

# The Development of Twelve-Note and Serial Techniques in the Music of Polish Twentieth-Century Composers §

Iwona Lindstedt

*Institute of Musicology, University of Warsaw*

Issues relating to the influence of twelve-note and serial techniques in cultural areas other than Western Europe are usually relegated outside the main focus of research in the world historiography of music. If they are discussed at all, they are regarded as a secondary and mostly belated reflection of ideas shaped in artistic and cultural centres of the West, providing a “fascinating assembly of <peripheral areas>”<sup>1</sup>. Polish musicological literature has also not dealt adequately with these issues so far<sup>2</sup>. The established view that came into existence is that after the period during which Józef Koffler was active as a composer there was a significant gap in the history of Polish dodecaphony, followed by a short period of general interest in serial techniques, which was a part of the cultural ‘thaw’ of 1956. This was regarded as a temporary phenomenon, leading to the period of domination of sonorism<sup>3</sup> and aleatory techniques.

The reasons why this view became prevalent relate both to the lack of availability of documented sources, and the evolutionary approach to analysing changes in musical language. However, a fundamental change of perspective is needed in order to encompass the true extent and manner of influence of the twelve-note and serial techniques on the works of Polish twentieth-century composers. Firstly, there is a need to take into account the works of Polish

§ The main theses presented in this paper are taken from my *Dodekafonia i serializm w twórczości kompozytorów polskich XX wieku [Dodecaphony and Serialism in the Output of Polish Twentieth-Century Composers]*, Lublin: Polihymnia, 2001.

emigré composers, which had been ignored in the approach adopted previously. Secondly, the widely adopted paradigm which analyses music in terms of genesis and development needs to be abandoned in favour of an approach which allows one to capture the variety of discontinuities, and the multiplicity of alternative solutions and processes of creative innovation.

The reason for this is that the history of the reception of twelve-note and serial techniques into the output of Polish composers is a discontinuous and non-organic phenomenon. It does not repeat the cause-and-effect chain of events which led to the development of Schönberg's classical twelve-note method, followed by overcoming the idea of total serialism, until its break-up in the perspective of open form and sonorism. Strong interest in applying twelve-note and serial techniques by composers after 1956 did not constitute a straight continuation of pre-war achievement of such composers as Józef Koffler, Tadeusz Majerski and Konstanty Regamey, but was, rather, a natural consequence of political and cultural changes.

A distinctive feature of the discussed reception is, moreover, a peculiar reconfiguration of the original models, linked to a critical and selective reading of the programmes of Western musical avantgarde. Dodecaphonic and serial techniques, interacting with other aspects of a musical composition, created a number of stylistic idioms of high originality. The re-evaluation of the function of serial rules in shaping musical material was mainly brought about by a strong need for preserving aesthetic identity — a point frequently stressed in the statements of individual composers<sup>4</sup>.

The chronology of the reception of twelve-note and serial techniques in the works of Polish composers can be divided into three phases, embedded in a general descriptive model of "fluctuations of modernism" (see Table 7.1.). This temporal structure is defined both by the dates when external conditions changed abruptly because of historical events (Second World War years, years of dominance of socialist realism aesthetics (1949–1956)), and by the internal regularities in the process of change in the musical language of the twentieth century. However, the main demarcation lines in the periodic division adopted here are constituted by dates of composition of particular works created in accordance with the serial principles.

The first phase (see Table 7.2.) includes, primarily, all the compositions of the Lvov pioneers of the twelve-note technique Józef Koffler, whose piano composition *Musique de ballet* op. 7 from 1926 marks the introduction of the dodecaphony to Poland, and Tadeusz Majerski, whose artistic achievements dating to the mid-1930s (*Four piano preludes* and *Two etudes* for orchestra (1936)) provide an interesting supplement to the phenomenon which might be described as the “Lvov school of dodecaphony”. Koffler’s works emphasise above all the Schönbergian aspects of the twelve-note technique relating to the thematic treatment of the series and assigning to it the function of the main regulator of the course of the music. They also contain experiments with cyclical permutations of twelve-note rows (yet in *Musique. Quasi una sonata* op. 8 (1927)) which are forerunners of Alban Berg’s achievements (e.g. *Aria Der Wein* (1929))<sup>5</sup>. Moreover, one can find in Koffler’s output some interesting attempts at incorporating of a purely tonal material in a rigorously serial structure of the work (as in his *II Symphony* op. 17 where the melodies of Polish folk songs *Pije Kuba do Jakuba* and *Miała baba koguta* are quoted) (see Figure 7.1.).

On the other hand, the twelve-note works of Tadeusz Majerski are based on experiments with the building of a series, which consist in marking in it many internal connections (above all homologous groups and palindromes) in the manner of Webern’s highly prestructured twelve-note rows (e.g., *Symphony* op. 21, *Concerto for 9 instruments* op. 24) (see Figure 7.2.).

The early 1940s saw the debut as a composer of Konstanty Regamey, who brought into this phase a new stylistic and technical quality. At concerts arranged in secret in occupied Warsaw he presented highly original attempts at assimilating the twelve-note technique in his *V Persian Song* for baritone and orchestra (1942–43) and his *Quintet* for clarinet, bassoon, violin, cello and piano (1944). Regamey’s *Quintet* is an example of creative adaptation of dodecaphony of the Bergian type, which contains elements of major-minor tonality and which opens the possibility of permutational treatment of twelve-note rows (see Figure 7.3.).

The first phase of the history of dodecaphony in Poland ends in 1944 with this work. It also constitutes the lower boundary of a four-year gap in its

The musical score shows a complex melodic structure. The top part of the score includes woodwind parts (flute, oboe, clarinet) with specific pitch class boxes: G-Major (11 10 9), D flat-Major (11 10 9), F-Major (11 10 9), B-Major (11 10 9), E flat-Major (11 10 9), and A-Major (11 10 9). The violin parts (vi 1 and vi 2) are marked with pitch class labels: P<sub>1</sub>, P<sub>11</sub>, P<sub>9</sub>, P<sub>7</sub>, P<sub>5</sub>, P<sub>3</sub>, P<sub>1</sub>, P<sub>11</sub>, P<sub>9</sub>. The bass line (vi 1 and cb) follows a similar pattern of pitch classes.

Fig. 7.1. Józef Koffler, *II Symphony* op. 17, mov. IV, b. 171–179, *Miała baba koguta* melody.

assimilation, when Polish musical culture was being reconstructed during the early post-war years.

The second phase (see Table 7.3.) starts in 1948, with the composition of the string trio *Ricercari* by Roman Haubenstock-Ramati. The need for re-evaluating this period by taking into consideration the output of Polish composers working abroad is particularly apparent. The few instances of interest in modern compository techniques, mainly in the works of Bogusław Schaeffer and Kazimierz Serocki, constitute only part of a much wider assimilation of the twelve-note technique during that phase. This trend, originating

Majerski's palindromic row (*Four piano preludes*)

$P_0 >$   $< P_6$

Webern's palindromic row (*Symphony op. 21*)

$P_0 >$   $< P_6$

Fig. 7.2. Majerski's and Webern's palindromic rows.

from the feeling of being connected to universal values, and from individual creative strategies, can be more clearly observed in the work of composers active outside Poland, in what might be called a “dodecaphonic diaspora”: Roman Palester, Roman Haubenstock-Ramati, Konstanty Regamey and Karol Rathaus. Dodecaphonic works of Polish composers created in the post-war decade may be classified into two basic groups. The first one concentrates its activities around a constant search for new technical, notational and formal solutions which are linked to dodecaphony as that element of the composer's tools which guarantees the logic and comprehensibility of the musical course. Such compositions as Haubenstock-Ramati's *Ricercari* (1948), *Blessings* (1951) or *Recitativo ed aria* (1954), originating from the twelve-note base, bring new compositional proposals, and in particular a new concept of musical time and space, contained within the framework of the so-called “dynamically closed form” (dynamisch geschlossene Form). This is based on the

**Lento** source row (P<sub>1</sub>) permuted row

1 2 3 4

cl *ppp* (1) (5) (9) (10)

bn 5 6 7 8 (3) (4) (8) (12)

vi *pp* con sord. *p* *mf*

vc *ppp* (2) (6) (7) (11)

fp *ppp*

Fig. 7.3. Konstanty Regamey, *Quintet* for clarinet, bassoon, violin, cello and piano, mov. II., b. 1–5.

idea of “variation through repetition”, which in the composer’s later works led to a totally new form — the mobile. On the other hand, Bogusław Schaeffer’s *Two Piano Compositions* (1949–1950) and the piano *Composition* (1954) express fascination with the interval as the main carrier of the melic content in music. For Schaeffer, the adoption of the rules of dodecaphony was from the beginning linked with attempts to go beyond Schönberg’s classical model towards serializing musical parameters other than pitch.

The compositions of Roman Palester (*IV Symphony* (1948–52), *Passacaglia* (1953) and *Variazioni* (1955) for orchestra, *Preludes* for piano (1954)), of Konstanty Regamey (*Musique pour cordes* (1951–53), *Cinq etudes pour voix de femme et piano* (1955)) and Karol Rathaus (*V String quartet* (1954)) employ the dodecaphonic technique which is most closely linked to Berg’s twelve-note writing. They emphasize norms secondary to Schönberg’s classical doctrine (in particular permutation and the weaving of tonal elements into the structure of the series), while on the aesthetic plane it is the issues of expressiveness which come to the fore. The unorthodox use of the series in

the works of Regamey and Rathaus means that dodecaphony is treated there as a kind of “auxiliary technique”, complementary to other, non-serial ways of organising pitch.

To complete the overview of the use of the twelve-note technique by Polish composers in the years 1945–1955, one needs to refer to an example of its use in a composition which cannot be assigned to either of the above groups — the *Suite of preludes* (1952) for piano by Kazimierz Serocki. For a long time this work was, without foundation, regarded as the first Polish twelve-note composition written after the war.<sup>6</sup> However, both Roman Palester’s *IV Symphony* and Bogusław Schaeffer’s piano compositions, whose “dodecaphonicity” is much more advanced, were composed earlier. What does distinguish the *Suite of preludes* is the rudimentary character of the twelve-note technique; this venture into the area of the sound space being taken over by chromatic series, which might be described as “exploratory” (twelve-note but non-serial ‘aggregates’), is merely the point of departure for Serocki’s later achievements using the twelve-note and serial techniques<sup>7</sup>.

The political upheavals which took place in October 1956 resulted in social and cultural changes in Poland, and this date marks the beginning of the third phase of the reception. In music, the watershed was the performance of Tadeusz Baird’s *Cassazione per orchestra* at the first International Festival “Warsaw Autumn”. With cultural pluralism being re-established, acceptance of modern technical and aesthetic ideas was so widespread, that it would be easier to provide an index of composers who showed restraint in their attitude to twelve-note and serial techniques, than to mention all those who actively made use of the possibilities they offered.

The high degree of differentiation in the manifestations of twelve-note and serial techniques during this phase means that they are best analysed systematically (see Table 7.1.). The issue concerns the links between serialism and other aspects of a musical work. The most important ones are problems of musical syntax (thematicism), structure (pointillism), sound aspects (sonorism) and form (aleatorism). Other aspects include Polish attempts at total serialization (see Table 7.4.), and ideas for controlling musical space using the row, present in the works of Witold Lutosławski and Zygmunt My-

cielski, and independent of Schönberg's classical doctrine. In the majority of cases the interest in the twelve-note technique is not related to one, chosen non-serial method of shaping music. Theme/motif-based dodecaphonic approaches coexist with emphasis being placed purely on the sonorous aspect of the music; post-Weberian pointillism does not automatically imply total serialism, and aleatorism does not preclude the use of the strictest forms of serialisation or sonoristic devices.

From the early 1960s one can observe the tendency towards widening the search by the avantgarde for new concepts in textural, timbral and formal solutions; however this does not in any way imply a total abandonment of serial techniques. It is therefore most difficult to decide on a point where the history of dodecaphony and serialism in the music of Polish composers comes to an end. One can propose 1976 as a symbolic boundary<sup>8</sup>, when a number of important works were composed (such as, for example, Henryk Mikołaj Górecki's *III Symphony*) which had clearly moved away from the avantgarde achievements of the past and were looking forward to the attractions of post-modernism. On the other hand it should be remembered that the period after 1976 showed many compositions which made use of the possibilities offered by the twelve-note technique and which introduced creative modifications into it. Among them one finds not only works influenced by modernist aesthetics, but also compositions in which dodecaphony is used as an equally valued element of postmodern multiplicity and synthesis (e.g., *Bagatelle für A. W.* by Paweł Szymański (1995)).

The basic regularity which can be discerned in the chronological approach to the development of serial works of Polish composers is the dynamic growth of interest in these techniques — from the singular examples of its adoption in the first phase, through sporadic and dispersed manifestations in the second phase, until its general acceptance in the third phase. However, the actual mechanisms of their reception are revealed only in the synchronic perspective, through defining the relations between a particular musical-aesthetic model, and the manner in which it is adopted in compositional work. The reception of these most influential compositional doctrines of the twentieth century by Polish composers is safeguarded both by the principle of creative develop-

ment of their elements, and the process of creating on their basis totally new, original qualities within the constant search for “new music”. The transforming mechanisms of assimilation include thus a wide spectrum of phenomena, from the unprecedented fusion of Schönbergian thematic dodecaphony with neoclassical stylistics in the works of Koffler, described in detail by Maciej Gołąb<sup>9</sup>, to the extreme widening of the total serialism model in Antoni Prosnak’s concept (*Composition with a Universal Series* (1964)). In contrast to the attitude of Western avantgarde centres, where serial techniques were increasingly regarded as having exhausted their potential, Prosnak points to the possibilities of their further development by linking all musical and non-musical elements within a synthetic art with a higher numerical model — a “universal differences series”<sup>10</sup>. Exemplary (see Figure 7.4.) universal row: -q, -2q, -2q, -q is applied to texture, rhythm, meter, and intervals. For the texture the value of q is a single part, for rhythm it is hemidemisemiquaver, and in case of interval structure the value of q is a semitone. Serialized structure departs from seven-part structure and becomes gradually thinner (7-6-4-2-1), while metric series starts from 4/8 and changes to 31/64, 29/64, 27/64 and 13/32. Prosnak composed also four durational rows, starting from quaver (8-7-5-3-2), crochet (16-15-12-11-10), dotted crochet (24-23-21-19-18) and minim (32-31-29-27-26). Finally, three interval rows are unfolded: 7-6-4-2-1, 9-8-6-4-3 and 11-10-8-6-5.

The move away from ideas inspired largely by the Western avantgarde, towards individual, separate searchings and concepts can be seen in compositions inspired by pointillism. Their most significant feature is the separation of pointillist technique from its serial origin, and even considerable loosening of the dodecaphonic norms themselves. However, the most important consequence of such attitudes has been the coexistence in the works of Polish composers of transformatory procedures derived from dodecaphony (retrograde motion, inversion, permutation) with other technical solutions. Combining serial formulae with sonorism, which was the distinguishing mark of the so-called Polish school of composition in the 1960s, and with elements of indeterminacy, came to reflect within the Polish tradition in its own specific way Stockhausen’s conviction that “serial thinking is something that’s come

The image displays a musical score for seven staves, labeled I through VII. The notation includes various rhythmic values, accidentals, and slurs. Numerical annotations are placed on the staves:

- Staff IV: 4, 8, 31, 64, 29, 64
- Staff III: 27, 13
- Staff IV: 64, 32

The score is organized into three measures. The first measure contains the numbers 4 and 8 on staff IV. The second measure contains 31 and 64 on staff IV, and 27 and 13 on staff III. The third measure contains 29 and 64 on staff IV, and 32 on staff IV.

Fig. 7.4. Antoni Prosnak, *Composition with a Universal Series*.

into our consciousness and will be there forever: it's relativity and nothing else"<sup>11</sup>.

Totally new qualities arose either as a result of applying serial regulation of pitch onto a layer of modern "purely sonorous effects", or — more fundamentally — through applying reflexive numerical transformations and permutations to sonoristic structures, so characteristic of the works of Krzysztof Penderecki (*Quartetto per archi*, *Dimensions of time and silence*), Henryk Mikołaj Górecki (*Genesis* cycle) and Wojciech Kilar (*Diphthongos*). Thus, although the aesthetic awareness of these composers concentrated around aspects of musical sonorism, this did not mean a total rejection of serial techniques. For example, in the initial fragment of Penderecki's *Quartetto* aside from the pitch row several numerical rows are used<sup>12</sup>. The series of odd (1-3-5-7-9) and natural (1-2-3-4-5-6-7-8-9) numbers, a series of pairs of alternately odd and even numbers (1-3-2-4-5-7-6-8) and a Fibonacci series of numbers (2-3-5-8-13) function here to order the so-called 'ligatures' — groups of extraordinary articulated notes joined by a single full beam.

However, an attempt was made at working out a compromise between total serialism and aleatory technique, by putting forward proposals to free some musical elements from strict distribution, while preserving serial pitch regulation (e.g., *Varianti per due pianoforti* and *Metamorphoses* by Roman Palester) and by attempts to employ serial techniques within the framework of "open" formal concepts (e.g., *Three diagrams for solo flute* by Henryk Mikołaj Górecki, *Rotazione* by Adam Walaciński).

The discussion of serial techniques in the works of Polish composers would not be complete without taking into account two other significant phenomena, characteristic of the third phase of development. They concern, firstly, the works of Witold Lutosławski and Zygmunt Mycielski, which developed on the basis of a clearly stated rejection of links with the traditions of Vienna or Darmstadt. The fundamental impulse for both these original solutions was criticism of those aspects of serialism which were imperceptible aurally, and the desire to move the centre of gravity to issues of musical perception, through reference to the expectations and habits of the listener. The twelve-note series was treated as a purely introductory, abstract regulator of the pitch

material, which later was subject to structuring methods independent of the Schönbergian doctrine. Lutosławski turned the series into a complementary element of a set of devices for ordering sound-space structures (including twelve-note chords and the so-called “assigned notes”)<sup>13</sup>, and Mycielski in his “matrix system” included it in the area of “modulatory” procedures, conceived of in his own individual manner, and techniques of elimination and choice of specific elements from a twelve-note potential<sup>14</sup> (see Figure 7.5.<sup>15</sup>).

The second phenomenon concerns regarding dodecaphony and serialism as points of departure for the search for increasingly innovative artistic solutions. It manifests itself in the works of Bogusław Schaeffer and Roman Haubenstock-Ramati. New formal, timbral, notational and structural devices were linked to the achievement of the serial doctrine as the most stimulating compositional concept of last century, without which they simply could not have come into being. In this interpretation, works such as Schaeffer’s *Tertium datur* or *Azione a due*, and Haubenstock-Ramati’s *Mobile für Shakespeare* are manifestations of the heritage of dodecaphony, understood in the widest possible sense.

The story of dodecaphony and serialism in the works of Polish twentieth-century composers is undoubtedly a turbulent process of interest to researchers. The true significance of these areas of creative activity of Polish composers, neglected in Western historical research, lies in the specific, exceptionally creative development of the two related artistic doctrines. One should thus emphasise that serial techniques played a much more significant part in the history of twentieth-century Polish music than has been traditionally accorded to them. Such a varied and artistically valuable heritage should also become a permanent part of the history of European music, especially when regarded from the perspective of a united Europe.

Tablica A

The image displays a musical score for a piece titled "Tablica A". At the top, a single melodic line is shown in treble clef, with three groups of notes labeled 'a', 'b', and 'c' underneath. Below this, the score is organized into six systems, each containing three staves. The notes are written in a complex, chromatic style, with many accidentals (sharps, flats, naturals) and some notes beamed together. The notation is dense and intricate, characteristic of a twelve-note matrix. The overall layout is clean and professional, with clear staff lines and consistent notation throughout.

Fig. 7.5. Zygmunt Mycielski, twelve-note matrix with highlighted groups.

Phases of assimilation	Phase I Modernism I (1926–1944)	Phase II “outlawed” modernism (1948–1955)	Phase III Modernism II (1956–1976) ( $\infty$ )
Composers and problems	“Lvov school of dodecaphony”: • Józef Koffler • Tadeusz Majerski Konstanty Regamey	“dodecaphonic diaspora”: • Roman Palester • Roman Haubenstock-Ramati • Konstanty Regamey • Karol Rathaus • Bogusław Schaeffer • Kazimierz Serocki	serial techniques in relation to: • thematicism • pointillism • sonorism • aleatorism • total serialism ideas independent of Schoenberg’s classical doctrine

Table 7.1. Serial techniques in the works of Polish twentieth-century composers — periodization.

1926	J. Koffler <i>Musique de ballet</i>				
1927	J. Koffler <i>Musique. Quasi una sonata</i>	J. Koffler <i>15 Piano Variations</i>			
1928	J. Koffler <i>Trio for strings</i>				
1930	J. Koffler <i>I Symphony</i>	J. Koffler <i>Piano Sonatina</i>			
1931	J. Koffler <i>Cantata, 'Die Liebe'</i>				
1932	J. Koffler <i>Piano concerto</i>	J. Koffler <i>Alles durch M. O. W</i>			
1933	J. Koffler <i>II Symphony</i>				
1934–1936	T. Majerski <i>Suite for cello and piano</i>				
1935	J. Koffler <i>III Symphony</i>	J. Koffler <i>Quatre Poemes</i>	J. Koffler <i>20 Piano Variations</i>	T. Majerski <i>Four piano preludes</i>	T. Majerski <i>Four piano compositions for voice and piano</i>
1936	T. Majerski <i>Two symphonic etudes</i>	J. Koffler <i>Capriccio for violin and piano</i>			
1940	J. Koffler <i>IV Symphony</i>				
1940–1942	K. Regamey <i>Seven Persian songs for baritone and piano</i>				
1942–1944	K. Regamey <i>Quintet for clarinet, bassoon, violin, cello and piano</i>				

Table 7.2. *Twelve-note compositions in the output of Polish composers in the years 1926–1944.*

1948	R. Haubenstock-Ramati <i>Ricercari for string trio</i>
1948–1950	R. Palester <i>IV Symphony</i>
1949–1950	B. Schaeffer <i>Two piano compositions</i>
1950–1951	R. Palester <i>Trenodies for voice and instrumental ensemble</i>
1951	R. Haubenstock-Ramati <i>Blessings for soprano and 9 instruments</i>
1951–1952	R. Palester <i>Three sonnets to Orpheus</i>
1951–1953	K. Regamey <i>Musique pour cordes</i>
1952	K. Serocki <i>Suite of preludes</i>
1953	B. Schaeffer <i>Music for strings – Nocturne</i> R. Palester <i>Pasacaglia for orchestra</i>
1954	R. Palester <i>Piano preludes</i> B. Schaeffer <i>Piano composition</i> R. Haubenstock-Ramati <i>Recitativo ed aria for harpsichord and orchestra</i>
1955	R. Palester <i>Variations for orchestra</i> K. Regamey <i>Cinq études for voice and orchestra</i>

Table 7.3. *Twelve-note compositions in the output of Polish composers in the years 1948–1955.*

1957	B. Schaeffer <i>Model II for the piano</i>		
1958	K. Serocki <i>Musica concertante</i>	R. Haubenstock-Ramati <i>Séquences for violin and orchestra</i>	R. Haubenstock-Ramati <i>Mobile für Shakespeare for voice and instruments</i>
1959	H. M. Górecki <i>Three diagrams for solo flute</i>	W. Kotoński <i>Study on one cymbal stroke</i>	
1959– 1969	K. Regamey <i>Electronic Hymn from the opera Don Robott</i>		
1960	H. M. Górecki <i>Scantri for orchestra</i>	B. Schaeffer <i>Concerto per sei a tre</i>	
1961	B. Schaeffer <i>Model III for the piano</i>	B. Schaeffer <i>Azione a due for piano and instruments</i>	
1962	B. Schaeffer <i>Four compositions for string trio</i>		
1964	A. Prosmak <i>Composition with a universal series</i>		

Table 7.4. *Totally serial compositions in the output of Polish composers in the years 1957–1964.*

## Notes

- 1 Detlef Gojowy, 'Russia and Eastern Europe, 1945–70', in: *Modern Times. From World War I to the Present*, ed. Robert P. Morgan, Englewood Cliffs, N.J.: Prentice Hall, 1994. , p. 307.
- 2 See: Józef Michał Chomiński, *Muzyka Polski Ludowej [Music of People's Poland]*, Warszawa: PWN 1968; Krzysztof Baculewski, *Polska twórczość kompozytorska 1945–1984 [Polish Composition 1945–84]*, Kraków: PWM, 1987.
- 3 The term sonoristics or initially rather its adjectival form — 'sonoristic technique' — was introduced into Polish musicological literature by Józef Michał Chomiński, 'Z zagadnień techniki kompozytorskiej XX wieku' ['Some Problems of 20th-century Compositional Technique'], *Muzyka* 1956 No. 3; see also: J. M. Chomiński, 'Technika sonorystyczna jako przedmiot systematycznego szkolenia' ['The Sonoristic Technique as a Subject of Systematic Training'], *Muzyka* 1961 No. 3 and J. M. Chomiński *Muzyka Polski Ludowej [Music of Peoples's Poland]*, op. cit.). It refers to "placing the values relating purely to the sound aspect in the forefront as the main means of expression, and thus a structural factor" (Chomiński 1968, p. 127).
- 4 See: Zbigniew Skowron, 'Recepcja postaw i programów awangardowych w powojennej muzyce polskiej' ['Reception of Vanguard Behaviors and Programs in the Post World War II in Polish Music'], in: *Muzyka polska 1945–1995 [Polish Music 1945-1995]. Materiały z sesji naukowej 6–10 grudnia 1995 w 20-lecie Zakładu Analizy i Interpretacji Muzyki [Notes from the Science Session 6-10th December for the 20th Anniversary of the Analysis and Music Interpretation Department at the Academy of Music in Kraków]*, eds. K. Droba, T. Malecka, K. Sz wajgier, Kraków: Akademia Muzyczna, 1996, p. 75.
- 5 These are exhaustively described by Maciej Gołąb in: *Józef Koffler*, Kraków: Musica Iagellonica, 1995, p. 38.
- 6 Such data is provided by, for example, Baculewski, op. cit., p. 170, and indirectly also Chomiński, op. cit, p. 113.
- 7 The second phase of assimilation of serialism includes also compositions of Tadeusz Majerski, not listed in Table 7.2. The postwar output of this composer testifies to attempts at preserving artistic independence under conditions of extreme pressure to conform to socialist realism aesthetics. Dodecaphony functions here as a relic, camouflaged in non-serial but twelve-note complexes (*Piano Concerto* (1946–47); *Four Organ Compositions* (1953)) and returns as a distant echo in structures based on interval-serial models employed in earlier compositions (*Cello Sonata* from 1949, which is a new version of the *Cello Suite* from 1934–36).
- 8 This date is treated as a watershed in the postwar history of Polish music by Krzysztof Baculewski. Cf. his *Polska twórczość kompozytorska... [Polish Composition...]*, op. cit., p. 280.
- 9 See Maciej Gołąb *Józef Koffler*, op.cit., pp. 186–201.
- 10 See Antoni Prosnak, 'Kompozycja serią uniwersalną' ['Composition with a Universal Series'], *Muzyka* 1964 Nos. 1–2, pp. 84–100.
- 11 Jonathan Cott *Stockhausen: Conversations with the Composer*, New York: Simon & Schuster, 1973, p. 100.
- 12 See Krzysztof Bilica, 'Pozaekspresyjne porządki w <Kwartecie smyczkowym (nr 1)>' ['Beyond Expression in the String Quartet (no 1)'], in: *Współczesność i tradycja w*

*muzyce Krzysztofa Pendereckiego* [Modernity and Tradition in Krzysztof Penderecki's Music], eds. R. Chłopicka, K. Sz wajgier, Kraków: Akademia Muzyczna 1983, p. 75.

- 13 The fullest description of the system of pitch organisation together with the foreground role of twelve-note series is to be found in Martina Homma's *Witold Lutosławski. Zwölf-ton-Harmonik – Formbildung – "aleatorischer Kontrapunkt". Studien zum Gesamtwerk unter Einbeziehung der Skizzen*, Köln: Bela Verlag, 1996.
- 14 See: Zygmunt Mycielski, 'Jeszcze o wyborach wysokości dźwięku' ['More about the Choices of Sound Pitch'], *Res Facta Nova* nr 1(10), Poznań 1994, pp. 12–16.
- 15 In the original matrix, the given groups of notes were indicated with different colors. As only a black and white photocopy of the table has remained, in the above example the "coloring" has been reconstructed through increasing the shape of the adequate note-heads.