Some Remarks about Serialism in *Atomtod* by Giacomo Manzoni

Giacomo Albert
Università degli Studi di Torino

INTRODUCTION

Around the beginning of March 1964, Luigi Nono criticised Giacomo Manzoni's idea of making use of formulas and stylistic motifs relating to eighteenth century music for the opera he was composing back then.[1] Manzoni answered him briefly that this was just one element among the others.[2] This distinctive trait of *Atomtod* has been named 'Stilpluralismus [stylistic pluralism]':[3] Manzoni made use of different compositional techniques and 'styles' – eighteenth and nineteenth century rhetoric and stylistic motifs, serial composing, *Klangkomposition*, electronic music, etc. –, in order to illustrate characters' traits and actions, providing the dramatic structure with a further meta-stylistic musical expressive level.

This paper deals with one of *Atomtod*'s components: serial procedures. Indeed, these have not been analysed so far, with scholars only mentioning their existence, but never scrutinising them.[4] I shall focus on them here, also trying to explain how they have been implemented, and thereby attempting to enlighten the status of the musical material in Manzoni's coeval compositional process.

ARCHIVAL NOTES
Sources and Research from the Institute of Music, No. 2 (2017)

ISSN 2499–832X | ISBN 9788896445167

Manzoni began creating an opera with Emilio Jona in 1961.[5] In 1963 it was commissioned by the Teatro "La Scala", in December 1964 the score was completed and at the end of March 1965 *Atomtod* was performed at the "Piccola Scala". Thus, the creative process spanned over more than three years. During this same period Manzoni also composed other works; some of them – *Studio n. 2* (1963) and *Studio Tre* (1964) – were directly de-composed and re-used in *Atomtod*, and *Studio per 24* (1962) was explicitly conceived as a preparatory study for the following theatrical work.[6] Hence, the composition of *Atomtod* represented a moment of study and experimentation, a long and significant period of radical evolution of techniques in Manzoni's compositional career. As usual with Manzoni's theatrical works, it represented a turning point, both the conclusion of a creative period and the beginning of another one. I shall try to highlight how Manzoni's work on serial procedures integrated within this process.

PITCH ORGANISATION

Atomtod's characters belong to two distinct typologies, which are representative of two social classes that never come into contact. In actual fact, there is no conflict between these two categories, they do not meet, but merely react in different ways and with different perspectives to social changes and political vicissitudes. On the one hand, there are the privileged (Padrone, Costruttore, Generale, Sacerdote, Slam and Servo), and on the other, the anonymous proletarians, the *Untermenschen*, those who cannot gain any access to the atom-bomb shelter. Manzoni reserved the experimentation of serial and advanced techniques for portraying the world of proletarians (as well as the progress of the state of the world *per se*), whereas the privileged could resort to various different classic or commercial styles, from eighteenth century vocals to jazz. Therefore, we will focus here on the *Untermenschen* world.

The first half of the opera (*Tempo I*) illustrates the characters and their action, or in-action. It consists of an introduction (tape material played in the theatre's foyer, corridors and hall) and two parts, each of which lasted between 15 and 20 minutes in the 1981 performance in Treviso:[7] the first one (*Scena I* and *Scena II*) introduces the privileged characters,[8] and *Scena III* the proletarians. *Scena III* portrays four anonymous characters – *Uomo I*, *Donna I*, *Uomo II*, *Donna II* –, each of whom reacts to the situation they experience in a slightly different and peculiar way. Representatives of a social class, they unfold their personalities, never developing, but simply depicting different

aspects, different ways of living the same social condition, of reacting to the outer world. The whole structure of *Scena III* is presented here:

TABLE 1. Analysis of *Atomtod, Tempo I, Scena III*

Macro-structure of the scene		Sections	Sub-section	Dur[9]	Beg. bar	N. bar	DI	DI Instr. (sax. crt. tba etc.)	UI	UI Instr. (3 perc. layers: plate-tom)	DII	UII	Choir	Video-Speaker: gradually widening screen	Speaker-war instr. (trumpet tromb. kettledr etc.)	Orch.	Lighting
I: presentations (cresc.) (10'11")	I.I	DI solo (3'23")	I (solo A)	1'20"	408	0	x										dark
			II (solo B)	1'47"	408		x										from dark to soft light
			III (speaker)	16"	409	4								x	x		
		UI solo (2'35")	I (UI solo)	1'07"	414	18			x	x							slowly increasing
			II (UI+sp)	1'28"	432	22			x	x				x	x		slowly increasing suddenly dark (end)
	I.II	DII+UII duet (3'03")	A (DII-UII)	51"	454	9					x	x				pp cresc.	soft
			B (DII-UII + sp ant.)	1'09"	463	13					x	x		x	x	p	
			A' (DII-UII)	50"	476	10					x	x				p	soft
			Transition	10"	486	3									x		dark
		Soldiers Choir (A-B-C) (1'11")		1'11"	489	20							x		x		light (dark at end)
II: accumulation (9'10")		DI + orch. (2'21")	I	1'08"	518	26	x									dal niente al ff	medium
			II	1'13"	544	24	x							x		medium (+puls.), cresc.	strong
		DI+UI	DI proposal	44"	568	16	x	x									"
			DI+UI refusal+...	1'53"	584	32	x	x	x	x				x	x	piano, cresc	"
		DII+UII		22"	616	9					x	x				piano	"
		Finale Atto - Concertato (grad. accum.: DI-UI-sp.-choir-DII-UII-Orch cresc.)		2'49"	624-673	50	x	x	x	x	x	x	x	x	x	x (cresc al ff)	max.

The presentation of the proletarians begins through the lyrical unaccompanied solo singing of a soprano, *Donna I*, from behind the stage, sounding as if from afar, with a totally dark stage (no lighting). She begins singing a melody whose first twelve notes reveal the following row:[10]

6 9 5 11 1 2 7 4 3 10 8 0

This is the fundamental row of the opera. By analysing its intervals, we can infer the following sequence:

[+3 -4 ± 6 +2 +1 +5 -3 -1 -5 -2 +4][11]

Thus, it is an all-interval row. This is not a unique case in Manzoni's *oeuvre*. For example, Angela Ida De Benedictis pinpointed the fundamental row of his previous theatrical work *La Sentenza* as 6 5 2 3 11 9 1 8 10 4 7 0.[12] Hence, an all-interval row again.[13] Nevertheless, *Atomtod*'s row is distinguished from *La Sentenza*'s in its internal formal properties. In *Atomtod*'s sketches Manzoni analysed its fundamental row – together with its 12 transpositions and corresponding inversions –, and its basic properties. During this process, the composer divided every item of this multitude of interconnected rows into two 6 pitch class sets through a dotted bar, so that the fundamental row is divided as follows:

6 9 5 11 1 2 7 4 3 10 8 0

Analysing the pitch content of each set separately allows us to deduce an interesting feature of the row. The two sets are:

Set O6-1[14] [6 9 5 11 1 2]

and

Set O6-2[14] [7 4 3 10 8 0]

Now, let us compute the prime forms of the pitch class sets, starting from their normal order forms.

Set O6-1 normal order form:

[1 2 5 6 9 11] = [5 6 9 11 13 14]

Set O6-2 normal order form:

[0 3 4 7 8 10] = [7 8 10 12 15 16]

I.e.:

normal order of O6-1 = T5 [0 1 4 6 8 9][15]

normal order of O6-2 = T7 [0 1 3 5 8 9][15]

[0 1 3 5 8 9] corresponds to the prime form of the set 6-31,[16] so that we can conclude that the prime form of the set O6-2 (as well as of each other set corresponding to the forms of the row On-2) is 6-31.

In order to compute the prime form of the set O6-1 (as well as of each other set corresponding to the forms of the row On-1), some steps still need to be carried out, namely inversion and transposition of nine ascending semitones (or their equivalent three descending ones):

I [0 1 4 6 8 9] = [12 11 8 6 4 3]

normal order [12 11 8 6 4 3] = [3 4 6 8 11 12]

T-3 [3 4 6 8 11 12] = [0 1 3 5 8 9]

We can thus conclude that the sets On-1 and On-2 share the same prime form, which corresponds to the set 6-31, whose interval vector is [2 2 3 4 3 1]. We can also deduce that the two sets are bound through a relationship of interval inversion plus transposition of nine ascending semitones (or three descending), so that:

IT-3(On-1) = On-2
I.e.:
O[n-3]-1 = IOn-2

Consequently, a relationship of hexachordal combinatoriality also arises[17] between the sets O[n-3]-1 and IOn-1, so that:

(O[n-3]-m) U (IOn-m) = {0,1,2,3,4,5,6,7,8,9,10,11}[18]
&
(O[n-3]-m) ∩ (IOn-m) = Ø

This relationship is particularly important, because Manzoni took great advantage of it. For example, we can see that he consciously structured the solo of *Donna I* at the beginning of *Scena III* (*Tempo I*) around – and thanks to – this combinatorial relationship. In the following table, the structure of the organisation of pitches in the solo of *Donna I* – both parts, *I* and *II* – is portrayed:

TABLE 2. **Analysis of the whole solo of *Donna I*, that opens *Tempo I*, *Scena III*** (TABLE 1)

Text	Eppure il cielo/	È nero come ogni se-	-era/ nero	e lucente/	Può perdersi la vi-	-sione amoro-	-sa/ della notte e fra	poco dell'alba-	-a?/ Il gorgo	del ritorno/ l'av-	- ventura	della luce?/ Eppu-	-re i fiumi cor-	-rono a mare/	e il mare	non si riempie/	Dove si dirigo-	-ono i fiumi/	tornano a dirigersi sempre/ eppure
Sets	O6 - 1	O6 - 2	I3 - 2	RI3 - 1	RO6 - 1	O6 - 2	RI3 - 2	RI3 - 1	RI9 - 1	O0 - 1	O6 - 1	O6 - 2	O6 - 1	RI1 - 1	O4 - 1	O5 - 1	RO5 - 2	O6 - 2	O6 - 1
Rows	Row (Or. form)		Row (±)		Row (±)		Row (RI form)				Row +?					Row (±)		Row (±)	
Compl	compl.		compl.		compl.		compl.		compl.		compl.			compl.		compl.		compl.	
Compl		compl.		compl.		compl.						compl.							
Transf.						1perm.			1perm.		perms.	perms.	perms.			1perm.			

In the first column of TABLE 2 (as in TABLE 3) I have transcribed the text that *Donna I* sings (see the *Uomo I*'s text in TABLE 4). The line underneath specifies the sets. Here, 'O6-1' indicates the first half of the original row in its form starting from the pitch F#, and 'RI3-2' the second half of the retrograded inversion of the row whose first pitch class is E♭. Below it, the complete expositions of basic forms of the row ('Row'), and of 'odd readings' of the row ('Row (±)') are indicated.[19] In the two rows entitled 'Compl.' I have pointed out the complementary combinatorial relationship between consecutive hexachords, which, in this way, generate sequences of non-repeating twelve pitch classes. The bottom row notifies the permutation of the order of the pitches within the ordered forms of the sets: a permutation between two pitch classes ('1perm.'), or even more than two ('perms.'). In TABLE 4 in the same row the indication 'slipp.' designates the abbreviation of 'slippage', i.e. the circular reading of the hexachord starting from its n^{th} element.

It is clear that Manzoni is not interested in unfolding complete presentations of the original form of the row. For example, the second and third rows expose two twelve-tone rows; nevertheless, these do not adhere to the all-interval model. Indeed, the composer reads the two halves of the row following independent, unrelated paths, engendering new forms of twelve-tone rows. Moreover, in the whole first part of the *Donna I* solo, from 'Eppure' to 'alba?' he continuously joins complementary combinatorial hexachords. By means of this, the pitch classes of each hexachord maintain a complementary relationship with both the immediately preceding, as well as with the immediately following hexachords. That is, Manzoni seems to be far more interested in achieving a distribution of the greatest possible number of changing and complementary pitches, than in exposing closely related configurations of interval sequences. He breaks the row into two sets that are both retrieved in different ways and connected to each other through hexachordal combinatoriality, striving to reach a statistical distribution of pitch classes as plainly as possible in every moment of the composition.

We can grasp another feature of Manzoni's writing by examining the few links between the non-combinatorial hexachords of the *Donna I* solo, namely: U(RI3-1, RI9-1); U(O0-1, O6-1); U(O6-1; RI1-1); U(O4-1; O5-1); U(RO5-2; O6-2). Adding the last three pitch classes of each first set to the first three pitch classes of each second set, a closed cluster of six pitch classes is generated, with just a few anomalies (as in the set built through the union of the second part of On and the first part of O[n+6], where one note is repeated, so that we obtain the set 5-1(12), whose primary form is [0 1 2 3 4]). Then, Manzoni 'reads' these narrow cluster-like sets of pitch classes spreading the melody through different octaves, probably in order to attenuate the perception of the dissonances. This seems to be a clear 'musical' choice for building connections between the few non-complementary set relationships included in the whole solo.

Manzoni's fascination with combinatorial hexachords is confirmed throughout the piece. For example, the first all-combinatorial set structure that we have just analysed, recurs at the opening of the second half of *Scena III* (TABLE 1): again on a melody of *Donna I*, this time accompanied by a huge and extremely extended orchestral crescendo, and with a different rhythmic organisation (TABLE 3).

TABLE 3. **Analysis of the pitch organisation of the voice (*Donna I*), bars 518–539**

Text	Le mie pupille	faticate al	richiamo si tendo-	-no dei rombi ai bre-	vi solchi di luce	che presto
Bars	518-522	523-526	526-530	530-532	533-535	536-539
Sets	O6 - 1	O6 - 2	I3 - 2	RI3 - 1	RO6 - 1	O6 - 2
Rows	Row		Row (±)		Row (±)	
Compl. rel.	compl.		compl.		compl.	
Compl. rel.		compl.		compl.		

We can deduce a similar architecture also in other passages, such as the first presentation of the character *Uomo I* (TABLE 4). This follows the presentation of *Donna I*: *Uomo I* sings on a softly illuminated stage, accompanied only by 'his' instruments, that is, those instruments that characterise his presence from the textural and timbrical points of view (plates and toms, TABLE 1).

TABLE 4. **Analysis of the pitch organisation of the first solo of *Uomo I*, bars 414–432**

Text	Nascondi nascon-	-di nascondi scap-	-pa dal son-	-no dal sonno mi-	-nacci sempre me-	-no sempre meno	del ne-	-cessario	assicuri	assicuri co-	-me come un sa-	-lario sta cal-	-mo trema ras-	-sicuri canta,	can-	ta-
Bars	414-415	415-417	417-419	419-420	420-422	422-424	424-424	424-425	426-426	426-427	427-428	428-429	429-429	430-431	431-431	431-432
Sets	I3 - 1	I3 - 2	O9 - 1	RI 6 - 1	RO 6 - 2	RO 6 -1	RI 3 - 1	RO 6 -1	O6 - 2	RO6 – 1	O6 - 2	RI6 - 2	O5 - 1	O5 - 2	O5 - 2	RO5 - 1
Rows	Row (inv. form)				Row (retr. form)				Row (±)				Row (or. form)			
Trans.		Slipp. 5								perms.	perms.				slipp. 3	
Comp	compl.		compl.		compl.		compl.		compl.		compl.		compl.		compl.	
Comp						compl.		compl.		compl.			2 rows in almost reverse order			

Here, there is a different, but at the same time similar, sequence of sets and rows to *Donna I*'s solo: indeed, *Uomo I*'s solo too is evidently structured around complementary hexachordal sets, much more than on full-row expositions. It is already only this relationship that binds the third and fourth sets (those that should theoretically constitute the second row, as well as the sixth and the seventh sets, and so on).

O5-2 '3 note slippage' at bar 431 clearly fulfils a local expressive need: the exceptional immediate repetition of three notes (the last three of O5-2 and first three of 'slipped' O5-2), as well as the almost retrograding repetition of its two twelve-tone surrounding organisation, which states an explicitly audible relationship between the two subsequent rows, brings to a crescendo of emphasis, engendering the sensation of a cadential path that closes *Uomo I*'s solo; hence, here the exception proves the rule!

From all these examples, it is possible to deduce that Manzoni was much more interested in taking advantage of set structure, than in the 'dodecaphonic' organisation. Although he often broke the sequence of intervals – probably also in order to avoid the recognisability of a precisely repeated sequence of intervals that could have occurred in a solo singing passage –, at the same time, he strictly abides by the twelve non-repeating pitch structuring.

This shows an inclination towards giving up twelve-tone structures in favour of set organisation. The composer seemed to be no longer interested in intervals between chains of pitches, i.e. ordered sequences of elements; on the contrary, Manzoni was interested in the internal intervallic properties of sets of pitches, that is in compounds of elements.

This inclination is particularly clear in the 'expressive' duets between *Uomo II* and *Donna II*, where the twelve-tone structure is fully abandoned in favour of the subdivision of the chromatic scale between the characters and the instruments, each of which continuously plays its own subset of pitches. This typology of pitch organisation does not cover the entire utterings of the two characters, but it is conspicuous in their duets and in their most lyrical passages.

For example, it permeates the climax of *Scena I – Tempo II* (bars 737–741), where the two characters sing the pessimistic and at the same time expressive words: 'Oggi ci conosciamo, e il cielo è così nero'. Here, they sing a slow and continuous oscillating melody, and the strings accompany them holding four notes of a narrow – minor third wide – cluster (one note for each of the following groups: violin 1–4, violin 5–8, violas, cellos). They play the following pitch classes:

Donna II: [2,3,4,5]

Uomo II: [10,11,0,1]

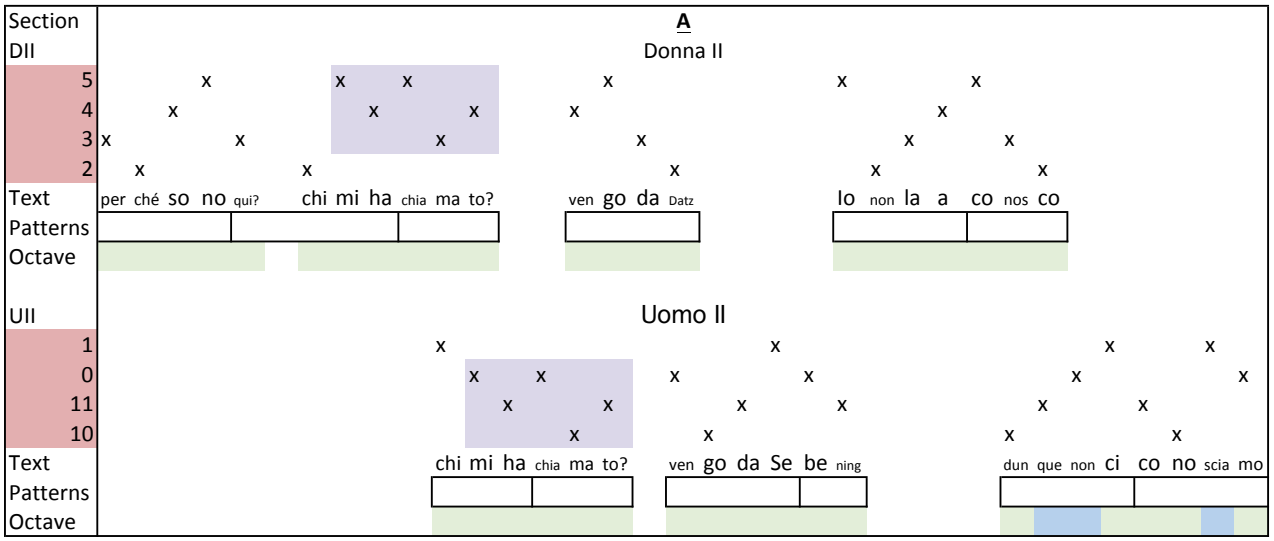
Strings: [6,7,8,9]

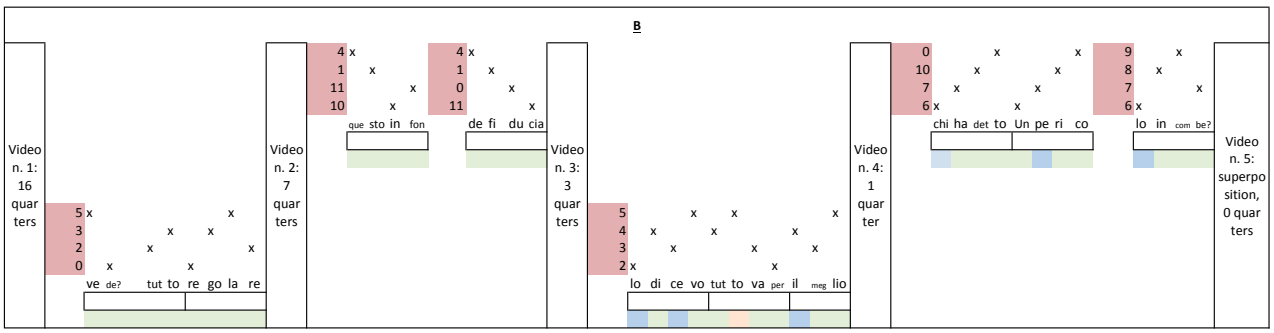
Therefore:
U (*DII*, *UII*, strings) = {0,1,2,3,4,5,6,7,8,9,10,11}
&
∩ (*DII*, *UII*, strings) = Ø

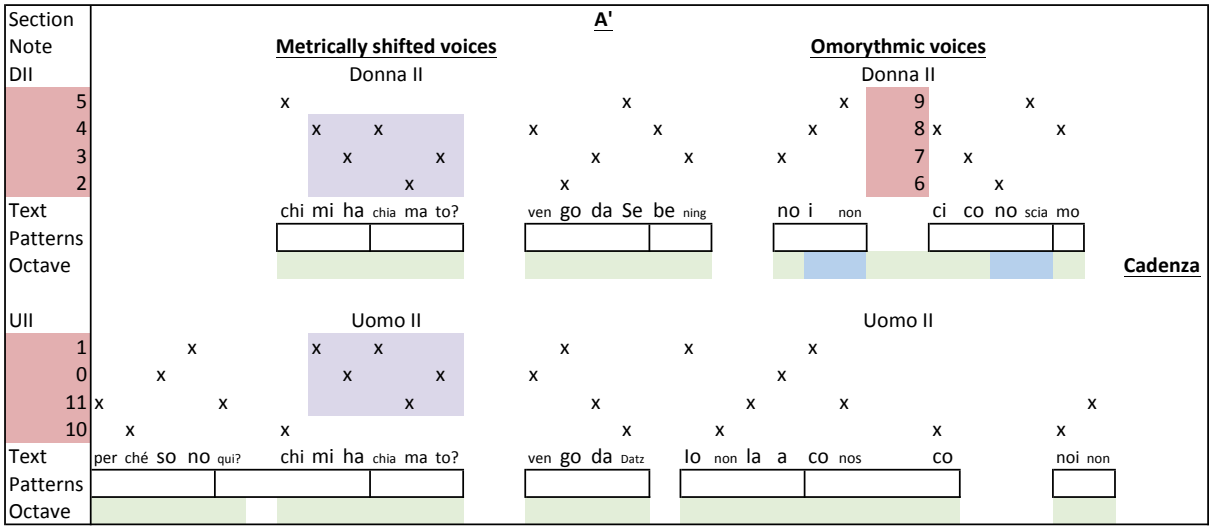
These three sets also share the same prime form [0,1,2,3].

A quick look at the first passage of the opera where Manzoni recurs to this technique, that is the first appearance of the two characters in *Scena III – Tempo I* (bars 454–489. TABLE 1, subsection I.II), allows us to see that he organised the whole form of this section around very simple principles, managing few elements in a coherent way. Indeed, the 'presentation' of *Donna II* and *Uomo II* follows an evident ABA' structure:

TABLE 5. **Analysis of *Atomtod*'s first duet between *Donna II* and *Uomo II*, bars 454–489**







There is a clear connection between A and A': in the two parts, the two characters play the same steady narrow pitch clusters – 2 complementary clusters each with 4 pitch classes –, but, at the same time, they swap their 'melodic profiles', as well as their texts. Moreover, as far as the pitch parameter is concerned, their complementary set is performed by *Donna II* at the conclusion of both B and A', as a cadence. If in A the two voices alternate, in A' they are mostly superposed on each other. On the contrary, in the contrasting part B, the voices perform different pitch class sets, but once again end up in two narrow complementary clusters. B's structure is antiphonic: the alternation of the two voices is controlled by several interventions of the speaker on the screen; these interventions gradually overlap the voices more and more, engendering a slight sensation of time compression (see the duration of the pauses in TABLE 5). A clear-cut and well-turned form, which engages the pitch organisation, as well as the orchestration and the phrasal organisation. Moreover, we can see a principle of serialisation of the melodic profiles of the voices, so that the only repetition of their patterns takes place in the last sentence of part B, so as to underline the cadential nature of the passage. The use of the registers also follows a clear structure, insofar as the voices change their octave range only during the final parts of each formal section (A, B and A'). Thus, it is possible to state that the unfolding of the pitch class sets strictly derives from the transparent and well-defined overall form of the piece, which in turn depends on the

dramatic structure of the opera and on the function that this passage carries out therein. It is also possible to state that the pitch class organisation is strictly bound to all other compositional dimensions, such as pitch range, orchestration, etc.

The concise introduction of this example has served to show the formal clarity and simplicity in the application of the serial techniques in *Atomtod*. Moreover, these are clearly subordinated to the dramatic structure, just as happens with every other dimension of the composition. Indeed, the musical structure follows the evolution of the overall dramatic arc: in *Scena III – Tempo I* (TABLE 1), we first see the presentations of the characters revealed separately, and later their accumulation, which flows into a great *concertato*. An overall ascending arch that engages all dimensions: the gradual widening of the screen, from a little point at the beginning of *Donna I* solo, turns into a TV set and ends up dominating the entire scene; along with the amplification of his voice, which at the end of the scene involves the spectators within the representational space; and the use of instruments, which from an initial off-stage solo of a single soprano voice, reaches an ending *concertato*, and a *tutti ff*. The different typologies of organisation of the pitch class sets fit within these structures, thereby following a dramatic principle.

It is also interesting to stress how Manzoni's gradual diminishing of interest towards serial structures in favour of other ways of managing pitch class set structures, coincides with when he started to use graphic drawings while composing. For example, the whole second intervention of *Donna I* in *Scena III – Tempo I* (bars 518–567), finds a corresponding six-sheet graphic sketch held at the Fondazione Giorgio Cini (Venezia), Fondo Giacomo Manzoni (FIGURE 1). This is a technique that leads the composer to develop new ways – concerning pitch, temporal, timbral and textural parameters together – of sculpting and inlaying the sonic material.

FIGURE 1. Graphic sketch of *Atomtod*'s *Tempo I – Scena III*, *Donna I* solo with orchestra episode (bars 518–567). Fondazione Giorgio Cini (Venezia), Fondo Giacomo Manzoni. The manuscript is written on six music sheets bound together; the two images reveal the front and the back of these bound sheets

FIGURE 1 is clearly subdivided into two parts: the gradual accumulation of sonic material observable in its first section accompanies the serial unfolding of *Donna I*'s singing analysed in TABLE 3 (bars 518–543), even though the latter is not portrayed in the sketch. The second part (bars 543–567) is made up of two different overlapping layers: on the one hand, three superposed periodic repeating pulsations, each of which has its own period, mostly unfold in the low register, and on the other hand, a few intermittent, discontinuous and irregular events take place in higher registers. The second part flows into a twelve-tone chord – portrayed on the back of the first sheet – which concludes this passage. Now, the sketch clearly does not depict all the details of the orchestration, and thus does not fully correspond to the complexity and internal richness of the final result. Nevertheless, it does highlight Manzoni's concentration on a visual and spatial organisation of the musical material. A compositional

strategy that perfectly fits his coeval transition from a serial to a set oriented conception of pitch structure as explained earlier.

The formal process of montage is clearly bound to this strategy. Ever since the advent of Adorno's theorisation of the 'spazializzazione del decorso temporale [spatialisation of musical time]' and the 'dissociazione del tempo [dissociation of time]', both concepts have been connected to Eizenstein's theory of montage, insofar as here 'il *concetto generale*, il significato, la sintesi degli elementi parziali nell'opera progettata deriverebbe proprio dalla loro giustapposizione in quanto giustapposizione degli elementi separati [the *general concept*, the meaning, and the synthesis of the partial elements in the planned work derive exclusively from their juxtaposition since this is a juxtaposition of the separate elements]'.[20] In *Atomtod* Manzoni re-used some parts of works that he had previously composed. Especially in the second scene of *Tempo II* (and partially in the first scene), the composer de-composed *Studio n. 2*, separating its parts and reassembling them. He also put them together with other materials, interspersing and superposing them with different sound layers, fitting all these together according to the needs of the dramatic structure. And it is no coincidence that Manzoni drew his first graphic sketch precisely for the composition of *Studio n. 2*: indeed, two large sheets of the graphic representation of the piece are housed in the Fondo Giacomo Manzoni, and constitute the draft of the piece, the first graphic draft Manzoni ever created. As an example of the montage technique, we can see that Manzoni took the first 9 bars of *Studio n. 2* and used it as conclusion of *Scena I – Tempo II*. These measures contained an autonomous element – the first gesturally oriented sound-mass of the score –, and, therefore, the composer was able to extrapolate them from their surrounding environment. Thus, *Studio n. 2* bars 1–9 correspond exactly to *Atomtod* bars 774–782. Then, once this sound mass comes to an end, in the middle of bar 782, instead of a pause, Manzoni retrograded the bars 9–3 of *Studio n. 2*, achieving the structure described in TABLE 6:

TABLE 6. *Atomtod*'s re-use of *Studio n. 2* in the conclusion of *Scena I – Tempo II*

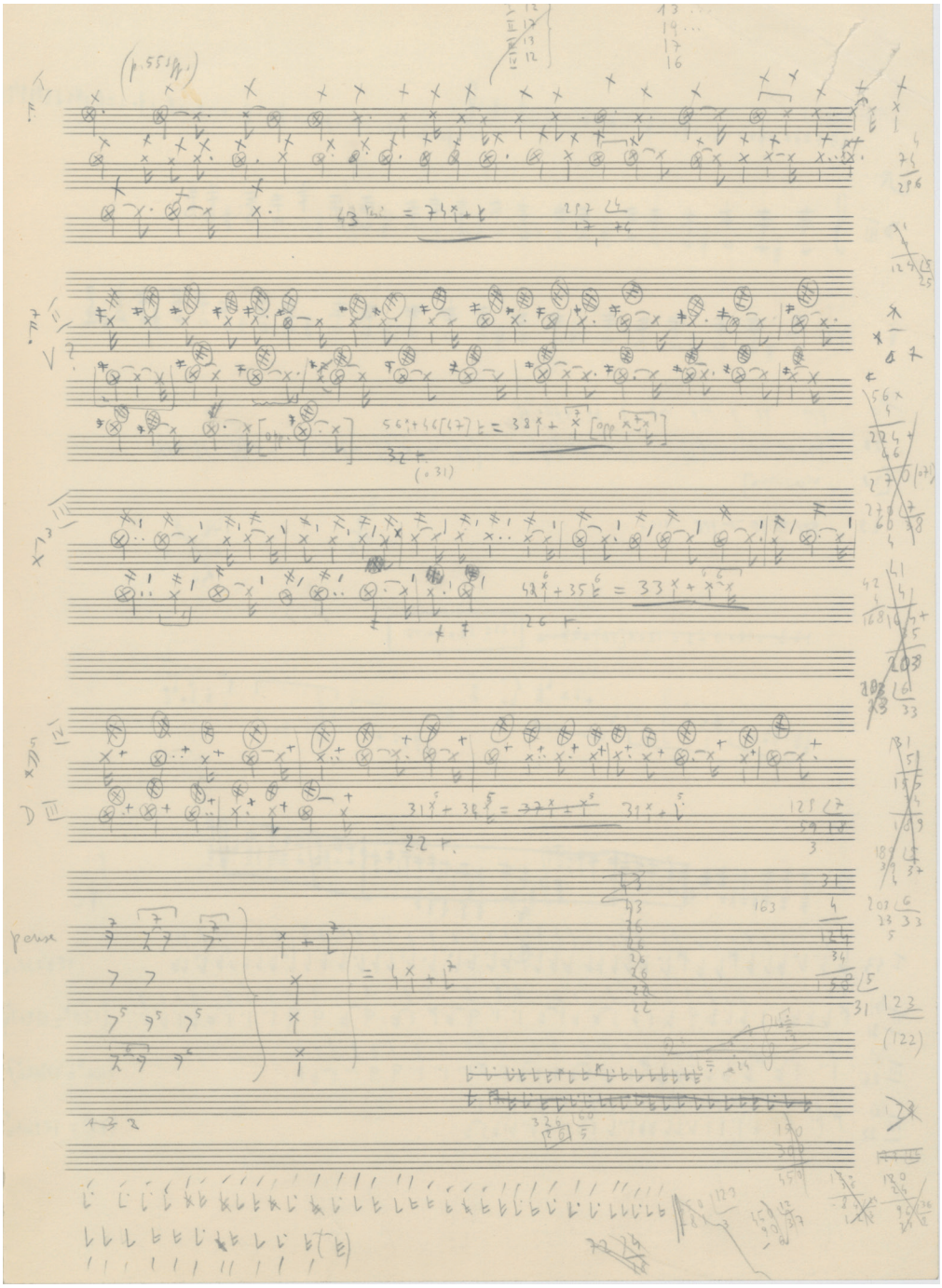
	Bars															
Atomtod	774	775	776	777	778	779	780	781	782/1	782/2	783	784	785	786	787	788
Studio n. 2	1	2	3	4	5	6	7	8	9/1	(R)9/1	(R)8	(R)7	(R)6	(R)5	(R)4	(R)3

The spatialised conception of musical structures – which could also be connected to Manzoni's first experience with electronic music in Milan's Studio di Fonologia creating *Studio III*, a preparatory piece re-used in *Atomtod* –[21] is in my opinion connected to his moving from serialism to set oriented pitch structure organisation. This led him to also deal and experiment with *Klangkomposition*,[22] and to the elaboration of new ways of managing the creation of sound masses and sound textures, which, since *Atomtod* and its related works, have become the main core of the composer's interest. Hence, we are witness to a process that comes from serial structures and leads to post-serial sonic mass and textural composition. *Atomtod*'s peculiar serial procedures are part of the process that turns Manzoni's main interest towards the idea of curving sounding configurations out of a sonic material, sculpting and chiselling, as well as experimenting with multifarious techniques for creating sonic compounds.

METRIC SERIALISM

Many sheets of *Atomtod*'s sketches held in the Fondo Giacomo Manzoni are devoted to the elaboration of rhythmic structures and of sequences of durations that the composer used in different ways in several parts of the work. One of these sketches displays four rhythmic rows/patterns (FIGURE 2).

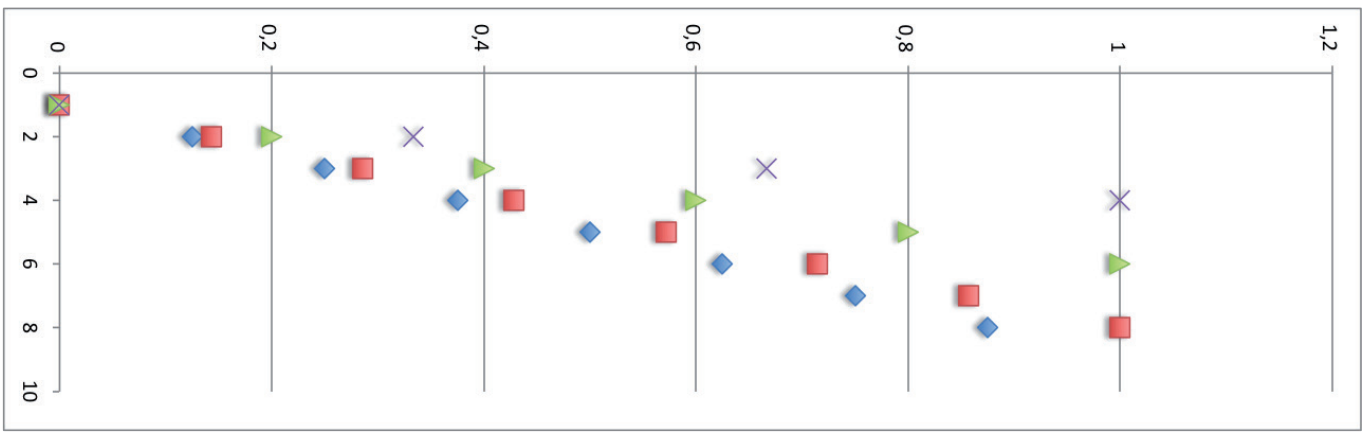
FIGURE 2. Sketch of *Atomtod*'s basic rhythmic patterns. Fondazione Giorgio Cini (Venezia), Fondo Giacomo Manzoni



On the left of each duration row/pattern Manzoni indicated a rhythmic subdivision of the unit/crotchet, respectively: 1/8, 1/7, 1/3 and 1/5. This means that in order to read these rhythmic rows/patterns, each semiquaver has to be intended as the basic unit of the respective subdivision. That is, an eight note should be interpreted as follows: if it is in the first row/pattern it becomes a normal eight note (2*1/4 of one semiquaver); in the second row/pattern 2/7; in the third one it could be read as two triplets (or often 2*1/6, since 1/6 is at times intended as basic unit instead of 1/3); and in the fourth row/pattern it becomes 2/5.

Now, why did Manzoni choose exactly these typologies of subdivision of the metric unit? The answer to this question is provided by the next diagram which portrays all the subdivisions of the metric unit in 8, 7, 5 and 3 segments (FIGURE 3).

FIGURE 3. **Junction points of subdivision of a single unit in 8, 7, 5 and 3 segments**



From this visualisation of the unit's subdivision into 3, 5, 7 and 8 steps, it is possible to infer that there are no coinciding steps. This is consistent, because the numbers 3, 5, 7 and 8 do not share a least common multiple (7, 5, 3 and 2 [8/4] are prime numbers). This is how Manzoni achieves the greatest differentiation in the subdivision of the unit.

He is now able to manage the degree of metrical complexity through the choice of superposing (or not) different metrical layers. For example, it is no coincidence that the superposition of all subdivisions takes place in the lyrical choirs that describe the dissolution of the 'living' world in a poetic way (see bar 1340 ff. *Scena III – Tempo II*), creating a sensation of a vanishing sounding fine dust.

I have still not understood if these four rows/patterns stem from the elaboration of particular models or not. In any case, their analysis makes it possible to see that their inner architecture intensifies the plain statistical distribution of beats and time lengths. In the following TABLE 7 I have rendered the quantity of notes that in each of the four rows/patterns (Subd. 8, 7, 3 and 5) correspond to a specific quantity (N) of multiples of their minimum basic unit.

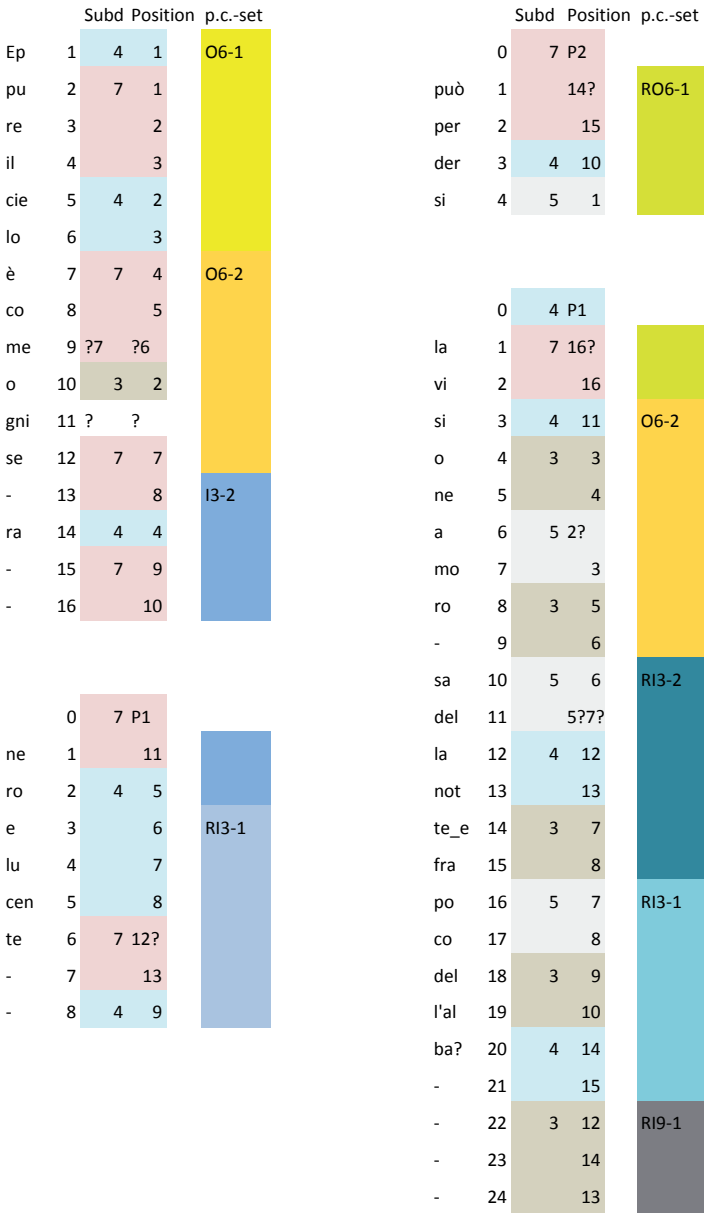
TABLE 7. **Number of items for each basic duration (from 1 to 19), subdivided for each subdivision-model-row/pattern (4-7-3-5).**

N.* min. dur. S.	S. 8 (4)	S. 7	S. 3 (6)	S. 5
1	2	1	3	2
2	2	2	2	2
3	2	3	1	2
4	7	2	3	2
5	3	2	3	0
6	3	2	0	1
7	2	0	1	2
8	7	2	2	2
9	2	3	0	2
10	3	2	2	0
11	2	2	2	2
12	7	1	0	1
13		3	2	2
14		0	3	2
15		1	0	0
16		1	1	
17		1	1	
18		1		
19		1		

If we consider the distribution of note values within each row/pattern, what clearly emerges is an almost plain statistical distribution ($1 \leq n \leq 3$, but mostly $n = 2$, with the exception of very long durations, where there is one single occurrence of each note value). This statistical distribution is only broken in correspondence with each multiple number of the basic unit for each subdivision (in TABLE 7 these are marked in red): in these cases the four voices would have corresponded and have had the same duration.[23] Therefore, Manzoni puts all multiples of the full unit within the row/pattern subdivided into eight (or four) note values, and the other rows/patterns have no occurrence of the full unit or of its multiples. In this way there are no equal durations among the different layers.

Now, how did Manzoni take advantage of this architecture? He used it in many different ways, according to his needs in that specific passage. For example, in the lyric solo of *Donna I*, analysed above, he read the whole matrix of four rows/patterns in a vertical way, as follows:

FIGURE 4. **Analysis of the organisation of the first durations of *Donna I*'s solo at the beginning of *Atomtod*'s *Scena III – Tempo I***



As we can observe in FIGURE 4, the composer read each row/pattern in a linear way, from the beginning to their nth element, but he also interspersed the four rhythmic rows with each other. This allows them to alternate continuously, giving rise to the utmost linear rhythmic complexity.

But in other passages Manzoni exploited the properties of the rows/patterns in a more linear way. We could briefly illustrate this process using *Scena I – Tempo II* as an example (TABLE 8).

TABLE 8. **Organisation of the rhythmic series in *Scena I – Tempo II*, bars 710–751**

Bar beg	Bar end	N. bars: dur	DII	DII Rh. Row	UII	UII Rh. Row	Organization of the voices	Text	Text/ content structure	Instr. subd 7	Instr. subd 5	Instr. subd 4	Instr. subd 3	Notes on rhythm
710	717	8	X	O(s3)			Solo	DII: Lontano è la mia casa, là dove non si trema, e un graffio sulle mura ahimé	DII past	X		X		3(voice)-4-7
718	727	9			X	O(s7)	Solo	UII: Non li so più contare gli anni che ho passato a spremere ogni forza a vendere il lavoro	UII past		X	X		7(voice)-4-5
727	736	10	X	O(s5)	X	R(s5)	Sequence of voices (first: DII; later: UII)	DII: ahimé ahimé bisogna crescere dei figli UII: non è rimasto altro che questa forza morta	perspective on the present and future	X		X	X	max. of complex. (4 layers)
737	741	5	X	slow & regular omorh. profile	X	slow & regular omorh. profile	Voices play together	DII+UII: Oggi ci conosciamo e il cielo è così nero	sight on present time		X			maximum of regularity: climax
742	751	10	X	O(s7)	X	R(s7)	Voices together, this time superposed with different rhythms and temporal organizations (retrogradated)	DII: Si fa presto ad essere amici e sapere l'uno dell'altro quando non c'è più niente da sapere UII: Si fa presto ad essere nemici ad odiarsi l'uno nell'altro quando non vi è poco più che l'uomo da temere	moral perspective (pessimistic and disenchanted)		X	X		7(*2) (voices)-4-5

In this piece of *Scena I – Tempo II*, the relationship between the dramatic structure and the serial-rhythmic organisation is particularly tight and clear. It is indeed a 5-part piece, where the rhythmic structure gradually increases in complexity, flowing into the expressive climax, when time takes a break and the complex and discontinuous flow stops; thereafter, the complexity returns, but the relationship between the voices endures, even if mediated through backward reading. The voices track the following path: maximum distance (part 1–2),

convergence (part 3), union (climax, part 4), interrelated separation (part 5). This basic structure is clearly strengthened by many other musical parameters, such as pitch organisation, as well as the orchestration, and the complexity of textures. In any case, my aim in using this simple example was to introduce the strict relationship between the dramatic structure and the unfolding of rhythmic serial structures, in a similar way to what was already pointed out in the preceding paragraph – as far as pitch parameter was concerned.

Manzoni used rhythmic rows and their features for managing textural complexity in relationship to his dramatic needs. He did not use only rhythmic rows and patterns, but also other techniques for controlling the temporal architecture. For example, many sketches are devoted to the analysis of the superposition of different layers of continuous regular pulsations that flow at different speeds. We saw a graphic representation of this typology of temporal organisation in the second part of the sketch reproduced previously as FIGURE 1. In the corresponding passage of the score, a timpani pulsation plays each quarter tone, from bar 544 ff.; this is gradually superposed on a second layer made up of a regular pulsation played each 6/5 of the basic rhythmic unit (the crotchet), which enters at bar 552; from bar 555 two rhythmic pulsations respectively each 5/6 and 7/6 join, etc. Then, the rhythmic subdivisions become thicker, and, thus, the pulsations quicker.

The composer used this technique as a means for building a pulsing accelerando (summing new quicker layers that substitute the slower ones), as well as a chaotic structure that stems from a periodic one (through the gradual superposition of layers). Now, it is also interesting to notice that in *Atomtod* Manzoni used both rhythmic rows/patterns and regular – often multi-layered – pulsations in order to enliven otherwise steady sound masses. Temporal techniques are used for engraving chaotic/periodic and continuous/discontinuous sonic aggregates and textures. Then, we see that rhythmic serial structures, just like pitch serial structures, also become something different from what they were originally meant to be, transformed into a tool for managing complexity together with other tools/techniques. All these devices are used in the perspective of an overall dramatic structure, which enlightens and shapes all dimensions of the compositional work.

CONCLUSION

This papers deals with Manzoni's serialism in *Atomtod*. My aim was not to highlight particularly innovative serial structures, but rather to explain a well-turned and very refined use of a particular way of conceiving serialism. As far

as both the pitch and metric dimension were concerned, Manzoni was more interested in finding ways for creating and managing sound fields that were as differentiated as possible, than in striving for realising peculiar sequences of pitch/durations. This is a peculiar way of conceiving serialism. After which, as we saw previously, serial structures could even eventually lose their coherence and become something else. The serialisation of other parameters – for example, see the dynamics of the choir and of the masses of metallic percussions from number 276 on – also pursued the same goal and similar techniques.

Moreover, we have observed that – in both pitch and temporal parameters – serial structures are perfectly integrated with non-serial structures. These are not just used with the aim of portraying specific characters, who are also identified through the use of specific sets of instruments. On the contrary, serial structures are used both to express meaning and fulfil specific formal functions, in order to give the overall architecture more clearness and intelligibility, as we have previously analysed in many examples. The connection to the non-serial world is strict and continuous, precisely because serial structures are here conceived and applied as parts of a continuum of techniques that goes from linearity to complexity. The evolution of the overall dramatic structure determines the form and gives coherence to all the dimensions of the work (scenic techniques, lighting, the managing of the multimedia devices, the structure of the text, etc.) and to the parameters of the composition.

Atomtod's serialism occurred in a period of wild experimentation (1961–1965), which, on the one hand, concluded Manzoni's previous compositional period, and, on the other, opened the composer to a vast set of new compositional methods and strategies. Indeed, in *Atomtod* he already tried new ways of creating and curving sonic material, from informal writing, to the creation of steady fields of pulsation. Moreover, serial structures are fully integrated within other compositional strategies, such as graphic drawing, and can be integrated as simple parts of this same drawing (as we have seen in the example of *Scena III – Tempo I*, with *Donna I* singing). In *Atomtod* Manzoni goes beyond serial techniques, in favour of different modalities of sound organisation: for example, in a recently published sketch we see the first attempt at managing sound textures through a matrix that clearly anticipates the techniques of *Insiemi*.[24] This process of transcending serial structures in favour of many different experimentations for creating and organising sound material is precisely what makes them so particularly interesting.[24]

Notes

1 'Tu pensi, con arie – duetti settecenteschi – è possibile oggi, un modo nuovo? forse l'imitazione settecentesca, dopo tanti, dopo Weill […] forse è una soluzione già scontata – e noi oggi ne dobbiamo inventare una nostra. Qui come sempre il problema – pensaci veramente – ogni tua scena, ogni tua battuta, dev'esser tua, della tua natura attuale e vive nell'oggi – nella nostra lotta continua – certo, ciascuno risolve e fissa come è e può e intuisce – ma splendido sarebbe, se ciascuno di noi inventasse per tutti quanti […] [Do you think, with arias – eighteenth century duets – it's possible, today, a new way? Perhaps eighteenth century imitation, after so many others, after Weill […] perhaps there is already an obvious solution – and today we have to invent our own. It's the same old problem – think hard about it – every scene you write, every line, must be yours, [springing] from your current inner nature and existing in the present – in our ongoing struggle – of course, everyone solves and fixes it as best they can and as they understand it – but it would be wonderful if each and every one of us could create for everyone else]'. Handwritten letter from Luigi Nono to Giacomo Manzoni of 10 July 1964, unpublished. Venezia, Fondazione Archivio Luigi Nono, fasc. 'Carteggio Nono – Manzoni'.

2 'Giuste le tue critiche sul '700: sarà un elemento, tra altri, come d'altronde già avevo pensato [Your comments on the eighteenth century are correct: it will be an element among the others, as I had already thought]'. Handwritten letter from Giacomo Manzoni to Luigi Nono of 16 March 1964, unpublished. *Ibidem*.

3 Joachim Noller, *Engagement und Form. Giacomo Manzonis Wek in kulturtheoretischen und musikhistorischen Zusammenhängen*, Frankfurt – Bern – New York – Paris: Peter Lang, 1987, p. 132.

4 The most in-depth investigation on this matter is still by Noller, *Engagement und Form*, p. 137.

5 '27-X-61 […] Abbozzo sull'idea di E. per operina [Draft on E.'s [Emilio Jona's] idea for an operina]' is written at the top of the first manuscript draft of *Atomtod*'s dramatic structure. Venezia, Fondazione Giorgio Cini, Fondo Giacomo Manzoni (FGM), fasc. 'Atomtod'.

6 The relationship between *Studio per 24* and *Atomtod* is elucidated by Giacomo Albert, '*Atomtod*: interazioni drammaturgiche tra testo, musica, scena e proiezioni', in: *Giacomo Manzoni. Pensare attraverso il suono*, a cura di Daniele Lombardi, Milano: Mudima 2016, pp. 85–118: 109 (footnote 6).

7 To my knowledge, the Treviso performance is the only existing recording of *Atomtod*. I shall therefore take it as my reference point for timing. I have studied its differences in the published score in Albert, '*Atomtod*: interazioni drammaturgiche tra testo, musica, scena e proiezioni', pp. 87, 90, 110 (footnote 17).

8 *Atomtod*'s score (Milano: Edizioni Suvini Zerboni, ©1964 S.63334Z.) divides the first Tempo into two Scene, whereas the edition of the libretto is in three Scene. See Giacomo Manzoni, *Parole per musica. Da Dante a Ginsberg*, Palermo: L'Epos, 2007, pp. 195–228. The first two scenes of the libretto correspond with two parts of the score's first scene, and the libretto's third scene corresponds with the score's second scene. I shall follow the subdivision of the libretto here.

9 Timing corresponds to the recording of the Treviso performance.

10 The standard set theory's denomination of pitch classes is applied here, so that 0 corresponds to C, 1 to C#, 2 to D, etc.

11 Each ascending semitone is represented by a +1 and each descending one by a -1, so that an ascending fourth is described as +5.

12 Angela Ida De Benedictis, *La sentenza impossibile: un primo «banco di prova» tra compromesso e attualità*, in: *Per Giacomo Manzoni*, a cura di Carmelo Di Gennaro e Luigi Pestalozza, Lucca: LIM, 2002, pp. 81–97: 85.

13 Indeed, the sequence of intervals is [-1 -3 +1 -4 -2 +4 -5 +2 ±6 +3 +5].

14 Where O6-1 is intended as the first half of the ordered form of the basic row in its original form starting from F# (i.e. 6); with O6-2 the second half of the same row.

15 T_n [s] indicates the transposition of n semitones of the set [s].

16 See Allen Forte, *The Structure of Atonal Music*, New Haven: Yale, 1973, pp. 179–181.

17 About set combinatoriality, and particularly hexacordal combinatoriality, see Milton Babbitt, 'Review of René Leibowitz, *Schoenberg et son école* and *Qu'est ce qu la musique de douze sons?', Journal of the American Musicological Society*, III/1, 1950, pp. 57–60.

18 Where m is an N included between 1 and 2.

19 Where 'odd readings' means rows where the two halves are read in different ways: e.g. the first half is straight, and the second half is subjected to a retrograde reading. A twelve-tone collection of pitches is thereby engendered, which does not respect the sequence of intervals of the original row, and therefore does not belong to the class of all-interval rows.

20 'Verräumlichung der Zeitverlaufes', 'Dissoziation der Zeit', 'der *allgemeine Begriff*, die Bedeutung, die Synthese der Teilelemente des Vorwurfs gehen hervor gerade aus ihrer Nebeneinanderstellung als getrennte'. Theodor Wiesengrund Adorno, *Philosophie der neuen Musik* [1949], Frankfurt: Suhrkamp, 1997, pp. 171, 174.

21 About the relationship between the spatialisation of musical time and electro-acoustic music, see for example Nicola Scaldaferri, 'Montage und Syncronisation: Ein neues musicalisches Denken in der Musik von Luciano Berio und Bruno Maderna', in: *Elektroakustische Musik. Handbuch der Musik im 20. Jahrhundert*, hrsg. von Elena Ungeheuer, Laaber: Laaber Verlag, 2002, V, pp. 66–82; Jennifer Iverson, 'The Emergence of Timbre: Ligeti's Synthesis of Electronic and Acoustic Music in *Atmosphères*', *Twentieth Century Music*, VII/1, 2010, pp. 61–89; Angela Ida De Benedictis, 'Le nuove testualità musicali', in: *La filologia musicale. Istituzioni, storia, strumenti critici*, a cura di Maria Caraci Vela, Lucca: LIM, 2009, II, pp. 71–116.

22 About *Klangkomposition* see, among others, Pascal Decroupet and Inge Kovács, 'Erweiterung des Materials', in: *Im Zenit der Moderne. Die Internationale Ferienkurse für neue Musik Darmstadt 1946–1966*, hrsg. von Gianmario Borio und Hermann Danuser, Freiburg im Bresgau: Rombach, 1997, pp. 277–333: 282–302 (§ 'Klangkomposition').

23 Because 1 = 3*1/3 = 5*1/5 = 4*1/4 = 7*1/7; and, in a general way: n = (n*s)*(1/(n*s)), where n in this case represents a natural number.

24 Albert, '*Atomtod*: interazioni drammaturgiche tra testo, musica, scena e proiezioni', p. 93.