are subject to analogous laws.)

For a given musical totality, the laws of impression seem to possess many similarities to the structural theories formed by Jean Piaget, the Swiss psychologist.<sup>3</sup> According to these theories, structure is »a system of transformations which – being a system (as opposed to a sum of elements) – contains laws. It is a system which is preserved and enriched in the movement of precisely these transformations without the same transformations exceeding their own boundaries or employing foreign elements. Thus, three qualities are characteristic for a structure: totality, transformations and self-regulation«. »The totality is created in the methods of composing . . . as a system of 'transformations' and not as a static 'form'«.

This interpretation does <sup>*farther*</sup> away with the common idea of the Gestalt being a static form of perception, which is of decisive importance in the present study. Self-regulation ensures that the transformations within a structure cannot destroy the system, that consistly prevails inside its boundaries, and that they only form such elements as are contained within the structure and maintain its laws. And finally Piaget argues that rhythm is one of the structural mechanisms, whose self-government is based on symmetry and repetition. The emphasis on the concept of Hierarchy – an emphasis essential to this study – may also be connected to Piaget's structuralism: »Regulation intervenes in the erection of new structures which engulf the

3. Jean Piaget: *Strukturalismen* (the Swedish edition), Falköping, 1972, pp. 18, 21, 22, 26.



one, or ones, preceding and incorporate it or them, as structural elements, in more comprehensive structures.« This corresponds directly to the musical work, whose totality of course will appear – in time – as *hierarchically organized Waves* – periodic as well as aperiodic – on all elemental strata (melodies, color of harmonies and instruments, rhythm, dynamics and so on).

What then is the essence of the perception that transforms instrumental and vocal signals into a musical message? In this study we shall distinguish between Sensing and Perceiving, Sensing being the auditive, instantaneous impression isolated by time, and Perceiving being the mental integration of instantaneous experiences. Also, I shall argue in favor of the assertion that auditive Sensing and Perceiving are subject to the same laws. These laws may be expressed approximately as follows:

- a) *Sensing and Perceiving are oriented binarily* around a movable center of energy. According to taste and circumstance this energy may be called: light : dark, strong : weak, fast : slow, etc. And as far as transitional forms modified through time are concerned: clearing up : darkening, etc. Also, they may take on more complicated forms of lightness : darkness polarities, i.e. in connection with clarity and vagueness of Gestalt.
- b) *Both Sensing and Perceiving are hierarchically organized*. As far as the sense of hearing is concerned this fact is expressed in the content of stronger or weaker strata of impression, possibly contained in the Sensing, regarding not only amplitude but also the mutual order of frequencies. In this way, a root is considered superior to its third or its other partials. On the other hand Perceiving expresses the hierarchic organization in the incorporation of the substructures already mentioned in more comprehensive structures. Needless to say, this order does not imply the value of tones and structures for the experience.
- c) *Both Sensing and Perceiving operate with several elemental dimensions*. Hearing spontaneously distinguishes between formant and partial elements (harmonies and timbres) and more ambivalently between noise and harmony. Similarly, Perceiving (as is well known) distinguishes various expressions of energy transformed into impressions of melody, timbre, rhythm and dynamics. At a later stage, these differences will be described as units of difference in frequency or amplitude, with those concerning tone, rhythm and melody being differences in frequency and those concerning timbre and dynamics being differences in amplitude. Speaking of timbre – also vocal timbre – this is a result of a formant/transi-

ent phenomenon and therefore related to dynamics. In the end, though, the frequency and amplitude group both fall under the concept »energy«, and the combined areas of Sensing and Perceiving may in this way be viewed as a continuous series of areas of concentrations – somewhat similar to natural »elements« (earth, water, air, fire).

## II. Pairs of Contrast

(Binarity is the basis of all registration of difference.)

The analogous lawfulness of Sensing and Perceiving, which was mentioned in chapter one, will be studied in this chapter as far as the first assertion ('a') is concerned: »Sensing and Perceiving are oriented binarily.« This statement may appear rather daring and even reductionistic in that a rich musical experience can never be recalled so simply. It should therefore first of all be emphasized that the statement will be relevant only when an attempt is made to achieve analytic insight into the preconditions for this rich musical experience. A person conscious of his experience will according to this theory create a richly faceted synthesis from the constant, overwhelming, intoxicating bombardment by »plus-minus signals« and their temporally conditioned intermediate forms (»clearing up«, »strengthening«, etc. as compared to »darkening«, »weakening«, etc.). This is evocatively described in the novel by Brian Aldiss: *The Male Response*<sup>4</sup>:

He knew now he had been right about the sunshine and the oleander bushes; light and dark lay cheek by jowl. Consciousness was the experiencing of events neither entirely tragic nor comic. It was not, as Hardy had claimed, that

'Tragedy is true guise  
Comedy lies'

but rather that the two were always present, mixed as inseparably as copulating octopi; life was at once funny and frightening: what lied was consciousness itself, for it was merely the sunlight painted over the wall of blackness. It was stretched skin-thin, and through it on occasions one could . . . glimpse the spear-sharp shadows beneath.

4. Brian Aldiss: *The Male Response*. Panther Books 1976, p. 181.

To claim that »consciousness is lying« would be too much, but it is a main theme of this study, that every individual in every single listening-situation will have his own experience of the above-mentioned »bombardment« on his system of Sensing and Perceiving – in which »light« and »dark« only occasionally are experienced as dominant phenomena of contrast, normally being »mixed as inseparably as copulating octopi«. Familiar contrasts such as »fast : slow«, »major : minor« belong to such exceptions, although with the tools of this study one often realizes that a host of sub-ordinate contrasts are concealed beneath the surface of polarity.

At the end of this study an attempt will be made to demonstrate that in the first movement of Mahler's ninth symphony we come across simultaneous alternation between polarities carried out in all parts and to the depths of the hierarchic tissue, resulting in (unequally long) »days« and »nights« with intervening »dusks« and »dawns«. This will be exemplified by two probings of typical fragments from the movement and will appear as a contrast in expression to similarly probed fragments from two works by Mozart. In these works the very balancing, most often a simultaneous balancing between expressions of light and dark may share in creating the »classic« expression (»intertwining together like lovers«). An expression of such a simultaneous light and dark might, for instance, be an intervallic intensification vs. a rhythmic weakening within the same Wave Length. On the rhythmic level, the simplest expression of tension, i.e. »dawn«, is the upbeat/downbeat pair and vice versa (i.e. the simplest expression of relaxation, »dusk«, is the downbeat/afterbeat pair).

By applying the tools of this study to »Greensleeves« it will be demonstrated how it is possible to experience one melodic line as two (both employing all tones), one of them upbeat-like, the other one downbeat-like, with »interference of consciousness« as a result.

### **III. Can Music be Described?**

(It is possible to give an adequate verbalization of a musical experience.)

Traditionally, verbal illustration of musical experiences is as problematic in scholarly circles as it is widespread in everyday conversation about music. The scholar as well as the reflective musician and layman clearly see the danger of the »music journalist's« simplification of complicated musical experiences, whereas the exclusively »intuitive« listener and



professional musician find little value for the deepening of their experience in the conventional and often abstruse analyses of form, function and counterpoint. This fact is supported by current debate at conservatories about theory and analysis as pedagogical disciplines.

Of course, what is so amazing about »popular music terminology« is its extraordinary universality and constancy. If expressions such as »high« and »low« notes as terms depicting the acoustical phenomena high and low frequency sound waves had been just as interchangeable as, for instance, short and long hair are fashionable and ever-changing symbols of masculine and feminine characteristics, a closer examination of the relation between terminology and phenomenon would hardly be very profitable. The present study, however, is based on the idea of the universally-disseminated musical term as derived from Sensing or Perceiving. Since acquired ideas are incorporated in the recollective ability of one's perception to create a Gestalt through tradition, it will be possible in complex higher civilizations to encounter contradictory theories which apparently weaken the idea of such a »platonic« or archetypal concept. Perceiving integrates both the recollected experience and the ability to imagine prior to the experience. The ability to imagine, which will be discussed later in this study, encompasses the past as well as the future, that is, experience as well as expectation. A great number of »duration Hierarchies« are stored away in the archives of one's memory – from the short-waved recollection of a telephone number, to the medium-waved recollection of an incident and finally to the long-waved life-long memory having to do with one's family and culture. Therefore it is clear that cultural tracks made over a long period of time often cause one pole to outweigh the other so greatly that the latter is suppressed for a long period of time (as seen in the case of the extreme matriarchies and patriarchies). Such one-sided epochal emphasis can therefore *for a time* obscure aspects of reality's binary nature, an example of this being the priority placed on the superharmonic root in relation to the subharmonic common denominator (the focal tone, chapter VI) during the 1600–1900's.

It is precisely this hierarchic property of the phenomenon of recollection that is the important factor in the larger forms of expression, in which a superstructure by means of its superior formal power can incorporate substructures and transform their isolated expressions. An example of this is the beginning of Bach's *St. Matthew Passion* where the Culmination (»summit«, »coronation«, »majesty«) is created by the entrance of a

chorale in unison. The immediate sensuous experience of »innocence« is subordinated by the aura of »coronation«, whereby Bach succeeds in conveying the evangelical message: the majesty of innocence!

What is sung by the children's choir is not without significance:

O LAMM GOT- TES UN- SCHUL- DIG AM STAMM DES KREUZES GESCHLACH-  
ALL- ZEIT ER - FUNDEN GE- DUL - DIG WIE-WOHL DU WAREST VERACH-  
TET TET ALL SÜND HAST DU GE- TRA - - - GEN SONST HÜSSTEN  
WIR VERZA - - GEN ER- BARM DICH UN - SER, O JE - - SU, O JE -  
- SU

Example 1.

The hierarchical main thesis of this study is that – analogous with the structuralistic sentence – »a content always comprises the form for a lesser content«. <sup>5</sup> We are confronted by a »content« (the chorale) in a »form« (the opening chorus), a content not only sensed through sound, but also perceived, as it constitutes a form in itself. This form also has a content, which in turn can be examined for forms. Since the methodological and the terminological implements for carrying out such an examination are not presented until chapter VIII, it must at this point remain an implication, which may, however, result in a support of the main thesis of this chapter. Characteristic of the opening chorus is its »arch« or »pyramid« shape, and characteristic of the chorale melody is that it does not manifest any development: three of its four phrases (together a bar form) culminate with d<sup>2</sup>–e<sup>2</sup> and end with g<sup>1</sup>. The upper and third hierarchical levels of the opening chorus tend to be analogously formed as »rise-fall«, while the second level (the chorale) shows stasis. As we sense »innocence« as »majesty« in the upper level and rediscover this perceptively and verbally in the culmination of the third level, with the words »unschuldig«

5. Jean Piaget: *Strukturalismen* (Swedish edition), Falköping, 1972, p. 114.

and »geduldig« in the first two lines, Bach manages, hierarchically, to permeate the introductory choir with the very epitome of the gospel: » . . . unto you is born this day a Saviour . . . a child, wrapped in swaddling clothes, lying in a manger«.

The following provisional conclusion can be drawn: a superior musical expressive quality arises during an hierarchical synthesis of form and sound on several levels, each having its own qualities. An expressive quality can be described by subjective choices of correspondences within a common sphere of symbols (cf. »child«, »innocent«, »sprout«, »fresh« etc. or »culmination«, »crown«, »majesty«, »zenith« etc.) A higher level of expressive quality can achieve variety by means of multiple ramifications of subordinate expressive qualities which may even compete with one another.

In the Bach example there was a peculiar connection between the contrasting expressions »child« and »majesty«, whereas in Fauré's *Requiem* (Introitus and Kyrie), we find the more usual association of the (lower energized) framework of the pyramid with the »sound of innocence« and of the Culmination of the pyramid with the »sound of majesty«, directly coupled on all elemental levels (*piano* vs. *forte*, *children* vs. *men*, *strings* vs. *brass instruments*, *step* vs. *jump*). All combinations are incidentally conceivable (and all are supposedly realized): Culmination with »tempestuously torn« expression, or with erotic, sensual sweetness, with expansive enthusiasm, etc. In short it is asserted that the total effect of a piece of music can essentially be expressed as linguistic correspondences for a limited number of expressive qualities on all hierarchical levels and in all Elements, but a combination unique for every single work. (As regards verbal attempts at synthesis, see chapter X, on synthesizing).

#### IV. Hierarchies

(All musical means of expression tend to be hierarchic).

Every act involves orders and orders of orders, whereby even supposedly simple activities achieve a high degree of complexity. Arthur Koestler<sup>6</sup> exemplifies this with the act of writing one's signature. The decision to write one's signature is primary while producing pen and paper secondary.

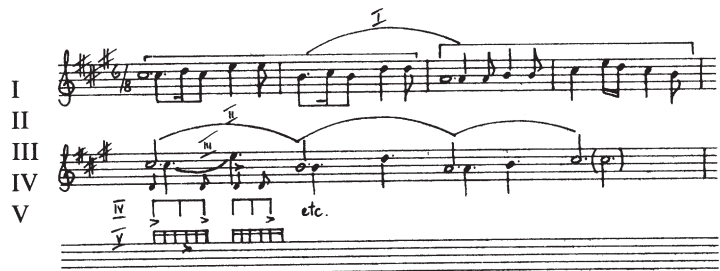
6. Koestler: »Beyond Atomism and Holism« (*Beyond Reductionism*). Hutchinson, 1969, p. 201.

Examples of other subordinate acts in the process are biological activities (also hierarchic) such as the flow of adrenalin, cell activity, and subordinate processes of combustion such as muscle contraction and movements of joints, which finally result in the activity aimed at, namely writing one's signature. Full consideration of all kinds of actions, or at least of the process of thinking and speaking, will lead to an acknowledgment of hierarchic organization as an indispensable precondition for their realization.

It is therefore no surprise that a consideration of the organization of the musical work (or of its fragments or individual Elements) reveals all kinds of hierarchic dispositions. A familiar example of this is the order of the levels of note values: a whole note is equal to two half notes or a triplet of three half notes, which in turn are equal to four quarter notes or six as a septuplet, a disposition characteristic of all European and much non-European music. As an expanded aspect of rhythm, structures occur as the great hierarchic »sonata«, »rondo«, »concerto« and »Lied« etc., each made up of a richly faceted subordinate world of »parts«, »periods«, »sentences« or what have you, again ramified into sections of bars and rhythmical lower orders. It is also a well-known fact that the element of harmony is expressed on slow, often low lying, levels as supporters of quick chord changes which in turn perhaps are faceted by even quicker chord changes in the figurations. There is a clear tendency in the *gamelan* organizations found on Java and Bali towards a hierarchic superiority of deep registers in relation to higher ones frequently with up to four or five strata.

Even a »simple« stanza can reveal a multitude of hierarchic organizations, as shown by the Wave Analyses later in this study. However, the author wishes at this time to point out the fact that a 6/8 melody such as Mozart's A-major theme is immediately ramified into rhythmical, harmonic and melodic strata:

Highest hierarchic  
stratum:  
Next highest:  
Third highest:  
Fourth:  
Fifth:  
(lowest)



Example 2.

Besides the rhythmic (melodic) strata of Hierarchy shown here, there is also a harmonic Hierarchy (described in the teaching on harmony) and superior to those shown, a »theme vs. variations« Hierarchy with its mutual strata.

Arthur Koestler in particular has reflected on the nature of the hierarchy and coined an applicable terminology in which »holon« represents an entity which governs subordinate strata while concurrently being governed as an integrated part by superior strata. When governing, a holon manifests Self-Assertive Properties (S-A), whereas it manifests Integrative Properties (I) when being governed. These two emphases of attributes, which are applicable both biologically and sociologically, may be transferred as a matter of course to a musical *holon*. A figure in an accompaniment may, for example, manifest itself as »S-A« (cf. Brandenburg Concerto No. 3 with the sudden dominant sixteenth-note cascades of descending seconds). Conversely, the main motif of the opening chorus in *St. Matthew Passion* mentioned above manifests Integrated Properties at the entrance of the chorale. Examples are, in fact, *legio* and the phenomenon constitutes one of the most powerful means of musical transformation without the actual tone signals being changed.

## V. From Hierarchy to Element

(There are profound differences in the potential of expression of musical Elements.)

It is a main hypothesis of this study and the method it employs that music's elemental effects are a transformation in the organs of perception of the energy-content of the perceived signals. According to this, the theory is that the physical expressions of energy are transformed into emotional impressions proportionally with the intensity of the *sensed* energy waves as well as of those *perceived*. Whether the experience, however, is more one of »stress« than of »catharsis« depends on to what extent the organization (»the noise«) characterizes a superior or a subordinate level. One can refer to the human ability to perceive, which is able to re-establish organized sequences of sounds as a mental process. This is possible through storage of impressions, attempts to perceive Gestalts and the expectation of impressions stemming from this. If such a mental process is



not successful – perhaps because the signals are not organized but random – irritation arises together with symptoms of stress and illness over a longer period of time, even though the individual signals are harmonious. However, the opposite is not the case: a totally noisy source of sound may – through a well-organized sequence of signals – be a fully satisfying musical experience. So we can place Perceiving above Sensing as far as the musical experience is concerned. (The reader is right if in these reflections he senses an argument against the advocates of »aleatoric form«. <sup>7</sup> With the introduction of the concept of priority in connection with Sensing/Perceiving the question arises whether an »order of experiences« can be established in other fields (the Hierarchies mentioned in chapter IV, realte of course, only to time-perceptions). It is tempting to consider whether there would be reason to establish similar priorities among musical Elements. The purely emotional outbursts about the »melody« or the »harmony« etc., »being the highest« seem to encourage this kind of consideration.

At least one criterion (possibly more) may justify establishing a priority in the sequence of Elements, that criterion being the potential of achieving graduations. Perceiving, of course, does not allow one to operate at one's discretion with – for instance – unlimited subdividing of the octave or endlessly refined differences in duration. *Doubling a frequency* (or in other words: dividing a Wave Length into halves), *halving a duration* and *doubling a tone's volume* may be described as rising (energizing) octaves of *tones*, *duration* and *dynamics* respectively. The organization of possible stages of perception within each of these three »octaves« will result in precisely the sequence mentioned. The opposite sequence would appear if one asked for the necessary preconditions for the emergence of an auditive musical experience: *dynamics* means volume of course, which requires sound, for without sound there is no music. *Durations* are limitations in time, without which the differentiated experience of sound would not be possible. Since – as already mentioned – music may express itself in noise without making use of tones, *tone* receives the lowest priority. Further arranging of the priority of the various forms of manifestations of tones within the areas of melody, harmony and timbre is not possible,

7. The remark for which John Cage has been given credit: »Sind Töne Töne – oder sind sie Webern?« (Untranslatable pun in German: Are tones tones, or are they Webern, i.e. Weaving?) in its implied answer: »Doch, Töne« (Tones, of course) expresses how the philosophy of Aleatorism places Sensing *above* Perception.

since the boundaries between these elements are vague and since a new definition based on subjective evaluations is necessary for every new analysis. Of course, everything may be viewed as a melody. Is, for instance, the function of a slow hierarchic stratum carried out in five deep gongs on a Balinese *gamelan* »melody« or »harmony«? This depends completely on the perceptive point of view and in a similar way reflection may result in the same conclusion concerning all other sorts of music: everything *may* be (but does not *have* to be) considered melody. Tentatively, we might conclude that a melody is a (sonorous) content differentiated in duration and in this way given a »form in time«. Rhythm (although an empty factor in itself) is a form in time executed by *sound*, perhaps differentiated into »*melodies*«. Dynamics (along with harmony and timbre) is a means of emphasis (or of tonal reflection or of creating timbre), setting off the work, and is of a supplementary nature<sup>8</sup>.

## VI. Superharmonic vs. Subharmonic

(The harmonic and the subharmonic spectra are equally perceivable.)

Apparently the so-called subjective tones play a large role in the formation of scales and of harmonies in all musical cultures. By this is meant, among other things, the processes of combination by which the inner ear (cochlea) forms »subjective tones«. These do not exist as physical oscillations, but are derived from them. Incidentally one can distinguish between two kinds of subjective tones: those divided by fission and those amalgamated by fusion<sup>9</sup>. Fission is division in accordance with the natural series of numbers, whereby a subjective impression of overtones emerges. During fusion the difference between the frequencies of two tones is created and consequently a subjective impression of a deeper tone occurs, containing the two original tones as two of its own partial tones. In the former case the spectrum of overtones is subjective; in the latter the root is subjective. Every time a sustained note sounds together with a chain of tones in a scale (diatonic or chromatic *ad lib.*), a subjective impression of a chain of

8. Cf. chapter X, first paragraph.

9. The metaphors »fission« and »fusion« clarify both the kinship and the difference between the phenomena of overtones and difference tones. »Fission«: the dividing of one tone into many (the overtone spectrum). »Fusion«: the creation of one or more »combination tones« out of two (or more) tones (difference tones and their linear, sub-harmonic, »minor« breaking).

(differential) roots emerges. The author intends to show that when combined, the deepest tones of this chain make up a broken, subharmonic chord, whose fixed and variable generative tones make up changing partial tones of the individual components of this chord (see Table 1–2).

One can hear this broken »minor« chord by letting two wind instruments play the upper staff *forte*. As we are exposed daily to differential impressions from constants as well as variable sources of sounds, it is at least *conceivable* that the repeated, partly sub-conscious experiences involving this broken »minor« and »major« world have contributed to its emergence (here it is not only a question of minor: major but also of the universal associations connected with the concepts of »dark« and »light«.) When a minor chord is played, it reminds one of the »unreal« root and of the way in which the two generative tones gradually approach each other, letting the root wander in the likeness of the minor triad downwards towards »darkness« and »quiet«. When a major chord is played, it reminds one of the »self-sufficiency« of that one tone which is gloriously divided into innumerable, though perhaps unreal »light« tones (the term »unreal« suggesting that even a strong impulse void of overtones evokes a spectrum of subjective tones in the cochlea).

Therefore I call major and minor chords »superharmonic« and »subharmonic« respectively, or perhaps »light« and »dark«.<sup>10</sup> The generative tone of the superharmonic will still be called the root, but the generating force in the subharmonic is more difficult to define (cf. the table), as it is for the most part the activation of the entire octave that determines the (subjective) occurrence of the broken minor chord. For the sake of convenience, though, reference will only be made to the constant of the two generative voices – designated as the »focal tone«, as it is the tone which unites the entire row of the individual overtone spectra of differential tones, each of which is founded in the superharmonic:



Example 3.

10. Cf. the priority given to the root in the period 1600–1900 mentioned in chapter 3. The major and minor concepts common for the period will, however, be applied at the same time, and possibly *varied* through the implication of the harmonic/subharmonic view.

Table 1. Selected differential tones.

Physical chords and mutual frequency proportion	$g^2$ $g^1$ = 2 : 1	$g^2$ $c^2$ = 3 : 2	$g^2$ $d^2$ = 4 : 3	$g^2$ $e^2$ = 5 : 4	$g^2$ $e^2$ = 6 : 5	$g^2$ $\uparrow e^2$ = 7 : 6	$g^2$ $\downarrow f^2$ = 8 : 7
Differential number	1	1	1	1	1	1	1
Differential tone	$g^1$	$c^1$	$g$	$e$	$c$	$\uparrow A$	$G$

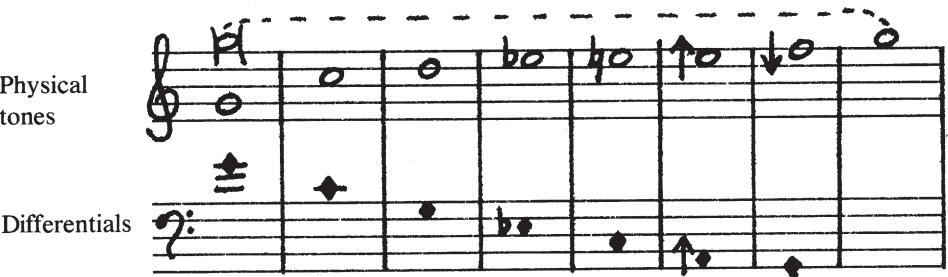
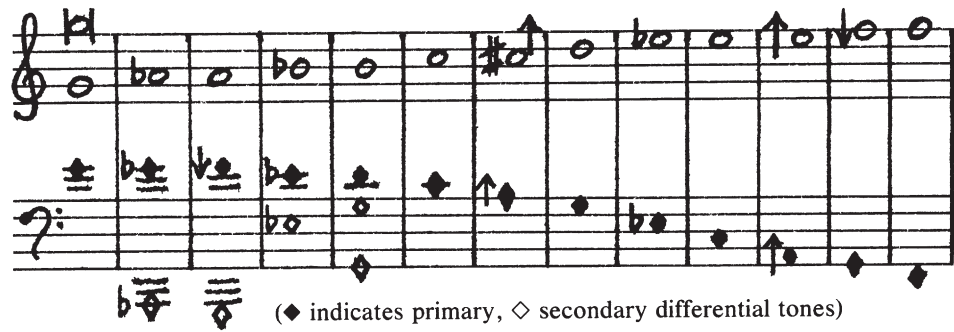


Table 2. All differential tones generating from chromatic tones.

The mutual frequency of the generative tones	2 : 1	15 : 8	16 : 9	5 : 3	8 : 5	3 : 2	7 : 5	4 : 3	5 : 4	6 : 5	7 : 6	8 : 7	9 : 7
primary differential tone	1	7	7	2	3	1	2	1	1	1	1	1	2
possible secondary differential tone		1	2	1	2								
					(1)								



## VII. From an Experience of Contrast to an Experience of Color (The diatonic scale is based on auditive laws.)

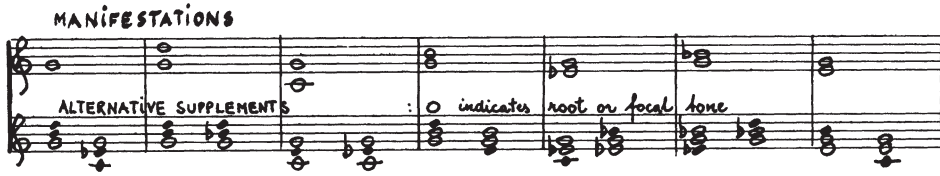
*Prefatorial remark:* Until now this study has concentrated on binarity, the experience of contrast, as a basis for Sensing and Perceiving on all levels. This is in agreement with the development of awareness of color observed among primitive people. A certain degree of urbanization is required before the concepts of color are allowed to develop beyond the basic contrasts of dark vs. light, black vs. white.<sup>11</sup>

Is it possible at this time to attribute the emergence of scales of more than two pitches (or of only two registers as is sometimes the case with Greenlanders) to something besides chance environmental factors (conventions)? In the following only the seven-tone scale, which is found world-wide and was known in our culture group as the »church mode« during the Middle Ages and later as »major« and natural »minor«, will be discussed. Dictionaries and textbooks give no answer – or only conventional ones – to the question of why seven-tone scales are as wide-spread as they are, especially the »major« form.<sup>12</sup> By implicating the idea of subharmonic triads as active factors, it is, however, possible to build a column of fifths, whose transposition to a single octave manifests this very »major« seven tone scale.<sup>13</sup>

At least three superharmonic or three subharmonic partial tones are necessary in order to define a given tone as having a super or subharmonic spectrum (»root« or »focal« tone). Given the tone »g«, for instance, it is not enough just to add a super- or sub-fifth or a super- or sub-third in order to determine whether the given tone is a »basic« or »focal« tone, as the listener – other things being equal – cannot be sure whether it is the upper or lower of the two tones that is derived from the other one:

11. Cf. Rolf Kuschel and Torben Monberg: »We Don't Talk Much About Colour Here: A Study of Colour Semantics On Bellona Island«, *Man*, (New Series) 9, p. 213–242, London 1974.
12. For example, the Indian scale *sa-grama* and the Balinese seven-tone scale used especially for religious ceremonies, which expands upon the five-tone *pelog* from (approximately): e - c - b - g - f to e - d - c - b - a - g - f.
13. The concept is based on Albert Freiherr von Thimus: *Harmonikale Symbolik des Alterthums*, Cologne 1868 (re-printed by Georg Olms Verlag, Hildesheim, New York, 1972). In this book, the author traces the diatonic scale back to the Pythagorean Jamblichus' commentary to Nicomachus' Arithmetic, in which the final chapter of the second book deals with the numbers 6:8:9:12, called the »most perfect, thrice expanded, all-encompassing« equation. It encompasses the three main kinds of proportionality: the arithmetic (6:9:12), the harmonic (6:8:12) and the geometric (6:8 = 9:12).

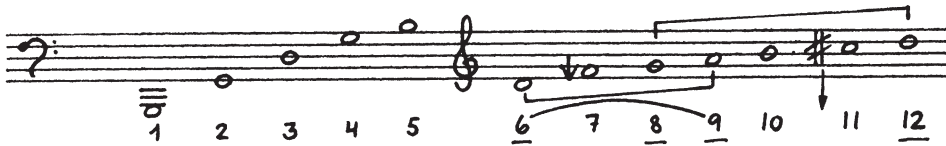




Example 4.

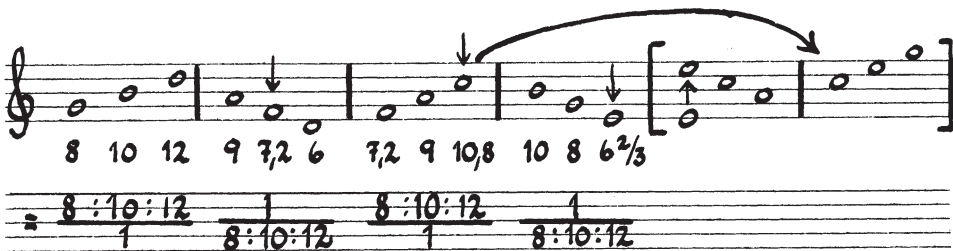
Only by adding a third representative of the tone spectrum does an unambiguous conception of the affiliation of the chord and of the position within the chord of its respective basic or focal tones emerge.

*Establishing the diatonic scale:* By observing the overtone spectrum one finds the symmetrical ratio  $6:9 = 8:12$  or  $6:8 = 9:12$  with two perfect fifths:



Example 5.

By establishing a super/subharmonic symmetry of  $g^1-h^1-d^2 / a^1-f^1-d^1$  one finds the proportions  $8:10:12/9:7,2:6$ . The new tone,  $f^1$ , corresponds quite closely to the fourth step of the C-major scale, and the last two missing tones in the seven tone scale can be found by analogous addition of the missing tones of the triads in the remaining »triadic torsos«:

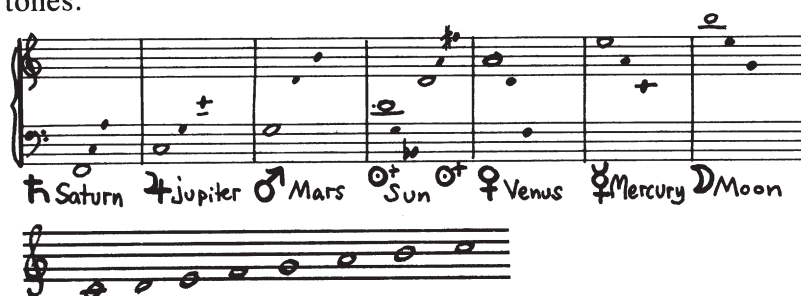


Example 6.

Thus there are no more fifth or major third »torsos« to fill in, the result being an acceptable version of the well-known seven tone scale, of which there are (as mentioned before) many varieties of precise tunings.

By setting up a table of fifths, one can gain an overall view of the innate richness of resonance. The planet symbols added to the table are mnemo-

nic and serve to aid the memory in learning the seven qualitatively different tones:



Example 7.

As can be seen here, each of the seven tones has a position in two light:dark systems at one time: in the table of fifths ascending from F and in a scale system ascending from the established root of the moment. In the former case it is a question of the position of the tone within a *resonance system*. In the latter it is a question of its position within a (linear) *octave*. It is characteristic that the C-major tonic is the center of the superharmonic triad, whereas the A-minor tonic is the center of the subharmonic triad. The fact that A is perceived as the root, E not being perceived as the focal tone, is explained in chapter three as the »upwards directed« dominance of the root of the baroque and classical periods, which does not exclude the possibility that a future stylistic epoch might awaken the »downwards directed« subharmonic conception. This depends on the code of interpretation valid at any particular time and period. If the »sun« tone with a mute third is activated (as far as the superharmonic third or the subharmonic third is concerned), it causes a momentary or permanent disruption of the previously established sequence of relationships (the »white keys«), resulting in either a sharp or a flat (bi)modulation.

### VIII. Terminology

(A musical concept must not inhibit the recollection of a momentary experience)

Characteristic of prevalent musical terminology is the fact that it considers the musical work a finished object instead of the result of a process of perception. Concepts such as »exposition«, »bridge«, etc., presuppose actual knowledge on the part of the listener, for instance, at the beginning

of an »exposition« of the fact that what follows will actually take shape as a sonata, and at the beginning of a »bridge« that what appears to be thematic is only a »sham maneuver« and will in due course reveal itself as being unsubstantial, a transitional passage.

This retrospective method of analysis does not, however, fall directly outside the hierarchic analysis/synthesis method outlined in this study (which for the most part is not exclusive but inclusive), as it is splendid for giving names to experiences associated with the moment after the final tone of a musical entity. The moment it has sounded, the listener has (via recollection) the »actual knowledge« mentioned above, which in any case makes it possible for him to say: »This was a rondo« – or just: »This was a bridge«.

There is therefore no cause for campaigning against common terminology, as long as it keeps its rightful place within the course of the musical perception, i.e. at the end of the musical experience (taken either absolutely or relatively within a work). On the other hand there is a need to establish a terminology to represent all the moments of a work other than the concluding ones. Why should these experiences of ambivalence be discriminated against by being kept nameless? There are, after all, far many more of them.

According to the argumentation presented in the previous chapters, the hierarchic, multi-elemental method of analysis is the solution of the problem. The names suggested in this study have not been chosen because they suggest ambivalence in themselves, but because they can be used concurrently on all tempo strata and connected to all Elements. This flexibility is only possible because the concepts used are not *specialized* (as is »expositon«), but general (such as »return«). Because of this thesis of the theory concerning the total homogeneity in the effects of the music, the same designation may often be used to characterize a chord (for example) as well as a sequence (cf. »light« vs. »dark«). Consequently, the registration of ambivalence becomes directly readable, as, for example, when one »Wave Length Analysis« shows a given Moment as »light«, while another (superior or subordinate) shows it as »dark«. The treatment – the synthesization – of the resultant accumulation of such synthetic judgments will be the subject of chapter ten on Synthesizing.

One may, of course, raise the objection that there are many traditional terms that do not require actual knowledge of a completed sequence. But these terms *either* refer to unrelated acoustic or auditive facts (»forte«,

»accelerando«, names of pitches etc.) and therefore have nothing to do with this study which deals with the process of *Perceiving* (i.e. comparative, mental processes); or they emanate from historical stylistic studies, for example within the major/minor-harmonic period with its harmonic method of analysis based on chordal functions. Granted, when mentally registering a dominant seventh, for example, one reacts instantaneously, spontaneously and with expectation and not only retrospectively (although the immediately preceding sequence is a precondition for the spontaneous experience). Therefore the harmonic analysis (like all other traditional methods of analysis) may be considered a partial aspect of the hierarchic analysis, as will be exemplified in the succeeding chapters. And even purely retrospectively founded concepts of form may, as previously mentioned, find an adequate place, namely as part of the analysis which becomes possible at the final tone.

The following law can therefore be presented for deciding which designations will be acceptable in a given connection: no designation may inhibit the subjective recollection of any moment of experience. The analysis must always approach the conditions of the musical process of perception, whose recollection may thus approach a state of transparency, all the while maintaining its character of synthesis.<sup>14</sup> In this way one can avoid causing a dangerous splitting of the listener's consciousness, occurring when *certain* aspects of the musical experience (namely the factors of retrospection, the harmonic progression, etc.) are so privileged as to have names, while others – for example the extremely essential experience of ambivalence – remain in conceptual darkness.

The chosen designations serve to promote still another important precondition: *the musical experience as characterized by mental participation in an autonomous, organic process*, rather than passive observation of a course of action constructed by a composer. It is as unreasonable to say, for example: »Now spring is repeated« instead of »Spring is here again« (or possibly »Now spring is coming«), as it is to talk about »repetitions« in connection with the musical experience as a creation. An impression of mechanical development is suggested by concepts such as »repetitions«,

14. The meaning being that it is possible to imagine that we will in future develop an ability whereby our afterthought will be able to perceive and thoroughly synthesize every short musical Moment. Together with this ability there will also be an acknowledgment of the isolation of this Perception to the investigated Moment. The spotlight illuminates a small area, but always leaves the rest in a darkness much more difficult to penetrate.

»inserts« etc., (as if there were someone repeating or inserting something), instead of designations which suggest that *there is no separation of the acts of creating, performing and listening in the musical experience*. In a musical experience, audible gestures »appear« for the audience, suggesting an expressive »Being« with which the listener, in the optimum experience, becomes one. The designations ought therefore to adapt themselves to the perceptive reality that the work is »created«, that expressive Gestalts »return« after having once manifested themselves, »appeared«. In the following, new formations are chosen so that they at least do not preclude the idea of the experience of a work as a »Being«.

Two main areas are the complementary »Particle« and »Wave« analyses: a) *The Particle Analysis* investigates the repertoire of »particles in the elemental areas: individual tones, groups of tones, rhythmical Gestalts, as required. Every »individual« describes, through the passage observed, a sequence of states that is different from each of the others *and* different from the behavior of the same »individual« (take for example the different qualities of the seven tones of a scale) in another work (or fragment of a work). These sequences are registered and studied together, whereby a repertoire of graduated importance is revealed. This is done with fixed, general terms, of which the following are suggested.

(NB: Capital letters indicate the usual abbreviation.) DOMinator: the first accented *tone, motif* (e.g. the first bar of Mozart's A-major theme or the first 4 bars of the »Jupiter menuet«), *theme, rhythmic Gestalt* etc. These are called DOM for note, motif, etc., and designate all variants of duration from point to theme). DOMinator REPresentatives are the first, second, etc., note respectively (motif, theme, rhythmic Gestalt, etc.) which appears in the place of the DOM, though transposed. See the first bar of the »Jupiter menuet«, g<sup>2</sup>: DOM, cf. the fifth bar a<sup>2</sup> (1st) DOM 1st REP and the ninth bar d<sup>3</sup> (1st) DOM 2nd REP. (»1st« may be added in cases where a new thematic or other type of division appears later in the course of the work which is then designated: 2nd DOM (2nd REP respectively) and so on. DOMinator SUCcessor may indicate the conclusion of a motif (e.g. notes 4–6 of Mozart's theme), theme, etc., which is in itself a DOM.<sup>15</sup> Furthermore miscellaneous functions may appear, designating e.g. a

15. The monstrosity of these names is unfortunately the price we must pay for their great and flexible versatility: once they are found suitable in a certain context, they are applicable to all Wave Lengths, to single tones as well as Gestalts.



CULMinator, by which is meant the highest tone, tone group, fastest or strongest passage, etc., of the sequence. (If it is not a question of pitch, a small »r« for rhythm or »d« for dynamics, etc., is added: for example CULM<sup>r</sup>.) I recommend creating »striking« synthetic names for each Particle investigated and even more so for synthetic appraisals. Although it may seem comical, this aspect is quickly overshadowed by the fact that it can be of great practical help in formulating a general, comprehensible glimpse into the individuality of a compositional »Being«.

b) *The Wave Analysis* investigates the wave-like sequence of a hierarchical nature which is, according to the circumstances, set up in three or more Wave Lengths: Wave  $\downarrow$  indicates the 3/8 Wave Length of the Mozart theme, whose Wave Train is analyzed in pairs of  $\downarrow$  (if other considerations, e.g. a triad, do not encourage a greater number of Waves to be compared). Whether the first note of the pair of Waves is to be perceived as stronger or weaker than the preceding pair as concerns frequency, may be indicated within a set of parentheses:

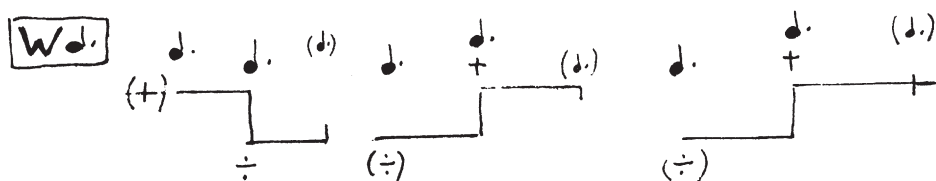


Figure 1.

The final stroke turning upwards, downwards or outwards indicates the tension of the *continuation* in relation to the preceding pair. To indicate the internal, melodic tension or de-tension of the Wave (investigated separately and recorded in another column – or simply read directly from the music, as in the shortest Wave Lengths of the Mozart examples) – the falling or rising arrow is added, supplementing the general, external tension relationship of the Moment under investigation with the internal tension specification:

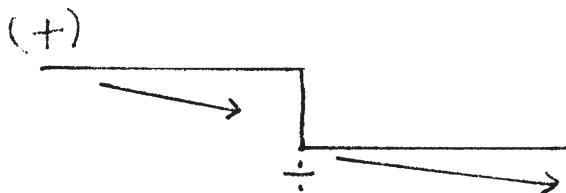
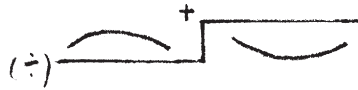


Figure 2.

A »Sinus form« occurs if both diminishing and increasing tension (and *vice versa*) are registered under the internally examined Wave:



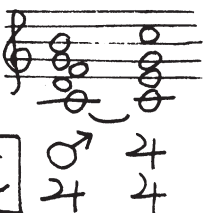
(»Sinus-plus« and »Sinus-minus«).

Figure 3.

A significant increase or decrease in tension may be indicated by ++ or ÷÷, respectively.

It is possible to indicate the differences in internal tension below every melodic Wave analysis with analogous notation on a separate line (»int. r«).

For music of a diatonic nature, the planet symbols suggested in chapter 7 will be used for the chord strata as shown, the »tonics« being white and the »focal tones« black. In this way, the note that »minor« has borrowed from major chords may be expressed, for instance in A-minor, whose g is perceived as the harmonic third to ♀ e which in this case is notated *white* and in *parentheses*, with *g* written above it. When there is (so-called) suspension and anticipation, only the simultaneous occurrence of the representatives of the two chords is registered, expressed, f.ex.:

(the key of C-major) → 4C 

(jvf. C:  $\begin{matrix} (fh) 7 - 8 \\ T 4 - 3 \end{matrix}$ )

Example 8.

One makes no decision, however, as to which of the two is »more real« than the other. As mentioned earlier, this need not exclude a registering of the common root for major and minor as set forth by the classical period or a functional analysis. The scope of partial analyses remains a matter of judgment.

If the need exists (as in the Mahler analysis) to express clarity, direction or fixedness of the Gestalt, PROgressive may be used for a directional figure, e.g. **PROG**, **FIXed** for a fixed Gestalt and **LABile** for an unstable Gestalt (considered »dark« in relation to the »light« of the other two). »Dawn« and »dusk« are expressed analogously with this in signs such as: **LAB** + (to PROG) and **LAB** ÷ (to FIX) as well as **PROG** **LAB** and **FIX** **LAB**.

The signs, »terraces«, arrows, etc., have been worked out to be as self-explanatory as possible and for this reason, variants, dotted lines, etc., are used without further explanation as a logical expansion of the basic ideograms.

The image shows a handwritten musical score for piano, consisting of three staves. The top staff is in treble clef, the middle in bass clef, and the bottom in bass clef. The score includes various musical notations such as notes, rests, and dynamic markings. Above the staves, there are several ideograms in boxes: 'LAB' with an arrow pointing right and a '+' sign, 'PROG', and 'Fix'. Performance markings include 'dim. e. ritard.', 'pp', 'ff', and 'p'. The tempo marking 'più Allegro' is written above the top staff. The word 'etc.' appears at the end of the bottom staff. The score is written in ink on a white background.

\*) The harmonic interpretation of this chord is solved by means of the conception of two superharmonic and subharmonic chords respectively on the same beat: the column of minor thirds is divided into *e-g* respectively having the superharmonic root, *c* and *b<sup>b</sup>-d<sup>b</sup>* having the implicit (subharmonic) focus tone, *f*. By these means, the subsequent *c*-subharmonic chord fills in the »vacuum« that has previously arisen. This interpretation makes the (to me, not very convincing) »flatted ninth« chord superfluous as a term. In general the new method of analysis suggested here must be seen in light of its consistent rejection of flatted or sharpened partial tones in the harmonic spectra.

Example 9.

## IX. The Analysis Program

### I. Analysis of Wave Length

Tone in pairs or groups of three are analyzed to determine conditions of tension and relaxation as regards intervals and rhythm as well as sonority (harmonic and instrumental) and dynamics. In the case of the usually regular rhythm of classical music, these analyses branch out in hierarchic duplications, while irregular durations are categorized according to pairs or triplets (which branch out not only in duplications but also in variable Wave Lengths). Similar to the determination of an increase of energy in intervals when rising, the increase in frequency of attack is also determined as a rhythmic increase in energy. This increase and the corresponding decrease of energy in case of decreasing frequency of attack is designated as Internal Rhythm (IR) to the left of the Wave Length in question (possibly a variable one). The following example is taken from the beginning of the menuet from the Jupiter Symphony (Wave Length  $\circ$  6/4):

interval: <sup>(+)</sup>

internal

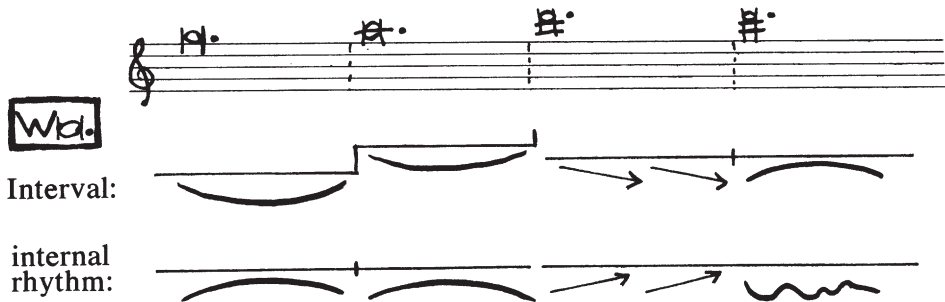
rhythm:

Example 10.

We see that the interval determination for  $\circ$  pairs produces the following answers: two falls, one stasis, one fall, while the reading of the notes, employing a certain amount of Opacity, produces the following rises and falls as far as the subordinated interval tension is concerned (represented by arrows): *down, up, down, up, down, down, +Sinus, ÷Sinus*. The interval analysis determination of the internal rhythm produces the answer »stasis«, since there is no pronounced change in frequency of attack between each  $\circ$  pair. On the other hand, however, the reading of the subordinated frequency for each  $\circ$  produces a »rise and fall« answer

which counterpoints exactly the answers concerning the interval subordinations: *up, down, up, down, up, up,  $\div$ sinus, +sinus*.

Clearly, this result of a synthesis (»total balancing of intervals and rhythm tensions concerning  $\circ$  Wave pairs«) must be compared with a reasonable (perhaps even considerable) number of other Wave Length analyses before one should attempt more elaborate verbal characterizations. The next step in the analysis of the Jupiter menuet is  $/\circ/$  (12/4).



Example 11.

This analysis actually produces new answers only as far as the identifications of pairs are concerned, since the subordinate answers concerning tensions in interval and rhythm only couple into pairs the answers of the  $\circ$  analysis concerning tension and relaxation. These pairs, of course, might have been synthesized directly, visually, while reading the  $\circ$  arrows: for the pairs of intervals: *rise* and *stasis*; for rhythm: *continued stasis* (there is no pronounced change in the frequency of attack of the compared  $/\circ/$  Waves), while the subordinate answers – which is not surprising – once again record an exact counter movement between the tensions of intervals and rhythm, namely the following: Interval:  $\div$ *Sinus*,  $+$ *Sinus*, *repeated rise*, *complex rhythm*. It is indicated by the connected »repeated«-determinations that the  $/\circ/$  analysis is no longer relevant. We see here the emergence of the typically end-oriented »breaking down« of superior hierarchic strata in classical/romantic finales (normally executed to the smallest count).

The last Wave Analysis deals with the  $/\circ/$ - $/\circ/$  Wave (24/4) which will produce only one answer: a rise (from  $g^2$  to  $d^3$ ) in the interval and a continued stasis in the rhythm. However, there is still an analysis to be carried out, namely that of the melodic Gestalt rhythm which may be



called »external rhythm«. This rhythm is determined by establishing the durations of such melodic phrases that may join supremely, first with one Wave Length and then another. As is typical of classical melodies, a tendency will appear in the »hierarchic breaking down«, showing a metric accelerando recurring in this menuet:



\*External rhythm      \*\*Sequence of tension

*Example 12.*

Similar to the melodic Wave Analysis, we now record the changes of harmony and the rhythm connected with these changes. Most often a single order will suffice, although an hierarchic harmonization is somewhat common. (See chapter four.)

Furthermore, yet another analysis of sound may be carried out having to do with music for symphonic and chamber orchestras and choirs – music with changing timbres. This analysis deals with instrumental timbres and their tensions and rhythms. For this the reader is referred to the following chapter and the analysis chart concerning the above-mentioned menuet.

## II. Particle Analysis

The analysis identifies the individual Gestalt of the various hierarchic strata and records their »fate« during the analyzed period. Each tone and interval figure, of course, show its individual characteristics of recurrence-emphasis-function as do the rhythmic and sound units (elemental Gestalt) which are found in the work or sections in question. It requires skillful judgment to estimate *how many* individual »fates« in a given period it is desirable to examine. In classical music it will often prove confusing and superfluous to analyze all 12 tones (not to mention their non-enharmonic number, G# / Ab as two separate analyses, etc.). However, experience will provide the necessary ability to judge what is reasonable. The tonal relationships will often be the most complex, followed by the harmonies and finally the rhythmic Gestalts (whose number as a rule is far smaller than the »particle manifestations« of the other two elements).

As an example we shall now examine the »tonal individuals« in the above-mentioned Jupiter menuet, the first 16 bars. (Note that their order here for the first time follows a chosen order of precedence according to the qualitative weight of the tone in question within the entity. It will always be a subject of discussion whether DOMinator REPresentative or CULMinator should be listed first, and so on, but it is indisputable that DOMinator should occupy the first place and that all other qualifications should be determined accordingly.)

g<sup>2</sup>: DOM. Occurs infrequently but with importance. Apart from the first bar only in the last bar (as »tonic-root« in G-major!) except as a Passenger in the fifth bar. In the last bar a double function, i.e. also CULM-REP.

a<sup>2</sup>: (1st) DOM-REP. Typical Passenger, also as DOM-REP (on the way to DOM-REP: d<sup>3</sup>) but otherwise all over (in the 10th, 12th, 14th and 15th bars).

d<sup>3</sup>: (Second) DOM-REP. Temporary CULM both in location of register and rhythmic insistence: the incorporation of the quicker Waves in the melody is carried out via d<sup>3</sup> (in the 9th and 11th bars and recurring as »hammer beats«), appearing in an up-beat in preparation for e<sup>3</sup>, the CULM. Besides, as DOMinator-ANTagonist-REPresentative one octave lower (7th bar).

e<sup>3</sup>: CULM. Appears exclusively as a tone of a high register, also rhythmically striking in its position in the »golden« point of division of the afterphrase (5:3).

c<sup>3</sup>: (1st) CULM-REP. The most important perceived feature in the 15th bar. In addition it has various other functions: (3rd) DOM-REP-SUCcessor<sup>15</sup> (10th and 12th bars), Passenger (14th bar) and »tonic-root« one octave below, in that position appearing also as DOM-ANT (3rd bar).

f<sup>2</sup>: DOM-SUC (2nd bar), DOM-ANT-REP (8th bar) and as Passenger (6th bar).

h<sup>1</sup>, f<sup>♯2</sup> and c<sup>♯3</sup> all play extremely subordinate Passenger parts.

The same terms may refer not only to the individual tones, but also to their immediate subsequent unstressed subordinates. When viewed from the highest point of melodic Gestalt, DOM will include four bars, DOM-REP four bars and the following two times it is consequently called DOM-REP-FRAGMENT, since the total DOM-REP does not appear. A more detailed fragmentation occurs at the thrice repeated d<sup>3</sup>, each of which – from this point of view – actually constitutes one twelfth of

DOM-REP! CULM is still the short motif  $d^3$ ,  $c^3$ ,  $a^2$  and CULM-REP  $c^3$ ,  $a^2$ ,  $f\sharp^2$ , while  $g^2$ , of course, is the FULL STOP. This (melodic) viewpoint corresponds to the rhythm of the melodic Gestalt and constitutes a link between the analyses of Wave and Particle.

## X. Synthesizing

It is self-evident that a realization of the program of analysis only leads to a chain of single answers, i.e. of »mini-syntheses«, not meeting the need of a collective synthesis judgment any more than do the other established harmonic, compositional or formal analyses. Contrary to these, the chain of the hierarchic results of the analysis of tension is, however, mutually commensurable. Therefore one must ask for a procedure which fruitfully compares and experimentally synthesizes the many subordinate synthesis judgments.

Setting up a flawless procedure (if such a thing were imaginable) would probably lead to a dogmatic petrification of the hierarchic study, which would almost be a ludicrous perversion of the aim put forward. The basic thesis of this study is that acceptance of the many mutually equal interpretive correspondences ought to *liberate* the student's imagination and encourage the creation of personally formulated, richly colored if possible, pictures of the work examined – a liberation whose strength comes from a respect for the results gathered. One cannot and should not construct a tool for building supersyntheses. Instead one must find the means to the same end subjectively. On the other hand, one can and should refer each detail of the supersynthesis to the results gathered. A correctly established supersynthesis must be connected to a documentation which fully demonstrates how the subsyntheses fit into the overall vision. In other words: the way to this end must be *found* subjectively, but the way back must be *traced* objectively. The process of combination must be laid open for control.

Even though establishing a guaranteed road towards an overall formula is neither possible nor to be recommended, one may practice the difficult art of synthesizing, presuming certain reasonable elementary basic combinations.

The results group themselves automatically into families, and therefore it is most natural to let the experiment concerning combinations begin with a

comparison of the results within one family. For that matter, chapter nine has already shown the basic model for these introductory combinations: *Wave Analysis* vs. *Particle Analysis* as the main groups encompassing the ramification of the wave analyses into interval, chordal, timbre and dynamic wave/rhythm judgments and the corresponding ramifications of the Particle Analysis in hierarchic Beings and their Returns and »representations«, etc. At a lower level of ramifications there is a connection between the *interval-wave-hierarchy* and the *melody analysis* (including the latter's »external rhythm«), as well as between the *harmonic* and the *timbre analyses*. As for the latter pair, the following argument must be put forward: harmony – the result of chordal succession – expresses in itself more of a (mimical) reaction than a (gesticulative) action. The gesticulative function has most often to do with the melodic element, which may make use of chord sequences like a reflecting layer in which the interval sequences like a reflecting layer in which the interval sequences and the tone qualities of every single factor can be reflected. Correspondingly, changes of timbre (for example, from strings to wind instruments) are a »reflecting layer« using instrumental/vocal attack and formant characteristics instead of a change of harmony. Quite often a change of timbre occurs in another, usually slower, rhythm rather than a change of harmony. An obvious exercise in synthesizing is comparing the two groups of results from the harmony and chord analyses and trying to interpret the special expression arising out of the interference between these reflection layers. This can be exemplified by the menuet of the Jupiter Symphony (the subject of another exercise in synthesizing later in this chapter, cfr. App. II):

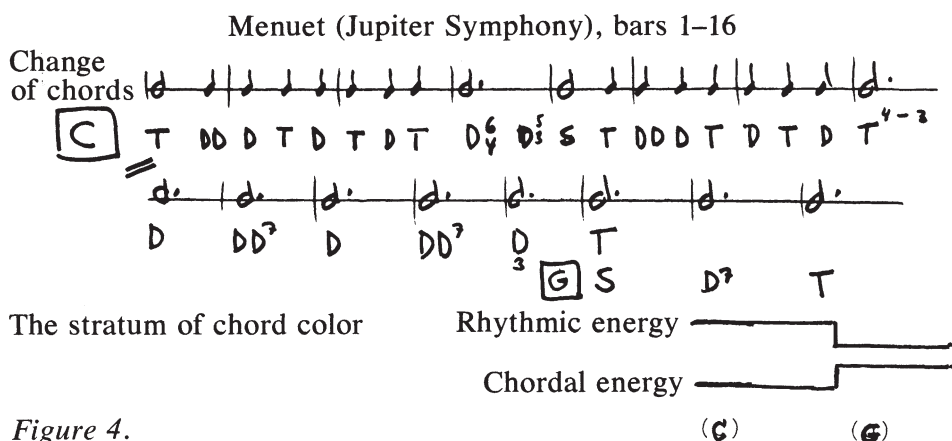
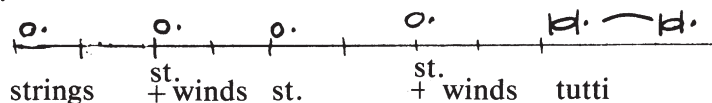


Figure 4.

Change in timbre:



*The stratum of timbre*

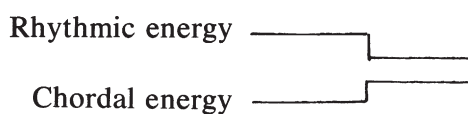


Figure 5.

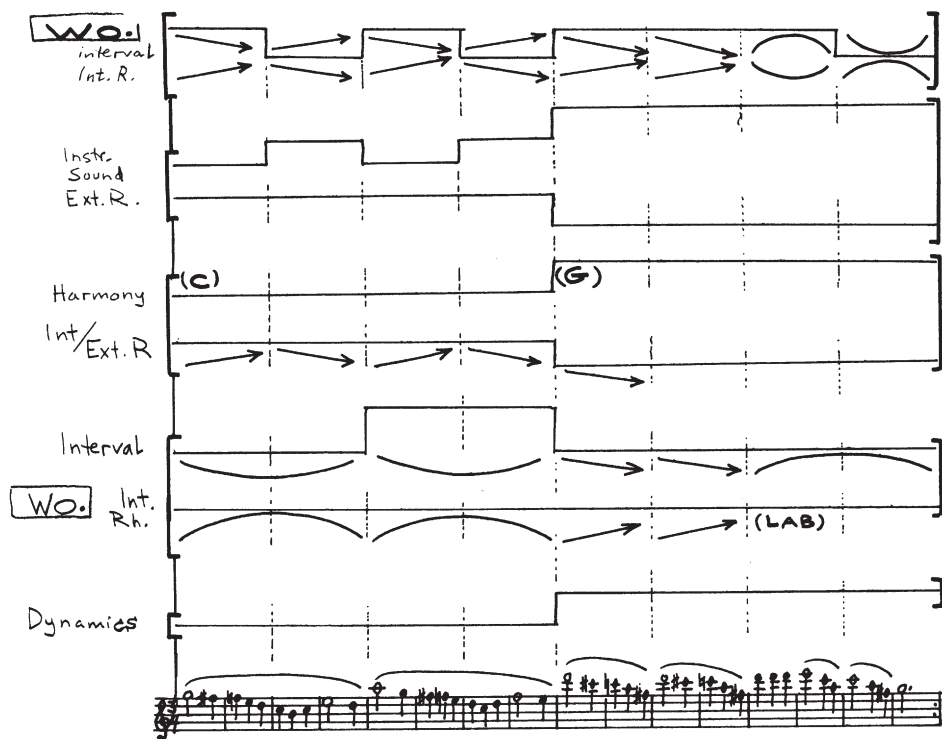
It can be seen from the above that the strata of chord color and timbre are coupled to parallel motion of two sequences, aimed in opposite directions: tension (instrumental sound)/relaxation (rhythm), both of which occur in the two strata. Again we find a total equilibrium between two hierarchic strata (cf. chapter nine) and one may, very cautiously, put forward a working hypothesis concerning the *equilibrium of poles* as being characteristic for Mozart, perhaps for the whole Viennese classical style. (However, it must be emphasized that the aim of this study is *not* to arrive at such »general« theories on style.) In any case this first supersynthesis speaks clearly not only about the fact that changes in chords and instrumentation intensify each other unambiguously, but also that the interval and color/rhythm analyses show a strikingly consistent combination of tension and relaxation in all hierarchic strata of tempo.

A couple of remarks about the diagram p. 40:

a) the author has not analyzed the internal tensions of the chord stratum, which can be done either by harmonic functional analysis (suggested by T, DD, D etc.), by diatonic (»planetary«) analysis of the table of fifths or by other methods. Only the general rise from the C-major stratum to the G-major stratum as an increase in tension (great Opacity) has been taken into consideration.

b) The **[LAB]** to the right of Interval: W / o / · may be used in all situations where tension/relaxation make an unclear picture. In accordance with chapter nine, this is equal to »night«, i.e. relaxation (whereby the polarity to the interval tension in the given situation is maintained, although by other means).





Example 13 a-h

From this, the Supersynthesis may be put forth as a clearly directional development, in which the obvious Culmination in the second part is counterpointed by a consistent equilizer by means of other elements. Dynamics, being the »surplus phenomenon«, clearly support the interpretation of the Culmination (i.e. from *piano* to *forte*). The ascent is »celebrated« with brilliancy of sound and volume at the Culmination, shifting the emphasis of the expression from the *Apollonian* to the *Dionysian*: a drastic expression of energy is added to the point of Culmination already manifested.

Certainly nuances also belong to the preconditions necessary for the synthesis judgment, such as the harmonic subtlety in which the cadenza of the first half allows the melodic rise of the third and fourth bars to accompany the *harmonic rise* ( $C \nearrow G \Rightarrow \sharp - \textcircled{\text{♂}}$ ) and in the seventh and eighth bars the *harmonic fall* ( $G \searrow C, \textcircled{\text{♂}} - \sharp$ ). The second half consistently emphasizes the contrasts between the *melodic fall* (drastically increased in its accelerando by the two half steps now followed by two thirds!) accompanied by an *harmonic rise* ( $G \nearrow D - \sharp - \textcircled{\text{♂}}$ ) and later between the melodic rise,  $d^3$  – emphasized by three hammer strokes – to  $e^3$  accompanied by an *harmonic fall* ( $G - C, \sharp - \natural$ ): the highest point in the melody coinciding with the lowest point in the harmony (appearing as a subdominant,  $\natural$ , the first time), whereby the *Apollonian* once again shines through the *Dionysian*.

In the movement's almost manic obsession with naked rise/fall pairs in all Wave Lengths and Elements, there emerges a peculiarly desperate expression despite the »classical balance«: *the Culmination is made up of descending figures* (or in other words, the enthusiasm is expressed in a mood of resignation).

Furthermore this is valid for the course of the entire movement, the dualism in the trio being crystal clear (i.e. dominant-tonic-rise, figured fall), and the sinus-curvature in the middle section of the trio (i.e. rise towards the top, then fall) is manifested in the most laconic formula yet and its opposite:  $\frac{g\sharp}{a} \frac{a}{c} \frac{c}{d\sharp} \frac{h}{e}$ . This motif is taken up again as the main theme in the finale (made diatonic:  $c^2, d^2, f^2, e^2$ ). The idea finally appears in a pure form (even as *movement DOMinator*), symbolizing the perhaps especially Mozartian, »Dionysian-oriented« classicism. One should not be fooled by the unindifferentiated purse of whole notes: these four bars only present the following aspect: melodic energizing (culminating with the  $a^2$  of the fifth bar), while its *rhythmic duplicate* should be observed throughout eight bars. Also here the energizing clearly appears: from whole notes, over quarters to terminating eighth notes. The melodic graph in the last four bars descends again: the counterpunctal balance. For further support of this uniform character, see ex. 14 a–h: the first movement, bars 3–4 and 7–8, whose accented tones (b in the example) and (a in the example) the first 23 bars together with bars 1–7 and 47–55 (c) of the second movement are wave-analytically analogous with the first 16 bars (e) of the menuet as well as with the motif-DOMinator of the theme of the finale and the theme as a whole:

a) I, b. 1-23  
 b) I, b. 3-4  
 c) II, b. 1-7  
 d) II, b. 51-55  
 e) III, b. 1-16  
 f) III, b. 68-74  
 (+ 72-75  
 c: inversion)  
 g) IV, b. 1-4  
 h) IV, b. 1-8

gestalt

Example 14 a-h

It is obvious that such a »Gestalt synonym« is often perceived with greater clarity when it occurs within a single Wave Length than when it uses several Wave Lengths as a medium (cf. examples b), c), d), f) and g) with a), e) and h). With increasing vagueness of the Gestalt (cf. chapter eight), the »day form« decreases as far as the Gestalt is concerned, in favor of »night«, the »darkness« lying in the fact that one cannot »see« anything. No Gestalt is perceived:



When such »darkness« is consequently classified as »low tension«, one must take care not to confuse this phenomenon (which occurs in connection with elemental tension) with a phenomenon of low tension, which has to do with expression. On the contrary, breaking up a Gestalt is a well-known means of creating anxiety through tendencies towards chaos. The same thing applies therefore to minor keys, slow tempos and other »dark« phenomena: Chopin's »Funeral March« (B<sup>b</sup> minor) is of extremely

low tension as far as tempo, intervals, chords (and frequently dynamics) are concerned, whereas its expressive content is of high tension, manifesting itself, for example, in sudden violent outbursts. What is the underlying cause of this paradox? Perhaps the conventions of Western culture (whereby the »healthy« person is versatile, pleasant and enterprising) categorizes the low tension of the »Funeral March« as abnormal (notice the small number of notes in the DOM THEME), i.e. *slow and extremely introverted*:



Example 15

The abnormality gives rise to uneasiness (and frequently fascination!) and puts the listener on the alert – as does Gestalt chaos. In this way, the high-keyed expression Chopin manages to create is achieved by low-keyed means.

One can very well imagine an Eastern meditator submerging into a state of emotional relaxation, in which anything expressed *f<sup>2</sup> subito* would be inappropriate bedlam in the early morning hour of meditation. Also the Gestalt »darkness« of modernistic manufacture (à la Cage and Xenakis) may be perceived either as a darkness with refreshing nuances of gray or as a darkness in which all cats may be gray, but at least they are *cats*: dangerous and disturbing. As Westerners, we have become »sensitized« into being aware of the least suggestion of a Gestalt coming into existence, of un-known as well as well-known species, of »light« and »day«.

The hierarchic evaluation must attempt to take this fact into consideration when synthesizing. A work may then be registered as containing a certain kind of tension, thereby juxtaposing the elemental contents with the picture of »normality« prevalent at the time. Such pictures outlive their own time as long as the convention has a certain grip on the individual personality. For the listener who has liberated himself from the Western ideal picture of »normal« liveliness (as something especially »healthy«), it may be problematic listening to classical music because of its acceptance of conventions (such as the »Funeral March« with its theatrical »flash of energy« in bar 13). On the other hand the major and high frequency light of bar 17 is directly connected to the *forte*. Not until the trills in bar 21 is the listener's acceptance of conventions demanded once again: the roll of

drums at the funeral procession! One may react in different ways to this. Personally I prefer to content myself with the conventions contemporary with work and listen to the music at its »face value«: with the prolongation of out-moded conventions into the clichés of musical expression, one must assume an attitude of *being at the theater*, perceiving the characters as they were intended. Occasionally musical creativity conflicts with the roles: consider for instance, *Beethoven's* later works which take elemental tensions at their face value and show surprisingly few theatrical effects. Or *Sibelius'* later symphonies which do not necessarily allow high-spirited figurations to romp about in high-spirited clichés, creating instead abstract patterns with undisputable poetic expression (as in the second movement of his Fifth Symphony with its »pastoral character«).

By this means some examples of relaxation acting as a creator of tension have been outlined. Conversely, the *Jupiter Gestalt* will not be especially dynamic, taking into consideration the fact that Mozart's contemporaries praised the Western ideal of liveliness, efficiency and pleasantness. It is quite normal (and can be found in an overwhelming number of works of that time). How are we to listen to »Jupiter« when, seen with the eyes of Mozart's contemporaries, there is no unusual tension involved in the *normal* increases in tension as expressed by the »untragic« human ideals of that time? In evaluating the composer, one must consider two possibilities: either he was totally unpersonal and conventionalized (»dull« for a listener who does not want unquestioning confirmations of the ideals of humanity which he considers untenable), *or* he was – independent of the »dynamic« age – by nature dynamic. In that event his deviating from the conventions of his time challenges us to a more sophisticated listening. The latter is true of Mozart, and for this reason an analysis of elemental tension may possibly prove fruitful, as it forces us to penetrate the micro-structure used by Mozart as the »standard« of *his* psycho-physical constitution. The theatrical side of Mozart lies in the play of nuances with deviations from conventions, while the musical side of him lies perhaps in the ornaments of pure form, indifferent to prejudices of his own time and therefore of »eternal beauty«. (This subject will be elucidated in the conclusion of this study which takes up the Mozart study once again, this time his A-major theme.)



## XI. Analyses With Attempts at Syntheses.

*Evaluations deduced by way of synthesis from the Particle and Wave Analysis of Mozart's theme (see Appendix I).*

It is impossible to establish priority in the order of the Particle and Wave Analyses, as they are complementary to each other and thus may both be fully evaluated only by incorporating the counterpart. This will be evident from the following Particle and Wave evaluations. The Wave Analysis seems to contain considerably more subdivisions than the Particle Analysis. It is, however, only for the sake of saving space that the Particle Analysis takes up just two staves instead of seven. Actually, as far as the overall view is concerned, it would help to have the »fate« of each tone (seven in all) appear alone, but practice will sharpen the reader's powers of observation and enable him to concentrate upon each of these seven »fates«.

The seven tones are placed within the resonance area created by six fifths as well as in the condensed form of the scale (white and black notes respectively). The reason that only an analysis of melodic Particles is carried out is that the theme concentrates on only a couple of Gestalt Particles, which demand no formalized examination.

### I: Analysis of Melodic Tone Elements

#### (»Subanalysis of Particles«)

The Particle Analysis commences at the first accented tone, DOMinator,  $c^2$ , and continues in what it is hoped will be found to be a reasonable sequence:

$[c^{\sharp 2}]$  dominates the sequence in various ways – not only in being DOMinator: out of 36  $\text{J.}$  notes, 11 are  $c^{\sharp}$  (one third). In addition there are a lot of unmentioned, unaccented  $c^{\sharp}$ 's. The introductory and concluding character given to each 4-bar phrase by this tone has to do with a special rhythm.

$[e^2]$  is estimated to be almost as effective: 8-beat DOM, temporary tone of climax, persistent and »hammer-like«, all of which is achieved within eight accented  $\text{J.}$  notes of the second part. Also, its *transformation* is important – from being unaccented during the first part of  $\text{J.}$  pairs to being accented in the  $\text{J.}$  pairs of the second part.

$[f^2]$  as  $a^2$  – although quite in a different way – distinguishes itself by its sudden appearance and Culmination (*temporary Culmination*, as is the

case every time Culmination is mentioned except for the final tone of the Moment). Mildly and surprisingly it flares up, only in the 9th and 10th bars.  $[a^{1+2}]$  only plays a minor part with its appearance in the lower octave, although its importance as a turning point for the  $\phi$ . Wave should not be underestimated. (The »tonic«,  $\sharp^4$ , on the other hand, appears as the final tone in the eighth and 18th bars, being an almost anonymous »rest«, »home«, »destination«, etc.). In the higher register, however, it is unique in the literal meaning of the word: »lightening-like«, it definitely creates a Culmination and also clearly becomes an »axis« (the first tone in the 10th of 18 bars)!

The  $[b^1s]$  have a mere serving position being the passing steps in the Wave  $c\sharp^2-a^1-c\sharp^2$  and

$[d^2]$  can almost be disregarded. As a DOM-SUC-REP, it merely serves as a stand-in (in contrast to the peculiar Passenger role played by the DOM-REP  $b^1$ ).

$[g\sharp]$  does not occur in any  $\text{♩}$  or  $\text{♪}$  position.

It may prove an advantage in the recollecting of these characteristics to call them by the means<sup>16</sup>, of such suggestive attributes as:  $c\sharp^2$  – »The Basic Light«,  $e^2$  – »The Transformer«,  $f\sharp^2$  – »High Noon Light«,  $a^1$  – »Home«,  $a^2$  – »The Flash«,  $b^1$  and  $b^2$  – »The Two Servants«. (Verbalizations of one's impressions need not »stick«, as it were, but need only serve a purely symbolic function.)

## II. The Wave Analysis

The Wave Analysis should first concern itself with the characteristics of the Waves (W . . .), then (M/R) with the characteristics of the freer Gestalts (i.e. melodic motifs and chords) as compared to the rhythmic ideas manifested through these Gestalts (»external rhythm«).

16. Cf. Mike Manthey: *User Manual for the EEG Real Time Digital Sound Synthesizer*. Århus University, 1976. »Avoid at all costs names like A1, A2, A3, etc. Not only do they not give the slightest hint about their contents, but are also a source of bad vibes. Such lack of imagination only reflects back on the creator.«

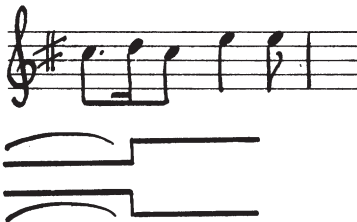
a) W  $\text{♩} / \text{♩} / \text{♩} / \text{♩} \text{---} \text{♩}$ .

On all levels of tempo, variants of Waves appear alternating between  $+\text{sinus}$   $\text{♩} \text{---} \text{♩} / \text{♩} / \text{♩} \text{---} \text{♩}$ .

and  $\div \text{sinus}$  (  $\text{♩} / \text{♩} \text{---} \text{♩}$  ). By paying attention to one Wave Train or another, it will be possible to create an experience of fluctuating identity derived from the combined repertoire of Wave Trains. W  $\text{♩}$  and W  $\text{♩}$  compete in carrying the superior tempo, each culminating with  $a^2$  on the axis of the unrepeated theme (10th bar), so that the entire  $+\text{sinus}$  Wave is emphasized dramatically: 1st bar:  $c\sharp^2$ , 10th bar:  $a^2$ , 18th bar:  $a^1$ .

b) The melodic Gestalt shows a link between the interval energy and the rhythmic energy of the motif:

and the intensifying/relaxing/intensifying.



The diagram shows a musical staff with a treble clef and a key signature of one sharp (F#). The melody consists of five notes: C4 (quarter), D4 (quarter), E4 (quarter), F#4 (quarter), and G4 (half). Below the staff, the text 'Interval: I. R.' is followed by a diagram of two horizontal lines. The top line has a curved line above it, and the bottom line has a curved line below it, representing the interval and rhythm of the motif.

Similarly, the loss and increase of energy is also manifested in W  $\text{♩}$ , with its loss in interval, from  $c\sharp^2$  to  $a^1$  linked with loss in rhythm, from  $\text{♩} \text{---} \text{♩} \text{---} \text{♩}$  to  $\text{♩} \text{---} \text{♩} \text{---} \text{♩}$  (the sixteenth appearing in the first group giving an impression of intensified energy as compared to the next group's »lazy« quarternote). In the middle section of the theme we see a Culmination of the link in question between interval and rhythmic energy: with CULM  $a^2$  and the grace notes to  $a^2$ .

c) The stratum of chord coloring as a counterpoint to the relaxation of intervals shows an intensification from the first to second bar ( $A \rightarrow E, \text{♩} \rightarrow \text{♩}$ ), while the third bar presents collective relaxation in all areas: the interval aspects:  $a^1$ , the rhythm aspect:  $\text{♩} \text{---} \text{♩}$ , and the chord aspect:  $D, \text{♩}$  or (subharmonically):  $c\sharp, \text{♩}$ . Also the continuation of the third and fourth bars shows a link of intensified interval ( $a^1-h^1 - c\sharp^2-e^2$ ), rhythm in the melody ( $\text{♩} \text{---} \text{♩} \text{---} \text{♩}$ ), and rhythm in the harmony ( $\text{♩} \text{---} \text{♩} / \text{♩} \text{---} \text{♩}$  or combined rhythmic ideas:  $\text{♩} \text{---} \text{♩} \text{---} \text{♩} \text{---} \text{♩}$  – in other words: intensification). The continuation shows similar characteristics.

d) To sum up, the strata of interval, duration and harmony show a distinct tendency to simultaneous graphs of tension/tension, mostly in phases of ( $\div +$  or  $+ \div$ ):

Example 16.

Not to be forgotten, though, is the afore-mentioned basic balance between the interval tension and the rhythmic relaxation of the DOM motif, which is characteristic of the tendency towards equilibrium mentioned in connection with the Jupiter menuet. The affirmation/disaffirmation of this tendency toward equilibrium must depend on additional – and numerous – hierarchic studies of Mozart's compositions, and of works both within and beyond the Viennese Classical style.

As for the wording of the theme's expressions of synthesis, see the conclusion, »A Musical Genesis«.

*Synthetic Evaluations of Two Fragments from Mahler's Ninth Symphony. (App. III).*

With the development of romantic music towards the extreme (almost *eccentrically* expressive), the emergence of new types of determinations can be expected, or determinations of *secondary* importance in classical music will perhaps become of *primary* importance. This requires the utmost openness to the message of style and precise wording of its emotional coloring. In Mahler, we find a greater tension between the contrasting values, increasing polarity between the strong and the weak, and expressions of crisis which defy immediate determination of wave tension.

The »figure« determinations ([PRO], [LAB], [FIX]) of the terminology should be viewed in this light: While all the examined Mozart examples have shown a definite clarity in the figures (whatever their content of

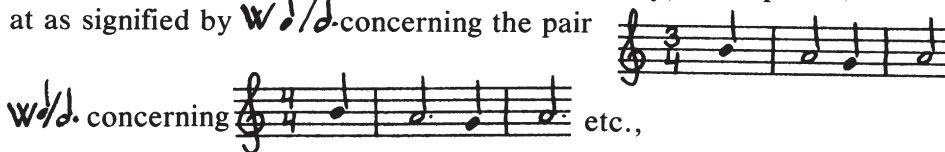
plus/minus values), with Mahler, we discover a great differentiation in the degrees of figure clarity. This clarity, however, does lend itself, terminologically, to subordination under the previously applied determinations of light/darkness or Day/Night, which is based on the following argument: When form is visible, there is light; when invisible (at first) there is, of course, darkness or »Night« (see chapter X). Consequently, increasing clarity is »Dawn«, decreasing »Dusk«. As we have seen, the forms of clarity make use of two types of expression: one directional [PRO] (Gestalt proceeding towards the lighter or the darker) and one static [FIX]. Both of these types appear as clear forms (that is »bright« forms) and are called *Progressive* and *Fixed*, respectively. The unclear form, on the other hand, will give a stammering, flickering, apparently lawless or inconsistent impression, jumping here and there, or LABile. [LAB]<sup>↑</sup>'s transformation to [PRO] or [FIX] will in every case represent Dawn – signified by an arrow pointing upwards, either to plus or to minus. In the event of a transformation to PRO one thing is certain: There is a greater rhythmic activity of superior character than is found in [FIX] where the number of changes is small (stasis). [LAB]<sub>↑</sub>[+PRO], therefore, expresses a transformation to a directional activity, while [LAB]<sub>↑</sub>[÷FIX] signifies a transformation to adherence, a ritual in time.

It is evident that the »Night fragment« (see App. IIIa) shows far more lability than the »Day fragment«. The expression for this situation is: Reduced periodicity and dissolved Hierarchy. It is difficult to limit a Wave Length of some regularity. Such Wave Lengths become disputable, and much argument may be caused by the attempt to establish which characteristics in the surrounding Elements are the most important for the determination of the Wave Length. Therefore, Wave Length determinations of a certain vagueness are introduced using, f.ex., the sign:



which means that the Waves that are related to each other in pairs may be unequally long.


This does not take into consideration the possible inequality of two subdivisions, which of course express a hierarchic clarity, f.ex. up-beat/full-beat as signified by  $W/d$  concerning the pair



Example 17.



Example 18.

From this viewpoint »Night« is much more labile compared to »Day«. If for example the passage 

appearing three times, had continued, the complicated rhythm would have consolidated itself perceptively with the determination **FIX** concerning the rhythm, while on the other hand the transformation to longer high frequency tones would have expressed itself **PROG**



Example 19

Similarly, as for the tones: A clear theme of »Day« would show, as for example in Mozart, immediately comprehensible directional signals, which would group themselves hierarchically in partly predictable patterns. In Mahler's »Night«, though, we see



Example 20.

in which the accented frequencies are fairly unpredictable. These determinations of »Night« on the Gestalt stratum provide the basis to which we add: Subharmonic sounds (»minor«) dominance by absolute low register (although incorporating the general »clearing up« on the tone and dynamic strata), and the rhythm stratum showing an evasive tendency (towards ÷), f.ex. in stopping after a short, perhaps vehement, previous activity.

The »Day fragment« shows a far greater clarity of Gestalt in each of the parts, and **FIX** preponderates: Ostinato – pizzicato + horn, the pedal point of the basses, the unambivalent use of scale, the far more »patterned« clarity in the melody, etc. Add to this superharmony (»major«) and increasing tension in rhythm/chord as well as in rhythm/melody.

This characterization of two (typical) important Moments of the movement suggests its generally *dualistic nature*. Further studies seem to verify



that the present outline may be viewed as a model. But in dealing with the uniqueness of expression we need to consult the Particle Analysis, in which we already re-discover dualism when determining the DOM tone in each of the two fragments. As mentioned, the DOM is decided upon by the initial factors of emphasis: The first accented tone of the theme is DOM. But what, now, should be considered accented in »Night« and »Day«?



Example 21.

In each case both tones! We must follow the fate of the DOM-pairs both in the first and in the second case, since the »message« *obviously is to maintain the meaning of the two times two tones*.

The fate of »Night«'s *a* is clearly outlined as it steps in octaves without returning, appearing in four terraces in all (the fourth ascension occurring two bars after the end of the example).

DOM 1(*a*) is mere growth in octaves, while

DOM 2 (*c*  $\sharp^1$ ), due to its »spineless« fate, only in the very end returns to a position two octaves above its starting point: Like the famous H.C. Andersen swan, it »triumphs« at last, in *c*  $\sharp^3$ .

»Day«'s 1st DOM (*f*  $\sharp$ ) shares a peculiar fate with 2nd DOM (*e*) in becoming a stable echo in the lower register (in the horn parts), while neither of the two shows up in the principal parts, although from time to time they do recur even here in the original pairs. »Day«'s remaining tones appear according to the following priority: In the course of the example, *a*<sup>2</sup> appears as DOM in the second theme, the trumpets entering in the third bar with the motif of »triumph« that we have met earlier in the movement.



Example 22.

It is announced two bars before (*a*<sup>3</sup>) as a REP of 1st DOM, in this case: *f*  $\sharp \rightarrow a$ -intensifying (the  $\sigma^7$ -tone, too!), later showing a persisting significan-

ce in introducing up-beats (in the fourth and fifth bars) and concluding afterbeats (fifth, sixth and seventh bars). In short, it constantly encircles the theme playing various roles.

*b*<sup>2</sup> appears in the role of terminator being the last tone in the theme of the 2nd DOM:



Example 23.

a role it keeps during the following transformations of this theme: »The Goal« (even if *d*, the tonic, from an ordinary point of view should bring about this association. On the other hand – however overlooked in the melody – this *d* is almost unswervingly stable as chord-carrier on the absolute bass stratum).

Second DOM's 1st REP (*g*<sup>2</sup>) is of lesser importance, completely unaccented until the sixth and seventh bars, where it recurs in two different octave positions. Since the analysis of harmony shows that the  $\text{C}^\sharp$ -chord is unusually persistent (on A), the *g* has an additional and similarly »revolutionary« effect.

*c*<sup>#</sup> is *d*'s Antagonist:



Example 24.

and is given some life as the *keeper of the theme* despite the discontinuation of the initial tones of the theme.

We observe that this demonstrated priority is found again in the ostinato *f*<sup>#</sup>, *a*, *b*, (*a*).

### Summary

*f*<sup>#</sup>-e DOM begins. It is laden with meaning, equally accented and in the course of the theme becomes almost a symbol, appearing as a coherent body of glittering echo: »The King and Queen«! (See the proposal in chapter XI, I about mnemonic support from suggestive attributes).

*a* runs like a red thread through the piece, playing various roles, but always having important functions: »Ariadne«.

*b* becomes the »Goal«-REP.

*g* is the 2nd DOM-REP, which later returns in accented positions, namely in higher octaves and on accented beats.

*d* appears as a temporary goal for the energy of the second theme but then disappears almost completely, while on the other hand the neglected *c*♯ is given a somewhat prolonged life as a preserved »d-Antagonist«.

*The order of priority of tones in »Night«:*

*a–c* ♯: 1st and 2nd DOM in the course of the theme are promoted to an intensified octave position, unpredictable: »When«, but always (especially *a*!) strongly situated in the metric context.

The remaining tones, however, are difficult to place in a convincing priority. Perhaps *g* ♯ co-ordinated with *e*, since both of them recur, as seen, although unpredictably; *g*, *f*, and *b*♭ are rather uncharacteristic (even if *b* is accented momentarily and almost as if it is surprised over its sudden exposure to the spotlight at the moment of emphasis). *d* seems to have a certain connecting function at the end of the second, fourth, fifth and seventh bars, in the beginning strictly a serving function. *d* ♯ enters as a *stranger of complete contrast* in the sixth and seventh bars, thus raising the number of chromatic attacks to eleven. The D-major third does not occur and *f* ♯ is missing – all very characteristic of the labile, torn, homeless atmosphere in this D-minor phase.

(As far as the verbal intensity is concerned, further synthetic evaluations may incorporate metaphoric synonyms from Nietzsche's »Also Sprach Zarathustra«, which culminates in a gigantic song of praise to the two main states of Return: *The Great Noon* and *The Midnight Hour*.)

*The Metamorphosis in »Greensleeves«. (App. IV)*

This little gem of a tune reveals to observation a content which is structurally very refined. The buoyancy, *the iambus* in the beginning accompanied by a rhythmic weakening (short/long) turn the first two pairs of tones

into ambivalent, neutral *carriers of tension* (similar to the DOM-motif of the Mozart theme). As a contrast, the following two tone-pairs weaken rhythm and melody in a parallel way, while in the last four pairs, neutrality and relaxation alternate immediately one after the other. The course of tones returns but now with a different ending:

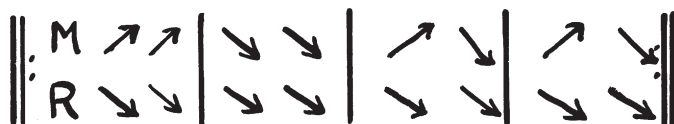
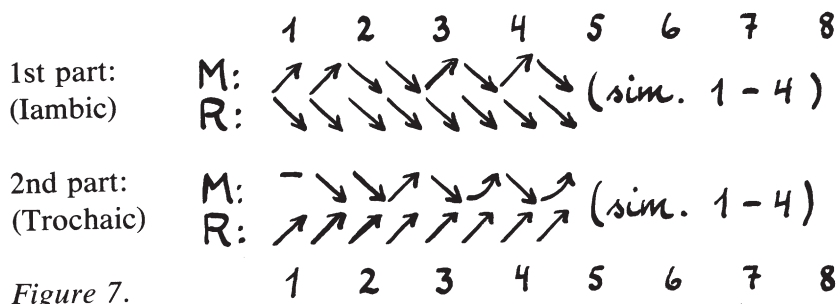


Figure 6.

The second part, though, has a trochaic rhythm ( $\text{♩} \text{♩}$ ), also in the groups of bars which strictly reproduce the tones of the first part, tones 5–18 and 23–35, respectively. Therefore a completely different »image of feeling« is now created by bars 2, 3, and 4 as well as 6, 7 and 8 in the second part – a considerable portion of the work. Three-fourths of the tune recurs in strict reproduction – and yet is altogether different! Let us examine the »new« elements and compare them with the corresponding elements of the first part.



In both parts it is evident that the energy-content functions completely differ from each other. The quantitative energy of the first part decreases, while its qualitative rhythmic energy increases, and vice versa in the second part. Through this we see a two-fold manifestation of a Being which is formed in the same way each time, and which is altered only by the change of time medium.

Let us now maintain this metamorphosis in »emotional« images (which are considered analogous to »energy-laden functions«) and make an attempt to verbalize them: A willful Being rises lazily but graciously, it tilts, breaks like a wave and sinks back, rising and sinking back three times in all, each time still deeper. The Will renews itself, the Being returns and in the end manages to change the course of the terminating fall and elevate it.

A new Being shows up, in equilibrium – introverted but with an inner acceleration of rhythm: »Repose« (on the height towards which the Will strove unsuccessfully) resigns itself from its high pitch, continuously giving in to the force of gravity, and yet preserving the energy acceleration of the inner rhythm and pulsation.

Actually, this is a duet! Inseparably united with the features of the Being in the »higher« sphere the Being of the »lower« restless will now reappears. There is a short pause (bars 1 and 5), where the »higher« Being appears isolated and serene before the duet returns with the theme: »I search upwards, but am pulled down again«/»I sink voluptuously!«

## **XII. Suggestions Practical for Study**

In order to make the methods outlined in this study practical for »prima vista« use, the author suggests a variant of the so-called »form hearing« (auditive analysis), whereby the student chooses in each situation to concentrate first on one facet of the hierarchical prism of analysis and then another. In this way the Particle Analysis concentrates its attention on the »fate« of the individual Gestalt (either including transfers of octaves – or excluding them, depending on the style of the work). In the Mozart theme, it is interesting to focus, for example, on  $e^2$  and follow its Returns (and their transformations) on the level of expression: first as a DOM-SUCcesor,



Example 25.

(»female« placement), then in the second part as DOM-REP,



Example 26.

(»male« placement) and finally as an independent (third) DOM.



Example 27.

When listening, it is necessary for the ear to »focus«, i.e. to concentrate on one tone (but still heeding the other ones and relating them to the one in focus with as many observations as possible).

Through this exercise, the need for the opposite practice, the Wave Analysis, gradually arises, since the evaluation of the individual tones' variants of expression requires increasingly greater insight into the Wave structures defined by time of which they are a part. On the other hand, the problem may be just as great if the exercises of concentration *begin* with the Wave Analysis, as the evaluation of the state of energy of the individual Wave Analysis is, of course, varied by increasing insight into the *qualitative* contents of the rhythmical impulses. Without a doubt, a series of recurring DOM tones on every beat (as in Mozart's theme, second part, e<sup>2</sup>)



Example 28.

intervenes drastically in one's perception of the rhythmical sequence. Therefore the author wishes to suggest a series of exercises, alternating between Particle and Wave Analysis.



Naturally, the verbal expressions of these experiences of concentration are in themselves a challenging exercise: with increasing confidence in the basic perception of energy in mixtures of light, dark and colored and in states of dusk and dawn, training in *discovering correspondences* in all areas of life will unite subjective and objective recognition of reality and enrich the namegiving that supplements objective designations (DOM, CULM, etc.) with additional names that trigger associations (such as »King and Queen«, »Ariadne« etc., cf. chapter XI).

The fear of simplifying the experience and rendering it commonplace (cf. the introductory definition of »simplification« vs. »simplicity«) will prove groundless if the criteria put forward and the methods suggested prove true. For any verbalization and shaded metaphor, there will be innumerable others – all of which will be »valid« *if* they refer to commonly accepted observations of objective hierarchical states of energy. A (non-competitive) multitude of characters of expression are only able to *enrich* group studies based on hierarchical experiments of analysis and synthesis originating from auditive as well as purely mental/visual perception.

In no way do these exercises require 100% acceptance of the theories put forward in this study. For many, the subharmonic phenomenon will, for instance, still be difficult to accept as anything but an abstract »thought embryo«. Instead of an »all-or-nothing« attitude, the author wishes to suggest a *selective* attitude in which one re-examines the attractive aspects of the subjects for hierarchic analysis. In the event of positive results of such limited experiments, the method may gradually be enlarged upon and supplemented with one's own phenomenal and terminological ideas.

### XIII. A Musical Genesis

#### I. Prefatory Remarks

Based on the methods just examined, it is now possible to attempt an entire musical »perceptive Genesis«, exemplified by further consideration of the theme of Mozart's A-major Sonata. In this attempt, one will be able to observe how each new modifying Moment not only adds a detail to the form (thus constantly changing its mutual relations), but also in many cases creates a *new musical dimension* in the conception. In other words,

such Moments establish (perhaps only the expectation of) a general state of Elements.

Such new dimensions may be a compound rhythmic picture, for example (in relation to previously isolated rhythmic impulses only), a dialectical formal contrast (in relation to previously co-ordinated parts only), or an exceeding of the bounds of the tonal area already established (in relation to a previously static concept of the tonal and chordal Element). In the following presentation, it is essential to take note of the extent to which a *large or small modification* occurs in the case of each musical impulse that does not simply carry into effect whatever the concept leads one to expect. That is, it is essential to note whether this *novum* is of a deepening, decorative or directly »revolutionary« character (in relation to the previous experience of the work).

The continuously changing demands upon the listener's alertness (inversely proportional to the relaxed »vegetating« confidence in an expected sequence) must be met with similar attention. The level of alertness is high when the modifications are many and deep and demand immediate ranking among already *experienced* (or just *anticipated*) *sequences*. If an Attack, for example, leads the listener to expect a long, unmodified Moment of Return, the low level of alertness will consequently make it possible to listen with great liberty. One's confidence allows the above-mentioned relaxed »vegetating« in the plants of the musical landscape.

## II. Creation

The Attack. The A-major chord is heard. The third in the upper part will be the all-motivating point throughout the piece, to which all that follows will relate (DOM-chord).

At a) a rhythmic contraction takes place, creating the picture of an internal, rhythmic space of either 8/16 or 6/16 (shortly thereafter, at b), determined as 6/16 rhythm).

At b) the tone  $e^2$  in particular is new, creating the *expectation of equilibrium*, as the increase of tension at  $e^2$  is balanced by the rhythmic weakening of the long duration of the quarter note(s) (3:1:2:4), cf. chapter 11.

At c) one senses a higher order of time than the rhythm of the 6/16 Gestalt, as the returning figure of punctuation rounds off the rhythm heard to a 6/8-entity. To this is added the expectation of its total Return, that is, of a twin pair of Gestalts. Finally the subverting E-major chord causes a

simultaneity of two different expectations: 1) *the basic chord changes at every completed 6/8 group*, 2) *the basic chords are all superharmonic*, and the concept of a diatonic space is strengthened decisively (only  $f^\sharp$  and  $d$  are missing now in the representation of the A-major scale.)

At d) a revolution occurs on the Gestalt level as the interrupted punctuated rhythm (at  $\text{♪}$  value instead of  $\text{♪♪}$ ) creates the idea of a *dialectical form-space* with one 12/8 Gestalt opposed to a »different« 12/8 Gestalt. This »different« 12/8 pattern within the bar seems to be an ascent of seconds rather than of thirds, that is, showing de-tension. To this is added, however, an increase in tension due to a more frequent change (per half-bar) of chords – and in addition to that (in spite of these innovations) a confirmation of the idea of equilibrium on the level of expression. Finally we must add a *modification of the expectation of a purely supertonal harmonic stratum*, since the chord  $f^\sharp$ ,  $e^1$ ,  $a^1$  either suggests a ninth (on  $D^2$ ) or an echo of the  $e^1$  of the Attack, camouflaging either a  $d$  (in the D-chord) or a  $c^\sharp$  (in the  $c^\sharp$  subharmonic » $F^\sharp$ -minor« chord). Whatever the evaluation, the result is in any case an increase in tension on the level of expression and therefore we must now add ambiguity to the classical »balancing« as a means of expression.

At e) the ambiguity is emphasized by  $c^\sharp$  which shatters the picture of a continuous descent, bar for bar, of seconds ( $c^\sharp^1$ ,  $b^1$ ,  $a^1$ ,  $g^\sharp^1$ ) through a continuation of the line of ascending seconds on the 3/8 Wave Length. At this point we must ask: Is this a matter of acceleration (which the frequency of chord changes tells us), or is the movement of thirds ( $c^\sharp^1$ – $e^1$ ,  $b^1$ – $d^1$ )  $a$ – $c^\sharp$  only augmented with the last pair of thirds extended over 6/8 as opposed to the previous 3/8? This peculiarity of ambiguity reaches its culmination at the sudden impulses of sixteenth notes down from the high tone,  $e^2$ . These may just as well be perceived as the climax of the chord accelerando (  $\text{♪. ♩. ♩. ♩. ♩. ♩}$  ) with the addition of an increase in impulse, or as a »balancing« by accelerando after the rallentando of the third-Gestalt.

At f) the idea of a dialectic form is confirmed, as the original form turns and (temporarily) refers one's musical attention to the two contrasting 12/8 Gestalts only and to their mutual differences. At the same time the idea of a superior 48/8 form in two parts is created, similar to a Return.

This is an important event in that a *superior relaxation* now appears on the level of expression, foreknowledge of the 24/8 reducing one's alertness, of course, and in this way stimulating a relaxed »vegetating« in the landscape

of the anticipated Return. The entire passage may be viewed – from the aspect of tension – as an Hierarchy in the following manner:

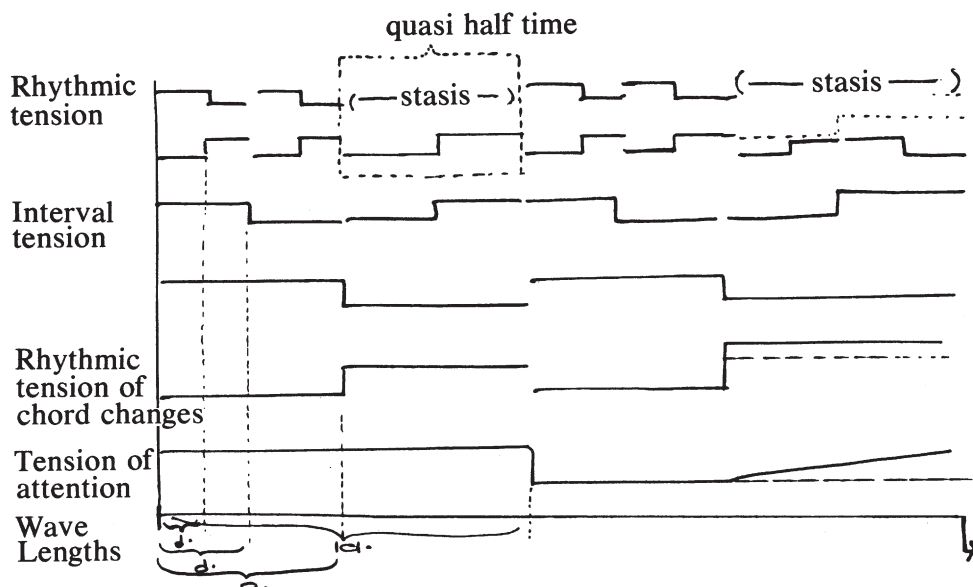



Figure 8.

This is expressed – and confirmed – by the scarcity in the second part of expansions of dimensions (bars 25–48). Not until g) is the Return modified by increased tension of chord changes on the one side (  ) as well as by the continuation of the tempo of an ascending third (and thereby doing away with the expectation of an ascending third in 6/8, as was the case in the corresponding bar of the first part) and it brings about an *indirect increase of tempo*, i.e. an increase of tension. Of course, the entire last fourth of the piece thus increases one's alertness and reduces one's »confidence«. All of this put together causes a general increase in tension, which also serves to modify the idea of the superior division into two to a superior division into four (which means a recreated interest in the inner structure).

In addition, though, we see a *relaxed balancing* in the final attack of the scale tone,  $a^1$ , the  $\sharp$  tone which is the middle of the three lower superharmonic chord carriers in the seven-tone column of fifths (as pointed out in chapter 7). The satisfaction which this provides is increased as the tone in question now melodically manifests the root of the introductory chord,

whereas previously it was hidden in the lower register. In short: the tonic of A-major.

At h) the original Attack (a) returns for the second time and creates a *great, superior de-tension* brought about in the concept of the Return of the complete 48/8 passage. Because of the modifying events (24/8) that took place in the last quarter of the former Return, a certain alertness towards possible modifications in the latter Return (48/8) will join the deepened, detail-oriented »vegetating«. This time, however, the Return follows unmodified. (At this stage, before reading on, it would be a good exercise to listen to the music, to imagine – and to verbalize – the rest of the »dimension expansions« in the movement.) At i) the idea is presented by a doubling in time of the duration which so far has been gestalted. A grandiose 96/8-perspective is announced with metrically accented Culmination of pitch,  $e^2$ , and with a »revolutionary« accompaniment – instead of the previous reflection of parallel thirds, we now see an upward breaking of triads in increased tempo. (The eighth note, as seen, has not introduced a bar before, or even a 3/8 point of accent.)

j) shows another »revolutionary« break (of the first Gestalt in its course towards decreased energy) brought about by a culminating *tension of energy*, also on the rhythmic stratum, towards  $a^2$  whose brilliance so far has been unique in every way. Not only is it the tone we have just heard, the tonic-root  $\sharp$ , the final tone an octave higher, it is also the highest tone so far! An experience of Culmination, therefore, may be expected as the result of the following premises: so far the continuation of the Gestalt has been constantly accompanied by *loss* of energy. Apart from the example we have just heard, it is precisely the quality of *exception* that will dominate, based on the balanced, though sometimes ambiguous expressions of the movement. Therefore, a shock as violent as the one occurring at j) will supposedly be experienced immediately as »unique« and the event consequently as a Culmination.

k) If one had thought that this Culmination was now to be balanced with »soothing Returns«, it will come as a surprise to see the »revolutionary« emergence to the surface of the energetic triad breaking in the lower register, although these are in turn being balanced with a downward breaking of decreased energy. The experience of the emergence in the melodic part of the accompaniment is verified by the sudden pauses in the lower register, as if the accompaniment were employed elsewhere. Which is exactly the case, as it is now in the upper register.



At l) we see the birth of a new »lower register consciousness«:  $d \sharp$ , a tone previously unheard, which momentarily cancels  $d$  and establishes a new  $e$ , a tone that has been prepared or »accumulated« through the many returning accented  $e$ 's. Immediately following, we notice a manifestation of this new  $e$  as an octave reinforced bass with the previous  $e$ , the A-chord being a dissonant treble on  $e$ 's bass-octave, before the collective E-chord »mercifully« spreads over the entire area of harmony (in other words, this describes only the well-known suspension of D 6/4).

At m) a peculiar situation arises. How, actually, should one understand this sudden Return of the  $e$ -A-chord, firmly established by the Return of its Gestalt from the very first opening? My belief is the following: Subordinate to the idea of a possible future order, that of the E-chord, the A-Gestalt returns after having stepped aside momentarily making way for the first Appearance of its »child«. So, the entire sequence from i) to l), with all the previously noticed peculiarities (the frequent »revolutionary« aspects), may now be understood as one coherent Being, individual, yet a section of the movement. It was simply the creation of a Being that gradually came about, liberating itself more and more from the tonality, the habits and the Gestalt of its »father«. Now m) is experienced with great »vegetating relaxation«. The only thing unknown to us is, how much of the »father« will show. The expectation that the weak second part of the 24/8-sequence should take its metric position is a reasonable one, and it is soon verified.

Shortly before n), however, and there especially, the course is carried beyond the set limit of expectation presenting a powerful »parade« of all of  $e$ -A's scale tones that bring about a *new Culmination*, that of the »father part«. The previous  $a^2$  belonged to the »son part«, while this  $a^2$  appears for the first time in the »father part«, amply verified by the steep fall one octave down to  $a^2$ , briefly ricocheting to the upper third, but falling again immediately to  $a^1$ .

At the Return of the »son part« at o), de-tension is at a maximum. The level of confidence was already considerable at h), and the level of alertness was low. How much more then will this be the case when, similarly, a total section appears as a Return!

The metaphor »father« instead of »mother«, of course, is debatable. In such an argument, the  $e$ -harmony 'A', being traditionally »mild« does not carry as much weight as the perception of the »son part« developing structurally out of the basic Gestalt. It may well be a matter of taste,



whether to create a biological (that is, »motherly«) analogy or a socially patriarchal one (that is, »fatherly«) in which the »son« announces the revolution. As mentioned, the principle of correspondence allows for many other metaphors. With reference to chapter 3 and various other parts of this study, only inner coherence is required in the choice of (subjective) metaphors. This inner coherence should be analogous to the (objective) idea of the musical/energetic model.

### III. Conclusion

Every musical work or fragment thereof will manifest an individual Genesis. The chosen example serves only as a model in order to demonstrate how any deviation whatsoever from an expected Return, *may* indicate a qualitative expansion of the idea about the tonal, formal and expressive dimensions in which the work moves. This makes it possible to add one more exercise to the ones suggested in chapter 12: The »slow motion« Genesis of a work, a Genesis in which the deviations from the expected are evaluated according to possible expansions of dimension (cf. the study of the Mozart theme). Possibly this procedure as well might bring about an accumulation of results which would show special, typical expansions of dimension in the Geneses of works from each epochal and personal style. Time will tell.

*Translated by Krista Wibskov*

## GLOSSARY

Antagonist	Dominator-continuation which not only concludes the sounded motif (as does a Successor), but is in competition or direct conflict with it.
Appearance	the first manifestation of a motif, theme or the like (recurring as a <i>Return</i> , if its creation as a <i>Gestalt</i> has been determined) – the possible consequence of an <i>Attack</i> .
Attack	an as yet unrelated sound impulse, which may later take the form of the introductory <i>Moment</i> in an <i>Appearance</i> .
Being	the designation of the verbalized expressive quality of a <i>Moment</i> , which is thus given the attributes, »personality« and »character«. As many Moments may hierarchically overlap one another, it follows that the same passage may contain many Beings.
Binary	the ability to be manifested in two parts; analogous with yes–no, high–deep, light–dark, strong–weak, etc.
Culminator	(CULM). The climax of a <i>Wave Succession</i> , a <i>Return</i> sequence, a melodic, rhythmic, harmonic, instrumental or dynamic development of tension (or relaxation).
Dominator	a partial result of the <i>Particle Analysis</i> , according to which each Attack or starting <i>Gestalt</i> of all <i>Moments</i> deemed relevant is indicated as Dominator (DOM), possibly with the addition of 't' for tone (= the first accented tone in the examined sequence), 'r' for rhythm (= the first rhythmic motif), 'm' for motif (= the first melodic-rhythmic motif) or 'theme' for the first thematic formation.
Dominator-representative (DOM-REP)	the possibly transposed <i>Return</i> of the <i>Dominator</i> (DOM <sup>t</sup> , DOM <sup>r</sup> , etc.).
Dominator-successor (DOM-SUC)	the conclusion of a DOM in two parts.
Element	the (traditionel) designation of melody, harmony, rhythm or dynamics.
Fixed	designates a fixed (»gestaltet«) Wave Train, a chordal, melodic or rhythmic Gestalt of ostinato character.
Full Stop	the conclusive <i>Moment</i> observed within any hierarchically superior Moment.
Genesis	»creation«, used in this study in connection with the listener's creation of the music as it progresses – music as a permanent <i>creation</i> .
Gestalt	a figure created in time, manifested solely through sound (dynamic and/or rhythmic/formal Gestalt).

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Hierarchy	an organization of the manifestations of sound of diverging Wave Lengths in mutually harmonious Layers of tempo.
Labile	a »non-gestalted« Wave Train, a sequence of durations, of chords, etc.
Layer	the collective manifestation of an <i>Element</i> (e.g. layer of melody, of timbre, etc.).
Moment	an observed whole, be it a note, pair of notes, motif, theme, phrase, movement or work. A prerequisite for the designation is the natural limitation of a Gestalt which makes it possible to retain the Moment in one's mind as a whole.
Opacity	the degree of camouflage from which a certain Progression, Fixedness or Lability may be observed by – mentally – »filtering out« distracting details.
Perception (Perceiving)	an established, musical conception based on a remembered sequence of Sensing and an expected continuation based thereupon; indirect as regards time.
Particle	individualized expression of Element, e.g. a (certain) note, a motif, a theme etc.
Particle Analysis	an examination of the changing accented and unaccented »fate« of a single Particle during the course of a musical passage.
Passenger	a transitional occurrence transferred to the metaphor about musical <i>Beings</i> .
Progressive	designates a directed (»gestalted«) <i>Wave Train</i> , a melodic, rhythmic, harmonic, instrumental or dynamic sequence (as opposed to Fixed or Labile).
Return	a recurrence within a sequence of a registered <i>Appearance</i> , be it a note, a pair of notes, a rhythmic motif, a theme etc.
Sensing	direct perception as regards time; the spontaneously received auditive impression.
Sinus	tension-relaxation (or vice versa), designated sinus-plus (or sinus-minus).
Wave	the manifestation of sound within a Wave Length, especially as regards its frequency of attack in relation to the previous and the succeeding Wave.
Wave Analysis	an examination of the tension of all <i>Wave Trains</i> deemed relevant.
Wave Length	the common (approximate) measure of duration uniting a series of <i>Waves</i> into a <i>Wave Train</i> .
Wave Train	a series of <i>Waves</i> within the same <i>Wave Length</i> .

### Resumé

»Hierarkisk Genesis« vil i konteksten sige: *tilblivelse ud fra indbyrdes afhængige lag*. Herved forstås »tilblivelse« således som den finder sted i tilhørerbevidstheden (og ikke hos komponisten eller gennem de udøvende), og »lagene« er de mange ordener af tempi – eller som det her vælges at blive formuleret: *bølgelængder*. Ved at anskue musikoplevelsen som reaktioner på en mangfoldighed af bølgelængder (med hver deres indhold af melodik, klang og dynamik) synes enhver tolkende tilnærmelse dømt til fiasko: mængden af heterogene indtryk – fra melodiske, klanglige og dynamiske gestalter i mangfoldig kompleksitet – skulle tilsyneladende umuliggøre ethvert synteseforsøg.

Her kommer forestillingen om *polariteten* til hjælp; ud fra denne opstår ethvert indtryk – melodisk, klangligt, rytmisk og dynamisk – på en baggrund, der er »lysere« eller »mørkere« (evt. uændret) og derved gør indtrykket henh. »mørkere« eller »lysere«. Allerede i indtrykket rummes altså en elementær syntese: *lys, mørke, uændret* (= »stase«) og (ved længere indtryk) *tiltagende lys* eller *tiltagende mørke*. Indtrykkene opstår gennem musikalske helheder, kaldet »momenter«, som kan være af højst variabel varighed. Et moment kan således strække sig fra én enkelt, anslået tone eller klang og til »Ringens« fire operaer, eftersom den hierarkiske tanke muliggør, at et afrundet moment (forårsagende et sluttet indtryk) kan være del af et længere, men ligeledes afrundet, moment. Bestemmelsen af »sluttethed« og »afrunding« sker ud fra de gestaltpsychologiske love.

Studien gennemgår de forskellige elementers lys-mørke-bestemmelser og kommer herved ind på den såkaldt »dualistiske« teori, iflg. hvilken moll-akkorden er omvendingen af dur-akkorden, forstået som et »subharmonisk« felt overfor et »super-harmonisk«. Forfatteren tager stilling til fordel for denne teori, med visse forbehold: dels dækker betegnelsen *dualisme* kun dårligt, hvad der ligger i begrebet *polaritet* (kan næsten siges at være kontradiktorisk!), dels opfatter han ikke størstedelen af moll-forekomster i den klassiske musik som anvendelig for vurdering med subharmonisk analyseteknik; dertil er de forfunderede i periodens udprægede *grundtone*-praksis (hvor sub-harmonisk tænkning implicerer en »himmel«- eller »fokustone«).

Som helhed er studien opbygget ud fra en række teser (kapitel-overskrifter), der uddybes i hvert kapitel. Således påstås det, at lys-mørke-karaktererne har plads endog indenfor den diatoniske syvtoneskala, der ud fra den super-sub-harmoniske teori kan anskues som en »objektiv«, nemlig klangligt symmetrisk-lovmæssig struktur.

Væsentligst er dog bestræbelserne for at udvikle et redskab for tanken til at udvinde stadig mere overordnede synteser ud af de mange elementære. Det er her tesen, at det er muligt at verbalisere musikalske oplevelser, – således forstået at enhver kan finde sin egen subjektive formulering, som dog må være baseret på det objektivt forefundne materiale af polaritets-forhold. En terminologi foreslås, og der opstilles et analyseprogram, karakteriseret af komplementære undersøgelser af bølge- og partikeltilstande (»partikel« forstået som det tidligere nævnte »moment«). Også en fremgangsmåde til en rent *auditiv*, »hierarkisk« analysemetode foreslås.

Analyseforsøg gennemføres endvidere over satsdele af Mozart og Mahler (samt over »Greensleeves«), og der afsluttes med en »slow-motion«-gennemgang af (det allerede forud analyserede) Mozart-tema fra A-dur-sonatens variationssats. Det påvises, at den opfattelsesmæssige tilblivelse af temaet ledsages af en *gradvis tilblivelse* (i tilhørerbevidstheden) *af selve musikens grundlæggende elementer*, hvis successive og fragmentariske tilsynekomst udgør en væsentlig del af musikens indhold.

## APPENDICES I–IV

- I (pp. 68–69): Theme from Mozart's piano sonata in A–major (K. V. 331)
- II (pp. 70–71): Menuet from Mozart's Jupiter Symphony (K. V. 551)
- IIIa (pp. 72): »Night Fragment« from the first movement of Mahler's ninth symphony
- IIIb (pp. 73): »Day Fragment« from the first movement of Mahler's ninth symphony
- IV (pp. 74): »Greensleeves« (English folk tune)

I: Theme from Mozart's piano sonata in A-major (K. V. 331)

[illegible]



Handwritten musical notation on a grand staff. The notation is divided into four measures labeled k), l), m), and n). Measure n) contains a circled 'o' with an arrow pointing left. The notation includes various note values, rests, and accidentals.

3. DOM.

Handwritten musical notation on a grand staff, featuring a series of dotted lines connecting notes across the staves, suggesting a melodic or harmonic progression.

Handwritten musical notation on a grand staff, featuring a series of eighth notes and rests, with arrows indicating a specific rhythmic pattern.

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## II: Menuet from Mozart's Jupiter Symphony (K. V. 551)

Handwritten musical analysis of the second movement of Mozart's Jupiter Symphony (K. V. 551). The analysis is organized into several horizontal staves, each representing a different analytical layer.

**Top Staff:** Original musical notation for the Minuet, featuring a treble and bass clef, a 3/4 time signature, and a key signature of one sharp (F#). The notation includes various musical symbols such as notes, rests, and dynamic markings like *p* (piano) and *f* (forte). Above the staff, labels indicate the instruments: *Strings*, *Str. + Winds*, *Str.*, and *Str. + W.*.

**Analysis of melodic particles:** A staff showing the extraction of melodic fragments from the original score, represented by notes and rests on a five-line staff.

**Wave analyses:** A series of staves showing the analysis of the melodic lines using waveforms and pitch contours. The staves are labeled *W*, *WH*, and *WHH*, with numerical values (6, 12, 24) and a 4/4 time signature. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

**M/R:** A staff showing the analysis of the melodic lines using a method labeled *M/R*. It includes a treble clef, a 3/4 time signature, and a key signature of one sharp. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

**DOMinator rhythm:** A staff showing the analysis of the melodic lines using a method labeled *DOMinator rhythm*. It includes a treble clef, a 3/4 time signature, and a key signature of one sharp. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

**Analysis of chord color:** A staff showing the analysis of the harmonic structure using a method labeled *Analysis of chord color*. It includes a treble clef, a 3/4 time signature, and a key signature of one sharp. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

**+R:** A staff showing the analysis of the melodic lines using a method labeled *+R*. It includes a treble clef, a 3/4 time signature, and a key signature of one sharp. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

**Analysis of formant color:** A staff showing the analysis of the timbre of the sound using a method labeled *Analysis of formant color*. It includes a treble clef, a 3/4 time signature, and a key signature of one sharp. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

**(Timbre) +R:** A staff showing the analysis of the timbre of the sound using a method labeled *(Timbre) +R*. It includes a treble clef, a 3/4 time signature, and a key signature of one sharp. Arrows and symbols like  $(+)$  and  $(-)$  indicate the direction and nature of the pitch changes.

The analysis is a comprehensive study of the musical piece, covering various aspects of its structure and sound.

*f*

IIIa: »Night Fragment« from the first movement of Mahler's ninth symphony

»Night measures«

dim. p cresc. p < f p < f p < cresc. molto sf

Analysis of melodic particles

Wave analyses of melody

W

W

W

M/R

Mel. outline

Chord analysis

R

IIIb: »Day Fragment« from the first movement of Mahler's ninth symphony

»Day measures«

cresc. ff

Analysis of melodic particles

DOM. REP.

Resonance

Scale

Wave analyses of melody

Wd

Wo

Total MEL.

R

Chord analysis

R

This image displays a handwritten musical score for the 'Day Fragment' from the first movement of Mahler's Ninth Symphony. The score is organized into several horizontal staves, each with a specific analytical label on the left. The top staff is the original musical notation, featuring complex polyphonic textures with many beamed notes and dynamic markings like 'cresc. ff'. Below this, the 'Analysis of melodic particles' staff uses circles and dotted lines to isolate and trace individual melodic lines. The 'Resonance' staff shows a series of circles, likely representing harmonic or timbral qualities. The 'Scale' staff provides a linear sequence of notes. The 'Wave analyses of melody' section includes three staves labeled 'Wd', 'Wo', and 'Total MEL.', which use various symbols (arrows, plus signs, etc.) to represent different aspects of the melody's contour and structure. The 'Chord analysis' staff at the bottom uses circles and numbers to denote harmonic structures. The entire score is written in black ink on white paper, with some additional annotations like 'DOM. REP.' and 'R' interspersed throughout the analytical layers.

IV: »Greensleeves« (English folk tune)

1. DOM. 2. DOM. 3. DOM. (or var.) 2. DOM. REP. (3. DOM. VAR.)

Melody

Internal rhythm

External rhythm (egentl.  $\text{♩} \text{♩} \text{♩} \text{♩}$ )

Wave analyses

W. d.

W. q.

W. s.

W.

4. DOM 5. DOM. 6. DOM. 5. DOM. REP. 6. DOM. VAR.

Melody

Internal rhythm

External rhythm

W. d.

W. d.

W. d.

W. o.