Czech Music Theory Between 1945–1975

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Foreword

When I was invited by Supraphon Music Publishing to write this study, I was immediately aware of the difficulty that will be involved writing about a period of Czech music theory in which I had been actively involved for more than twenty years.[1] I tried to present as unbiased of a picture as possible. Nevertheless, I am aware that, despite all my efforts, this study presents a personal view of the period described and I ask that it be understood as such.

The study is divided into three main parts. The first defines the subject and method of music theory. The second part presents a brief historical overview of music theory in the period described. The third part then provides a systematic discussion of the individual specialized fields of music theory and presents some of the main Czech representatives of these disciplines in the years 1945–1975. It is not intended to be a complete and exhaustive list of all our music theorists. Therefore, it follows that the failure to mention the name of some theorist does not imply any diminution of the importance of their work. In harmony with my own rather systematic specialization, I have endeavoured to give, within the limits of possibility, a complete and systematic survey of the problematics, mentioning representative authors.

This concept is also reflected in the choice of works referenced, which are again thematically and personally curated, without any claim to completeness and with a majority of citations from my own works. This preponderance follows, among other things, from the fact that, in some cases, I refer to my own works, wherethe issue is discussed in more detail. In addition to published works, I also list some unpublished works in the bibliography, when it is helpful for understanding the full picture of the Czech contribution to a certain topic.

I give page numbers only for topical quotations. I do not include them (or only exceptionally) in the overall citation of studies in journals and proceedings where finding such a study does not present any difficulty.

[1] The study was originally supposed to be a part of a larger project which Supraphon abandoned between 1977–1978.

As can be seen from the above, I could not avoid information about my own topics. I refer to myself in the text as "the author" (this word is further used in no other way).

The study was written in 1975, and its historical scope ends in that year. Later factual changes were not taken into account

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§ 1. Methodological introduction

§ 1.1 The concept of music theory

Let us clarify at the outset what we will mean by music theory and how we will define its scope (Janeček 1957; Risinger 1961, 1962, 1973c; Volek 1961b). We can start with the following working definition:

Music, like other phenomena, has form (in the broad philosophical sense) and content. Both of these aspects are studied by music theory (in the broad sense), which can be further divided into music theory (in the narrower sense) and music aesthetics. Thereby, **music theory starts from the aspect of form and its aim is to get as much as possible towards the aspect of content** while maintaining as much exactness as possible (sometimes music theory is also described as the study of musical syntax). Music aesthetics, on the other hand, starts from the aspect of content and its aim is to get as much as possible towards the aspect of form. It is neither within the scope nor the possibilities of this study to deal with identifying and defining musical content. Let it be said: as far as I can judge, even in so-called "absolute" (more correctly, non-programmatic) music, content is determined with a certain variability simply by the complexity of the human psyche. The heard piece is as it were "projected" against the background of all other perception, feeling, thinking, and all memories (Burjanek 1970, 73, 93, 99).

On the other hand, music theory is closely linked to musical practice, primarily compositional. One could say that it is a certain interface between musicology and the practical activity of music. For the music theorist, the ideal synthesis of musicological and practical musical training is above all compositional training (the latter being more indispensable). If theoretical interest prevails over the compositional, it is usually a scientifically oriented music theorist with general scientific aspects. If compositional interests predominate over theoretical interests, it is usually the theorising composer (or and performer) who aims at the rational grasp and description of their own creative methods.

Music theory is thus linked on the one hand with musical aesthetics, and on the other hand with musical practise, especially compositional. It also connects (as we will see later) with musical history and ethnomusicology. Finally, music acoustics, music physiology, music psychology, and music sociology function as auxiliary disciplines to music theory.

§ 1.2 **Music theoretical research** is further divided into music theory proper (direct) and the science reflecting music theory.

I. Music theory proper can be divided into:

1. A systematic theory, which provides us with a necessary and properly sorted network of concepts. As far as I can judge, the optimal method here is the synt hesis of deduction and induction, that is, a system deductively derived from musical practise, which is constantly confronted by this musical reality and then corrected and supplemented.

2. An analytical theory, which deals with the knowledge of the laws of musical language in different periods and in different areas. It must be remembered that period and place are inextricably linked. The determination of ‚when' is meaningless without the complementary determination of "where," and similarly "where" is meaningless without "when". This is in no way contradicted by the practical experience that in European music (which already determines "where") the historical aspect is more important (because the variability over time is quite considerable), while in non-European music cultures the local aspect is more important (also the determination of "where" is much more variable here).

The described laws have three degrees of stability or variability:

A) Physical laws. We can find the basis of their existence in nature independent of the perceiving organism. These include, for example, the harmonic series, general differences in pitch, dynamics, timber, and timing. Possible changes in this group take place very slowly (basically in the astronomic time scale).

B) Laws of anthropology (or more generally of biology). I understand the concept "anthropology" here in the sense that it refers to laws or phenomena whose existence is linked to Man "homo sapiens" and as long as Man is Man, it can't be otherwise, as we will see in specific cases. The grounds of their existence are probably given by the structure of a properly functioning and perceiving organism. They represent a synthesis of the common activity of the physical stimulus and the reaction of this respective organism. These include, for example, the fact of octave identity, or perhaps the limits of audible pitch range or the limits of pitch discrimination (no human can tonally hear a frequency of 1/s or a frequency of 100,000/s as a tone and cannot distinguish the pitch difference of 1/10 cent). These are human biological laws and the possible changes in this group are basically on the time scales of changes in the species homo sapiens.

The second place in this group is taken by the laws that can be described as psychological, whose variability is perhaps a little faster but still very slow in terms of ordinary human history. As far as I can judge, those would be such as the fact of consonance and dissonance or the equality of major and minor modes (Janeček's principle of harmonic inversion).

C) Sociological laws (by this term I mean regularities and phenomena that change faster or slower with the development of human society and may also be different for different societies at the same time). These include such phenomena as the prohibition

of parallel perfect fifths in the last few centuries in European music, the choice of tonal system, and so on.

These laws can be scaled into a series of degrees in temporal and geographical parameters.

Degrees	Temporal parameter	Geographical parameter
1.	A certain individual work (generally a musical fact)	A certain individual work (generally a musical fact)
2.	A certain composer (generally the author of a musical fact)	A certain composer (generally the author of a musical fact)
3.	Movement (e. g. the Mannheim school)	Regional musical culture (e.g. music of the Chodsko region)
4.	Style (e.g. Classicism of the 18th century)	National musical culture (e.g. Czech music)
5.	Super-style epochs Can be further differentiated as required: Epoch a) small (e.g. functionally harmonic music of the 17th to 19th centuries; Vladimír Helfert speaks in the same sense of styles [19, p. 16]) b) intermediate (e.g. European polyphony in the Middle Ages and the modern period) c) large (e.g. music based on the diatonic or chromatic tonal systems from Greek antiquity through the Middle Ages and modern times)	Region Region a) small (e.g. Central European music) b) medium (e.g. European music) c) large (e.g. world regions influenced by European music, such as white musical cultures in Asia, Africa, America, Australia)

In some cases, these individual degrees may be interconnected. There are works composed over such a long period of time that there can be a considerable difference between their beginning and end (about the same as between different, temporally distant works by the same composer). As an example, consider the two, widely separated in time, parts of Wagner‘s tetralogy The Ring of Nieibelung (The Rheingold, The Valkyrie, half of Siegfried on the one hand, the other half of Siegfried, Twilight of the Gods on the other).

Furthermore, there are some composers who go through various trends, styles or even epochs. Beethoven, for example, started with the Viennese Classicism of the 18th century and arrived at an idiosyncratic synthesis of Classicism and the emerging

Romanticism of the 19th century, which influenced some 19th century composers to combine Romantic musical language with traditional formal structure (e.g. Brahms or the young Dvořák). Or, for example, Janáček came out of the Romanticism of the 19th century and arrived at a distinctive reaction to the musical language of the 20th century, belonging to a different, new epoch. Similar are the cases of Suk and, perhaps most strikingly, of Schoenberg.

3. A Synthetic theory which deals with the modelling of musical speech in general. This modelling can be most conveniently implemented based on certain not very numerous rules. Such rules can be derived empirically. The ratio of rules to living production is something like this: a rule has probabilistic validity. It must be established in such a way that its observance in any case protects against a stylistic error („impurity"). On the contrary however, it is true that breaching a rule does not necessarily lead to a stylistic error, as is often the case in the works of true masters who are able, with their refined sensitivity (perhaps unconsciously) to capture those situations when the violation of a rule does not lead to an error.

The rules can be derived in two ways:

a) by analysing the works of great composers,
b) by testing a large number of randomly constructed examples of a particular kind of musical speech.

As far as I can judge, the second way is more advantageous for synthetic theory tasks because it shows us the wrong cases clearly and thus also allow us to formulate rules for avoiding these wrong cases. By contrast, the first way – so important in music theoretical analysis – will only show us the correct cases. They can only be repeated literally or transposed. The second way, on the other hand, allows us to orient ourselves flawlessly in arbitrarily selected material.

Musical speech modelling can be divided into two areas:

A) Machine modelling (musical cybernetics). The rules here must be completely precise and without gaps.
B) Pedagogical (didactic) application. This includes applied music theoretical disciplines. Since the modeller here is a human (student), the rules don't have to be so mechanically machine-accurate. Instead, they may put more weight on musical talent.

It should be remembered that exact and arbitrarily repeatable principles can, in all my experience, be found only for modelling artistic musical phenomena at the lowest epigonic level. It is probably not possible to find a set of generally applicable rules for high-end artistic expressions. It seems that a top artistic phenomenon always creates a specific rule for itself. However, this rule is broken even by small interventions. It can be recognised by analysis, but it can't be generalised. We can literally repeat it (a work can always be reinterpreted or copied). However, we can't change it without violating

the artistic significance of the original construction. That is why, it is not possible to find a generally functioning set of theoretical rules of excellent artwork in musical art according to which it would be possible to recognise such an excellence a priori safely, or to teach or to model an excellent artistic expression by machine.

A style (let us mark it "A") passes through three basic stages (Janeček 1936):

a) the pioneering stage, breaking down existing norms,
b) the stage in which the style itself becomes a general norm (while another style "B" enters stage (a)
c) the stage in which a style becomes historical past.

In general, music theory can usually rationally grasp stages b) or c) of a particular style. On the other hand, stage a) is the most important for compositional activity, or even stage b) (the possibility of epigonic art), whereas stage c) becomes useless in terms of composition (there are cases, however, when a certain style becomes an inspirational source after a long time, which is altered in a creative way). In the performing arts today, musical styles in all three stages (stage c) are accepted, especially for top composers or works.

§ 1.3 II. **The science reflecting music theory** is divided into three corresponding disciplines:

1. The systematic science reflecting music theory compares various theoretical systems, classifies them, seeks generalisations, etc.

2. The historical-ethnographic science reflecting music theory discusses from a historical and geographical point of view a) theoretical systems, b) music theorists (their theoretical work). It does so either in collections of studies or monographs.

3. The methodological science reflecting music theory concerns research into the ways and methods of a) modelling musical language, b) teaching music theoretical disciplines.

§ 1.4. **Music theoretical disciplines** are closely linked with the basic properties of sound. Yet music itself must now be defined in a broad sense as sound art. If we wanted to hold on to the older conception of music as an art of tones, we could not include some manifestations of 20th century music and would have to look for a broader, more inclusive conception.

The basic characteristics of sound are as follows:

1. Duration.
2. Volume (intensity).
3. Colour (the characteristic by which we identify the source of the sound).
4. Brightness (indeterminate/unmeasurable pitch). Can be:
   a) general (from the lowest audible sound to the highest)

b) registral (from the lowest to the highest sound positions of a particular sound source or musical instrument). Colour and brightness are usually connected into the concept of timber.

5. A certain (tonal) pitch.

The first four properties relate to all sounds without distinction, the fifth characteristic relates only to tones.

The sum of all these properties and their musical use is processed in an elementary sense by the general study of music.

Duration is the basis of the study of rhythm and metre. The volume of sound and the dynamics associated with it, as well as the timber (colour and brightness), are the most important bases for the study of orchestration. Its precursor is the study of musical instruments. This context also includes the theory of the art of performing (here, of course, rhythm and metre are also important).

The area of pitches and their relationships was the most important factor in European music until the 19th century and is still largely so in the 20th century. It is related to:

A) the study of tonal systems
B) the study of melody (*melodika*)
C) the study of harmonies and chords (*akordika*)
D) the study of harmony (*harmonie*), namely:
   a) the study of harmony in the 17th to 19th centuries (Baroque, Classicism, Romanticism)
   b) the study of 20th century harmony (beginning approximately with Impressionism)
E) the study of polyphony – counterpoint, namely:
   a) Vocal – Palestrinian counterpoint (generally refers to the polyphonic theory of the 15th and 16th centuries).
   b) Instrumental counterpoint – Bachian (generally refers, in a broader sense, to the polyphonic theory of the 17th to 19th centuries) .
   c) 20th century counterpoint.

The study of musical form, along with its more advanced discipline–the analysis of compositional structure, or tectonics–is grounded in the synthesis of all sonic properties, with the temporal dimension serving as the dominant factor in both. Further related to musical forms is the study of musical species and the study of musical genres.

On the basis of all the components of music, it is then possible to attempt the very difficult task of formulating a study of musical styles (that is, of their exact technical characteristics).

Music theory also includes the study of compositional techniques in twentieth-century music. These include:

A) Techniques determining the compositional process (dodecaphony, serial or multiserial technique).

B) Techniques that use the element of chance and significantly liberate the performance (small and large aleatory or possibly improvisation).

§ 1.5 The works of theorising composers are usually **distinguished from music theory** in the true scientific sense. The difference can be explained as follows: music theory presupposes a generalising supra-individual approach to problems even when the theorist is also the composer. In contrast, the theorising composer rationally grasps in their texts mainly their own compositional methods and can maintain a considerable degree of subjectivity.

§ 2. Historical overview

The development of music theory is basically dependent on the development of music and predominantly, it follows after it. Only exceptionally do theoretical conclusions precede musical development. European music underwent major changes in the transitional years between the 19th and 20th centuries. One can speak of a change of the fifth degree or a change of the supra-stylistic epoch (Helfert 1938, 25). It is not yet possible to fully decide whether this is a change on the scale of a small, medium, or even large epoch. (Changes of tonal systems, a shift of dominance from pitch relations to other components such as timber or rhythm, and so on).

It goes without saying, then, that music theory has also undergone serious development. In general, Czech music theory experienced a considerable boom in the thirty years described above. Only the few years after 1948 constitute an exception. The fact that music theory starts its investigation from the category of form (in the broad philosophical sense) carries with it a certain potential danger of assigning this discipline to aesthetic formalism, with which, of course, theory has nothing in common. Consequently, this period mainly recognized pedagogically oriented works. In general, it can be said that there are two potential dangers. A one-sided view from the position of the categorical content can lead to an underestimation of the category of form and to the subordination of music theory to aesthetics. Conversely, a one-sided view from the position of the category of form can lead to an underestimation of the category of content and to the subordination of music aesthetics to theory (or even to its liquidation). It is necessary to keep in mind the existence of form and content, as well as the corresponding existence of music theory and aesthetics. From about 1953 onwards, and especially after 1955, there was a steady development of our musical theory.

§ 2.1 **Places where music theory is developed**

The Faculty of Music of the Academy of Performing Arts in Prague includes the Department of Music Theory and History. After Mirko Očadlík and Karel Janeček, its head was Jaroslav Zich (since 1973). At the Janáček Academy of Performing Arts in Brno (JAMU), the Department of Composition, Music Theory and Conducting is now, after Vilém Petrželka and Teodor Schaefer, headed by Ctirad Kohoutek (since 1965). The main subject of the department's work are the composition disciplines. In addition, there is a Department of Art Theory at JAMU which is active in the field of general and musical aesthetics and the theory of theatre. It was headed by Josef Burjanek.

Otherwise, the departments of music theory and history (or music education) at the philosophical faculties of Czech universities and the departments of music education at pedagogical faculties are partly engaged in music theoretical work.

In 1962, the Institute of Musicology was established within the Czechoslovak Academy of Science (ČSAV). In this institute there was a music theoretical department and later a department of theory and aesthetics. The author of this study (henceforth referred to as the author) was its head. After the dissolution of the Institute of Musicology in 1971, a section of musicology was established in 1972 in the Institute of Theory and History of the ČSAV which temporarily took over the structure of the former Institute. Since 1973, this section was divided into working groups, one of which, under the leadership of Jiří Bajer, is devoted to issues of music theory, and partly also to music theory in a narrower sense.

In 1956, a group for music theory was established within the Association of Czechoslovak Composers (SČS) under the chairmanship of the author, which later functioned as a creative committee for music theory until 1970. In the newly established Association of Czech Composers and Concert Artists (SČSKU), a group for music theory started its activities in 1974. Its chairman is again the author.

§ 2.2 **Music theory as a field of study**

The individual applied music-theoretical disciplines (general study, harmony, counterpoint and fugue, musical forms, the study of musical instruments, orchestration, as well as the analysis of compositions) are taught at conservatories and at the departments of philosophical and pedagogical faculties. In a higher form, they are also taught at the Academy of Performing Arts in Prague (AMU) and the Janáček Academy of Performing Arts (JAMU)–mainly analytically, but also technologically (study reflecting composition at AMU and theory of composition at JAMU).

Music theory is not implemented as an independent field of study (so-called daily studies) in the Czech lands. It existed at the Prague Academy of Performing Arts in this form between 1946 (the founding of the school) and 1948. In 1968, the Music Faculty of this school established a two-year postgraduate course in music theory which has

been offered continuously ever since. At JAMU it is possible to branch off into theoretical studies after two years of composition studies.

At the level of scientific education, postgraduate studies were occasionally carried out in the field of music theory in the aforementioned institutes of the Czechoslovak Academy of Sciences and at universities. Candidate dissertations and doctoral theses (for DrSc.) have been defended in music theory.

§ 2.3 **Research forums in the field of music theory**

Three symposia were devoted exclusively to the problems of music theory, organised by the SČS in 1957 in Brno, in 1969 at the ČHF (Czech Music Fund) Hromovka cottage and in 1970 in Liblice, as well as a symposium on the topic: The Development of Musical Language in Czech Music, organised by the SČSKU at the Year of Czech Music in Prague in 1974. A symposium in honour of the seventieth birthday of Professor Karel Janeček, Doctor of Science, was organised in 1973 in Prague by the Music Science Section of the Institute of Art Theory and History of the ČSAV. In addition, several round tables on music theoretical publications and other problems were organised at the SČS and SČSKU, as well as the Institute of Music Science of the ČSAV and the Institute of the Art Theory and History of the ČSAV (there especially, some topics were discussed by the working team for expressive and communicative systems of art headed by Sáva Šabouk).

Music theoretical issues were included (in addition to the music historical and aesthetic ones) in a seminar on Marxist musicology, organised by the Union of Czechoslovak Composers in Prague, both at the national Czechoslovak level in 1962, and at the international level in 1963. Numerous preparatory discussions preceded the organisation of both the seminars. Otherwise, music theoretical topics were also discussed at other conferences organised by various institutions. The discussions at some candidate and doctoral dissertation defenses in the music theoretical specialisation, as well as during habilitations and professor nominations, were also stimulating.

§ 2.4 **Publication opportunities in the field of music theory**

Music theoretical works were published by the Library of Hudební rozhledy, the State Publishing House of Beautiful Literature, Music and Art (later the State Music Publishing House and even later at Supraphon). The Library of Hudební rozpravy, Panton, the ČSAV publishing house Academia, the journal Hudební věda (Musicology), the collections of studies Živá hudba (Living Music), the State Pedagogical Publishing House end elsewhere have done meritorious work in this direction.

Publication opportunities were and are available. Nevertheless, the field of music theory presents certain difficulties in this respect. It necessarily and inseparably combines two very different and specialised aspects of production, text and scores, and, furthermore,

symbols and diagrams. For example, the method of rotor printing, while undoubtedly advantageous and simplifying in the case of a purely literary text, presents, for the reasons mentioned above, a considerable difficulty compared to traditional production methods. I therefore believe that it would be good in the future to develop, within the possible limits of the music theoretical field, production methods that would incorporate all the necessary working procedures and aspects mentioned above.

§ 3 Music theory in its own sense

§ 3.1 **Systematic music theory**

§ 3.1.1 *General systematics (systematika)*

Systematics, in the general sense, are addressed by the author (Risinger 1969). He attempted to formulate principles generally applicable in music based on the relationship of wholes and their parts (elements). These relations may be hierarchical, exhibiting a regular periodicity of identity (or, in broader sense, similarity) and contrast, or they may be non-hierarchical, exhibiting either a stable identity or stable contrast (in the latter case, however, they are not wholes in the strict sense of the word, but rather unorganized clusters). Hierarchy can be centric (where elements are subordinated to a central element) or distance-based (where no element is superior to the others but the whole has a distance-based arrangement, such that the position of each individual element is unique and not interchangeable with that of any other element). An example of a unit that is both centric and distance-based in its hierarchy would be a major and minor triad; an example of a unit that is only distance-based in its hierarchy would be an uncentered non-centric type of modality (e.g. anhemitonic pentatonic]); an example of a unit that is only centric in its hierarchy would be a simple type of meter (equally long beats subordinate to the accent of the first beat). An example of a non-hierarchical cluster is, for example, a whole-tone scale (or harmony) or so-called non-thematic composition.

The author applied the principles of hierarchy in the above quoted work in more detail to the area of pitch relations, specifically to the functional hierarchy in contemporary tonal music and finally the area of musical form and tectonics. He put forward a working hypothesis that hierarchical relations in the area of at least one component are probably a condition for the purely artistic effect of the musical work (musical expression in general). In works combining two or more artistic areas (music and speech, etc.), a hierarchical arrangement of one of the participating artistic areas is sufficient.

František Sehnal (1969) has developed a unique perspective on the questions of music theory.

§ 3.1.2 *Pitch relations in general*

The author has attempted to develop a systematics in this area, so important in modern European music (Risinger 1969, part I). He distinguished three types of hierarchy: tonal (centric horizontal), modal (distance-based horizontal), chordal (centric and distance-based vertical) which are marked by the letters T, M, A.[2] If we add the absence of hierarchy in this area (mark 0), we get eight combinations that can be summarised by four groups of musical speech: tonal (combination groups TMA, TM, TA, T), modal (MA, M), chordal (A), non-hierarchical – historically, though not quite accurately, referred to as atonal (0). On this basis, he also distinguishes, for example, between tonal and modal modulations. He further distinguishes between polytonality, polymodality, and chord combinations (Risinger 1978).

§ 3.1.3 *Tuning issues*

In the question of tuning, we find two basic opposing points of view:

a) Proponents of the view that tuning is largely a matter of social convention. Hence the inclination in our cultural regions mainly towards tempered tuning. Luděk Zenkl (1971) shows a moderate and critical inclination towards this group.

b) Advocates of the basic psychological binding by the so-called natural (it would be more correct to say just) or also pure tuning, whether Pythagorean or harmonic (didymic). Tempered tuning is then seen as a certain acceptable compromise within which our hearing complements the required natural intervals. A representative of this group with regard to tonal music is Bohumil Dušek (1964; 1966)

§ 3.1.4 *Tone systems*

The author presents the following systematics of tonal systems with equally sized parts (1971a, part IV):

A) According to the relation to the interval of perfect octave.
   a) within the octave,
   b) outside the octave.

B) According to the content of our basic harmonic consonant intervals of perfect fifths, major and minor thirds, or their inversions:
   a) the system contains all or some of these intervals,
   b) the system does not contain these intervals.

The individual cases under A) and under B) can be combined with each other.

In addition to systems with equally sized parts, it is possible to consider systems with parts of unequal size. However, the letter can always be converted to the former by finding the largest common measure of unequally sized intervals which is then the fundamental

[2] A as in *akord* (chord). Translator's note.

measure for a system with equally sized parts. For example, the smallest common measure of the intervals of anhemitonic pentatonicism (but also, say, diatonicism) is the interval of the semitone, which is the basis of the equal part twelve-tone chromatic system.

For the tradition of European music, the systems of groups Aa) + Bb) seem to be the most advantageous, and of them especially the quarter-tone and sixth-tone alternatives and the twelfth-tone system as their combination.

The use of quarter tones in Lebanese music was discussed by Alois Hába (1956).

§ 3.1.5 *The question of consonance and dissonance*

Karel Janeček acknowledges that the boundary between consonance and dissonance is unmovable (1965,11). He considers major and minor triads and their interval components to be consonances. Dissonances, then, are harmonies in which some of the following four dissonant elements are present: whole tone, semitone, tritone, and augmented triad.

In a broader sense, Janeček recognises repose and tension. Both can be internal (a property of isolated consonances, i.e. consonance and dissonance in the narrower acoustic psychological sense; Otakar Šín uses the term effective) or external (determined by the position of the consonances in the functional harmonic context) (Janeček 1965, e.g. 212, 213, 268-272).

For the degree of consonance or dissonance, Janeček's principle of harmonic inversion is important (Janeček 1965, 49-50). It stipulates that those harmonies with mutually inverse structure (e.g. major and minor triads, dominant and half-diminished chords, etc.) have within a narrow range approximately the same degree of consonance or dissonance (of course, with completely different expression).

The author also considers the boundary between consonance and dissonance as essentially unmovable. However, he looks at consonance and dissonance in the sense of repose and internal tension as complex phenomena (Risinger 1963a). He separates consonance and dissonance into the acoustic physiological (influenced by the harmonic series, combination sounds, beating and similar – essentially corresponding with the view of H. Helmholtz) and the psychological (determined by greater or lesser fusion and the resulting greater or lesser psychological unity of form – in the sense of the original theory of K. Stumpf).

The author further distinguishes between inner repose (major and minor triads), static tension (chords with added notes – e.g. C-D-E-G and chords from harmonic series – e.g. C2-G3- E4-B♭4-D5- B5-D♭6-E♭6) and dynamic tension (e.g. C-E-G-D) (Risinger 1965). These three categories also imply a scale of steady increasing tension. With simultaneous external repose (tonic), in all three named internal states, the reposng moment prevails in principle, while with the simultaneous external tension (non-tonic function) the moment of tension dominates.

The author has also made one–so far only very hypothetical–working assumption about a detectable parallel between the dissonance (internal tension) and the mechanic half (square root, in the acoustics) of harmonic intervals or also mechanical double multiplication of these intervals (square, in the acoustics) (Risinger 1970).

§ 3.1.6 *Chords and harmonies*

Janeček developed a full list of all harmonies from dyads (actually with mathematical consistency from silence and a single sound) up to twelve-note harmonies (Janeček 1965, 328-343). He distinguishes two schemata for harmonies:

a) the orientation scheme to which he subordinates all possible inversions and dispositions of harmony (ordering the pitch-classes within the smallest possible ambitus),

b) the harmonic scheme, which gives the most appropriate disposition of the harmony.

Furthermore, Janeček speaks of the dissonant characteristic of harmonies on the basis of the above mentioned (see § 3.1.5) four dissonant elements. For each harmony he distinguishes its primary form and negative. The latter contains the pitch-classes that we get after subtracting from the twelve-tone total the tones of the original harmony (e.g. the negative of the major triad C-E-G is the nine-note chord C#-D-D#-F-F#-G#-A-A#-B). Janeček considers the fundamental tone to be the lower tone (root) of a major or minor triad. In chord combinations (i.e. polychords), the fundamental tone of the lower triad tends to predominate (Janeček 1965, 120).

The author's classification of chords (concerning mainly the disposition) was mentioned above (§ 3.1.5). As to the nature of the chords themselves, he also distinguishes between centrically hierarchical and non-hierarchical chords (with or without a fundamental tone – see below) and distance-based hierarchical and non-hierarchical chords (the latter are composed of equal-sized parts, i.e. the augmented triad, the diminished seventh chord, the whole-tone six-note chord and the semitone twelve-note chord). The author's conception of *thickened* chords differs from the original conception of the creator of this term, Leoš Janáček (1920, 103-179), by being more specific. In Janáček's work, this term represents any dissonant harmony. Jaroslav Volek (1961a, 264-278) also suggested a similar concept. Both Volek and the author understand by the concept of thickened chords basically as harmonies in which the movement of dissonant tones is blocked by chord tones a second apart (see above). The author has also developed a method of probability of determining the root for arbitrarily composed harmonies (Risinger 1969, 34-47), which bridge some of the gaps in Hindemith's method of determining chord roots (Hindemith 1940, 90-130, also table at the end of the book). He distinguishes between positive conditions for being a root (for the tone C mainly the presence of tones G, E, E♭), negative conditions (against C mainly the presence of tones F, A♭, or, more weakly, A) and neutral conditions which neither support nor – in conjunction with the positive ones – undermine the tone being a root (against C, for example, the tone F# or D♭).

§ 3.1.7 *Scales and modalities*

Janeček's above-mentioned taxonomy of harmonies (§ 3.1.6) is simultaneously a complete list of all possible scales and modalities (in the " horizontal" distribution of tones) on the basis of orientation schemes.

Janeček's principle of pure tonic (Janeček 1965, 200-203) is important to the centric conception of modalities. According to it, tonic is indisputable if the modality (scale) does not contain tones that stand in a tritone relation to the tonic root, third, and fifth. Janeček characterises scales as tonal systems that are the result of a long development (Janeček 1965, 42).

Alois Hába discussed the possibility of chromatization of European diatonicism on the basis of all "eponymous" church modes. The "most minor" is Hypophrygian, the "most major" Lydian, the "axis of symmetry" is Dorian (Hába 1944).

Ctirad Kohoutek presents a modal principle (without sequence order) including also extended modality, working with between two to all musical parametres simultaneously (Kohoutek 1969, 11, 13, 55, 73-74).

Miloslav Ištvan sees in modal technique a special manner of diatonic embellishment of dodecaphonic ambiguity Ištvan 1973, 121-160).

Jan Kapr pays attention to cyclic modes (e.g. C, D♭, E♭, E, F#, G, A, B♭ and C, D♭, E, F, G#, A) (Kapr 1967, 150-177).

The author distinguishes between distance-based hierarchical (e.g. diatonic), semi-hierarchical (e.g. C, D, E♭, F, F#, G#, A, B, C) and non-hierarchical (whole-tone and chromatic) modalities (Risinger 1974b,15-16). The author further divides modalities into diatonic, chromatic, and transient. These last ones sound diatonic in a broader sense in some inversions (e.g. Gypsy scales C, D♭, E, F, G, A♭, B, C, or F, G, A♭, B, C, D♭, E, F) in another chromatic form (e.g. the same modality in the form E, F, G, G#, B, C, C#, E, or D♭, F♭, F, G, A♭, C♭, C, D♭) (Risinger 1978, 15-20).

Modalities and scales are also discussed by Arne Linka (1968, 58-61). For example, he introduces the notion of modal tonality, linking modal thinking with tonal thinking.

§ 3.1.8 *Tonal systems*

(Risinger 1963b, 1964, 1969, part II;1974b).

The starting point of modern tonal functional systems in Czech music theory is to be found in the work of Otakar Šín (1933). Based on his suggestions, Janeček arrived at the system of five functions (Janeček 1965, 210-211). These are the traditional three functions of tonic, dominant, subdominant, and two auxiliary functions—Phrygian (on the lowered second scale-degree) and Lydian (on the raised seventh scale-degree). Janeček recognises two tonal principles. In addition to the already mentioned principle of pure tonic (§ 3.1.7), there is the principle of the leading tone. It states that in relation to a firmly established tonic, those tones that stand a semitone under or above the individual notes

of a tonic major or minor triad have a strong tendency towards movement. These tones belong to the aforementioned auxiliary functions, both major and minor (Janeček 1965, 203-204).

Later, Janeček came up with the notion of antitonic, which he understands to be a major or minor triad containing all three tones that violate the principle of pure tonic (they stand in tritone relation to the tonic (Janeček 1976).

Emil Hradecký arrived at a similar five-function system (the functions are even identically (Hradecký 1972). Hradecký starts from the concept of a harmonic unit, by which he means major and minor triads. He classifies the Phrygian function in a broader sense as related to the minor subdominant, the Lydian function to the major dominant.

Hradecký thoroughly developed the theory of so-called characteristically dissonant chords. He distinguishes between three degrees of characteristic dissonance.

1. The combination of non-tonic primary functions (dominant and subdominant – e.g. G-B-D-F-A in C major).

2. The combination of dominant or subdominant on the one hand, and Phrygian or Lydian functions on the other (e.g. G-B-D♭-F; this includes common altered chords).

3. The combination of Phrygian and Lydian functions (e.g. D♭-F-B-D#; this includes bidirectionally altered chords).

The bidirectional alternation has been dealt with specifically by Zdeněk Blažek (1949) and later by A. Linka (1968).

The system described by Janeček and Hradecký exhaustively describe the possibilities and needs of chromaticism, which can be called altered chromaticism. It is characterised by the fact that the individual tones of the tonic triad are approached only by diatonic (leading tone) semitone steps (if there is a direct tonal relationship to the tonic). In *C major* the altered chromatic scale looks as follows: C, D♭, D, D#, E, F, F#, G, A♭, A, B♭, B; and in *C minor*: C, D♭, D, E♭, F♭, F, F#, G, A♭, A, B♭, B.

There is a difference in the starting point of the two theorists. Janeček takes tempered chromaticism as a starting point. He is more concerned with indicating, technologically, which tones of tempered chromaticism should be used to produce a certain function than with accurately capturing tonal relationship and the distinction between diatonic and chromatic relationships. For example, if we denote the tone C (tonic root) by the number 0 and the other eleven notes by the numbers 1-11, then, for example, the minor subdominant will be given by the numbers 0, 5, 8 (12). Tone 8 will then be seen in direct relation to the tonic as a minor subdominant third, even if it were included in the chord represented by the numbers 4, 8, 11 (actually the notes E-G#-B) (Janeček 1965, 214-215). The actual distinction between enharmonically interchangeable intervals is then de facto rather left to the listener (in the same way as the earlier distinction between Pythagorean and harmonic interval values).

Hradecký, on the other hand, is essentially starting with tonal diatonicism (1960, 1972). The chords in chromatic third-relations (mediants) represent tonality-disturbing factors. Janeček places them in the category of intermediate functions (Janeček 1965, 212-215). For example, the E-G#-B chord mentioned above will be a combination of three functional thirds in the C tonality: the major tonic, minor subdominant, and the major dominant, i.e. actually E-A♭-B.

A certain contrast to these concepts is the system outlined by Jaroslav Volek (1961a). It is based on three basic functions and adds to them, as a complex fourth function, all kinds of chromatic mediants. Volek does not conceive of altered chords as combinations but as chromatically focused versions of the dominant and subdominant. Thus is Volek's notion of tonality extended, as outlined already by Šín. In this notion, even tonic can be approached by chromatic progressions in individual voices. Enharmonically interchangeable pairs are distinguished here as well as in theory.

This distinction is matter of context. Consider, for example, the progression from the chord C3-G3-C4-E4 (tonic) to the consonant E3-G#3-B3-D4. If the second consonance is realised as a short rhythmic value, the logic of the horizontal (melodic) aspect, i.e. the diatonic step G3-A♭3 in the tenor, will dominate, and the harmony will appear to be a functional combination E3-A♭3-B3-D4. If, on the contrary, the second harmony is considerably lengthened, its unified harmonic logic (quasi dominant seventh chord E3-G#3-B3-D4) asserts itself, even at the cost of the chromatic progression of G3-G#3 in the tenor. The author describes in detail a type of extended tonality he calls enharmonic-chromatic. He distinguishes between two basic principles of functional relationships (Risinger 1969, 57-59):

1. The relation of the root of the function to the root of the tonic of the perfect fifth is the most effective, that is, a dominant and a subdominant).

2. The relation of the individual notes of the function to the tonic root, fifth or third (the most effective is the relation of the minor second from one side, the major second from the opposite side, and possibly the perfect fourth from the first side, that is, for example, to the note C4 (tonic root) on the one hand, the notes G3-B♭3-D4 on the other hand, the notes B♭3-D♭3-F4).

The strongest realisation of both the principles, i.e. the major dominant and minor subdominant, is the most effective.

Following the overall relation to the tonic, the author divides functions into (Risinger 1974b, 19-22):

1) those oriented towards the tonic (authentic) and who's root is dependent on the root of the tonic (in relation to the tonic root mainly the fifth, third or possibly seventh above).

2) those oriented away from the tonic (plagal) and who's root is superior to the root of the tonic (in relation to the tonic root mainly the fourth or sixth above or possibly seventh under).

The author has placed functional triads on all degrees (even twice on tritones given the distinction between the augmented fourth and the diminished fifth). In the original conception (Risinger 1957, 1958), the functionality of both the major and minor triads (with respect to the major or minor tonic, or both) is proposed on all twelve steps of the twelve-part system. Later, with the exception of tonic, dominant and subdominant chords (e.g. the chords C major, C minor, G major, G minor, F major, F minor) the author limited the functional role to the major triads in the sequence of fifths (D major, A major, E major, B major, F# major) and to the minor triads in the sequence of fourths (B♭ minor, E♭ minor, A♭ minor, D♭ minor, G♭ minor). He considers the opposite mode triads to be auxiliary harmonies (Risinger 1964, 73-74; 1969, 98-103).

The author classifies these functional chords into the more general broader functional groups as tonic, dominant, subdominant, Phrygian and Lydian (Risinger 1957, 1958). In contrast to the conception of Janeček and Hradecký, the author considers the B♭ minor triad (considered in C) to be the core of the Phrygian functional group, and the D major triad to be the core of the Lydian group. At the same time, however, he acknowledges the broader Phrygian character of the triads D♭ major and D♭ minor, as well as the broader Lydian character of the triads in B major and B minor.

Finally, it is possible – especially for pedagogical purposes – to generalize further using the above-mentioned distinction between centrality (tonicity), authenticity (or – according to the main representative – dominant-ness) and plagal-ness (or – depending on the main representative – subdominant-ness).

The author has also proposed a general system of tonal harmonic functions (Risinger 1969, 71-73). He distinguishes two basic parameters:

1) Functional interpretation, indicating degrees of increasing definiteness and simultaneous decreasing generality of a functional concept.

2) Functional description, indicating how many tones of tonal degrees are included in the functional concept (a general tendency of motion, one particular tonal degree, two tones, three tones – that is, a functional triad).

Also related to functional theory is the notion of so-called auxiliary triads. Janeček provides three ways to interpret them (Janeček 1976):

1) Incomplete functions – impoverishment of representatives (corresponds to older labelling of the functional substitutes).

2) Borrowing functions from other keys (e.g. from the relative key–the auxiliary triad is essentially understood here as a separate harmonic unit).

3) Functional combinations (mix).

The author also mentions the three factually identical interpretations of the auxiliary triads (Risinger 1957, 40-42; 1964, 74-75).

Josef Rut (1969) gave a specific so-called bi-scale, which he combines from the tones of the “parallel” Lydian and Hypophrygian scales. He chooses the tone D as

a starting point and arrives at the following series. D, E♭, E, F, F#, G, G# = A♭, A, B♭, B, C, C# (D). The bi-scale has two essentially equal centres, in tritone relation. In the quoted form, these are the notes D and G# (A♭).

§ 3.1.9 *Dodecaphony and the serial method*

As far as the theory of the dodecaphonic [twelve-tone] compositional method is concerned, it is necessary to mention in the first place the original, general solution for the derivation of arbitrary all-interval or balanced interval series that was presented by Eduard Herzog. His method overcame the earlier stage in which the all-interval series had to be derived by trial and error (Herzog 1964, 102-128].

A comprehensive textbook of dodecaphonic composition, largely independent from Hans Jelinek's book (Jelinek 1967), was written by Arne Linka (1968).

Jarmil Burghauser, for example, has discussed the partial issues (on the functional contraposition of six-tone harmonies in dodecaphonic composition (1964)) or the author (on the relationship and potential independence of atonality and dodecaphony (Risinger 1968).

A complete index of all series of different numbers of tones is provided by Alois Piňos (1971). In contrast to Janeček's list of harmonies—which, as we have seen, is also applicable to modalities (see § 3.1.6 above)—Piňos includes into one category both the primary form and its inversion, as well as the tritone substitution and its inversions. Therefore, there is a smaller total number of categories than Janeček.

§ 3.1.10 *Systematics of tectonic principles and musical forms*

Janeček (1955, 74 ff) divides musical forms into those that are:

1. Dependent (in principle capable of existing only as parts of higher forms):

a) A phrase, identical with the earlier term "sentence" (Jirák 1931, 24-29); it is therefore a unit forming an antecedent or consequent in a period.
b) An article, corresponding to the earlier term "two-measure" (or half-phrase) (Jirák 1931, 21-24) but more precise because it fits even when the corresponding unit has a different number of measures than exactly two.
c) A sub-article (usually in the range of one measure).
d) A minor sub-article (usually part of a measure, such as one beat).

Janeček calls types b), c) and d) particles.

These four formations mainly represent the divisions in the structure of the period. Moreover, Janeček also uses the term motif to denote the smallest individualized form of a primarily non-periodic structure (Janeček 1955, 89 ff).

2. Independent (capable of independent existence).

A) Small forms:

a) The period and the non-periodic sentence. If they are separate units, Janeček labels them as small sentences. Their parts are newly designated by Greek letters.

b) Small form (song form, possibly contracted or expanded, small-Couperin rondo). The parts are labelled with lowercase Latin letters.

B) Large forms. They include large two and three-part forms (e.g. also menuet with trio), sonata form, rondo form, variations, fugue (non-periodic structure), etc. The parts are labelled with capital Latin letters.

Types 1a, 2Aa, b, 2B can be parts of larger composite units (e.g. cyclic).

For Janeček, the rondo is characterised by at least three statements of the main theme. Finally, he also mentions the so-called combined forms, composed of several parts, having, for example, different tempi, time signatures, etc.

Janeček accurately distinguishes the concept of a musical form (a kind of floor plan) from a musical genre (e.g. polka, march, etc.) These two areas had previously been largely mixed.

Emil Hlobil divides musical forms into continuous, closed, symmetrical forms (e.g. song form, rondo) and developmental, open, asymmetrical forms (e.g. sonata form, fugue) (1963, 21-24). He calls the elementary forms phrases (corresponding to an articulation or also a two-measure) and the mora, namely major mora (corresponding to a sub-article), normal, and minor (both corresponding to a minor sub-article) (Hlobil 1963, 28-45).

The author (Risinger 1969, part III) starts first from the determination of the form-bearing component which may be rhythm and metre (measure), melody, harmony, colour, or, possibly, the brightness of sound (timbre), then dynamics, texture, tempo, articulation, and, to a lesser extent, agogics. The author calls the sum of all these components theme, in the broader sense of the word, and considers it to be intonation invariant (in Asafiev's meaning). In modern European music (up to the end of the 19th century), the basic form-bearing component is the rhythmized melody – possibly with the aid of harmony (so-called thematicism in the narrower sense of the word). In terms of this component, the author also divides musical forms into dependent and independent ones. In the dependent ones, he adopts the Janeček's fourfold structure of terms both substantively and terminologically. He divides independent forms into:

1. Small forms (the contrast is realised in the area of a single theme).

2. Large forms (the contrast is realised by two or more thematic areas but usually without changing the tempo and the time signature).

3. Higher types of forms (to realise the contrast it is necessary to change the time signature or to change the tempo). These are the so-called "one-movement" cycles thematically interconnecting individual parts (e.g. Liszt's Piano sonata B minor).

Similarly, the author divides genres into short (e.g. small piano pieces or songs), long (e.g. sonata or symphonic movements, overtures, etc.), and higher types (e.g. "one-movement" cycles or variations of a larger scale).

Thanks to K. Janeček, the independent formulation of tectonics, i.e. the study of the construction of compositions, (Janeček 1968a) appeared in Czech music theory. Janeček explored the general principles of this construction, regardless of particular formal plans. Among his many ideas and suggestions, the notion of the temporal span of a composition, which is understood as the arithmetic average of the temporal length (musical time expressed in number of measures) and duration (astronomic time expressed in number of minutes and seconds), is important (Janeček 1968a, 26-29).

Janeček distinguishes between five functional types of music (1968a, Chapter IV). Those are expositional, developmental (evolutionary), introductory, episodic, and coda-music.

The author approaches the question of tectonics from the point of view of musical wholes. Based on the principal periodicity of identity (similarity) and contrast, he distinguishes the following basic tectonic principles (Risinger 1969, 136-151; 1966, no. 1, 50-73):

1. Simple (division into two and three parts)

2. Composite transitional (four and five parts). These operate sometimes independently, sometimes they transition into higher order simplicity.

3. Unambiguously composite (six, nine parts, etc.). They always create a higher order simplicity.

These principles are the basis of concrete musical forms.

The author arrived at a similar concept of musical time as Janeček (Risinger 1969, 122-123; 1966, no. 1, 41-43). He distinguishes between physical time (given by the duration in seconds, minutes, hours) and structural time (given by the degree of internal articulation of the composition, this time can usually, but not necessarily, be expressed by the number of measures in the composition) (see also Risinger 1971b).

Tectonics is also touched upon by Hlobil (1963, 18-20 and elsewhere). He speaks, for example, of centripetal and centrifugal forces in composition, or of continuous and developmental forms (see above).

§ 3.1.11 The *performing (interpreting) art*

Jaroslav Zich (1959) was primarily concerned with the theory of musical performance. He discusses, in great detail, the principles of lively interpretation, such as possible deviations from exact intonation or rhythm, and also their limits.

The theory of the performing arts was also researched by a working group at the former ČSAV Institute of Musicology under the leadership of Jaroslav Jiránek (it continued at the Institute of Arts, Theory, and History under the leadership of Jiří Bajer).

§ 3.1.12 *"New" music* (electronic, concrete, aleatoric, etc.)

The theory of new music has been the subject of two collections titled "New Paths of Music" I, II (*Nové cesty hudby* 1964; 1970). Otherwise, the contribution of Vladimír Lébl is important here (1966).

§ 3.2 **Analytical music theory**

§ 3.2.1 *Theory of musical analysis*. The author contemplates a complex analysis (Risinger 1969, 199-202), the subject of which is thematism in the broader sense (see above § 3.1.10). All the components of musical language are compared and the analysis of those which appear to be the most important in terms of the style of a given work are emphasised. In the case of a work of complex art (in which other arts are combined with music), the analysis has four stages (the basic criterion of the theory of hierarchisation as explained above (see § 3.1.1 (Risinger 1969, 33-34)):

1. We identify which kind of art involved in the work shows a hierarchical construction.
2. If it is music, we identify the component that is constructed hierarchically.
3. If this component is, for example, a region of pitch relationships, we identify the kind of these relationships that is hierarchical
4. For example, if it is a tonal hierarchy, we identify the kind of tonality (e.g. diatonic, extended, etc.). If it is an analysis of a purely musical work, stage one is eliminated and only the other three stages, i.e. stages two through four remain.

Structural analysis based on the statistics of the chord forms used was proposed by J. Burghauser (1955).

A detailed proposal for statistical harmonic analysis was also presented by Jaroslav Tvrzský (1973). The method of analysis – mainly focusing on avant-garde musical trends – was developed by Vladimír Lébl (1971).

§ 3.2.2 *Comprehensive analytical works*

Among the summarizing works analysing larger periods and a wider selection of compositions by various authors are some parts of the "History of Czech Music Culture" I., dealing with the development of Czech music in the years 1892-1918, especially the chapters on musical language and on stylistic formation (*Dějiny české kultury* 1972, 193-235) (the history was written by a collective of staff of the former Institute of Musicology of the CSAV with the cooperation of external experts).

Václav Felix discussed in detail the harmony of Bedřich Smetana (1959). He also wrote a study on harmony in the works of Vít Nejedlý (1968). Otakar Ostrčil's means of musical speech has been the subject of an extensive study by Jiří Válek (1965-66). The development of the fugue in Czech music was dealt with in detail by Jaroslav Smolka (n.d.).

§ 3.2.3 *Monographic analytical works*

Janeček treated some of Smetana's works analytically using the methods described in his "Tectonics" (1968b).

The journal "Hudební věda" (Musicology) published several different analytical views on Alban Berg's "Violin concerto" by Vladimír Lébl (1972) (thematic analysis), Jarmila Doubravová (1972) (analysis in terms of interpersonal hypothesis) and the author (Risinger 1973d) (complex tectonic analysis). A partial analysis of the harmonic musical speech of Pavel Bořkovec was dealt with by E. Hradecký (1973). Jarmil Burghauser analysed the orchestration of Dvořák's Slavonic Dances (1959). The instrumentation component in Smetana's Dalibor was dealt with by J. Zich (1957b). Zich also performed an analysis of the instrumentation of Suk's String serenade (1962).

§ 3.3 **Synthetic music theory**

§ 3.3.1 *Modelling of musical speech*

The theory of musical speech modelling was generally dealt with by Antonín Sychra (1964). It was a modelling of monodic melodies using the statistical analysis of the occurrence of intervals, obtained by analysis of Moravian folk songs. The theory of modelling was further discussed with some critical observations by Jitka Ludvová (1974; 1975).

§ 3.3.2 *Applied pedagogical (didactic) disciplines*

A) The general study of music. In this elementary area, it was already O. Šín who started but did not finish his work. It was completed by K. Janeček and František Bartoš (1949). The book by František Pícha (1961) is also of an older date. Recently, Luděk Zenkl's book was published in this area (1976).

B) The study of harmony

a) **Traditional harmony** (17th- 19th century). Janeček wrote two methodologically contradictory and mutually complementary textbooks. The first of them represents a certain novelty altogether, as it is exclusively a guide to analysis (1963). It discusses the whole subject of so-called classical harmony by analysing a large number of examples from musical literature, selected according to a precise methodological procedure. In the conclusion, simpler phenomena of twentieth-century harmony are presented. Important for the analysis, in addition to the principles mentioned above, are Janeček's principle of harmonic inversion (see § 3.1.5) (1965, 49-50) and his theory of imaginary tones (1965, 36, chapter V). This theory is based on the observation that the sounded tone

remains in our memory as an imaginary tone even after the end of its reverberation and it influences the further course of the perceived music as long as it is not cancelled (see the similarity to Janáček's theory of "pacity" (false sensations) (1920, 6-7, 14-15) but on a more adequate psychological basis).

Janeček's second textbook is based on an active, compositional approach to the teaching of harmony. Interesting in it are the final exercises in style based on examples of specific works from the Baroque to the late Romantic period (Janeček 1973, Chapter VI).

An extensive work of traditional harmony was written by Zdeněk Hůla (1956). The main difference from the older textbook by Šín lies in the greater emphasis on practical living harmonization.

Among the university manuals, we can mention Bohumil Dušek's textbook based on the conception of dialectic polarism (Dušek 1969), and the author's textbook which follows, as two basic tasks, the correct voice leading in chord progressions (mainly using figured bass) and the correct sensing of implied harmony (on the basis of harmonisation of national songs) (Risinger 1955).

All the textbooks mentioned above are developed on the basis of functional harmony.

B) **Twentieth-century harmony**

The great work by Karel Janeček on the foundations of modern harmony, already quoted, is more of a systematic work than a textbook in the true sense of the word. Only two of its chapters give direct working instructions, namely on composition and analytical work (Janeček 1965, chapters VII, IX).

An attempt to write a textbook of Twentieth-century harmony was made by the author (Risinger 1966). His book presents working instructions on the basis of precise, empirically derived rules. Topics progress from diatonic tonality, mixed tonality (T, S, D in major and minor), altered chromatic and enharmonic chromatic (including chapters on modulation, polytonality and parallelisms added) through modality (including chapters on modal modulation and polymodality), chordal harmony (non-tonal and non-modal sequences of simultaneities) to atonality and conclude with a chapter on the application of the dodecaphony and the serial method applied on the harmonic material discussed. Other shorter studies by the author (Risinger 1968; 1973b; 1974b) also deal with this topic.

C) The study of counterpoint

a) **Vocal counterpoint** (sixteenth century) has been studied in great detail by Zdeněk Hůla in the first volume of his comprehensive work on counterpoint (1958). In contrast to the older Czech textbooks on this discipline, Hůla's work is based on a historical study of Renaissance vocal polyphony rather than on an affiliation to the well-known classical textbook by J. J. Fux (1938). In this, it is close to Jepessen's book to certain degree (1956). However, the methodological procedure of the discussed material still follows the model of Fux.

b) **Instrumental counterpoint** is discussed in the second volume of Hůla's work. It is again very detailed and develops from a historical basis (here, however, older works followed a similar procedure) (Hůla 1958).

c) The final chapter of Hůla's text (1965, 336-348, 356-366) is devoted to **twentieth-century counterpoint**.

The author (Risinger 1974a) attempted to write a comprehensive textbook of the counterpoint of the twentieth century. In principle, he relies on the working principles described in the cited volume on twentieth-century harmony. He divides the material itself traditionally into two-, three- and four-part counterpoint. In each of these sections he discusses single, double (invertible) and transpositional (the contrapuntal movement can also be constructed so that inversions and transpositions are possible at any interval), and imitative counterpoint. The counterpoint of five or more voices is then discussed only very briefly. Imitation can be free, strict and not preserving intervals (for example, the interchangeability of minor second for major one, etc.) or interval preserving (the obligation to maintain the exact quality of the intervals). The interval preserving as well as not-preserving can also be invertible and transpositional. Much more space than usual is devoted to retrograde forms of imitation which can't be considered a mere pun in twentieth-century music. Interval augmentation and diminution are also described, and they are mechanical (e.g. C- D-E will give C-E-G# in augmentation) or harmonic (e.g. C-D-E may give C-E-G or C-E♭-G in augmentation). Finally, an application of the findings to the basic contrapuntal forms, namely passacaglia, canon, and fugue, is appended. Here, attention is mainly drawn to some peculiarities, such as those found for example in D. Shostakovich's collection of fugues (e.g. the modal fugue) or in P. Hindemith's "Ludus tonalis" collection (e.g. the fugue with a retrograde course of the second half, etc.) as well as some others. This theme is also the subject of the author's shorter meta study (Risinger 1976).

D) Musical forms

In the field of musical form, these are mainly the aforementioned works by Janeček and Hlobil. Both of them eliminate the mixing of musical forms and genres, typical of older textbooks, and therefore represent a step forward in terms of methodological and pedagogical approach (see § 3.1.10).

E) Melodics

Here, the founding work would be the book by Janeček (1956). It is a work on the principles and laws of melody. It is not, and does not want to be, a pedagogical work that would teach how to write melodies and therefore perhaps give prescriptions and prohibitions for the specific creation of melodies of a certain type. It contains only some general instructions at the end. The book is divided into two main parts. The first part presents a system of melodics, the second deals with practical tasks which are understood as melodic analysis and secondly a composition exercises.

F) Tectonics

Janeček's aforementioned book on tectonics is also of founding importance. It contains findings very valuable for composition studies (see § 3.1.10). In the fifth chapter (1968a, 181-225) Janeček deals with the structure of composition. A composition is composed of parts and at the same time built up from blocks of music (these are expressed mainly in terms of dynamics, timber, tempo, rhythm, etc.). This also expresses the difference between the form of the composition and its structure. Although Janeček's book does not provide direct synthetic assignements (it is rather a guide to analysis), it nevertheless provides a great deal of suggestions for compositional study and for the composer's own work. In addition, tectonics are discussed, as mentioned above, in relevant parts of the works of the author and of Hlobil (see § 3.1.10).

G) The study of musical instruments and orchestration

It is useful to describe these two disciplines together, as most books link the two. In my opinion, the study of orchestration can be considered in the narrower and strict sense of the word if discussing the use of musical instruments within closer or more distant instrumental groups.

An older book by Antonín Modr, which was republished in an amended addition in the period described here, has the character of a study of pure instrument-oriented works (Modr 1961).

It is the work of Václav and Dalibor Vačkář which gives both theory and examples of practical use of orchestral instruments. Its strength lies in the fact that besides the work with symphonic orchestra it also deals with the orchestration of brass bands (1954). The second such work is a book begun by Jan Rychlík. After his untimely death, it was completed by several followers (Rychlík and others 1968). This book gives a detailed description of the technical possibilities of individual musical instruments, including the technique of how to produce the tones (sounds), and then the basic use of instruments in orchestration practise. The older manual by Otakar Jeremiáš was also republished (1959).

The founding work of Antonín Špelda and Jarmil Burghauser (1967) mainly contributes to orchestration. Based on preliminary experiments and physical calculations, it brings exact data concerning combinations of instruments, in terms of dynamics, timbre, and chords. Especially important is the dynamic aspect, because proportional deficiencies in this direction can completely destroy the intention of the orchestration. In this respect, the book provides very valuable insights for composition students.

§ 3.4. **Related disciplines**

In the field of musical acoustics, there is, for example, Špelda's study on the pizzicato of string instruments (1968). See also Špelda's studies (1966; 1970a; 1970b).

Tectonic analysis is used by the interpersonal hypothesis, exploring the possibility of using music in psychiatry. Jarmila Doubravová (1970) deals with this hypothesis. More recently, Arne Linka has also worked in the field of music therapy (1975).

§ 4. The Science of Music Theory

§ 4.1 **System science**

Jaroslav Volek has written two books on modern harmonic systems (1954; 1961a). In them, he gives a critical Marxist analysis and comparison of European harmonic systems, starting with Zarlino and ending with the most recent times (in terms of the origin of works). The first book deals with mechano-materialist systems, the second with idealist systems. Interesting, for example, is his theory of the responsible bond, i.e. the component that carries the general in a musical work (e.g. melody in vocal polyphony, harmony in Baroque, Classicism and Romanticism) (1961a, 302-322).

Emil Hradecký described the development of tonal-harmonic systems from the first mediaeval indications of their emergence to the twentieth century (1960).

The author has presented the classification of harmonic systems as described above (see § 3.1.8) (1964; 1966, esp. part II).

§ 4.2 **Historic-ethnographic science**

A) Among the works dealing with the subject comprehensively, we can mention the book by Hradecký (1960) which has been cited several times where the principles of the work of the main European music theorists are discussed. Then there is the work of Bohumil Dušek dealing with the work of Czech and Slovak music theorists of the 19th and 20th centuries (1965). Also the oeuvre of Ctirad Kohoutek on modern musical compositional trends belongs here (1962, 1965)

B) Among the monographic works we can mention the author's book dealing with the music theoretical work of Otakar Šín, Alois Hába and Karel Janeček (Risinger 1963b) and Hradecký's book on Paul Hindemith devoted mainly to the composer's theoretical work (1974).

§ 4.3 **Methodological science**

The author has written two studies, namely on the methodology of teaching twentieth-century harmony (Risinger 1973b) and counterpoint (Risinger 1976) in which he summarises the results of the above-mentioned larger works (Risinger 1974a; 1978) (see § 3.3.2).

§ 5. **Compositional treatises by theorising composers**

In this area, we mentioned the authors who have developed their own compositional method, mainly for pedagogical work with their students:

Jan Kapr in his book "Constants" presents a method of composing with certain constant elements of various kinds (1967). Ctirad Kohoutek has written a book "Project Music Composition" (1969) in which he suggests a method of abbreviated preliminary planning of the overall course of the composition in terms of various musical components. Then there is Miloslav Ištvan's book "The Method of Montage of Isolated Elements in Music" (1973). Ištvan discusses the method of montage in terms of form, rhythm, and pitch relationships. Finally, Jaromír Podešva described the possibilities of cadence in the twelve-tone field (1974).

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