CONTEMPORARY MUSIC STUDIES
VOLUME 2

PIERRE BOULEZ
A WORLD OF HARMONY

LEV KOBLYAKOV

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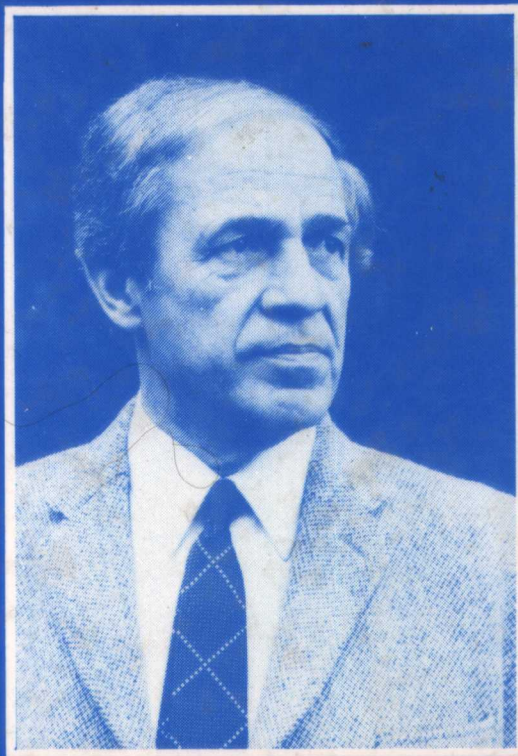
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Harwood Academic Publishers

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Preface

This book, which was my PhD thesis, was completed at the Hebrew University of Jerusalem. I carried out the analysis of *Le marteau sans maître* between 1975 and the end of 1977. The concluding chapter was written subsequently. Since then my knowledge of *Le marteau* and Pierre Boulez' musical thought has broadened. Nevertheless I have decided to publish the work without changing it, otherwise another book would have emerged. This analysis of *Le marteau* can also serve to show that it was possible to analyse a totally serial composition without seeing any sketches for the work.

Lev Koblyakov
Spring 1989
Jerusalem

To my Mother, Judith Koblyakov

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Introduction

The purpose of the present study is the investigation of harmony in the music of Pierre Boulez based on his composition *Le marteau sans maître* (1952–55). By harmony we mean two phenomena. On the one hand, in the narrow meaning of the word, we shall understand by this term the whole pitch structure of the composition. On the other hand, in its wider meaning, we understand proportionality, balance of the parts of a musical form, their harmoniousness. Both of the above phenomena will be demonstrated in this analysis of *Le marteau sans maître*, which will make it clear that they form an inseparable unity in the music of this composition.

Marteau by Boulez includes three cycles of movements; therefore the structure of the present study consists of three chapters where in turn each of the three cycles is investigated, with the results being summed up in the fourth chapter, the conclusion. Each cycle is analysed in a different way. In the first cycle attention is paid mainly to the analysis of pitch structure and formal proportions. The second cycle is analysed the most comprehensively, as the relationship of all the parameters is the principal subject here. In the third cycle attention is paid mainly to movement 9, the conclusion of the composition. Throughout this study references are made to most of the other compositions of Boulez composed both before and after *marteau*.

In *Le marteau sans maître* Boulez turned for the third and last time to the poetry of René Char. Boulez had used other texts of this poet in his earlier cantatas *Le visage nuptial* (1946) and *Le soleil des eaux* (1948). The name *Le marteau sans maître* itself is taken from Char, who at the end of the 1920s and the beginning of the 30s wrote several sets of poems which he united in one cycle with this title. For the three cycles of his own composition Boulez chose three separate poems. From this collection *marteau* is probably one of the first instances of music written to a surrealist text.

Several significant trends in music first appeared in the 1950s. Among them is serialism, which developed the ideas of the Schoenberg school borrowed via their considerable development by Webern. The serialization of all parameters was probably first achieved by Boulez in *Structures Ia for Two Pianos* (1951). After that followed *Polyphonie X* (for orchestra), *Structures* Ic, Ib, *Oubli, Signal, Lapidé* (for mixed chorus) (1952), two *Etudes concrètes* (1951–52), and finally *Le marteau sans maître* (for contralto and six instruments).

But the serialization of all parameters alone is not sufficient for the creation of a good composition with a unique new form. Something more is needed. A special direction must be produced: special types of serial organization have to be created. It is also necessary to master and control the serial organization on the basis of a *musical* concept, without subjecting the latter to the full automatism

of the serial organization. All this was accomplished in *marteau* and together with the high musical quality of the composition, has resulted in success.

Le marteau sans maître is one of the most important works of Boulez and of the mid 20th century. It reflects some of the most characteristic features of the thinking of the time, while putting them into a new and beautiful form. *marteau* is a kind of focal point in the creative output of Boulez, as, on the one hand, it embodies the basic ideas of his previous works of the 40s and 50s and, on the other hand, it has turned out to be a source of essentially new ideas, which were later developed in many other of his works. *marteau* was a turning–point for Boulez, and probably one of no less importance than that which happened in composing *Structure Ia*. This turning–point was the transition from a simple or little developed serial organization to one complex in conception and specially directed.

What can musical analysis be? What is the working method of a musical investigator? Boulez himself gives the following definition:

> 'I have often pointed out that analysis is only of real interest when it is *active*, and it can only be fruitful in terms of its deductions and consequences for the future.'[†]

> 'Let us define what may be considered the indispensable constituents of an "active" analytical method: it must begin with the most minute and exact observation possible of the musical facts confronting us; it is then a question of finding a plan, a law of internal organization which takes account of these facts with the maximum coherence; finally comes the interpretation of the compositional laws deduced from this special application. All these stages are necessary; one's studies are of merely technical interest if they are not followed through to the highest point—the *interpretation* of the structure; only at this stage can one be sure that the work has been assimilated and understood.'[‡]

The special nature and the difficulty of analysing serial music are a result of its complex organization. The problem is that, besides the serialization of all parameters, numeric codes are used, which help in the hierarchic development of the serial system. Besides, with Boulez the general series of a composition is mostly only the organism generating a network of derivative series, and usually takes no direct part in the music. Thus the investigator ought to have at least some sketches by the composer himself, otherwise he will have to perform a task of incredible complexity.[§] Of course *musical intuition* is of enormous importance for analysis. In particular, the author of the present study could only complete the following analysis to a great extent through its help. Musical intuition assists analysis if there is an intimate knowledge and aural familiarity with the composition. In such a case the investigator tries to imagine the main direction of the composer's thinking and practically, so to speak, to compose the music anew.

The structural analysis of the works of the recent past, serial music in particular, is rather important today. The young generation of composers born after the war is in many cases unaware of the compositional technique of the composers of the preceding generation owing to the almost complete absence of precise analyses. This analysis of *Le marteau sans maître* is a modest attempt to fill the gap.

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†   *Boulez on Music Today*, pp.16–17. See also the discussion of the problem continued on p.17.

‡   Op.cit., p.18. In our work we have tried to follow the advice of Boulez, therefore possibly our following analysis of *marteau* can be assessed as active.

§   Hence the almost complete absence of structural analyses of works of serial music (Boulez, Stockhausen, Nono, etc.). We could never see any sketches to *marteau*, the whereabouts of which are unknown.

Chapter I

Analysis of the First Cycle

The first cycle of *Le marteau sans maître* comprises the 1st, 3rd and 7th movements:

1. Avant L'artisanat furieux,

3. L'artisanat furieux,

7. Après L'artisanat furieux.

The 9th movement of *marteau* consists of three sections, the last of which is the coda (see bars 88–95, 100–102, 128–143, 154–158, 164–188). In organization this section is related to the first cycle of *marteau* and will therefore be discussed with it.

The whole of the first cycle and the coda of the 9th movement use the technique of frequency[†] multiplication, the frequencies making up a twelve–note series. This type of organization was used for the first time in the works of Boulez and it was created and developed by him. All the musical parameters: pitch, system of durations, dynamics, number of attacks, etc., are subjected to the common impact of this organization.

The pitch organization is based on one general series, which by different divisions creates an ensemble of series of frequency groups.[‡] The general series as such is not included in the first cycle. The division of the general series into groups of frequencies is connected with the application of the proportion row 24213, which is consistently rotated, thus producing the following five derived series (each figure denotes the number of sounds in each group).

Each derived series has a one–sound group and the positions of these sounds (within the original series) divide the series by the same proportions but in reversed order (compare the proportion of Ex. 2 with row IV in Ex. 1a).

Each of the five marked sounds could become the basis of a transposition for its derived series. Boulez however starts by an additional pitch transposition of the derived series, with the exception of derived series IV, which keeps the E flat transposition. Series I and III go down by a major second, so they are based on the sounds F sharp and C natural instead of G sharp and D natural respectively. Series II and V go up by a minor second, so instead of the A natural and F sharp transpositions they

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† Boulez uses word frequency instead of sound (see *Boulez on Music Today*).

‡ Or sound groups, or blocks. Boulez also calls them sonorities (see *Notes of an Apprenticeship*, p.167). For the sake of brevity we will also call them just groups.

I   24213

II   42132

III   21324

IV   13242

V   32421

**Ex. 1a**

Ex. 1b

Ex. 2

will have B flat and G natural respectively.

Now each of the abovementioned series, by multiplication of frequency groups, creates five *harmonic fields*. Moreover, each frequency group in the derived series is multiplied by another frequency group, thus producing new groups. Since a series has five groups, multiplication results in twenty–five groups, ten of which appear twice. This can be denoted by letters.[†]

aa	ab	ac	ad	ae
ba	bb	bc	bd	be
ca	cb	cc	cd	ce
da	db	dc	dd	de
ea	eb	ec	ed	**ee**

Ex. 3

E.g., to obtain block aa, group a is multiplied by itself, any repeated sounds appearing only once (see Ex. 4).
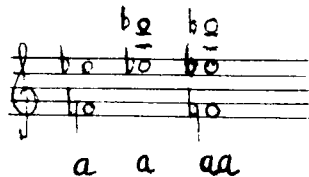
Ex. 4

The elimination of repeated sounds leads to the number of sounds in a group never being more than 12. When dividing the general series into five groups, as in the first cycle of *marteau*, the number of sounds in a group cannot in fact be more than 10.

With multiplication each of the five derived series is to produce five harmonic fields. Each system of five harmonic fields will be called a *harmonic domain*. Thus we have five domains (see Diagram I, where they are denoted by Roman numerals). This diagram shows that Boulez replaces in each domain the horizontal field a by a field consisting of a derived series.

Each domain has its system of blocks of different structure. Sometimes however identical blocks can be found, coinciding even in transposition, though belonging to different domains. Such a coincidence results from the existence of a single division system of the general series, as shown above. Each domain is based on the transposition of its derived series, which creates, so to speak, a higher system of pitch interrelation of domains: I, F sharp; II, B flat; III, C natural; IV, E flat; V, G natural.

Those domains can be found in the 1st, 3rd, and 7th movements of *marteau*, while for the coda of the 9th movement the composer uses the inversion of the general series and a row of proportions in retrograde order 31242 (see Ex. 5a and 5b).

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† See also a short description of the multiplication process in Boulez, *Notes of an Apprenticeship* (pp. 167–168) and *Boulez on Music Today* (pp. 79–80).

Ex. 5a

I			31242
II			23124
III			42312
IV			24231
V			12423

Ex. 5b

One–sound groups create within this series the same interrelation of proportions, though in retrograde order (compare the proportion in Ex. 6 with the proportion from row V in Ex. 5a).

Ex 6

These five sounds become transposition bases for their derived series, and then produce domains. In the coda of the 9th movement of *marteau* for each of the five domains only the harmonic fields b and d are used; that is why they are the only ones given in Diagram II.

Now we can begin the analysis of the general form and the description of the harmonic domains in the first cycle of *marteau*. The 1st movement of the composition includes five sections or nine subsections in which all the five domains are presented (see Ex. 7, and also the score appended).

bars	1-10	11-20	21-32	33-41	42-52	53-60	60-68	69-80	81-95
domains	I	V	III	IV	II	V	II	IV	III
number of domains per one section	1		3		1		3		1

Ex. 7

As seen in Ex. 7, all five sections create a symmetry by the number of fields included in them (13131). On the other hand, each domain is found to be used twice, the exception being domain I which reappears only in the 7th movement of *marteau*, which is built completely on this domain. Fermatas separate the five sections of the 1st movement and at the end of each domain (or subsection) there is a compression of tempo (*presser*) or its retardation (*poco rit.*), while each domain begins *a tempo*.[†] It is also noteworthy that by switching domains V and II a consecutive movement of domains from I to V appears; then a reverse movement of the domains begins (with bar 53), where domain II is between domains V and IV. Thus a concealed mirror symmetry is expressed, which exists also with the position of the domains (see also bars 21–52, domains III–IV–II, and bars 60–95, domains II–IV–III).

The 7th movement of *marteau* is something like a widened conclusion of the 1st; it also includes five sections (Ex. 8).

bars   1–7   8–17   18–29   30–37   38–47

Ex. 8

The 3rd movement is built on a strictly consecutive alternation of domains, using only fields b in prime form and d in retrograde (see our score appended and Ex. 9). Thus the 3rd movement is divided into two parts, and they in their turn into two sections.[‡]

In the 3rd movement the composer uses twice field b in domain III and field d in domain I, the fields in both cases being first given in retrograde, and then in prime form (see bars 10–15 and 42–48 in our score appended). Boulez possibly chose those fields for repetition because they consist of 12 sounds only and in fact are transposed derived series. Due to the repetition of two fields their total number in the 3rd movement amounts to twelve.

[†] This expresses some extent of homage on the part of Boulez to Webern, who also made use of a change of tempo with the change of structural sections.

[‡] This corresponds to four stanzas of a poetic text. From the traditional viewpoint bars 1–5 (domain I) can be considered an instrumental introduction. Then the following sections contain about the same number of bars: 10+11+11+11 (see Ex. 9). Other features of symmetry will be shown later.