Richard Toop

Stockhausen's 'Klavierstück VIII'

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For Aloys Kontarsky and Herbert Henck

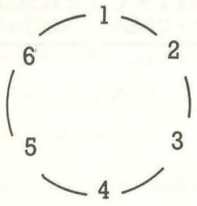
In the following analysis, I have sought to portray in as lucid a manner as possible all those aspects of Stockhausen's *Klavierstück VIII* (1954) which stem from a predetermined organisation scheme; in particular, I have tried to show how most local and formal details of the piece are derived from a single 6 × 6 serial square and its permutations, and to account logically for all deviations from the fundamental scheme.

External structures

Klavierstück VIII was conceived as part of a cycle of six serially interrelated pieces. In the end, all of the other five pieces were revised, replaced, or shelved, with the result that of the published *Klavierstücke V–X*, only *VIII* adheres closely to the original scheme. Yet the overall schematisation is important, for it equips *VIII* with certain *a priori* features, and these features form the global background against which more local decisions have to be made. Reference has already been made to a basic 6 × 6 square which generates all the proportions for the cycle of six *Klavierstücke* as originally defined. Without further ado, here it is:

2 6 1 4 3 5
6 4 5 2 1 3
1 5 6 3 2 4
---
4 2 3 6 5 1
3 1 2 5 4 6
5 3 4 1 6 2

The construction, both of the first line and of the square as a whole is readily explained. The basic line is a sort of 'all-interval' proportion series:[1] if one considers the numbers 1 to 6 cyclically,



the fundamental series yields the following differences:

\+ 1 3 2
2 6 1 4 3 5→(2)
– 2 1 3

The remaining lines are arrived at by simple addition, subtraction, and reversal. In the square

(i) 2 6 1 4 3 5
(ii) 6 4 5 2 1 3
(iii) 1 5 6 3 2 4
(iv) 4 2 3 6 5 1
(v) 3 1 2 5 4 6
(vi) 5 3 4 1 6 2

(ii) = (i) reversed + 1
(iii) = (i) − 1
(iv) = (iii) reversed (= (i) reversed − 1)
(v) = (ii) reversed (= (i) + 1)
(vi) = (i) reversed

Though not exactly a sophisticated method of derivation, it does have the advantage of maintaining the balance of + and − proportions (always given the frankly speculative character of the 6 ⟶ 1 progression; in practice, 6 → 1 is always felt as −5 rather than +1).

Another five squares are derived from this basic square, starting with lines (ii), (iii), (iv), (v), and (vi) from the basic square. The complete set of six squares runs:

	A	B	C	D	E	F
(i)	261435	645213	156324	423651	312546	534162
(ii)	645213	516423	345621	543612	615432	546231
(iii)	156324	142653	134625	312546	415326	512463
(iv)	423651	624153	312546	462531	534162	513642
(v)	312546	561243	126543	534162	234516	564321
(vi)	534162	125463	365142	324156	136452	526143

Without going into the method of derivation, we can point out that the six squares are paired: F = B reversed + 2, C = E reversed + 1, while D has the same kind of axial symmetry as A (though in cruder form). Note also the last line of F is the first line of A, displaced by one position.

A basic idea for all six pieces was that each one should have a different number of main sections (1 to 6), the different sections being identified primarily by different tempos (1 to 6). Taking line Aii (that is, the second line of the first square), Stockhausen arrives at the following number of main sections (or 'tempo groups') for each piece:

Klavierstück V 6
" *VI* 4
" *VII* 5
" *VIII* **2**
" *IX* 1
" *X* 3

(once again, I should like to emphasise that, because of subsequent revisions, by no means all these specifications apply to the other printed pieces).

The actual tempo for each tempo group is obtained from square B. The six figures on the first line give the tempos for *Klavierstück V*, the first four of the second line give those for *Klavierstück VI*, and so on, yielding the values 6 and 5 for the two tempo groups in *Klavierstück VIII*. The discrete values for these

tempos were adjusted many times in the course of composing the cycle (the logarithmic scales in the printed versions were a decided afterthought; the earlier versions have simple arithmetic tempo differences), and in fact 6 5 has become 5 6 in the final version of *Klavierstück VIII*, so that all that remains of the initial scheme is the use of two adjacent tempos (♪= 80, 90).

Another predetermination for the whole cycle determines the number of subsections in each tempo group, without in this case specifying how the subdivisions are to be effected. Reading from square A (same procedure as for tempos), we find that the two tempo groups in *VIII* are to have 3 and 2 sections respectively.

We can summarise these predeterminations as follows:

Klavierstück	*V*	*VI*	*VII*	*VIII*	
No.of tempo groups	6	4	5	2	
Tempos	6 4 5 2 1 3	5 1 6 4	2 3 1 4 2	6 5	.....
Sections per tempo group	2 6 1 4 3 5	6 4 5 2	1 3 1 5 6	3 2	.....

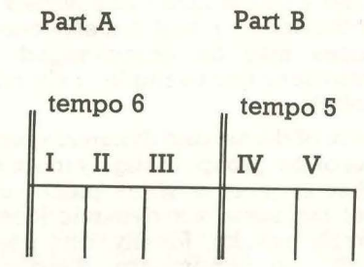
Internal structure

The six permutation squares furnish a sufficiently large number of proportions for all the pieces in the cycle, but, apart from determining the tempo groups and main subdivisions, they do very little to precondition the actual content of each piece, or indeed the number of features to which the squares are applied.

There are certain fundamental ideas that underlie the whole cycle, ideas that for the most part closely reflect the general development of Stockhausen's style (and indeed that of European new music as a whole) during the early 1950s. One such is the concept of small notes (in effect, grace notes) to be played 'as fast as possible', independently of the metrical structure. This purely physically determined type of time measurement was a primary factor in luring Stockhausen back to instrumental music and the fallibilities of human executants after some 18 months during which he had concentrated on the theoretically infallible measurements of electronic music.

A second idea, which Stockhausen had recently been testing in the context of tape music, was that of group composition, not in any complex mathematical sense (the 'mathematics' of Stockhausen's early work is confined to simple arithmetic), but as a progression from the composition of completely autonomous 'points' to that of groups, which, while retaining a high degree of parametric variation, have at least one uniting factor (most commonly a dynamic level or envelope).

Both these notions have a role to play in articulating the medium- and small-scale form of *Klavierstück VIII*. The basic concept of the piece is that of a hierarchic system of formal subdivisions into ever smaller units, all levels of the formal structure being regulated by the same sets of proportions. The largest proportions—that is, the major formal units—have already been established by the superordinate scheme for the whole cycle, both as regards their number (two) and means of characterisation (tempo). The next level of the form, namely the subdivision of each tempo group, has been fixed numerically:



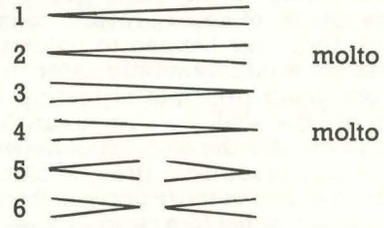
but the cyclic scheme contains no hint as to how this division into five sections is to be achieved. Now a central technical idea of Stockhausen's for *Klavierstück VIII* is the polyphonic superimposition of groups of 1 to 6 notes, the notes themselves having durations of 1–6 × demisemiquaver.[2] Since, in the normal run of events, no durations longer than a dotted quaver are going to occur, we have an immediately audible means of marking off the end of sections, namely the use of a single duration substantially in excess of a dotted quaver.

The next step down on the formal ladder is the subdivision of each of the five sections into up to six subsections. Here the grace notes come into play. In most other pieces of the cycle, grace notes are clustered around 'main notes':

Serial criteria for these groups are the number of grace notes they contain, their position in relation to the main note (before, with, after), and the use or non-use of the sustaining pedal. But in those pieces the durations of the main notes are usually fairly long, and there is little or no polyphonic layering. In the case of *VIII*, the combination of grace notes and main notes in this way could lead only to the hopeless confusion of ears and fingers alike. So Stockhausen completely separates them, and thereby gains a new means of formal punctuation: each subsection is partitioned off from its neighbours by groups of grace notes organised serially in respect of number (1 to 6 attacks) and density (1 to 6 notes struck simultaneously).

The subsections contain the hard core material of the composition: 1 to 6 groups of 1 to 6 notes, each note having, as we said above, a duration of 1–6 × demisemiquaver. The groups are differentiated (and at the same time, linked internally) by the use of two dynamic specifications: level and envelope.

The envelopes are the following:



The attentive reader will probably have spotted a source of difficulty here: the envelope characteristics are only fully practicable with two or more notes. No dynamic change can be effected on a single note (apart from the natural decay process), and two notes are insufficient to execute a crescendo-plus-diminuendo or the reverse (types 5 and 6). This means that in 'groups' containing only one note, the envelope specification is automatically ignored (no great loss, since the purpose of the envelope is to

unite notes, and a single note can scarcely be other than united with itself . . .), and that elsewhere, serial envelope values may be interchanged to avoid impractical situations (for example, a six-note group *ppp* > *molto*).

The treatment of the second dynamic specification, the initial level of the group, is slighly more complex. It is clear that even in a short piece, a uniform distribution of the same six dynamic levels would yield insufferable results. Ideally, one needs more than six levels and non-uniform distribution; but neither the serial system nor the human ear is about to cope with more than about six levels at a time. The solution is found in the same principle of field selection that Stockhausen had already used in *Elektronische Studie II*. There are ten dynamic levels, assembled into five overlapping 'fields' each of six adjacent levels:

	1	2	3	4	5
ffff	1				
fff	2	1			
ff	3	2	1		
f	4	3	2	1	
mf	5	4	3	2	1
mp	6	5	4	3	2
p		6	5	4	3
pp			6	5	4
ppp				6	5
pppp					6

Each of the five sections of the piece uses a different 'field' selection for the dynamic of the polyphonic groups, the order of the 'fields' being 3 5 4 1 2. The grace notes, on the other hand, always use the loudest 'field', 1, and have no envelope shape beyond that provided automatically by changes of chord density.

We have now mentioned all those aspects of *Klavierstück VIII* that are determined by the 6 × 6 square. However, there are other aspects of the piece which, though not so rigorously deduced from the basic proportions, are still subject to a certain degree of quasi-serial control.

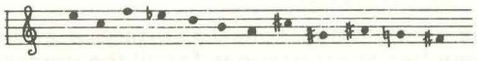
We saw above that the duration of individual notes was controlled by the basic squares; but as yet, nothing has been said about the 'intervals of entry' (*IEs*) between notes. Various factors are involved here: one must consider both the time intervals between notes belonging to the same group and those between the totality of notes present, regardless of what group they may happen to belong to. Actually, the first factor is largely subordinated to the second, whose governing principle is that no two notes in different groups shall be struck simultaneously; this helps to enforce the distinction between polyphonic groups and grace-note groups, since it means that any chord of two or more notes must *ipso facto* belong to the grace notes (the reverse does not necessarily apply, since grace-note groups may also contain a single note, that is, density 1). Now Stockhausen's aim is to interlock the polyphonic groups as far as possible,[3] and rather than imposing any strict series of *IEs*, he settles for general field limits. Thus, in the first tempo group, there are, from the *IE* standpoint, five sections:

the first has an *IE* range of 1–5 × demisemiquaver
the second has an *IE* range of 1–2 × demisemiquaver
the third has an *IE* range of 1–4 × demisemiquaver
the fourth has an *IE* range of 1–3 × demisemiquaver
the fifth has an *IE* range of 1 demisemiquaver only.

Actually this process extends beyond the first tempo group to VA. VB then takes the prevailing state (that is, regular demisemiquaver *IE*), and applies the same procedure inside-out, so to speak. The rest of the piece has a constant *IE* of demisemiquaver, but the notes, once struck, may be held for different durations: again there are five sections, with maximum durations of 4, 5, 2, 1, and 3 respectively. (The cramming of this second method into the final section has an air of compromise; presumably Stockhausen's first idea was simply to use one *IE* range per section.)

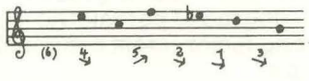
Pitch

The main notes of *Klavierstück VIII* are based on the following series, which originally was intended to do duty for the whole cycle:



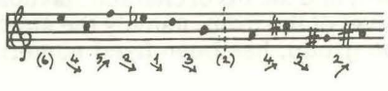
Inspection of the intervals reveals immediately what Stockhausen was aiming at: a series that would relate directly to the basic set of proportions, with twelve intervals of 1 to 6 semitones arranged in two sets of six (the twelfth interval would be the one joining the last note of the series to the first). Stockhausen had heard about all-interval series from Eimert a couple of years earlier (in his *Grundlagen der musikalischen Reihentechnik* (Vienna, 1963), Eimert relates how the 22-year-old Stockhausen had even spent a couple of sleepless nights 'discovering' some new all-interval series; this, naturally, was long before the complete set of all-interval series had been systematically induced—in those days, they were still hard to come by), and it would have been conceptually ideal for his purposes if he had been able to hit upon a series integrally matching the basic proportions for other parameters.

There are no 6s (that is, tritones) in Stockhausen's series; but it is not uncommon for a symmetrical all-interval series to have the interval of a tritone between its last and first note, so probably he was aiming, initially, to end up on an A sharp. This being so, one can legitimately transfer the figure 6 to the beginning, so that the first half of the series reads:

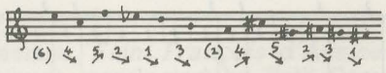


that is, the second line of the basic square!

Perhaps Stockhausen considered various possibilities for the second half: the second row of square B, or the third row of square A; eventually he aimed to repeat all the intervals of the first half, but in the opposite direction (ascending instead of descending, and *vice versa*). With a major 2nd in the middle, this idea starts out promisingly:



Then the trouble starts: 1 does not work in either direction (B and A have already been used), so 3 and 1 must be interchanged. Even so, the only possible solution is for both 3 and 1 to descend, whereas in principle they should have ascended:[4]



This pitch series is used throughout *Klavierstück VIII*, without recourse either to permutation or to the classic dodecaphonic techniques of inversion, retrograde, and retrograde inversion. It is transposed, however: the initial degrees of each transposition are determined by the series itself (that is, first transposition on E, second on C, third on F . . . twelfth on F sharp). The twelve transpositions thus obtained are not enough for the main notes in the piece, so Stockhausen embarks on a second cycle of transpositions, starting on G sharp, and once again following the intervals of the basic series (second transposition on E, third on A, etc.); the deciding factor here is the note E, which is the first note for the first transposition set, and the second note for the second set.

The pitches for the grace notes derive from the same series and the same transposition procedure, but here the 'model' series is the one beginning on C. Accordingly, the first transposition is on C, the second on A flat, the third on D flat, etc. Once again, all twelve transpositions are exhausted well before the end of the piece, and as was the case with the main notes, the first transposition of the first cycle (that is, the C transposition) becomes the second transposition of the second cycle; consequently the 'model' series for the second cycle is the transposition on E.

Thus far, the pitch structure is simplicity itself; in practice, though, there are complications. The very first note of the main text makes this clear; in view of all that has been said above, why is it not an E (in fact it is a C)? What Stockhausen has done is institute a sort of filtering system: in each of the five main sections, one pitch is consistently omitted (again, in the order of the series: E, C, F, D sharp, D); the missing pitch is restored by the long note at the end of each section. Consequently, each transposition of the series has its interval structure disrupted in a different way (in the full analysis below, I have indicated the point in each series at which a note is theoretically 'missing'). In addition, there are countless minor modifications (notes exchanged, delayed, anticipated, etc.), which are discussed below.

Octave registers are more freely handled. In general, the first main section of the first tempo group (I in the analysis) concentrates on a medium-plus-high range, with the long note at the end placed in a contrasting low register. Section II reverses this lay-out: the register is medium-plus-low, with a contrasting high long note, while III returns to the lay-out of I (minus the latter's initial 'Mannheim rocket'). The two remaining sections use the full register, and the treatment of the long notes is in direct contrast to the first tempo group. Whereas in the first tempo group the long notes are isolated in register from the rest of the text, in the second tempo group they occur right in the middle of the pitch range. Similarly, whereas in I–III the long notes occur on their own, in IV–V (particularly V), they are integrated into the polyphonic texture.

Exceptions and inserts

The score of *Klavierstück VIII* reveals a very substantial number of cases where serial definitions have been modified, interchanged, or simply disregarded. Rather than try to deal with these in advance of the analysis itself, I have preferred to discuss each individual case in a commentary appended to the analysis.

However, there is one particular type of exception that requires prior investigation, namely the wholesale addition of material to the pre-existing scheme. The idea of 'inserts' begins modestly in Stockhausen's work of the early fifties, and expands steadily till, by the time of *Momente* and *Plus-Minus*, it has become a deliberate compositional principle. In *Klavierstück VIII* there are two such inserts: the grace notes at the beginning of the work, and the sequence of arpeggiated chords on the final page. The added grace notes at the beginning are simply a matter of gesture, of opening the work with a flourish; the octave registers, as is so often the case with the grace notes, are parasitic on the main text, coming in this case from the transition IA to IB. The other instance, the chords at the end of the work, comprises a more basic disruption of the serial structure, and thus requires more thorough explanation.

Up to this final page, there have been no chords in the main text; the main notes have been horizontally, the grace notes vertically conceived, and the two categories have been sharply demarcated. So why the sudden departure from this principle? Well, anyone familiar with Stockhausen's essays of the fifties (and after) will have been struck by this insistence on the idea of mediation between opposites, of black and white being linked by a scale of intermediary grey values. Yet in this composition, there has been no such mediation as far as horizontal and vertical are concerned. Not until now, that is. For it is not just a matter of chords' suddenly appearing in the main text: the chords themselves are arpeggiated, that is, they occupy a border position between horizontal and vertical. Exactly when Stockhausen decided to make this insert is not clear: it is already present in the first draft copy of the piece (whereas the grace notes at the beginning are not), but on the other hand, it does not draw any of its materials from the predetermined structure.

The pitches are furnished by a couple of additional transpositions on D and B (the main series transposition on C sharp is simply interrupted, and then resumed again after the insert), whilst the series for dynamics (3 1 5 6 2 4; note also the abrupt change to the softest 'field'—*pppp* to *mf*—in contrast to the surrounding main text, which at this stage is using the loudest 'scale') and density/IE (modally coupled: 2 3 4 5 1 6) are completely foreign to the permutation squares. It's worth noting that in the draft sketch, the boundaries between grace note and main text are even more fluid: the density 2 chord A–G is also arpeggiated (upwards), and the grace-note group consists of only two attacks, a single note and an arpeggiated six-note chord(!).[5]

Lay-out of the analysis

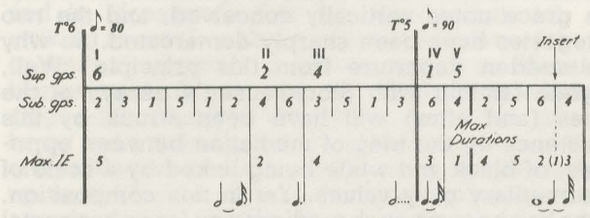
Because of the sheer number of serial determinations present at every moment, it was necessary to let the analysis run parallel to a copy of the score. The analysis is preceded by diagrams showing the form of the whole piece, and of the individual sections, so that the reader can see the formal structure of different levels of magnification.

As in the published score, there are two lines of the piece per page. Above each line stand the large-scale formal specifications: the number of 'superordinate groups' (groups of groups) per section, and the number of groups in each superordinate group (the subordinate groups are numbered off in the score

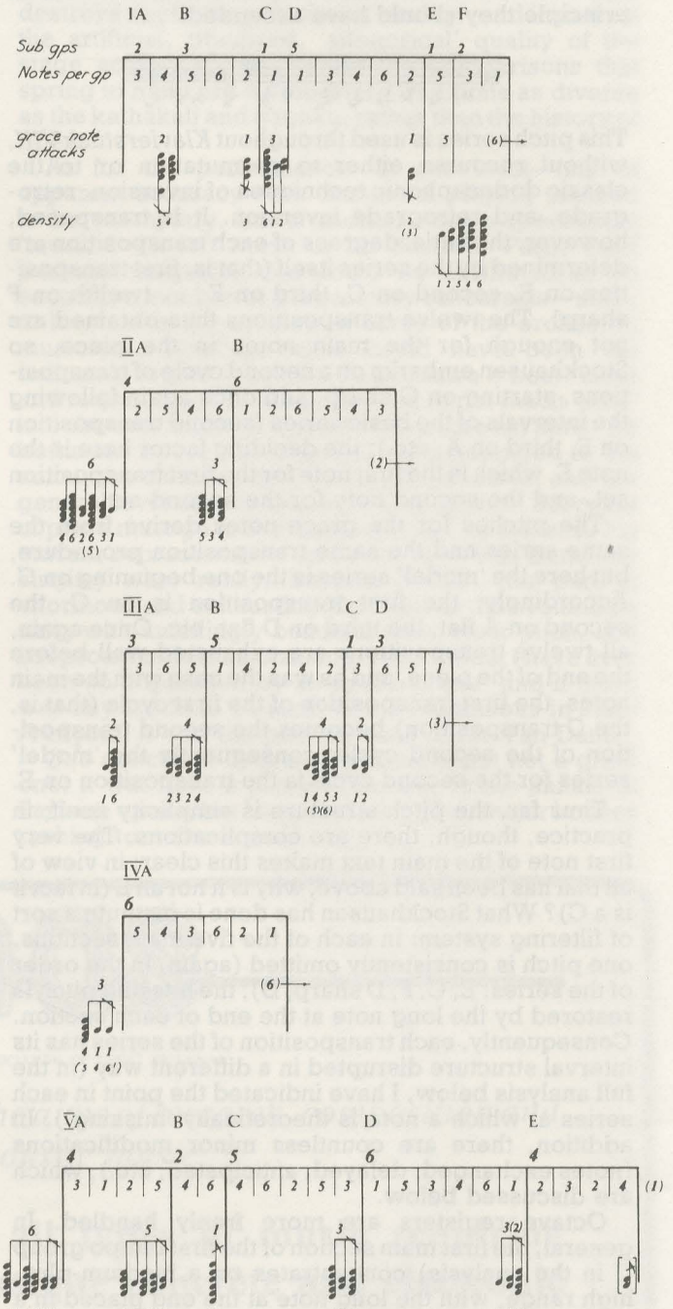
itself). Next come the determinations for the grace notes: the pitches, the number of attacks per group, the density of each attack, and the dynamic level of the group. Below the score are written the specifications for the main text: the pitches, the number of notes in each subordinate group, the basic level and envelope of the group, the duration of each note, and the *IE* range (the last two specifications apply to all notes in order of occurrence, that is, irrespective of the groups to which they belong), and finally the general distribution of intervals of entry within a particular section. The numbers on the bottom line are associated with asterisks directly above them in the score or tables, and refer to the commentary.

The letters and Roman numbers at the beginning of the tables (for example, Aii, Fii) indicate the square and line from which the proportions have been taken; a dotted line in the tables indicates the end of a line in the permutation squares.

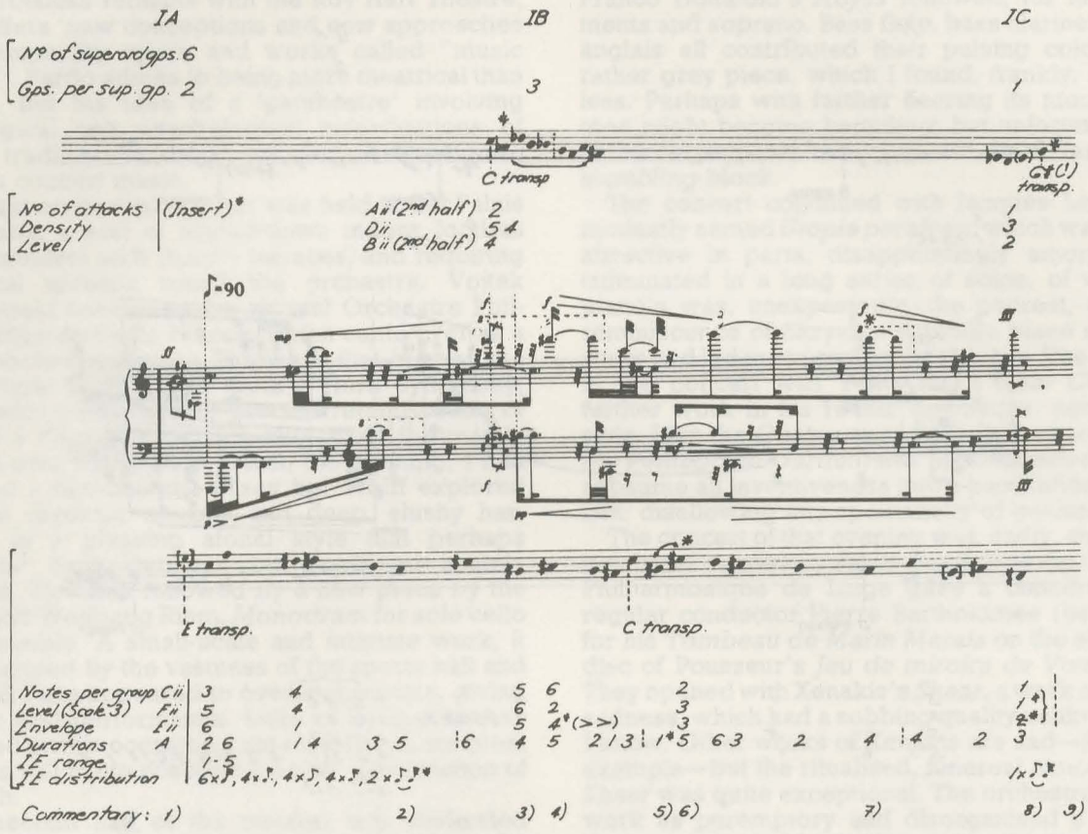
Overall form

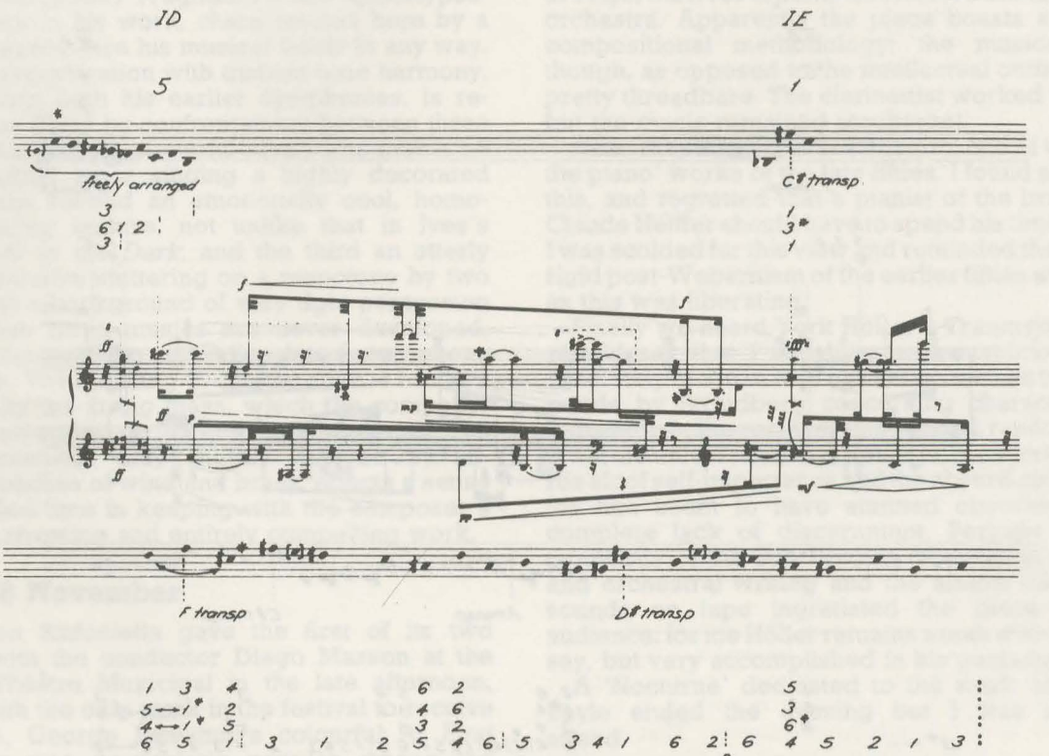


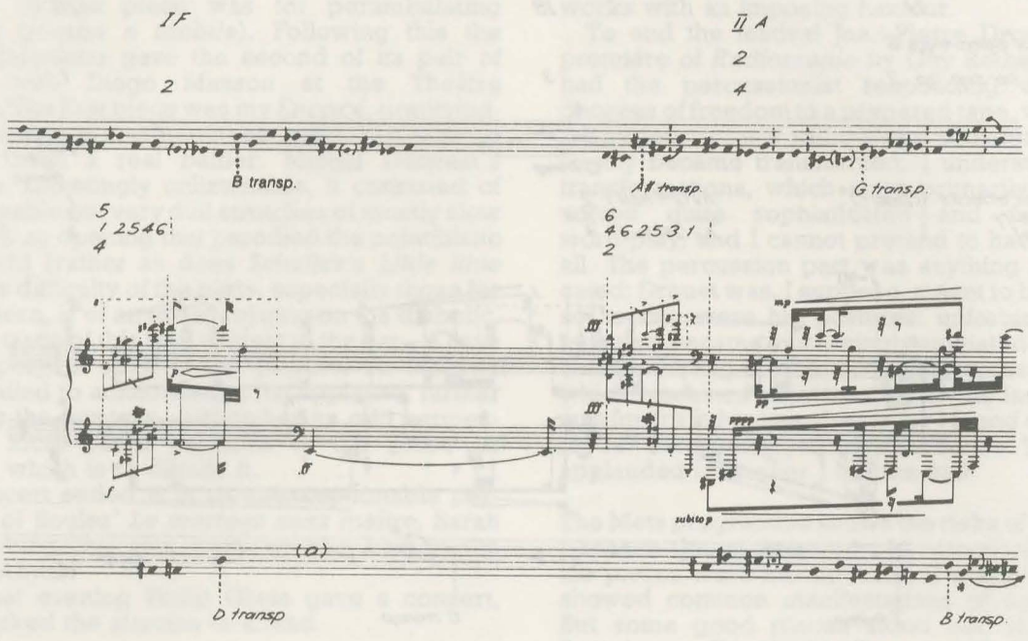
Tempo groups

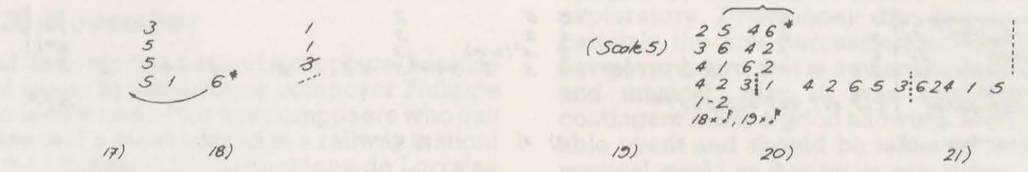


The analysis






I F
II A
B transp.
A# transp.
G transp.
subito p
D transp.
B transp.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18)
19)
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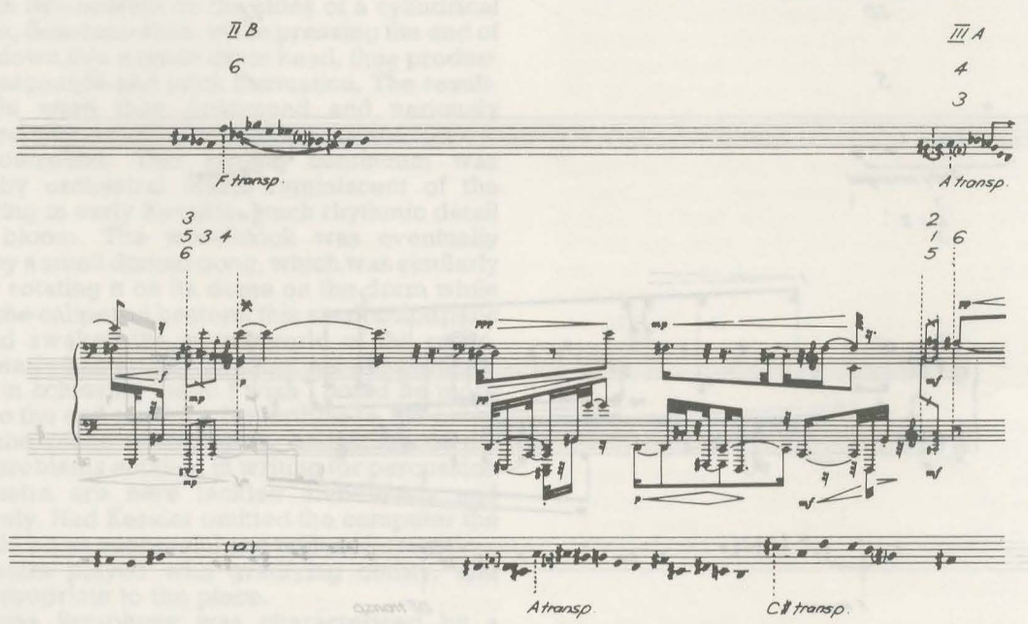
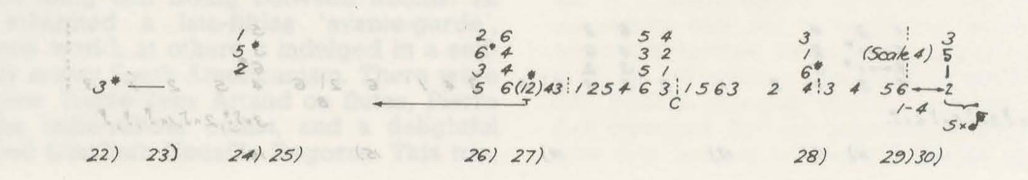
21)


II B
III A
F transp.
A transp.
A transp.
C# transp.


(Scale 4)
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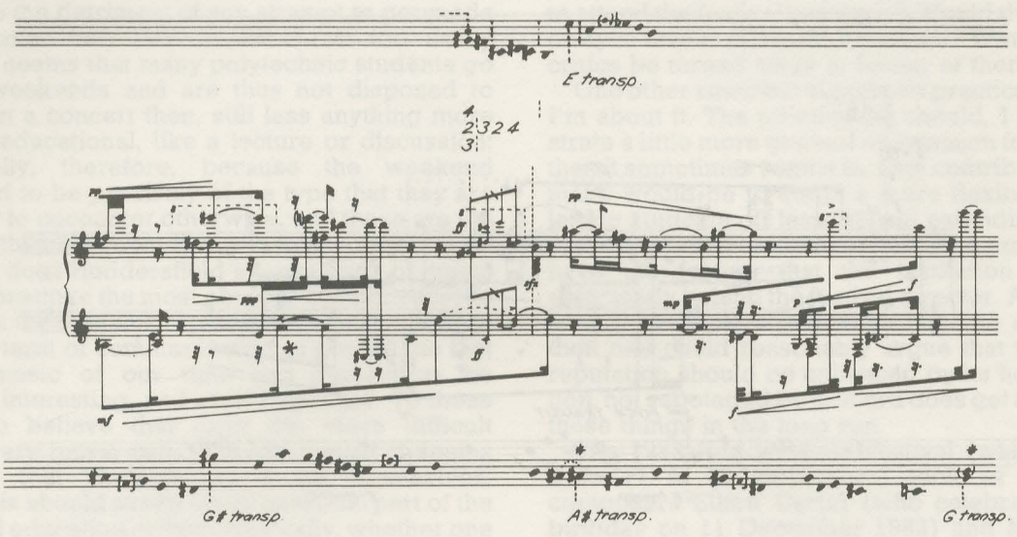
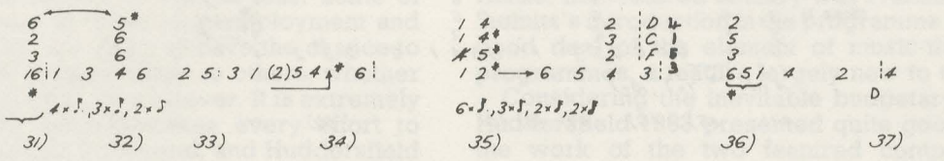
30)

III B

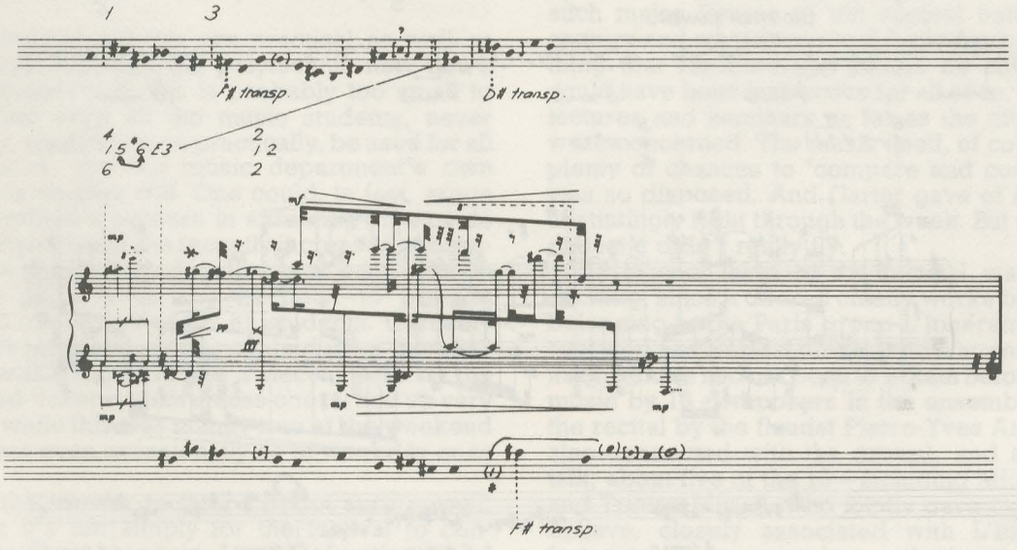
5

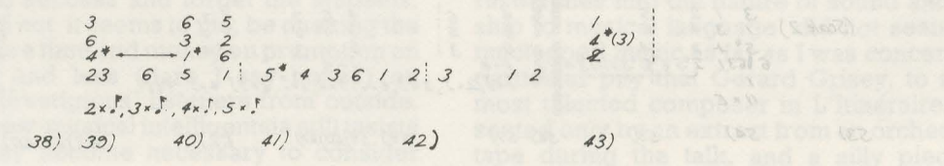




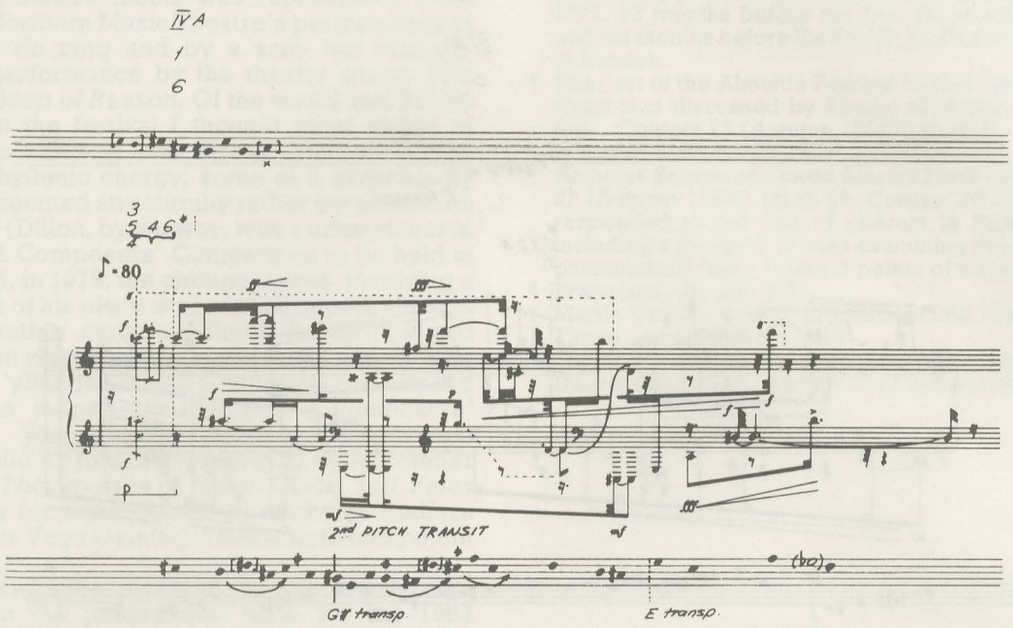
31) 32) 33) 34) 35) 36) 37)

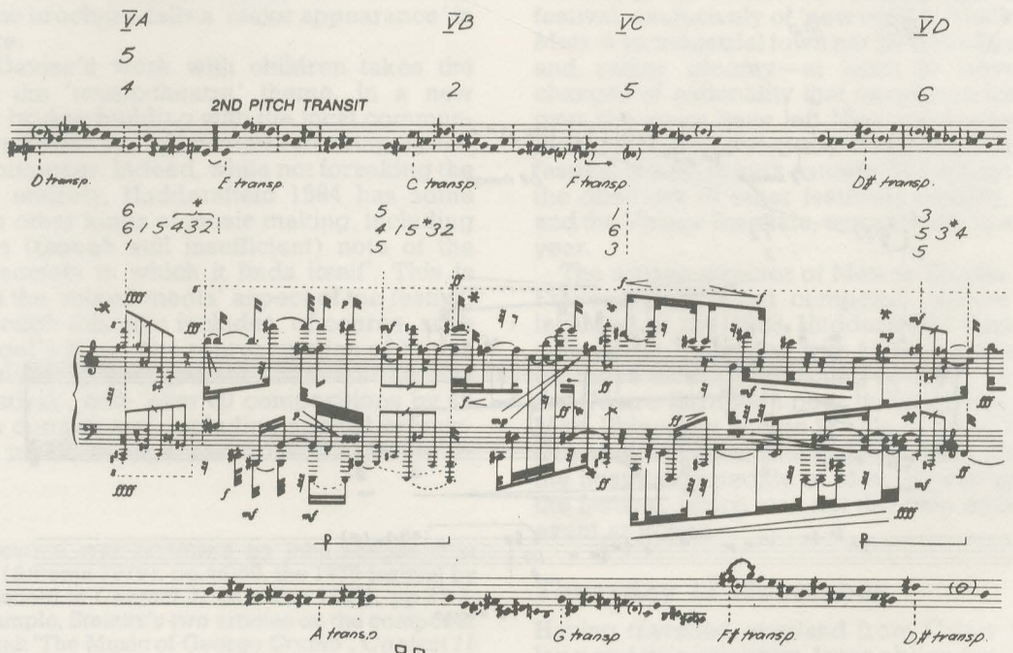
III C III D

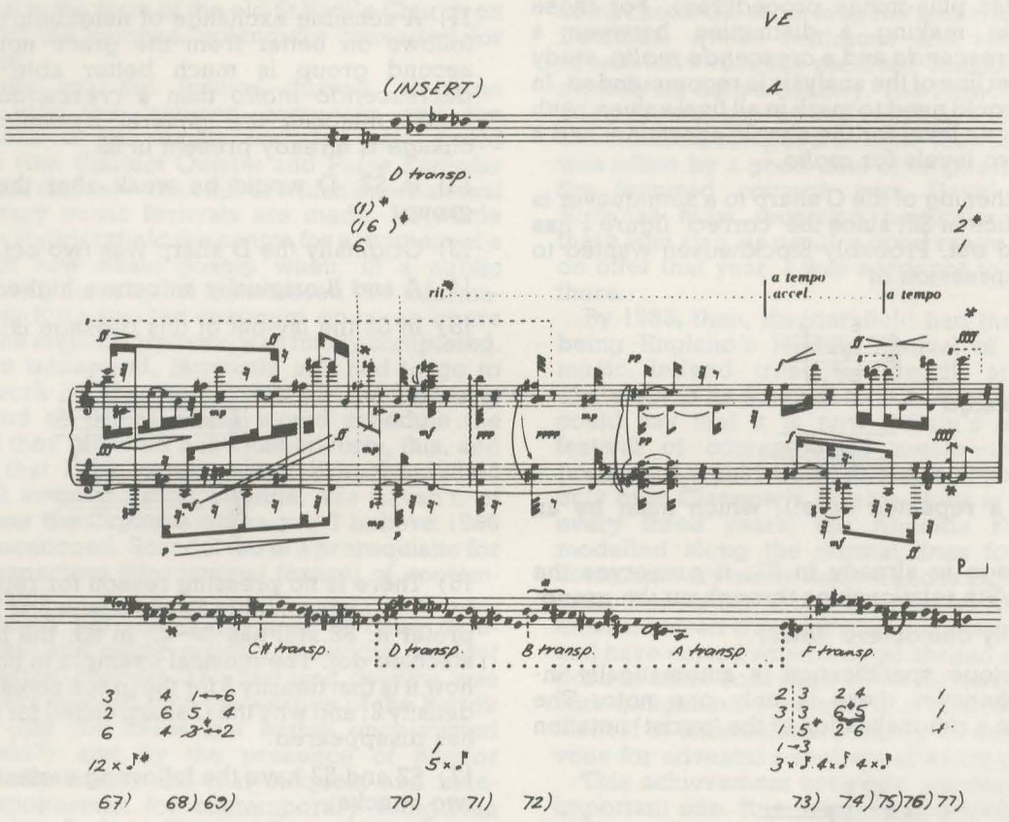




38) 39) 40) 41) 42) 43)


IV A
♩=80
2nd PITCH TRANSIT
G# transp.
E transp.
(Scale 1)
44) 45) 46) 47) 48) 49) 50) 51) 52)


V A
V B
V C
V D
2ND PITCH TRANSIT
D transp.
E transp.
C transp.
F transp.
D# transp.
A transp.
G transp.
F# transp.
D# transp.
(Scale 2)
Duration range:
Duration distribution:
53) 54) 55) 56) 57) 58) 59) 60) 61) 62) 63) 64) 65) 66)



Commentary

Up to now a 'Revionsbericht' seems to have been the prerogative of scholarly editions of classical and pre-classical music. But such a commentary fulfils a real function in the case of *Klavierstück VIII*: it allows one to comment on the dozens of minor discrepancies between sources, some of them the result of evident carelessness, some of them deliberate revisions.

The sources for this commentary, and indeed for the analysis itself, were the following:

S1 Two preliminary sketches containing (a) the permutation tables for the piece, and some indications as to their prospective use, and (b) the pitches, all notated in the treble clef.

S2 The draft sketch already referred to on several occasions; this is particularly useful, since Stockhausen clearly used it for reference in writing the piece out fully, and many of his revisions have been entered into the sketch.

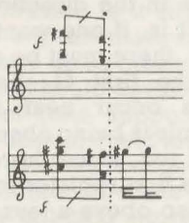
S3 A manuscript copy whose notation differs in many respects from that of the printed edition. Like a similar manuscript copy of *Klavierstück V*, it is barred, with time signatures. Perhaps surprisingly, the barring by no means always coincides with the grace-note groups. This copy presumably represents Stockhausen's final thoughts on the piece at the time it was composed (the re-notated published edition did not appear until some eleven years later), and was intended as an engraver's copy.

S4 The score published by Universal Edition (London), UE13675 d LW.

1) For this insert, see 'Exceptions and inserts' above. In S3, where these grace notes appear for the first time, their notation is very cramped—it certainly looks as if they were added after the fair copy had been written out. No attempt has been made to integrate them serially (to do so would have meant tracing back the respective series, resulting in five attacks, density 2 3 6 5 1, level *pp*; all these, particularly the level, are inappropriate to what Stockhausen had in mind, namely a brief opening flourish). In S3 the major 2nd G–A is marked >, but not expressly tied over.

2) This is one of two points at which the *IE* distribution does not seem to fall into a neat pattern (compare the distribution at IC); presumably the number of attacks was unsuitable.

3) The A flat and F sharp have been exchanged, presumably so as to tone down the following rather Messiaenic carillon effect:

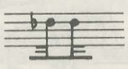


4) This is the first point at which a *crescendo* or *decrescendo molto* occurs. The actual word *molto* is never used in the score, and the notation makes only desultory attempts to communicate the idea of major

dynamic alterations (occasionally both initial and final dynamics are given). In this case, the *decrescendo molto* has been subdivided into two separate decrescendos (an unexpected anticipation of Stockhausen's later plus-minus procedures). For those interested in making a distinction between a theoretical *crescendo* and a *crescendo molto*, study of the relevant line of the analysis is recommended. In effect, one would need to mark in all final values, with a change of one level for the simple alteration, and a change of two levels for *molto*.

5) The lengthening of the C sharp to a semiquaver is already implicit in S2, since the 'correct' figure 1 has been rubbed out. Probably Stockhausen wanted to avoid the impression of

In S3 it is notated

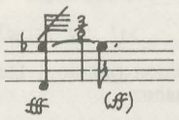


(that is, as a repeated note!), which must be an oversight.

6) This change is already in S2; it preserves the constant 7th/9th relationships throughout the group.

7) F originally one octave lower.

8) The envelope specification is automatically invalidated whenever there is only one note. The dynamics are a rationalisation of the 'purist' notation in S3:



9) This is the first major surprise. The G should, according to the series, be a G sharp, in fact it is the first note of the G sharp transposition(!). Probably this 'alteration' is simply an error made while writing out S1b. As we shall see, there is a tendency on Stockhausen's part to take the text of S1b, mistakes and all, as gospel when it comes to drafting sketch S2; on the other hand, it is possible that Stockhausen noticed the error, but still preferred a minor 9th after the F sharp. The 'correct' G sharp sounds very well (it gives the grace-note chord more brilliance) and it is tempting to restore it; but there are obstacles. In his earliest pieces, Stockhausen serialised all changes of octave register. In later works he abandoned this principle, but substituted a general rule for changes of octave register: the octave of a pitch may be changed only if the two registers are separated by one of the notes' having a minor 2nd relationship to the note to be transposed (for G sharp, G or A); moreover, this 'minor 2nd'—almost invariably a 7th or 9th—should lie in the direction of the proposed transposition: that is, if one wants to transpose the G sharp upwards, there must be an intervening G or A lying above the first G sharp. Such register transpositions as occur near the beginning do suggest that this rule is being observed, and the G, as such, observes it too, since there is an intervening F sharp above the first register for G and below the second. The G also obeys a less obligatory second rule, namely that wherever possible, transpositions should be of two or more octaves. A high G sharp on the contrary, breaks both rules: the only intervening minor 2nd (G) lies below the first register, and the transposition is of one octave only.

10) Here, exceptionally, the ordering of the nine pitches for the grace notes is completely arbitrary in serial terms; it is harmony that is the deciding factor.

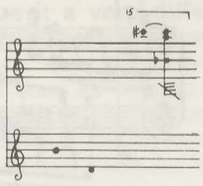
11) A sensible exchange of neighbouring values: *ff* follows on better from the grace notes, and the second group is much better able to effect a *decrescendo molto* than a *crescendo*, since this better matches the general dynamic level. The change is already present in S2.

12) In S2. D would be weak after the grace-note group.

13) Originally the D sharp was two octaves higher.

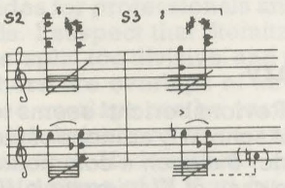
14) A and B originally an octave higher.

15) In S2 the lay-out of this passage is:



16) There is no pressing reason for replacing $\gtrless$ by $< >$: presumably Stockhausen just happened to prefer it. S2 still has $\gtrless$. In S3, the high G has a staccato dot. The musical example in note 15 shows how it is that density 3 for the grace notes has become density 2, and why the C sharp called for by the series has disappeared.

17) S2 and S3 have the following variants on the last two attacks:

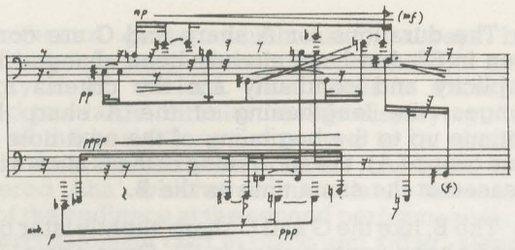


In S2 Stockhausen has accidentally omitted the D (the mistake was made in S1b and only recognised and corrected after S2 had been written). The problem now is to keep the right densities. S3 displaces the C to the fifth attack, and lets the F in the main text do duty for the one omitted from the grace notes (hence the odd dotted slur).

18) The rearrangement of durations is already given in S2. The result is undeniably more elegant than the version proposed by the series.

19) This is one of several grace-note groups that Stockhausen did not write into S2. In S3, uniquely, fingerings are given for the first left-hand chord (A sharp-B: Stockhausen proposes thumb and third finger). A certain amount of juggling with the series has gone on here, once again for harmonic reasons: the F sharp which should have been in the first chord is exchanged with the following B, thereby avoiding an F sharp major triad. Similarly, E flat and D in the fourth and fifth groups are interchanged, as are E and B between fifth and sixth groups. The A sharp in the left hand on the fourth attack is almost certainly a misprint for F sharp; S3 has the F sharp.

20) In S4, perhaps in the interests of legibility, the groups have been redistributed, inexplicably garbling the serial structure. The version in S3 shows what was originally intended, and is also preferable for its more meticulous notation of dynamics:



The first and fourth groups confirm that a *crescendo* or *decrescendo molto* means an alteration of two dynamic levels. Note the strictly polyphonic rests.

21) The holding back of G is already shown in S2.

22) The correct duration for the F sharp, namely dotted semiquaver, is given in S3 (see above). Its disappearance in S4 is probably just another consequence of the simplified notation, though it may just be an error. At any rate, the dot is worth restoring. The appropriation of short values (from later on in the series) for the E and G is already shown in S2.

23) Since one cannot have two different C sharps in the same chord, the second is withheld until the third attack.

24) The sudden appearance of the long C here is a surprise; normally the long notes do not occur till the end of a subsection. The decision to make an exception here is arrived at mainly by default; it is some while before the series specifies another one-note group (not until the beginning of IIIB, in fact). The 'premature' position is already shown in S1b, but perhaps Stockhausen had his doubts, since S2 does not show the note at all (on the other hand, it does show the remaining Cs in IIB, which cannot occur without the preceding long C).

25) The serially correct dynamic (*ppp*) is inadequate for a long note in this register.

26) A practical measure. If one observes the dynamic specification (6 = *pppp*), the envelope > is impossible. Rather than change the latter, Stockhausen takes *pppp* as an implicit final dynamic instead of the initial dynamic.

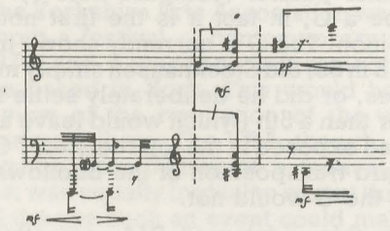
27) Durations 1 and 2 have already been used (see note 22).

28) Another seemingly arbitrary reversal of dynamics (compare note 16), but this time the alteration is only in S4. It looks as though Stockhausen simply did not care for the exposed 'negative *espressivo*'.

29) This is almost certainly a misprint (for G sharp). The series, confirmed by S1b, calls for a G sharp, and both S2 and S3 have one. In addition, the octave register is wrong for the G, right for the G sharp (on the basis of their registers earlier in the group). The G natural is particularly undesirable since the next note is another G two octaves higher (that is, at the 'correct' octave).

30) Further confirmation of note 29. The G sharp and G have been exchanged—the correction has visibly been added to S1b—so that the G sharp can change register. But this creates a problem: the second attack now has two G sharps. So the second one is deferred to the beginning of the next grace-note group (before IIIB), and the D is brought forward.

31) Durations 5 and 6 as a pair have changed places with 2 and 1. This change has been written into S2 as a correction. The cause of the modification clearly has to do with the *IEs*; the following example shows what would have happened if the values had not been interchanged:



Here durations and *IEs* are hopelessly at odds. This particular case allows one to make a fair guess at the order in which the various aspects of S2 were written out. Evidently the pitches must have been blocked in first, then the durations. Last came the *IE* lengths, and it was only when these had been marked in that Stockhausen would have spotted the difficulty and adjusted the durations accordingly. This conjecture gains support from the fact that the durations in S2 are written in small figures throughout, whereas the *IE* figures are written equally small in section IA, but then made larger for the rest of the sketch, presumably to avoid confusion.

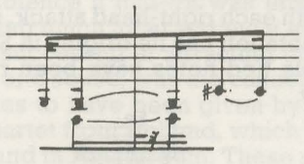
32) The interchange of these two values again results from simplified notation in S4, though the changes here are much less drastic than those referred to in note 20. The second D sharp has been moved from group 2 to group 3. The one noticeable effect of this is to make the transferred note too soft; in S3 it is expressly marked *mp*, and linked to the C in the lower system.

33) In S2 the accented A is marked *f*.

34) This rearrangement of durations is shown in S2 as a correction.

35) The A sharp has a double function as the last note of one transposition and the first note of the next. Once again, we seem to have an example of Stockhausen's aversion to exposed <> / >< groups; the correct marking and correct dynamic level are given in S2, but S3 is written as here. The change of durations is given in S2 as a correction; it avoids the gap between the first two notes of the group which the *IE* of 4 would otherwise have caused.

36) Sometimes, evidently, composers get rather attached to their mistakes. According to the series, both the G and the D should be tied over. S3 has:



which still is not quite right, since the first two Gs should also be tied. S2 is unequivocal in giving G and D the correct serial durations of 6 and 5 respectively. Now a few years after writing the pieces, and apparently at the instigation of David Tudor, who had noticed some implausibilities in various of the *Klavierstücke*, Stockhausen wrote a couple of errata sheets for the pieces *V-VIII*, including this particular passage. One can see that initially Stockhausen simply restored the missing tie between the first two Gs. But then the musical attraction of a note repetition at this point must have struck him, for the tie between the second and third Gs has been fairly vigorously

erased. All that then remained was to apply the same principle to the D.

37) Another puzzler (compare note 9): the high B should be a G, in fact it is the first note of the G transposition. The G is correctly shown in S1b but is given as B in S2; did Stockhausen simply miscount the leger lines, or did he deliberately settle for a minor 7th rather than a 5th (which would leave a melodic C major triad exposed in the top register)? Once again, the upward transposition of the B follows the rules, whereas the G would not.

38) From this point until IVA, something akin to chaos reigns over the grace-note series. It is easy enough to see what has happened, but difficult to adduce any cause more cogent than sheer fatigue. In the second attack an F sharp is missing; checking S1b, one finds the F sharp is there, and is tied over to another F sharp at the beginning of the group for the next chord. Obviously Stockhausen intended either to tie the note over from the second attack to the third, or else to let one F sharp do duty for both; but somehow both F sharps have gone astray as early as S2, hence the reduction to densities 4 and 5 respectively. In the final attack, the C demanded by the series is not even to be found in S1b.

39) Like that referred to in note 26, a practical measure: one cannot make a *decrescendo molto* from *ppp*, so the envelopes of the two neighbouring groups are interchanged.

40) Once again, the first note of the transposition (D sharp) has been purged, as has the second (B). Concerning the latter, see note 44.

41) In S3 the E is correctly notated as a quaver tied to a demisemiquaver. The alteration in S4 makes excellent sense, however, since it avoids the impression of a melodic progression E–C sharp, and thus maintains the separation of groups 1 and 2.

42) In S1b the G has already been placed before the D; in S2 it moves again to its final position in front of the F sharp.

43) Once again, a slight raising of the prescribed dynamic level is desirable to make a long note last the specified length of time.

44) Complications regarding the grace notes reach their height at this point. Firstly, one observes the sudden reappearance of the B and C that had been omitted earlier (see notes 38 and 40). Secondly, the prescribed densities 5 4 6 have been replaced by a meagre 4 1 1.The actual notation is misleading: it suggests that the left hand B–A sharp is to be repeated with each right-hand attack, which is not the case. This notation has its origins in S2, where some barely visible tied notes have been rubbed out and replaced by

The explanation is already implicitly given in S1b; here all the pitches necessary for the planned 5 4 6 density are given, but the last eight pitches have been bracketed, and these same pitches, minus the initial A which disappears completely, are written out again when the next set of grace-note groups falls due (at VA). Obviously Stockhausen did not want to undermine the effect of the density 6 1 5 4 3 2 outburst at VA by having an equally dense 5 4 6 sequence shortly beforehand (VA is the point at which the main text goes over to a constant *IE* of 1, that is, attacks on every demisemiquaver), so he made a drastic reduction.

45) The durations for A sharp and C are correctly given in S2, but have already been changed by S3. Simplicity and continuity are the criteria for the changes: the lengthening of the A sharp lets it continue up to the beginning of the next note in the same group (A); the shortening of the C allows it to be released at the same time as the B.

46) The B, like the G and C sharp slightly later on, has already been repositioned in S2. Once again, Stockhausen is out to create an 'interval field': all three repositioned notes create the relationship of a major 7th or minor 9th to the note directly preceding them.

47) A originally an octave higher.

48) See note 46.

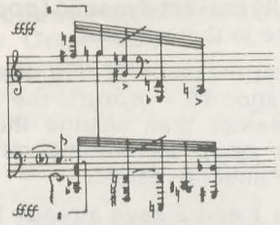
49) See note 46.

50) The duration of the low A sharp has been interchanged with that of the D five notes later on. This may have been to give the long D sharp more breathing space at the end of the section; equally, and more probably, it may have been intended to avoid a legato link between the A sharp and the low E in group 4.

51) In order to let at least part of the D sharp emerge at the end of the section, it has been interchanged with the following two-note group, and the dynamic specifications have been changed round as well (actually the dynamic of the long note has been slightly reduced). According to the series, the two-note group should be *ffff* <, and S3 optimistically proposes just that. S4 sensibly treats *ffff* as the terminal dynamic for the group.

52) See note 50.

53) In S2 this grace note is written:



Quite apart from being enough to scare the wits out of any pianist, this contains several interesting features. For a start, one can see that Stockhausen intended the long D sharp (or E flat, as it is here) to be held over into and through the succeeding cataclysm, though one does not quite see how, given that there is no third pedal marking, and that in those days Stockhausen consciously avoided any notation that depended on a third pedal (which is not to say that there are not many passages in the *Klavierstücke* that are greatly facilitated by its use). This characteristic has disappeared in S3 along, regrettably, with the snarling arpeggiation of the first chord in the left hand. The real surprise, though, is the bass clef in the right hand, missing in S3 and the printed score, which converts an exceptionally difficult passage into one of the most unreasonable in the entire piano literature. Mercifully, it appears to be a mistake, but the reason for its occurrence is sufficiently interesting to merit a digression.

There is no doubt that originally Stockhausen wrote this passage in S2 with the treble clef applying throughout in the right hand. But in doing so, he breaks one of the basic rules of the piece, since at this point the D is supposed to be filtered out. Maybe the fact that he had just reached the second pitch transit diverted his attention; at any rate, the D got through the net, so to speak. Still, one can then imagine that on

checking what he had written, the D stuck out like a sore thumb, and without referring back to S1b he assumed and lightly wrote in a change of clef before the fourth attack. By S3, the 'correction' has been re-corrected, and the D allowed to stand, since otherwise one would have to reduce the chord density yet further, or else shift all the remaining pitches forward one place.

The two reductions in density (fourth and fifth attacks) are caused by the omission of a (technically unrealisable) tie in the first case, and the seemingly arbitrary omission of a low B in the second. The accents on the third and fifth attacks in the right hand are missing in S3 and S4.

The E flat omitted from the pitch series is the result of carelessness. In transferring grace notes *en bloc* from IVA to VA (see note 44), Stockhausen failed to notice that the E flat automatically filtered in IV was now valid.

54) There is no reason why the three-note group should not be executed with the correct < > envelope; all it involves is remembering to play the A sharp *fff*. The crescendo hairpin is given in S3; its omission in S4 may be an oversight, or, on the other hand, Stockhausen may have thought that the notation already implied a *fff* A sharp.

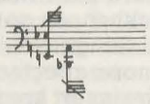
55) As far as the durations are concerned, we are dealing here with a piece of expedient patchwork. The durations reach the end of square D with the first note of the main text, and since a completely new system for durations is about to come into force after the next group of grace notes, Stockhausen is apparently unwilling to make an incursion into square E. Consequently, he simply invents a series foreign to the existing square (631254), and uses it twice over. And since the series itself is a temporary expedient, he does not feel much compunction about altering it where desirable.

56) S2 adheres to the series by repeating the bass G of the first attack in the third attack, arpeggiating downwards to the bottom A; in S3 and S4 the second G has been omitted, hence the reduction to density 4. S2 also follows the density series more strictly by not holding over the C–F sharp to the second attack. S2 and S3 accent the D sharp in the left hand, fourth attack; the omission of the accent in S4 may be an oversight. In S3 the pedalling indication does not begin until the high semiquaver A sharp in group 4; no pedalling is shown in S2. D flat is exchanged with the following G flat, and thus delayed to the next grace-note group.

57) The A sharp is conceptually tied over from the main text before the grace-note group, making the duration up to the requisite quaver tied to a demi-semiquaver. S3 ties this note to the A sharp in the grace-note group. The G belongs to group 1, and it is this G rather than the tied F sharp that constitutes the first note of the prescribed four-note group. This is shown clearly in S2; the G is actually essential in yielding the correct envelope 6 (><).

58) The •— marking is first found in S4. Markings of this kind are not used until the first revision of *Klavierstück VI*, that is, after the first versions of *Klavierstücke V–VIII*.

59) The lower D sharp in the left hand is a certain error, not so much because of the octave doubling it creates (Stockhausen's aversion to octaves in the early fifties was not as total as one might think: see particularly *Klavierstück VII*), but because the series calls for an E natural at this point, and S2 clearly gives one, which Stockhausen must have misread when making the fair copy. The notation of S2 underlines the minor 2nd relationships so characteristic of the grace-note harmony:



60) F sharp correctly given as a quaver in S2 and S3. When it came to the printed edition, Stockhausen probably considered that in this high register the difference of a demisemiquaver was not sufficiently audible to justify the notational complications it involved.

61) Once again, the crescendo is only possible if one makes *ffff* the final value.

62) The pitches are already interchanged in S2. The envelope is more explicit in S3, but is still implicit here.

63) In theory the G sharp is held through the grace-note group, with a duration of a quaver. S3 makes the theory more explicit, but S4 corresponds to practical realities.

64) D sharp is accented in both S2 and S3.

65) In S1b one can see that Stockhausen had planned to exchange the second B and the E instead of simply omitting the B; in other words, the second attack was going to include a B tied over from the first attack. But in the event, the register requirements of the other two notes made this impossible, and even in S2 the B has been omitted, hence the reduction to density 2.

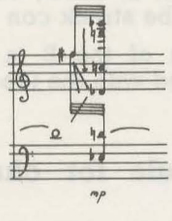
66) Level 6 is out of the question if the long note is going to be heard through the dense surrounding polyphony.

67) The theoretical 12:8 distribution reckons on the first semiquaver of the long D being included in the durations scheme, and the remainder being proper to the long note itself. Stockhausen was still probably thinking in terms of *IE* measurements.

68) The exchange of notes has already been made in S1b, apparently to increase the number of minor 2nds.

69) The exchange of one- and six-note groups is in S2. Perhaps the aim was to ensure a greater interlocking of the different groups. the six-note group retains its original envelope.

70) In S2, this group is notated:



I have already commented briefly on this lay-out in the section on inserts. As in note 53, the implication is that the D should be held through the grace-note group. In addition to the arpeggiation discussed earlier, S2 also has what appears to be a crescendo marking, which has disappeared in S3. Both S2 and S3 agree in marking the D in the second attack *pp*, whereas the rest of the chord is *mp*. The fact that this is theoretically the last grace-note group allows an ingenious solution to the question of where the pitches for the insert are to come from: Stockhausen simply continues the grace-note series, reverting to the standard transposition for the main text as soon as the insert is over.

In theory, there should be only one grace-note attack consisting of one note. From the change of pen-stroke that occurs after this single note in S1b, one can see that Stockhausen got bogged down here, and stopped to mull things over. At first, maybe, all he wanted was a more spectacular introduction to VE: the pitches for the insert are written on a separate stave, which suggests either that the insert was an afterthought (though the handwriting of the insert pitches is identical with that of the other pitches after the single note), or that Stockhausen could not decide straight away where the insert pitches were going to come from. As far as the revamped grace-note group is concerned, Stockhausen simply adds the next value of the series (density 6), and since the six pitches involved extend over a wide range (taking their registers from from the preceding main text), arpeggiation is essential. The 1-2-4 density in S4 is just a written-out interpretation of the arpeggio.

71) The analysis and justification of the insert is given in 'Exceptions and inserts' and 'Lay-out of the analysis' above. The ritardando is another 'exception', mediating between the metronomic exactitude of the main text and the agogic freedom of the grace notes in the rest of the composition. A marking on S1a suggests that Stockhausen had originally thought of using ritardando-accelerando patterns serially throughout the piece.

72) The slight rearrangement of pitches has already been made in S1b; once again it is meant to create more minor 2nd relationships.

73) The correct envelope is shown in S2, but has disappeared by S3, for no apparent reason, unless Stockhausen thought the F sharp would be masked by a *ff* low C sharp.

74) The dynamic levels here have been upgraded to make a more brilliant ending.

75) Rearrangements already in S2, made to secure a minor 9th between A sharp and B.

76) This ending is really a third insert, grafted on to the end for effect. It conveniently rounds off the series; in contrast to those mentioned in note 70, the grace notes here draw on the series for the main notes. S2 completely illogically notates an *ffff* grace note with a crescendo hairpin leading to an *fff* note (albeit with an accent)! S3 omits the hairpin, but keeps the accent and the *fff*. The solution in S4 is the only sensible one: in effect, both grace notes and main note are to be struck *con tutta forza*.

77) The notation of the B in S1b suggests that Stockhausen toyed with the idea of making it into a sixth long note.

Appendix: Rule for change of octave register

The following diagram illustrates the rule for change of octave register referred to in note 9 of the commentary; it covers the first page of the analysis.

Pairs of notes representing the 'before and after' stages of a change of register are linked by unbroken lines. The semitone relationships mentioned in note 9 are shown by dotted lines. Where more than one such relationship exists, only one has been shown (in the interests of relative legibility).

For the purpose of quick orientation, the grace-note groups have been enclosed in boxes.

The opening grace-note group (bracketed) was added at a later stage; its register positions relate to the situation shortly after the first legitimate grace-note group (as shown by the arrows).

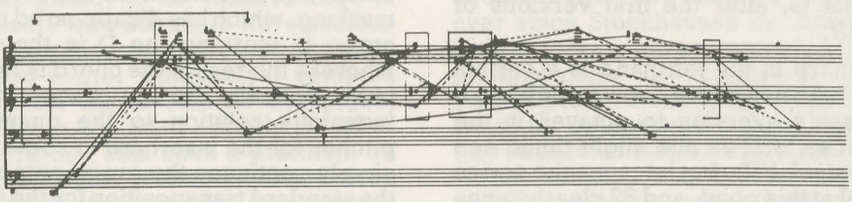
There are two cases (marked '?') where the rule is broken, the transposition being one octave only. In the second case, the second A was originally an octave higher; there is no ready explanation for the first.

Postscript

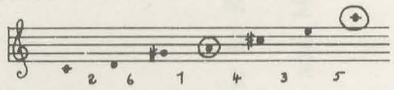
It may seem disproportionate to have devoted so much space to the analysis of a piece lasting less than two minutes. But *Klavierstück VIII*, more so than its companion pieces, is a piece 'about composing', and as such it takes in perspectives much wider than those of the piano piece itself: the lessons Stockhausen learnt from *Klavierstück VIII* were to prove crucial for the works to come, particularly as regards the use of exact measurements for quasi-statistical distributions (which is the whole purpose of the 'polyphony', with its superimposed dynamic structures!). In a sense, too, the dozens of alterations are as important to an understanding of the 'composer's-eye-view' as are the serial structures themselves.

Obviously, what the listener hears in performance is not the analysis of a piece but the piece itself, and a composer's technique is evolved not as an end in itself, but primarily as an aid to communication. Still, one should not underestimate the degree to which a composer may become personally involved in the mastering of his craft. There is, quite simply, enormous satisfaction in setting oneself a difficult compositional problem and solving it. The mid-Renaissance offers proof enough of this and, for the present case, an excerpt from a hitherto unpublished introduction by Stockhausen to the whole series of *Klavierstücke* should put the matter beyond doubt:

> It was while I was working on the eighth piece, which caused me a lot of harmonic difficulties, and which I persisted with for over a week, that Boulez came to visit me. I had got to just before the end of the eighth piece, and was searching and searching for a solution to the pitch distribution of the close. I showed him the passage, and he said 'We'll soon get that - what are you after?' I explained the rules for this piece to him. He wrote down a suggestion. 'Yes, but that's no good, because . . .'. He wrote another solution. 'That's impossible, because . . .'. In the end he got impatient and said 'If you observe all the restrictions you have made, there's no solution. You'll have to give up at least one limitation.' I was quite shocked, because he was so sure there was no solution. Then he left, and I worked several days more at the same spot—and I found a solution, despite all the prohibitions that I had imposed on myself. It was a fantastic relief!



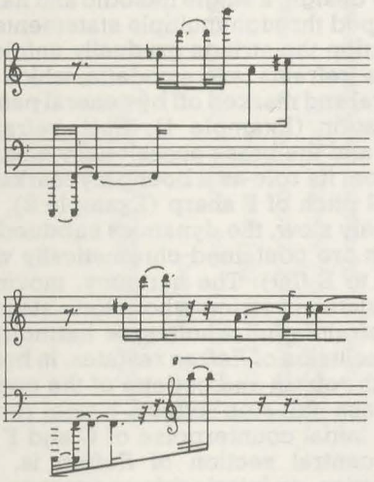
1 Applied to pitch, however, it would not yield a true all-interval series:



In the event, as will be seen later, the pitch series for the *Klavierstücke* actually relates to the second line of the basic square (645213), but pitch is treated quite independently of the other parameters.

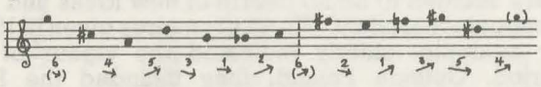
2 Since *Klavierstück VIII* is a short piece (about 1'50"), only one basic unit for duration (demisemiquaver) is necessary. In other pieces, the variation of the basic unit is one means of formal articulation.

3 Naturally, since this makes for a more sophisticated (quasi-statistical) result as far as dynamics are concerned. Stockhausen may not have thought of this straight away, as the following comparison between an early draft and the final version suggests:



The comparison reveals some interesting features, quite apart from the unified presentation of the second group in the earlier version. Firstly, one can see that the lay-out of the pitches precedes any attempt to group them (very few of the octave registers given in the first draft were subsequently altered). Secondly, despite the printed score's rationalisation of accidentals (sharps only), it will be seen that Stockhausen originally notated accidentals 'instinctively' and indeed harmonically (E flat–D rather than D sharp–D). It is also worth noting here that by no means all grace notes are included in the draft version from which the first part of this example comes. The casual notation of durations in the draft score is supplemented by numbers (omitted here) giving exact values for durations and *IEs*.

4 The failure to find an ideal series clearly niggled Stockhausen, but the stage must have arrived at which he simply was not prepared to delay work on the pieces any further. Still, he kept worrying away at the problem, and eventually came up with the following extremely elegant series



in which each half starts with a tritone, and the remaining intervals of the first half appear in inverted direction and reversed order (45312 21354) in the second half. The relationship to the original 645213 is evident (in effect, the 213 has been reversed). By the time Stockhausen hit on this series, it was too late for it to be used in the Nr.4 cycle of *Klavierstücke* (apart from the revised *Klavierstück VII*, which is largely based on a five-square anyway), but this 'Wunderreihe' was too good to waste: a modified version is used both for *Gruppen* and for certain peripheral aspects of *Klavierstück XI*.

5 The insert also permits Stockhausen to use his maximum durations series in section V without cramming two different values into one subsection, a fact so convenient that it leads one to wonder whether this is not the cause (or at least a cause) of the insert, rather than its effect.