ARRAY ANALYSIS

Case study: Milton Babbitt, *Wiedersehen* from the song cycle *DU*

As with every analysis, the student is invited to use the original score as the reference material and the bibliographic materials (Lake 1986, Quinn 2001, etc.). The following table summarizes the array structure underlying measures 1-10.

Lyne 1	305	124	78T	E69	250	431	79T	6E8
Lyne 2	E69	T87	124	305	6E8	79T	413	250
Lyne 3	472	0E9	356	81T	947	20E	568	1T3
Lyne 4	81T	356	0E9	472	1T3	568	20E	947

As far as row forms and specific ways of alteration are concerned, we observe that the first half of the table (the lynes spanning the first four columns) presents four rows.

Lyne 1 presents the basic row from, P3. The series presented in lynes 2, 3 and 4 are related to this series by R, I, and RI row forms. The row forms present specific ways in which they are altered; the color-coded trichords make it easier to discern these relationships:

P_3	305	124	78T	E69
R_3	E69	T87	124	305
I_4	472	0E9	356	81T
RI_4	81T	356	0E9	472

	I_3	I_0	I_5	I_1	I_2	I_4	I_7	I_8	I_{10}	I_{11}	I_6	I_9	
P_3	3	0	5	1	2	4	7	8	A	B	6	9	R_3
P_6	6	3	8	4	5	7	A	B	1	2	9	0	R_6
P_1	1	A	3	B	0	2	5	6	8	9	4	7	R_1
P_5	5	2	7	3	4	6	9	A	0	1	8	B	R_5
P_4	4	1	6	2	3	5	8	9	B	0	7	A	R_4
P_2	2	B	4	0	1	3	6	7	9	A	5	8	R_2
P_{11}	B	8	1	9	A	0	3	4	6	7	2	5	R_{11}
P_{10}	A	7	0	8	9	B	2	3	5	6	1	4	R_{10}
P_8	8	5	A	6	7	9	0	1	3	4	B	2	R_8
P_7	7	4	9	5	6	8	B	0	2	3	A	1	R_7
P_0	0	9	2	A	B	1	4	5	7	8	3	6	R_0
P_9	9	6	B	7	8	A	1	2	4	5	0	3	R_9
	RI_3	RI_0	RI_5	RI_1	RI_2	RI_4	RI_7	RI_8	RI_{10}	RI_{11}	RI_6	RI_9	

As seen in the matrix, the first two rows are P_3 and its retroversion, while the other two rows are I_4 and its RI. There is a profound, triadic connection between the two pairs of rows, as they share the exact same number of triads and triadic content. The only difference, as it would be expected, is the placement of the triadic material, in this case organized in a very precise symmetrical displacement which allows the creation of the array:

305	124	78T	E69
E69	T87	124	305
472	0E9	356	81T
81T	356	0E9	472

- Lyne 1 begins with P3. After P3, the following row form in lyne 1 is I_2.

I_2: 250 431 A97 6B8

- Next, we will attempt to reveal if the transformation relating the two lyne 1 series may apply to the two lyne 2 - 4 series and if the lynes in the second half of the table (the last four columns) are related to one another in the same way discussed above.

Relationships

250	431	79T	6E8
6E8	79T	413	250
947	20E	568	1T3
1T3	568	20E	947

Array

250	431	79T	6E8
6E8	79T	413	250
947	20E	568	1T3
1T3	568	20E	947

Serial Matrix

	I_2	I_5	I_0	I_4	I_3	I_1	I_7	I_9	I_{10}	I_6	I_{11}	I_8	
P_2	2	5	0	4	3	1	7	9	A	6	B	8	R_2
P_{11}	B	2	9	1	0	A	4	6	7	3	8	5	R_{11}
P_4	4	7	2	6	5	3	9	B	0	8	1	A	R_4
P_0	0	3	A	2	1	B	5	7	8	4	9	6	R_0
P_1	1	4	B	3	2	0	6	8	9	5	A	7	R_1
P_3	3	6	1	5	4	2	8	A	B	7	0	9	R_3
P_9	9	0	7	B	A	8	2	4	5	1	6	3	R_9
P_7	7	A	5	9	8	6	0	2	3	B	4	1	R_7
P_6	6	9	4	8	7	5	B	1	2	A	3	0	R_6
P_{10}	A	1	8	0	B	9	3	5	6	2	7	4	R_{10}
P_5	5	8	3	7	6	4	A	0	1	9	2	B	R_5
P_8	8	B	6	A	9	7	1	3	4	0	5	2	R_8
	RI_2	RI_5	RI_0	RI_4	RI_3	RI_1	RI_7	RI_9	RI_{10}	RI_6	RI_{11}	RI_8	

As it can be seen above, the lynes in the second half of the table are in the same relationship as the ones in the first half of the table, completing the super-array.

Lyne 1 renders the P_2 of the new series, while lyne 2 contains the R_2.

Lyne 3 and 4 contain again I_4 and RI_4 but in reverse order. The whole second array looks like a half step transposition of the first series.

Lyne 1: $P_3 \rightarrow I_2$
Lyne 2: $R_3 \rightarrow R_2$
Lyne 3: $I_4 \rightarrow I_4$
Lyne 4: $RI_4 \rightarrow RI_4$

Lyne 1	305	124	78T	E69		250	431	79T	6E8
Lyne 2	E69	T87	124	305		6E8	79T	413	250
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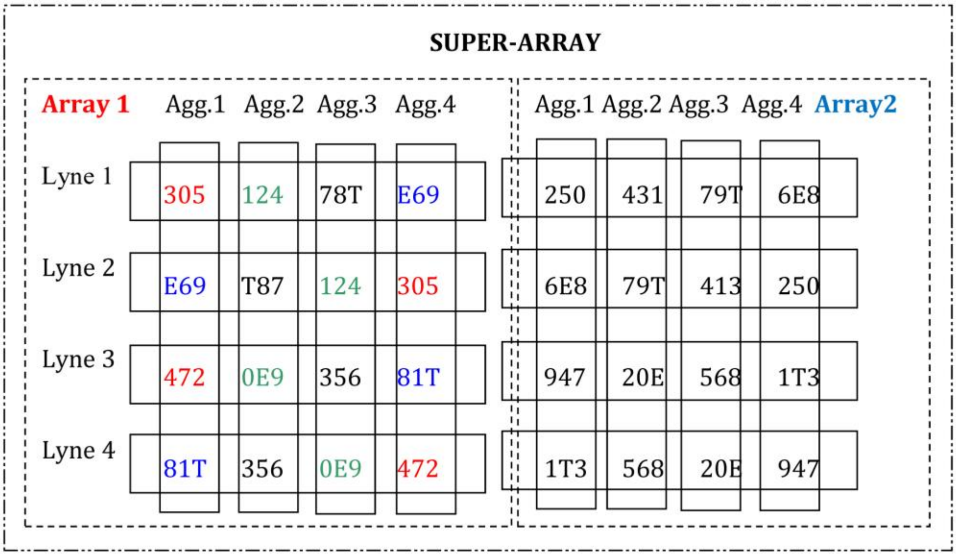
Lyne 4	81T	356	0E9	472		1T3	568	20E	947

The architecture of the super-array is as follows:



As an element of novelty perhaps, the vocal line is dropped in measure 10:

469 E53 210 T**4**6 E82 350 T
783 **7**01 94T etc.
2**T**E 6**T** etc.
0**5**2 948 2T3 **5**8T6 etc.

It seems that Babbitt chose to keep a 4-layer structure for pitch displacement but the rendering of the series and its transpositions are no longer complete, signaling a possible "composing out" section, an interesting feature as Babbitt was always quite careful with pitch material rendering and methodological accuracy. However, there is a possibility that despite all of the mathematical planning, some fragments are still left to be more of a musical gesture than the precise result of a combinatorial musical matrix.

The trichordal array structures identified above are elaborated on the musical surface in ways that encourage the listener to associate pitch classes in ways not captured in the array diagram.

Secondary sets continue to play a role in array compositions, just as they did in "classical" 12-tone works. There are at least two examples of secondary sets found on the surface that can be related to the subset structure of the basic series:

305	124	78T	E69
(025)	(013)	(013)	(025)
250	431	79T	6E8
(025)	(013)	(013)	(025)

By extracting the prime forms from the two series in question, and re-ordering their elements, two triads (013) and (025) seem to be significant due to their re-occurrence, which suggests a connection at this triadic invariant level. The marginal triads are based on (025) while the internal triads are (013)-based, forming an axis of symmetry.

035	124	78T	69E
025	134	79T	68E
(025)	(013)	(013)	(025)