Karlheinz Stockhausen

Addendum to the score of JUBILÄUM

Sound Projection

1. For the **sound projection**, a musician must be found who has already often controlled the microphone - amplification of instruments in large concert halls, and who has experience in setting up loudspeakers and microphones.

   (The Stockhausen-Verlag can recommend several sound projectionists on request.)

2. The location of the mixing table must be planned well in advance (because of ticket sales etc.) since either **3-4 seats will have to be removed from the acoustic centre of the hall** to make space for it, or it may be set up in an aisle at that position.

   If this is not allowed, then the performance must be cancelled!

3. The **1st bassoon** should be **amplified with a microphone** during bars 18 - 33.
   The 1st bassoon is amplified over loudspeakers 1 and 2 (from left).

   Therefore **10 microphones** are needed.

4. The microphones should not be pointed at the loudspeakers.

   The **microphone for the 1st trombone** should be placed in front of the trombonist in such a way that he plays just across the top of it.

   The **microphone for the 1st horn** should be pointed horizontally at the opening of the bell coming from behind at the right side.

   The **microphone for the 1st bassoon** should come from the right, as close as possible in front of the instrument.

   The **microphone for the 1st violin** should reach down from the upper left to close above the violin.

   The **microphone for the 1st flute** should reach from the left to just above the mouthpiece (lower notes should be played closer to the microphone).

   The **microphone for the 1st oboe** should reach from the right, close to the oboe without blocking the view of the music.

   The **microphone for the celesta** should be pointed at the middle of the back side (experiment to find the location of the sounding bars of the octave which is used).

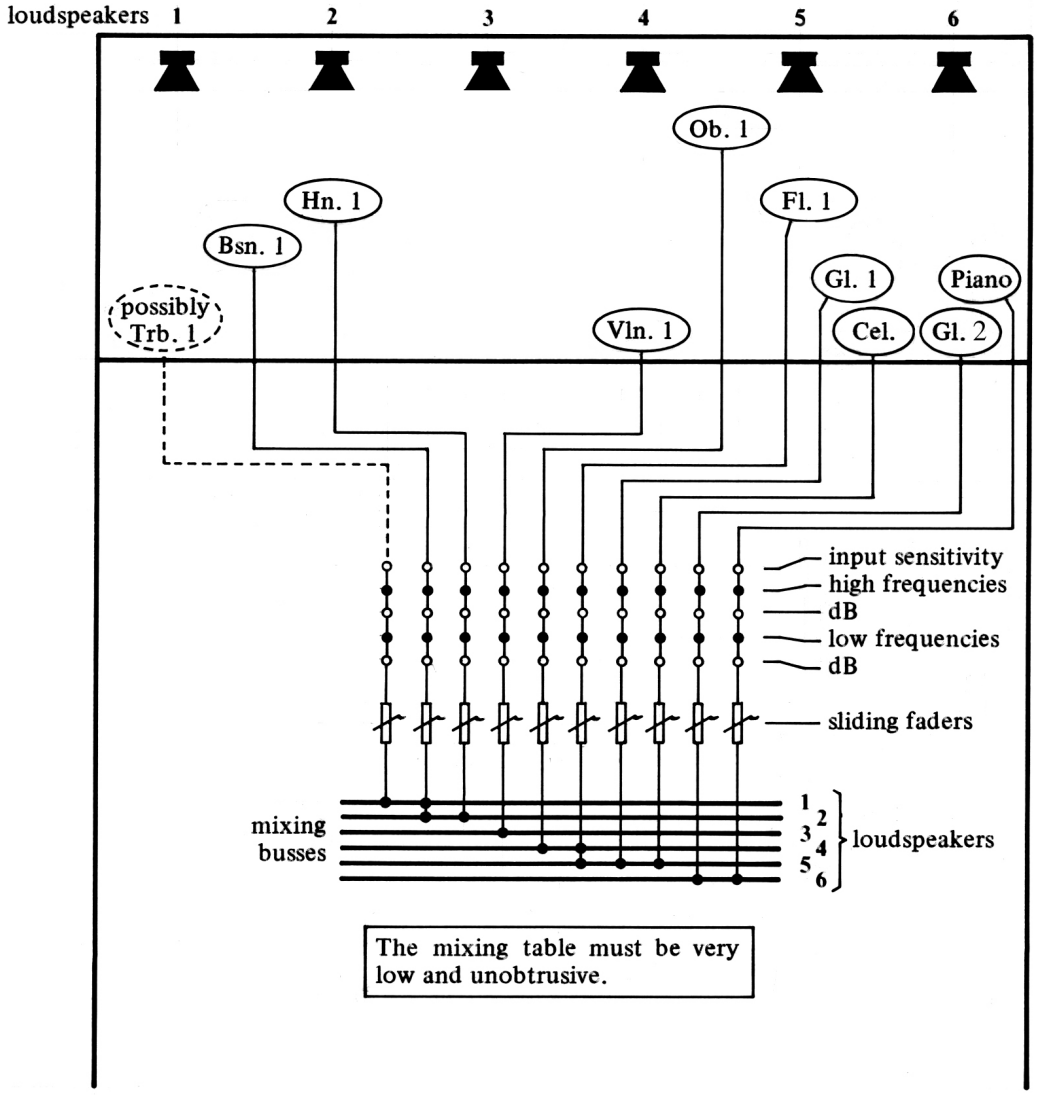
   The **microphone for the 1st glockenspiel and glass chimes** should be positioned above both instruments in such a way that they are picked up equally well.
   The same applies to the **2nd glockenspiel and triangle.**

   The **microphone for the piano** should be fairly close above the strings of the two highest octaves.

   (The sound projectionist must assist in making sure that the percussionists use the prescribed beaters, properly damp with pedal during pauses and do not play the tremolo crescendi near the end too loud.)

   All microphone stands should have foam rubber feet.

5. The **mixing table** must have 10 inputs (more than prescribed in the score) and 6 outputs. Each input channel should have controls for the input level and for high and low frequencies. It should also have push-buttons for variable distribution onto the output channels and a sliding potentiometer.



6. Before the 1st rehearsal, the sound projectionist must supervise the set-up of all microphones, loudspeakers, and the mixing table, and then test it acoustically. For this he needs approx. 3 hours, provided that everything has been well prepared.

   The 6 loudspeakers (*Altec* or *Electro-voice*, 100 or 150 watts each), microphones, and mixing table must be of the best quality.
   If the minimum height of 4.5 m for the loudspeakers as prescribed in the score is not possible, one should not make compromises, as the danger of feedback is too great.
   Under no circumstances should the loudspeakers be placed **in front** of the orchestra (as has unfortunately happened), nor should they be placed too far away from the orchestra to the left and right.

7. After the conductor has had a lengthy rehearsal with the solo instruments seated closely together, an **approx. $1\frac{1}{2}$ - hour rehearsal of the solo instruments, amplified as prescribed**, must follow on the stage.

Instruments

1. The conductor must specifically request **2 glockenspiels with pedals** and their **damping during rests** (approx. after bar 46, bracket [10]).
   The **damping** of glockenspiels with pedals can be **variously adjusted** by means of screws. Thus, the 1st glockenspiel should be adjusted to **slightly damp**, thereby limiting the rule *immer klingen lassen* (*always let ring*).
   The 2nd glockenspiel should be adjusted so that only the **lower notes are slightly damped.**
   Further, the prescribed **beaters** – with wooden heads until bar 107 and metal glockenspiel beaters thereafter – must be tried out in order to decide if the sound mixes in a balanced way with the celesta and piano.
   The **tremolo crescendi** (only to *f*) of bars 120 and 136 are usually played too loud; they should not cover up the other instruments.

2. Out of laziness, the **triangles** are sometimes not hung as indicated in the score (and as prescribed in the part). This must be checked.

   Glass chimes and triangles must be damped immediately after the downbeat of the last bar.

Rehearsals

The significance of the **textures** which result from the repeated figures is generally underestimated. That is why conductors often begin with tutti rehearsals, leaving these textures in an amorphous state. In reality, these textures are the most important.

The formula in the foreground is easy to hear. This formula is, however, interrupted by acoustic "windows", and in these windows one must very gradually discover that the background has a micro-texture which is made of the same figure, only much faster. (The "windows" are bars 2, 4, 7, 10, 15, 16, etc.)

Therefore, the tempo may by no means be taken faster, so that the windows are long enough (tempo ♩ = 30 should be subdivided in ♪ = 60).

The textures must be carefully worked on in **sectional rehearsals**. The **conductor should first conduct all players of a group synchronously**. Only then should the musicians perform "EACH PLAYER INDEPENDENTLY".

The following rehearsal suggestions apply to a very good orchestra:

1 rehearsal, 2 hours minimum: **(from beginning to bar 94)**
piano/ celesta/ 2 glockenspiels
(it is really difficult to make an independent ritardando ♩ = 160 ⟶ ♩ = 60 with the jump ♪ = ♩ = 120 ⟶ ♩ = 60, while following the instruction that each should try to strike pitches **simultaneously** with the others more and more often, while respecting the notated rhythm.)
One must by all means hear the increase of rests and of chords of this layer until it gradually comes to a standstill!

1 rehearsal, 2 hours minimum: **(from beginning to bar 33)**
Fl. 1, 2 / Cl. 1 - 4 (possibly leave out 3, 4, but this can only be decided in the rehearsal) / Violins I and II.
The **number** of violins must be determined through experimenting during the rehearsal.
All instruments must sound equally loud.
The **transition** from *legato* to *staccato* must be very clear: *staccato* extremely short, sparkling; strings gradually change to *spiccato*, without becoming louder.
The **increasing pauses** and, starting with bracket [12] , the **increasing synchronism** (more and more often, try to begin pitches **synchronously** with the other players, while respecting the notated rhythm) in independent ritardando ♩ = 160 ⟶ ♩ = 30 (think ♪ = 60 and 𝅘𝅥𝅯 = 120) must be heard, by all means.

1 rehearsal, 1 hour minimum:
(bars 107 - 139)

Fl. 2 - 4/ Cl. 1 - 4/ Violins I and II.
Work on all the criteria mentioned, in reverse morphological development, at first **without the final** *crescendo* but starting at bracket [18] taking off mutes, distributed over one minute.

1 rehearsal, 3 hours minimum:
(bar 46 until end)

Tp. 1 - 3/ Hn. 2 - 4/ Vla./ Vc.
The **number** of strings must be determined through experimenting during the rehearsal.
All instruments must sound equally loud. Due to the use of **various mutes** by Tp. and Hn., much time is needed until the **played dynamics** can be established and consistently maintained by the players.
The **independent accelerando** ♩ = 60 ⟶ ♩ = 120 and again ♩ = 60 ⟶ ♩ = approx. 160, while precisely respecting the notated durations and rests, then the **strict adherence to the tempo** ♩ **approx. 160** and the **increasing staccato articulation** of the pitches (extremely short) and, starting at bracket [6], the **gradual elongation** of the durations at the end of the bracketed formula, their increasing **slurs** during the **slowing down** of the tempo to ♩ = 120: All these instructions are quite difficult to realize, and the final result can only be as good as the weakest player.

In order to make these rehearsals worthwhile, the conductor must require **in advance** that each player should have already perfectly practiced (with a metronome) the bracketed sections in context by the time rehearsals begin.
Only if the sectional rehearsals of the texture groups for a minimum of 2 + 2 + 1 + 3 hours plus approx. 1 hour with solo instruments have taken place (for example, in a separate room) can a **1½-hour rehearsal of the solo instruments with amplification** take place in the concert hall.
Then a **2 hour rehearsal of the orchestra without oboe, 1st horn, trombones, tuba** (who rehearse their parts in separate places during this time) of **only the textures** without the solo parts must take place **before** the first tutti rehearsal with the electrically amplified solo instruments.

In the first **tutti rehearsal**, the right dynamic balance between the solo instruments and the rest of the orchestra must be found.
As conductor, one at first has the impression that the amplified instruments cannot be heard clearly. For this reason, one should first play lengthy sections with the slow formula in the foreground together with the solo instruments, then softly add the background orchestra, and, repeating several times, allow the background orchestra to play each time somewhat louder until one can perceive all layers.

During the "windows" mentioned, the conductor may bring forth through <⟩ individual groups and also individual players ad libitum, and thus make the micro-texture perceptible (that is why there are instructions such as " ***p*** **or** ***pp*** ", "conductor must indicate dynamics", "one must clearly hear the **emergence** of the melody from bar 46 - 62 , its **dominance** from bar 62 - 78 , and its **submergence** from bar 78 - 88 ").
Thus, the overtone glissandi of the horns and strings in the windows should not be too soft.

Also considered as "windows" are the bars during which solo instruments are playing (bars 47 , 49, etc., 63 , 65 , 68 , 71 , 76 , 77 , 79 , 81 , 84 , 87 , 92 , 93 , 108 , etc.).
The sound projectionist can react to the bringing out of the background orchestra by proportionately raising the dynamic level of one or another solo instrument in these bars.

It is possible to arrive at a **balance** at which all superimposed layers and their developmental tendencies may be perceived – although this is very fragile and sometimes can depend on a level difference of only 1 or 2 dB.

It must be made clear to the orchestra that rehearsals do not only serve for learning the piece, but also for experimenting with the balance.
Without a clear realization of the multiple layers of time and space, an interpretation is senseless. One should therefore not speak of " the simple form of a passacaglia with noodling in the background ", but instead make it clear that the simple object – the formula – appears in the **most varied** speeds, processes, layers, that these **processes** are more important than the presentation of the formula, and that the background layers must be treated as more important, because they are weaker and faster.

If a conductor does not have the time or the means for such careful rehearsing, then he should not perform the piece. He must pay attention to each unconventional detail. He should, for example, **give advance notice** that the 1st trombone player and also the 1st oboist come onstage while playing and therefore have to memorize a few bars.

The details and recommendations made here are not pedantic exaggerations of a never-satisfied composer. They were written on the day after my return from 3 performances of the Berlin Philharmonic conducted by Zubin Mehta, with myself as sound projectionist, on March 13, 14, 15, 1982 (with 2 + 3/4 + 1/2 hours rehearsal for JUBILÄUM on March 12 and 13).

Kürten, March 16, 1982
K. Stockhausen

Translation: Suzee Stephens

JUBILÄUM – Errata in the Score

Page 27:	Tp. 1–3 and Hn. 2-4: tempo change from ♩= 160 to ♩=120 should start one triplet earlier.
Bar 18, Bassoon:	notation error: in the last triplet there is one beam too many.
Bar 78, Horn I:	notation error: a beam is missing in the last 4 notes of the bar.