Rewriting Recent Music History: The Development of Early Serialism 1947–1957

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THE TONE ROW, SQUARED: BRUNO MADERNA AND THE BIRTH OF SERIAL MUSIC IN ITALY*

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Even ignoring his actually quite spectacular career as a child prodigy around 1930, Bruno Maderna had begun to emerge as a strong musical personality already in his twenties, though of course the war slowed his activity in many ways. He started to compose seriously in 1941–42, receiving support mainly from Gian Francesco Malipiero, the Venetian composer who had shared with Alfredo Casella the historic role of reviving the music of seventeenth- and eighteenth-century Italian masters, thus bringing back an almost forgotten instrumental tradition to the national musical culture. Through Malipiero, Maderna deepened the study of the Renaissance masters and started forging his style by twisting the then fashionable neoclassical trend towards a uniquely brilliant and thoughtful contrapuntal writing. He had also been attracted at an early age to Hindemith's theoretical work, and there is evidence that already in 1940 he was studying the *Unterweisung im Tonsatz*.[1]

Now that his substantial work from those years is beginning to resurface — the Piano Concerto (1942) and especially the riper, monumental *Requiem* (1946), both recently unearthed[2] — it becomes clear that in those years Maderna was trying to find an escape from the tonal system by way of evolving from a harmonic framework strongly influenced by Hindemith and Bartók. He was probably aware at that time of the Second Viennese School

* This article has profited from research conducted at the Paul Sacher Stiftung in Basel and the Archivio Luigi Nono in Venice. Documents, examples, and facsimiles are reproduced with the kind permission of both institutions. I would also like to express my grateful thoughts to Gianmario Borio and Angela Ida De Benedictis for sharing ideas, researches and documents on many topics touched in this article.

[1] Paul Hindemith, *Unterweisung im Tonsatz* (Mainz, 1937). The purchase of a 'Treatise in counterpoint' by Hindemith is mentioned in a letter that Bruno Maderna writes from Rome, where he is studying, to his adoptive mother on 19 December 1939. (Unpublished letter of Bruno Maderna to Irma Manfredi (Paul Sacher Stiftung, Basel).)

[2] Veniero Rizzardi (ed.), *Esumazione di un Requiem*. Edizione anastatica della partitura e note informative sul ritrovamento del giovanile *Requiem* di Bruno Maderna (Florence, 2007).

— after all Malipiero had already had personal contacts with Schoenberg and Berg before the war — but he was probably not attracted by their music before 1947, when he got to know Luigi Dallapiccola. Although the very first Italian dodecaphonic piece was, in 1941–42, a *Serenata* by Camillo Togni (then aged twenty), Dallapiccola stands indisputably as the pivotal figure in introducing the twelve-note technique in Italy with the *Cinque frammenti di Saffo* (1942–43), first panel of a triptych that set to music some fragments of Greek lyric poetry in a recent Italian translation.[3] This music was important for its matching of the novelty of the new international trend in composition to the vernacular, so to speak, reinvention of an archaic idea of *melos*. Indeed, this concept established an aesthetic canon, since between 1948 and 1949 Maderna and Luigi Nono also composed their first twelve-note pieces on Greek poems — in that same translation —, *Tre Liriche Greche* and *Due Liriche Greche* respectively.[4] These pieces had hardly any circulation at that time (Nono even left his work unpublished), but they are crucially important in the artistic biography of both composers. Along with the deliberate reference to Dallapiccola's model, their dedication to Hermann Scherchen bears a specific significance.

Scherchen, who had returned to Germany in 1947 after an exile of eighteen years, had been invited by the International Festival of Contemporary Music in Venice to give a course in music analysis and conducting, which took place in September 1948. Maderna, Nono, and other young musicians — notably a group of Brazilian composers, all pupils of Hans Joachim Koellreutter — attended that workshop, which in retrospect can be considered to have been a crucial episode in the communication of international experiences, and more specifically in the introduction of twelve-note music to postwar Italy. During the Venice workshop the two young composers captured the attention of Scherchen, who immediately took them under his wing and eventually fostered their international debut at the Darmstadt summer courses in 1949 and 1950. The meeting with this German musician, who had been working with Schoenberg long since — he had even conducted the premiere

[3] *Lirici greci*, trans. Salvatore Quasimodo, with introduction by Luciano Anceschi (Milano, 1940).

[4] Another diptych was part of this fascination for setting Greek poetry to music: the two *Liriche greche* written by Eunice Catunda (or Katunda), a Brazilian composer who was part of Koellreutter's circle, and who worked close to Maderna and Nono during her stay in Venice during the winter of 1948–49. See Eunice Katunda, 'A minha viagem para Europa', in Carlos Kater, *Eunice Katunda, musicista brasileira* (São Paulo, 2001).

of *Pierrot lunaire* in 1912 — had a great impact on the community of the Venetian musicians. Maderna had already been teaching privately since settling in Venice in 1946, but it was precisely in the years 1948–52 that he formed a real composers' workshop, where they all analysed music of the sixteenth-century masters alongside that of Debussy, Hindemith, and Schoenberg and where they experimented with twelve-note technique. According to one of his former pupils, Renzo Dall'Oglio, Maderna dreamed of bringing back a Renaissance *bottega*, where even individual authorship should have been of lesser importance than collective creation. The 'New Venetian School' group would also meet at Hermann Scherchen's villa in Rapallo. All this was indeed a major turn: for Maderna, who changed his way of making music, and for Nono — the *primus inter pares* in the workshop — who at that time had just started composing. There is some evidence that they were aware of this, as Maderna would write to Nono in 1952 that 'having created […] a common technique, a common personality' he was currently feeling that they should both 're-examine all the results, all the research made after 1948.'

A transition is apparent in the works that Maderna wrote between late 1947 and 1949: the Concerto for two pianos and instruments, the *Fantasia e Fuga su BACH* for two pianos[5] and the *Tre Liriche Greche* for small choir, soprano solo, and instruments. While the first is a post-tonal work that sounds much like Bartók, the other two employ twelve-note rows, but already in a personal way. Maderna is clearly moving some steps ahead in the direction suggested by Dallapiccola, by combining a contrapuntal technique whose models are the Renaissance masters and Bach with the principle of developing non-thematic functions of the row, as pioneered by Webern. As far as the twelve-note technique is concerned, in those works one finds fragmentations, permutations, and proliferations of the basic material that go beyond the discipline of employing only the forms in the usual twelve-note matrix. Even if the choice of a specific row still had an expressive connotation for him,[6] Maderna nevertheless treated it as if the invariance of the basic interval set was not the main concern. Rather, the tone row was

[5] See Paolo Cattelan, 'Biografia di un concerto di Maderna: il *Concerto per due pianoforti e strumenti* (1947–49)'; Stefano Bellon, 'Il *Concerto per due pianoforti e strumenti* di Bruno Maderna verso Darmstadt: un'analisi della partitura'; and Susanna Pasticci, 'Maderna verso il pensiero seriale. La *Fantasia e fuga* per due pianoforti (1949)', in Paolo Cattelan (ed.), *Malipiero Maderna* (Florence, 2000).

[6] Renzo Dall'Oglio, personal communication, July 1994.

considered as the germ of a more complex pitch organization in which different pitch-class sets were produced. Given that an equal distribution of pitch classes over the entire composition was already implied in the method of generation, the composer had to face the problem of controlling interval material that was definitely less consistent than in a conventional dodecaphonic framework.

For this purpose Maderna devised a system that enabled him to 'weigh' exactly the expressive quality of the material — a system that would take firm root in his technique, and in Nono's as well. The principle introduced by Maderna is clearly derived from Hindemith: that is, a survey of the different degrees of tension generally ranging from the utmost relaxation of the perfect fifth (unison and octave are not considered) to the utmost tension of the augmented fourth. This reference to Hindemith represents a continuity with Maderna's earlier, pre-dodecaphonic work, and once again shows how strong he felt the connection to be between the contemporary progressive musical trends and the early music he still eagerly studied and transcribed. A text survives, probably from the early 1940s, in which Maderna describes how Hindemith, followed by Malipiero, had introduced a non-tonal harmonic system based on the 'dynamic functions' of chords built upon pure, physical ratios,[7] as was supposed to be the case in the polyphonic music of the Renaissance. These facts reveal that the origins of the 'Italian way' to serial music traced by Maderna — and immediately followed by Nono — cannot be entirely understood within the Schoenberg – Webern – Messiaen lineage, as received wisdom has it.

The first 'relaxation/tension' schemes are found among the sketches of the *Composizione n. 2* and of the *Studi per 'Il processo' di Kafka*. In the latter the intervals are still classified as 'consonant' and 'dissonant', but a chart is also found in which all intervals up to the minor ninth are mutually opposed around a centre represented by the augmented fourth: perfect fifth and minor second (maximum opposition) are associated respectively with the colours black and white.

A copy of this drawing, only without the black/white association, is found among the sketches of Nono's *Polifonica –Monodia–Ritmica*, showing two different versions — 'melodic' and 'harmonic' — of the chart.

[7] Nicola Verzina, 'Mutazioni storiche. Intorno a tre testi inediti di Bruno Maderna', *Studi Musicali*, 28/2 (1999).

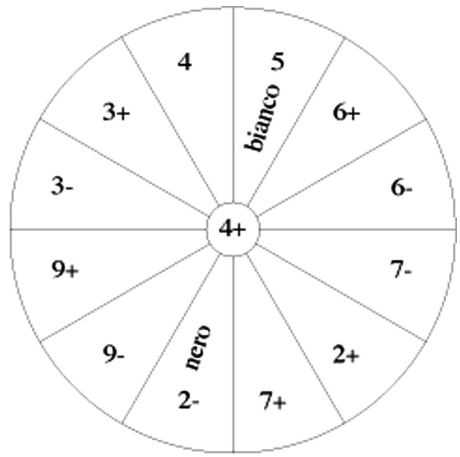


Figure 1. Interval diagram for Bruno Maderna, *Composizione n. 2 per orchestra* and *Studi per* 'Il processo' *di Kafka* (reproduction of the original sketch; 'bianco' = white, 'nero' = black)

Nono's twofold chart reveals even more clearly its origin in the *Unterweisung im Tonsatz*, where Hindemith classifies the harmonic and melodic 'strength' of the intervals:[8]

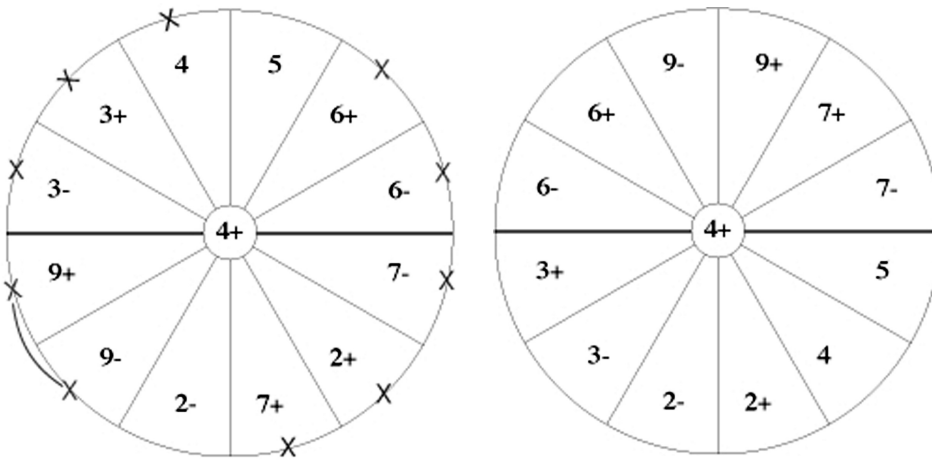


Figure 2. Interval diagram for Luigi Nono, *Polifonica –Monodia–Ritmica*, 'melodic' (left) and 'harmonic' (right) (reproduction of the original sketch)

[8] Hindemith, *Unterweisung im Tonsatz*, 110–12.

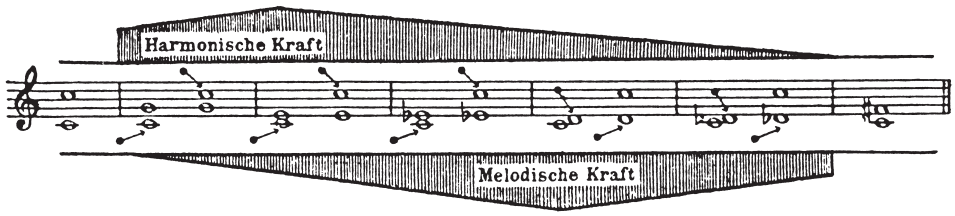


Figure 3. 'Melodic strength' and 'harmonic strength' of the intervals. Paul Hindemith, *Unterweisung im Tonsatz* (facsimile reproduction)

According to what is found in the sketches, it is possible to say that almost every single work composed by Maderna and Nono until at least 1953 uses this method for the purpose of selecting and regulating the use of the pitch-class sets derived from the permutations. The chronology of the compositions, the scrutiny of their preliminary sketches, and the study of the correspondence confirm that Maderna clearly played a leading role within the 'New Venetian School': he was the one who experimented with new techniques and passed them to his students. In particular he had been employing different ways of analysing and transforming tone rows by way of translating them into graphs. One of these devices, which Maderna discovered early in the year 1951 and which will be briefly described, eventually proved itself to be the most effective of all in turning the tone row into a different entity altogether, capable of giving new directions to the compositional process.

During the few years following the adoption of the twelve-note method, Maderna had not dramatically changed his approach to composition, as one can see in the surviving pieces of the 1940s. It is true that for most of the music written before the twelve-note 'turn' no relevant preliminary material is preserved — and this is only partly explained by the especially erratic period in the composer's life. It is nevertheless apparent that Maderna's work at the time was still based largely on complex contrapuntal constructions, imitation, and canonic forms. In the aforementioned early twelve-note pieces, or even the subsequent two *Composizioni* for orchestra, the adoption of twelve-note technique generally implies a basically multilinear structure, though this is often concealed by interventions that aim at filtering out portions of the canonic constructions.

It is also the necessity of this multilinear writing that Maderna tries to escape by way of the new technique, which could be concisely described as a device for the automatic generation of pre-organized serial material from just

one parameter, pitch. Failing a consistent or uniform definition given by the authors involved (Maderna and also Nono), a convention has been established to call it 'squares technique' or, perhaps better, 'shifting technique'.

Like several systems previously tried out by Maderna, this technique is based on a graphic representation of the tone row. As a rule, the method works as follows: on a sheet of squared paper, some square areas are drawn, 12x12. The first one represents an ordinary twelve-note row, in which notes are ordered vertically, from the top down, 1 (=*A*) to 12 (=*Ab*),[9] and horizontally, left to right.

Here is the basic tone row of Maderna's *Improvvisazione n. 1 per orchestra*, the prototype of its genre, which will be discussed later:

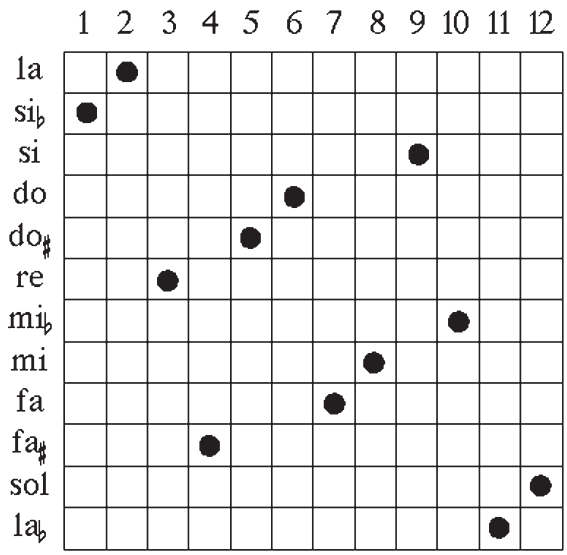
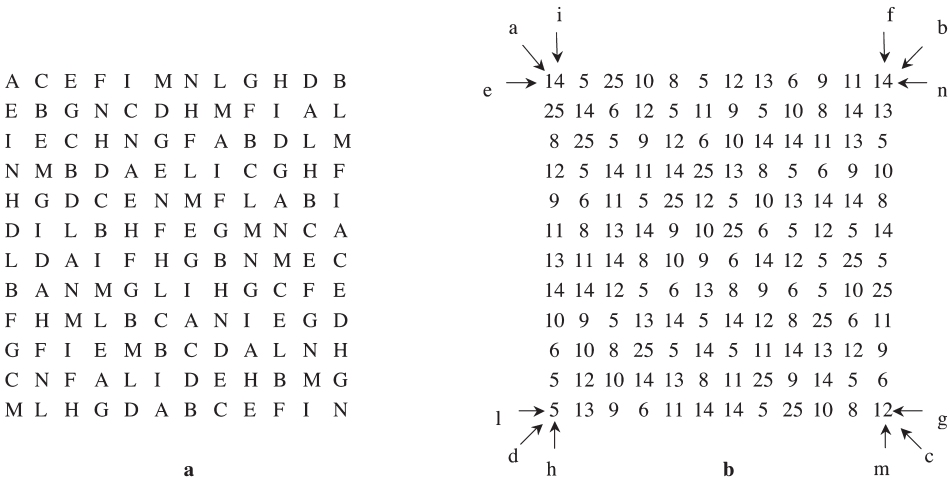


Figure 4. Bruno Maderna, *Improvvisazione n. 1 per orchestra*, graph of the basic row (A1) (reproduction of the original sketch)

Another square is drawn — the actual 'magic square' — that is, a disposition of twelve letters, so that each row or column shows a unique

[9] Maderna, followed by Nono, systematically codes pitch classes as numerals, starting from 1=*A*, through 2=*Bb*, 3=*B*, and so on to 12=*Ab*. In the same way he codes interval classes, i.e. '2+' being the major second, '6–' the minor sixth, the only exception being the augmented fourth ('T' for 'tritonus').

sequence. Letters are replaced by numbers, which are not necessarily different, provided that their sum, divided by twelve, gives a value corresponding to the desired number of derived sets — in this case the value is eleven, since the aim is eventually to obtain a group of twelve squares/sets including the basic one.



A B C D E F G H I L M N
14 14 5 11 25 10 6 9 8 13 5 12
(14 + 14 + 5 + 11 + 25 + 10 + 6 + 9 + 8 + 13 + 5 + 12 = 132 = 11 x 12)

c

Figure 5. *Improvvisazione n. 1*. a) Basic scheme of the magic square; b) Distribution of the shifting factors on the magic square with reading directions (small letters); c) Key of the shifting factors (reproduction of the original sketch)

As a result, within this matrix one can read in any direction — horizontally, vertically, or diagonally — with each of these series representing a unique combination of twelve numbers. These combinations are then systematically assigned, row by row, column by column, to each dot/note of the tone row in order to define how far away the next dot will be drawn, counting the boxes from left to right, in one of the next charts, or even — if the number is small — on the same chart.

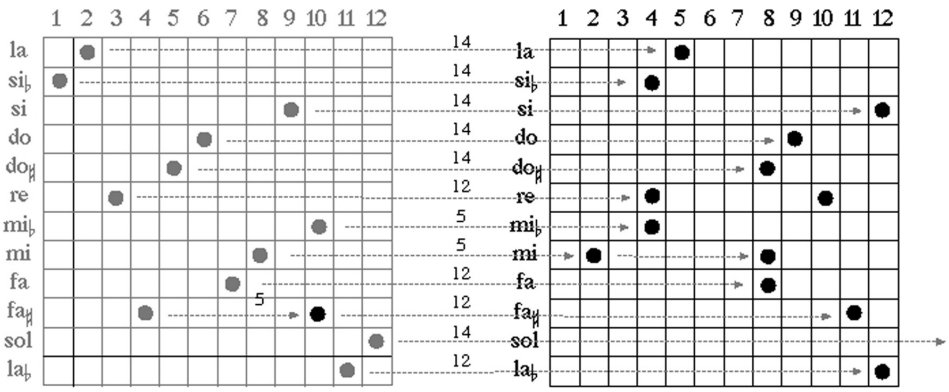


Figure 6. *Improvvisazione n. 1*, first shift: derivation of the A2 set from the basic row (A1) (elaboration of the original sketch)

This operation is repeated for each note, in such a way that the last chart obtained reproduces the same pattern as the first square. Thus the twelve patterns contain 144 dots/notes altogether, corresponding to twelve times the twelve notes of the basic row. This is precisely what Luigi Nono referred to in his 1957 Darmstadt lecture on the 'development of the serial technique':

> Since only the 'serial' function of the tone row has been developed, and not its thematic function, the use of the four basic forms and their transpositions — so important in the thematic conception — is no longer necessary. Only two rows (Webern), and eventually just one is enough for drawing the order of the intervals, and subsequently the entire compositional framework: the basic tone row may remain unchanged, or it may be permuted; the entire composition is therefore based on one row only. The permutation is made either within the row itself (in this case each note, according to the nature of the row, appears just once), or the notes are permuted in a larger context, generated by multiplying the row (by twelve or a multiple of twelve; 12 x 12 = 144). Of course in this case each note of the row occurs at least twelve times, but each time not necessarily in the same order of the original row. In the first case the basic row is preserved, in the latter it is projected on a larger framework.[10]

This method of permutation aims at something more than simply generating new tone rows, or at a uniform distribution of the pitch material 'on a larger framework', according to Nono's somehow understated explanation. If one

[10] Luigi Nono, 'Lo sviluppo della tecnica seriale', in *Scritti e Colloqui*, 1, ed. Angela Ida De Benedictis and Veniero Rizzardi (Milan–Lucca, 2001), 34, my translation.

observes the results of the graphic manipulation it is apparent that the derived squares, except for the first one, which represents the basic twelve-note row, all contain: 1) repeated dots/notes in the same row (horizontal), 2) two or more dots/notes in the same column (vertical), and 3) entire rows or columns of empty boxes.

Each of these squares is then retranslated into ordinary notation, yielding a sequence of twelve sets, which, except for the basic one, are 'series' of not just pitches, but of other, heterogeneous elements. These elements, according to what has been observed, are: 1) isolated notes, which may be repeated within the same set, 2) vertical aggregates of pitches, and 3) 'empty' boxes which are treated as 'rests'. These 'series' are therefore a kind of material that already contains a polyphonic and a rhythmic potential capable of foreshadowing its compositional development. In light of the practical consequences of the 'shifting technique', Nono's announcement of the advent of a new 'sound material' seems less vague. The tone row begins here to lose those motivic–thematic implications that were still present in the music composed by Maderna in the years 1948–49 — it may be recalled that in the preliminary sketches of the *Liriche Greche* the basic tone-row is still called 'theme'.

The tone row has now undergone a real 'mutation', to express it with a term coined by Maderna himself:[11] not only is its aspect different, its function towards the compositional process has a new inherent strength as well. As far as the aggregates are concerned, Maderna, and also Nono, will frequently use the term 'harmonic projection'. This is one of those typical terms that both composers used when they referred to their work, mostly in private, and not consistently. It is indeed used by Nono in his aforementioned article on the development of serial technique when describing the vertical treatment of the row by Schoenberg

[11] Maderna uses the term *mutazione* (mutation) in a note probably written for the lecture that he gave at the Darmstadt summer courses in 1953, where he must have demonstrated the 'shifting technique'. In this text he gives some examples of compositions made with 'mutated' twelve-note rows, such as Luigi Nono's *Variazioni canoniche* and *Polifonica–Monodia–Ritmica*, which are indeed based on complex permutational strategies, however *not* with the aid of the shifting technique (see again Verzina, 'Mutazioni storiche'). The same word *mutazione* is found in various sketches with different and not uniform meanings: in 1952, when working on *Musica su due dimensioni*, which is largely based on the shifting technique, the term still describes a local, simple, 'linear' permutation. *Mutazione* is part of Maderna's private lexicon, not to be found in any published text. It is perhaps interesting to point out one occurrence in a text written by Nono, probably in 1948–49, concerning Dallapiccola's treatment of the tone row: '[…] in the *Congedo di Savonarola*, once the tone row was divided into three fragments, [Dallapiccola] moved them by operating continuous mutations of the basic row […].' (Luigi Nono, 'Luigi Dallapiccola e i *Sex Carmina Alcæi*', in *Scritti e Colloqui*, 1, 3–4, my translation.)

and Webern. In the new context the notion of 'projection' refers to a conscious aesthetic choice: the harmonic colour of the sets derived by means of the shifting technique is the product of an essentially monophonic conception of the process. One year later, during the troubled composition of *Musica su due dimensioni,* Maderna wrote to Nono:

> Once again, no counterpoint. Only the melody, but with clearer and stricter harmonic–timbral projections. The tone row remains as an expressive element (a melody for the flute), and starting from this row, from its thematic– rhythmic features, the need and the necessity of singing is developing. I believe this principle is good.[12]

Following this principle, Maderna had found a way to build up some vertical complexity, a kind of polyphony that could be directly elaborated from a basically melodic process. The vertical dimension is here intended as a complex of harmony and sonority ('harmonic–timbral projections') flowing in a natural way from just a line, which possesses also a built-in rhythmic articulation — a line that comes out of the 'necessity of singing'. One may find here the deep structural foundation of the orientation to the *melos* which both Maderna and Nono consciously referred to in their music, and which probably also helped to give birth to the commonplace of a typically 'Italian' way to serial music.[13]

But there is very little 'harmony' indeed in those statistically generated combinations of two or three tones (less frequently, four or more). These may be better described as sound aggregates, in a sense close to what John Cage had discovered some years before. According to Cage, the experiences made with the prepared piano — where one notated pitch corresponds to a sound complex with unique features[14] — had led him to conceive what he had called the 'gamut technique'. This idea had been applied to various instrumental formats, producing beforehand a supply of sound aggregates, which were then to be systematically and consistently assigned to the single notes of a line, separately

[12] Bruno Maderna to Luigi Nono, undated (probably May 1952). (Archivio Luigi Nono, Venice.)

[13] This was of course rejected by Nono as a commonplace: '[The critics] tried to make some distinction, and in relation to me they talked of Latin elements and lyricism — more or less according to the pattern "he's Italian, so he is probably going to sing".' (Luigi Nono, 'Intervista di Hansjörg Pauli', in *Scritti e Colloqui*, 2, 24, my translation.)

[14] 'The sounds themselves are single, aggregates (cf. the accord sometimes obtained on a prepared piano when only one key is depressed), or complex situations (constellations) in time (cf. the Chinese characters made with several strokes). Sounds of indefinite pitch (noises) are free to be used without any restriction.' (John Cage, 'To Describe the Process of Composition Used in *Music of Changes* and *Imaginary Landscape No.4'*, in Cage, *Silence* (London, 1987), 58.)

composed.[15] When in 1950 Cage presented to Pierre Boulez his newly composed String Quartet, based on the gamut technique, he stressed that 'there is no counterpoint and no harmony. Only a line in rhythmic space'.[16] 'A melodic line without accompaniment', he would state later.[17] It is also true that similar conceptions must have been shared in those years by Boulez himself, who, in his landmark essay *Eventuellement…* theorized a musical entity, the *objet sonore*, as an aggregate devoid of a conventional harmonic significance:

> There may be surprise at my labelling as 'complexes of sounds' what usually are called 'chords'. Without speaking of the historic heritage to which the word 'chord' is linked, I am not according any harmonic function, properly speaking, to such a vertical coagulation. I mean by it nothing more than the superimposition of frequencies as a sound-bloc.[18]

In Maderna's system, especially considering the music written between 1950–54, the vertical group yielded by the shifting technique is indeed very close to the ones conceived by Boulez (through Cage): an unintended aggregate of pitch classes. Later on, Maderna was to elaborate his serial 'machines' in order to design specific harmonic plans, and it would be Nono, in turn, who would better exploit these techniques for the creation of complex sonorities. Even when — with a look at Stockhausen — the composition of sound masses and groups was the key feature of such works as *Cori di Didone* (1958) and *Composizione per Orchestra n. 2: Diario Polacco '58* (1959), Nono stressed the continuity and consistency of his orientation to melody as a poetic principle.[19]

Maderna's shifting technique has another relevant consequence besides the vertical implications: the alternation of full and empty boxes within the squares implies an embryo of rhythmic organization. The 'voids', according to specific choices, are to be translated into rests or indications for different actions, such as extending the duration of the preceding note/aggregate or introducing non-pitched sounds. A further potential of the square will be developed as a tool for distributing values to different parameters, as was common practice by other serial composers at the time.

[15] Concerning the 'gamut technique' see also James Pritchett, *The Music of John Cage* (Cambridge, 1993), 39–55.

[16] Letter from John Cage to Pierre Boulez, February 1950, in Jean-Jacques Nattiez (ed.), *The Boulez–Cage Correspondence*, trans. Robert Samuels (Cambridge, 1993), 55.

[17] *John Cage: Catalog of Works* (New York, 1962), 23.

[18] Pierre Boulez, 'Possibly…', in *Notes on an Apprenticeship* (New York, 1968), 159.

[19] Luigi Nono, 'Composizione per Orchestra n. 2 (Diario Polacco '58)', in *Scritti e Colloqui*, 1, 436.

The shifting technique, as well as other devices, was not, for Maderna, an exclusive 'trick of the trade'. As mentioned before, he passed his discoveries on to his students who, though less experienced musicians, were younger by just a handful of years and all shared a deep friendship. Maderna's *Improvvisazione per orchestra* and Nono's *Composizione per orchestra* — both subsequently retitled with the addition of 'No. 1' — were composed simultaneously in the second half of the year 1951 using the same technique, and presented as a sort of twofold manifesto at one 'Das neue Werk' concert in Hamburg entitled 'Das junge Italien' on 18 February 1952.[20] Some months later Renzo Dall'Oglio would complete his *Cinque espressioni* for orchestra,[21] preparing its material by means of the magic square and the shifting technique. Even *Nones* and other music by Luciano Berio — who was especially close to Maderna during the foundation years of the Studio di Fonologia in Milan (1953–59) — profited from his method.[22] It is well known that similar systems were used in the first half of the 1950s by other serial composers, notably Boulez and Stockhausen.[23] But, once again, this was to have long-lasting consequences on Maderna's and Nono's output, affirming itself as the main tool for generating and pre-forming the musical material. Nono would use it in all of his works until *La terra e la compagna* of 1957, and Maderna until the 1958–59 Piano Concerto.

Among many works by Maderna as well as by other Italian composers of those years, one stands as the prototype of this particular approach to serial composition, since it is surely the first to have been composed almost entirely with the aid of 'magic squares' and the 'shifting technique': it is the *Improvvisazione n. 1 per orchestra*.

The *Improvvisazione n. 1 for orchestra*

The formal concept of this orchestral composition is that of an automatic 'machine' that produces the finished work after various stages in which the

[20] The concert was produced by Herbert Hübner for the Norddeutsche Rundfunk (Northern Germany Radio), Hamburg. The rest of the programme included: Guido Turchi, *Cinque commenti alle 'Baccanti' di Euripide*; Luigi Dallapiccola, *Tre Poemi*; Goffredo Petrassi, *Coro di Morti*.

[21] Premiered at Darmstadt, 20 July 1957.

[22] Luciano Berio, 'Interview with Rossana Dalmonte', in *Two Interviews* (New York–London, 1985), 61–3.

[23] Gianmario Borio, 'Sull'interazione dello studio degli schizzi e l'analisi dell'opera', in *La nuova ricerca sull'opera di Luigi Nono* (Florence, 1998), 15 ff.

musical material gradually becomes more and more concrete. This idea was expressed in a text entitled 'Improvisation and Discipline in the Latest Work by Bruno Maderna', clearly inspired, if not dictated, by the composer, though written by another hand. This text is actually a description of the *Improvvisazione n. 2*, an orchestral piece written two years later, whose compositional technique is substantially the same as that employed in *n. 1*, one notable exception being that the serial elaboration implies the disappearance of the basic row from the final composition:

> According to what the composer has stated, the word 'improvisation' stands […] for a free form, improvised, yes, but on a material that is 'absolutely organized' in every aspect: colours, rhythms, horizontal and vertical structures. […]
> Instead of going back to the monad of the tone row — which is here intended just as a principle of the construction — the organization of the sound material consists of mutations and permutations of the tone row itself. This fact shows an almost continuously evolving line of expression, therefore giving up the act of composing to 'almost a state of inner automatism'.[24]

Interestingly this very same expression is also found, once again as a quotation, in a letter written years later by Luciano Berio, who, at Luigi Nono's request, tried to describe how Maderna had made some decisions regarding the selection of the serial material prepared for his recent String Quartet.[25] Although the notion of 'inner automatism' (*automatismo interiore*) was never directly stated by Maderna himself — either in any of his writings or in interviews or even in private letters — these two occurrences should anyway be regarded as clues to understanding an important aspect of his thought, that is, the tendency to a temporary suspension of the control exerted on the creative process. To be sure, the two orchestral *Improvisations* of the years 1951–52 are built largely upon this principle.

[24] Roberto Zanetti, 'Improvvisazione e disciplina nell'ultimo lavoro di Bruno Maderna', in *Festival Internazionale di musica contemporanea* (Venice, 1954), 44–5 (my translation). The *Improvvisazione n. 2* was premiered on 17 September 1954 by the Orchestra del Teatro La Fenice conducted by Nino Sanzogno.

[25] 'Don't worry, Bruno isn't going to write anything about his string quartet, ever… What I can say is that he has used a material permutated on the "little squares" for both movements: in the first one the material is exactly respected, whereas in the second one he has improvised on the very same material. This material is fixed in relation to the pitches and the durations: registers and dynamics have been chosen each time according to the variations of the attack (*pizz.*, *al tallone*, *col legno* and so on), and following what he calls "inner automatism".' (Luciano Berio to Luigi Nono, undated (probably March 1957), Archivio Luigi Nono, Venice, my translation.)

The basic row of the *Improvvisazione* (n. 1) is a symmetrical set consisting of just three intervals: minor second, major third, perfect fifth. In Maderna's scale of intervallic qualities, it shows a nice balance between 'relaxed' (five perfect fifths) and 'tense' intervals (four minor seconds), with two additional major thirds having the lowest 'tension' value:

	2-	5	3+	5	2-	5	2-	5	3+	5	2-	
2	1	6	10	5	4	9	8	3	7	12	11	
Bb	*A*	*D*	*F#*	*C#*	*C*	*F*	*E*	*B*	*Eb*	*G#*	*G*	

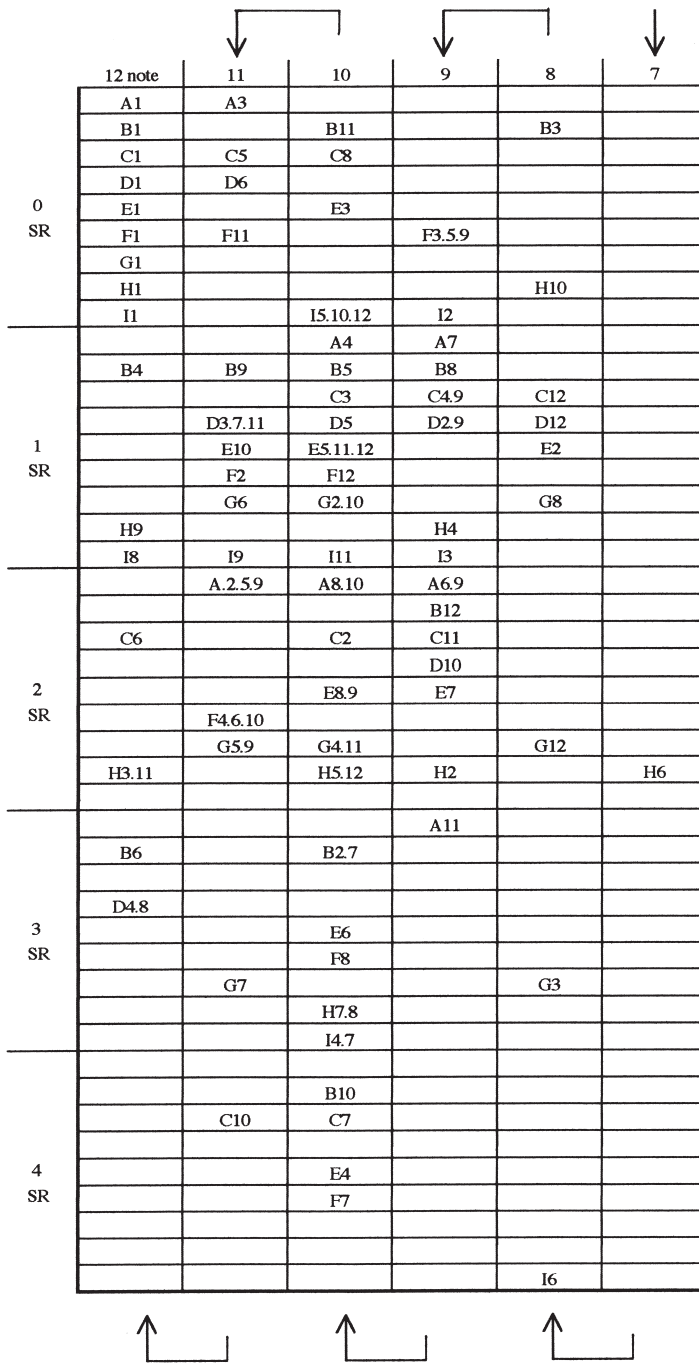
Figure 7. *Improvvisazione n. 1*, basic tone row

Such a balance should not be considered in relation to a thematic treatment of the row as would be the case in a more conventional dodecaphonic framework; more than its implicit scarcity of potential harmonic relations, one should notice its relative neutrality with respect to the potential 'mutations' induced by Maderna's serial machine.

A first application of the shifting technique generates, starting from the basic row (A1), eleven derived sets (A2, A3, … A12), each of them containing a variable number of both empty boxes and aggregates — made mostly of two or three points/sounds, up to a maximum of five (this being rather an exception). Since the penultimate shift generates some points on the last square (A12) that interfere with the restored A1 configuration, a new pattern of twelve points/notes is created, called by Maderna 'first proportion' (*prima proporzione*) — again a lexical nod to the Renaissance. It is a ordinary twelve-note row and constitutes the new B1 square, starting from which a new sequence of shifts generates B2, B3, …B12. In a similar way a new *proporzione* will generate C1 and so on until the eighth sequence of squares, I1…I12, reaching a total of 9 x 12 = 108 squares, that is, sets of twelve notes/voids-aggregates.

The following operation consists of the identification and classification of the resulting sets on the basis of two criteria: 1) the ratio between 'full' and 'void' cases within each set, and 2) the quantity of repeated points/sounds within each set (zero to four). Eventually a chart is prepared where all sets are ordered horizontally according to 1) and vertically according to 2).[26]

[26] Exceptionally, the A12 set is not included in the chart.



	12 note	11	10	9	8	7
	A1	A3				
	B1		B11		B3	
	C1	C5	C8			
	D1	D6				
0	E1		E3			
SR	F1	F11		F3.5.9		
	G1					
	H1				H10	
	I1		I5.10.12	I2		
			A4	A7		
	B4	B9	B5	B8		
			C3	C4.9	C12	
		D3.7.11	D5	D2.9	D12	
1		E10	E5.11.12		E2	
SR		F2	F12			
		G6	G2.10		G8	
	H9			H4		
	I8	I9	I11	I3		
		A.2.5.9	A8.10	A6.9		
				B12		
	C6		C2	C11		
				D10		
2			E8.9	E7		
SR		F4.6.10				
		G5.9	G4.11		G12	
	H3.11		H5.12	H2		H6
				A11		
	B6		B2.7			
	D4.8					
3			E6			
SR			F8			
		G7			G3	
			H7.8			
			I4.7			
			B10			
		C10	C7			
4			E4			
SR			F7			
					I6	

Figure 8. *Improvvisazione n. 1*, classification and ordering of all the derived sets to be sequenced (reproduction of the original sketch)

The chart shows, in the upper left sector, the first row of each sequence: B1, C1…I1 are the results of the *proporzioni* derived from the fundamental A1, all of them being ordinary twelve-note 'linear' rows. Moving to the right, one finds sets that include more and more 'voids' while, moving down, one finds sets provided with more and more 'repeated sounds' ('SR'); B3, for instance, is made of eight different notes and four voids; A11 contains three repeated notes and three voids, and so on. This chart is the structural key of the whole *Improvvisazione*. Maderna reads its columns from right to left, alternatively upwards and downwards, thus yielding the chain of sets for the whole composition, with the exception of the short final section. In order to scramble his material a little more, Maderna reads each set that he encounters along the chart alternatively in its prime and its retrograde form.

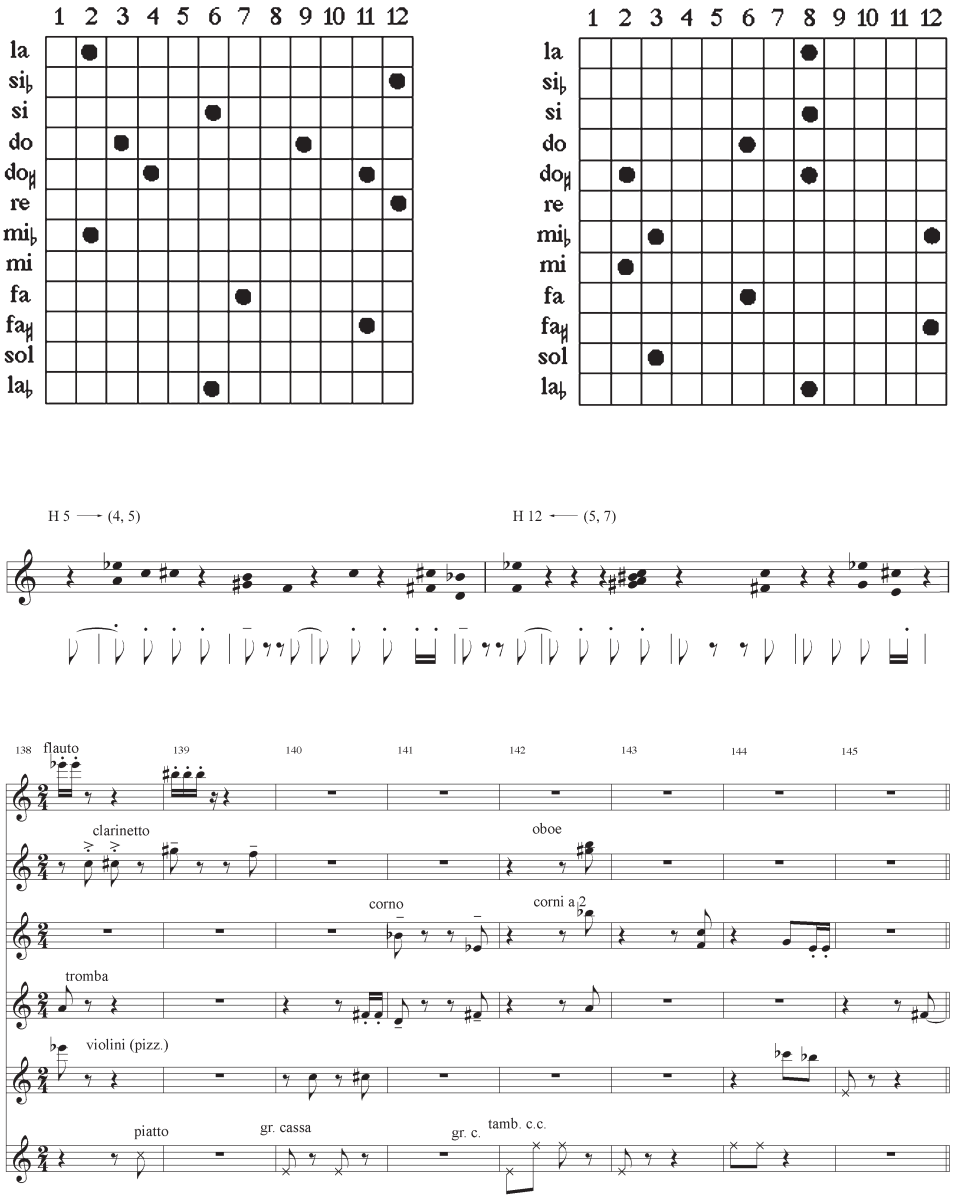
Once the succession of the pitch material is established, the piece is organized rhythmically by means of three basic dance patterns: waltz, polka, cancan. The manner in which the pitch material is related to the rhythmic material is reminiscent of the isorhythmic motet: here the *color* would be the succession of the 108 sets, the *taleae* being the dance rhythms. As each one of these patterns is applied to a different section of the work, its basic duration is also different accordingly, but it is uniform within each section. Example 1 shows how this works in a specific passage.

The repeated sounds (SR) contained in each set also become functional to the rhythmic dimension, since they are transformed into 'pedal sounds', held notes or tremolos, never exceeding the duration assigned to the note corresponding to the single sound complex.

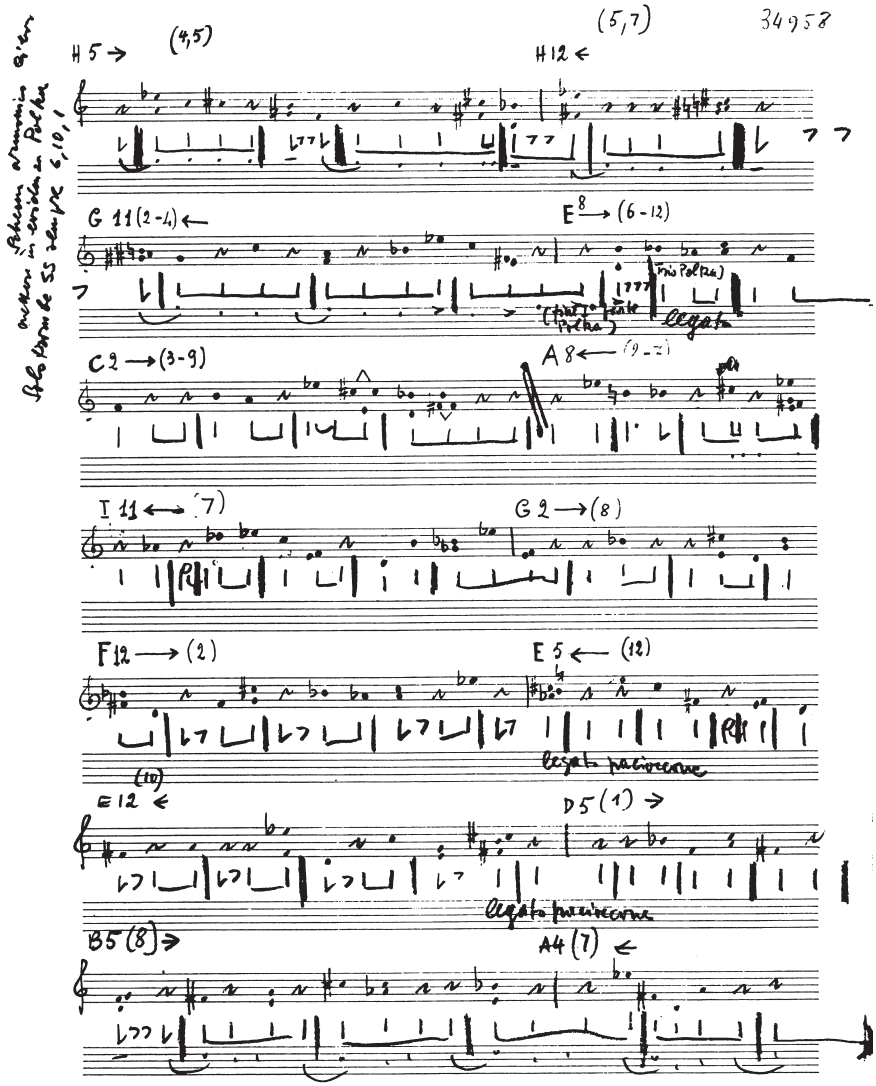
As one can see, all along the work there is a uniform distribution of all sets with respect to internal repetitions, while voids are less and less present. At the end of the chain, only 'full' sets are employed, and eventually only the nine regular tone rows. The actual 'improvisation' closes at bar 286 with the exposition of the A1 row — thus revealing for the first time, at the very end of the process, its generative nucleus. The composition does not end here, however. A short closing movement (*Andante*) is added, whose pitch material is based upon an elaboration of the same basic row, followed by eight permutations yielded by a new, different use of the matrix. Here the rhythmic treatment is freer and does not seem to depend on a specific plan.

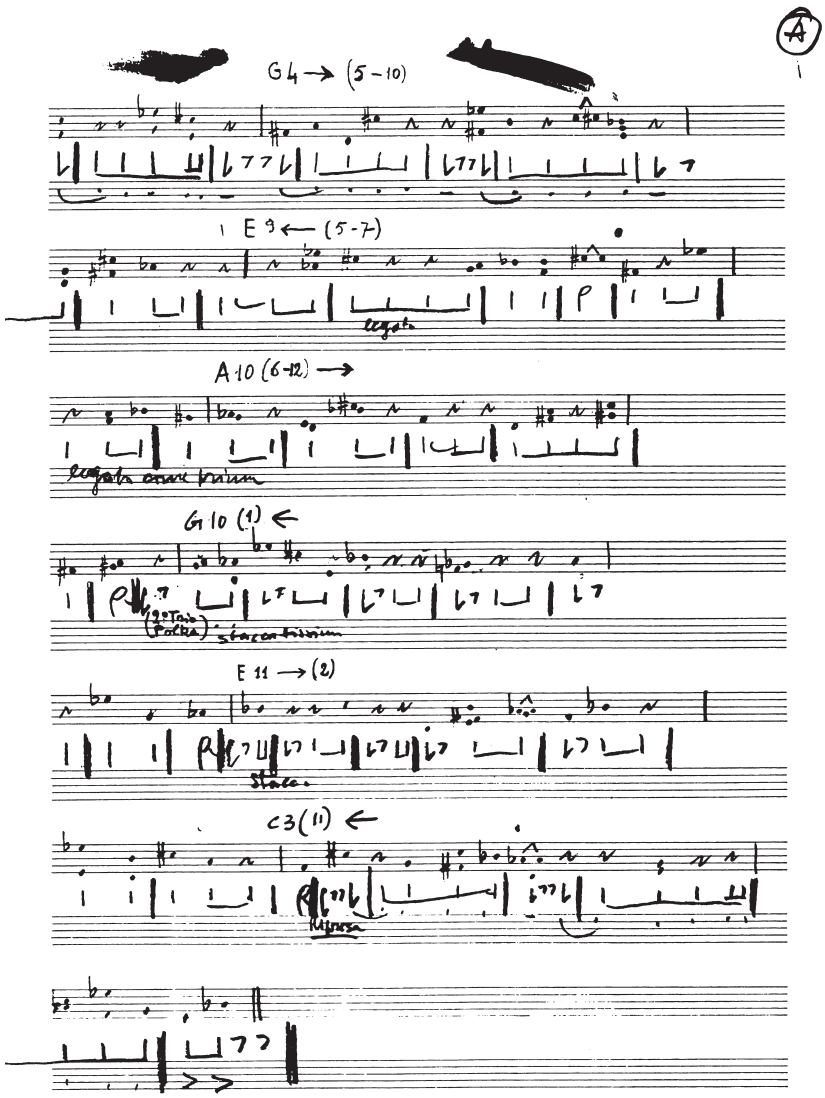
The *Improvvisazione* n. 1 may demonstrate how, in the very same year as the *Structures I*, *Kreuzspiel*, and the *Music of Changes*, Bruno Maderna had found an independent, personal concept of multi-parametric serial composition.

Example 1. Bruno Maderna, *Improvvisazione n. 1*, H5 and H12 sets. Translation of H5 and H12 into musical notation, with assignation of notes, rests, and sound complexes to the rhythmic pattern (*polka*). Realization of bb. 138–145 (see Example 2) (elaboration of the original sketches)



Example 2. Bruno Maderna, *Improvvisazione n. 1*, general plan (bb. 137–195) (facsimile reproduction)





This first piece would be followed by more and more complex applications of the same technique: *Improvvisazione n. 2* for orchestra, *Musica su due dimensioni* (1952) for flute and tape, the *Serenata*, the Flute Concerto, the String Quartet, the Piano Concerto — to name just a few. Maderna's way to serial music in the course of the 1950s is surely part of the same process of radical renewal of

musical thought that can be seen in the music of many other composers in those years. Yet one would hardly find in his production any indulgence of the rhetoric of the 'zero hour'. Compared to his fellow composers in the rest of Europe, Maderna had a less problematic connection with the modernism of the preceding generation. Furthermore, his claim to belong to the tradition of the St Mark's *cappella* is clearly a long-established myth — but of course a productive one; his work is undeniably rooted in his studies of the ancient masters. In this respect, one can even consider his tools, his serial 'machines', not just as functional objects; they may well appear as attractive intellectual constructions, and there is always a playful side in the way they are designed and operated.