anton wassiljew

keyboardstück I

for stockhausen‘s klavierstück ix, keyboard and sampler

2011

the piece consists of the score of karlheinz stockhausen's klavierstück ix and a max/msp patcher, which controls a session in ableton live.

tech rider

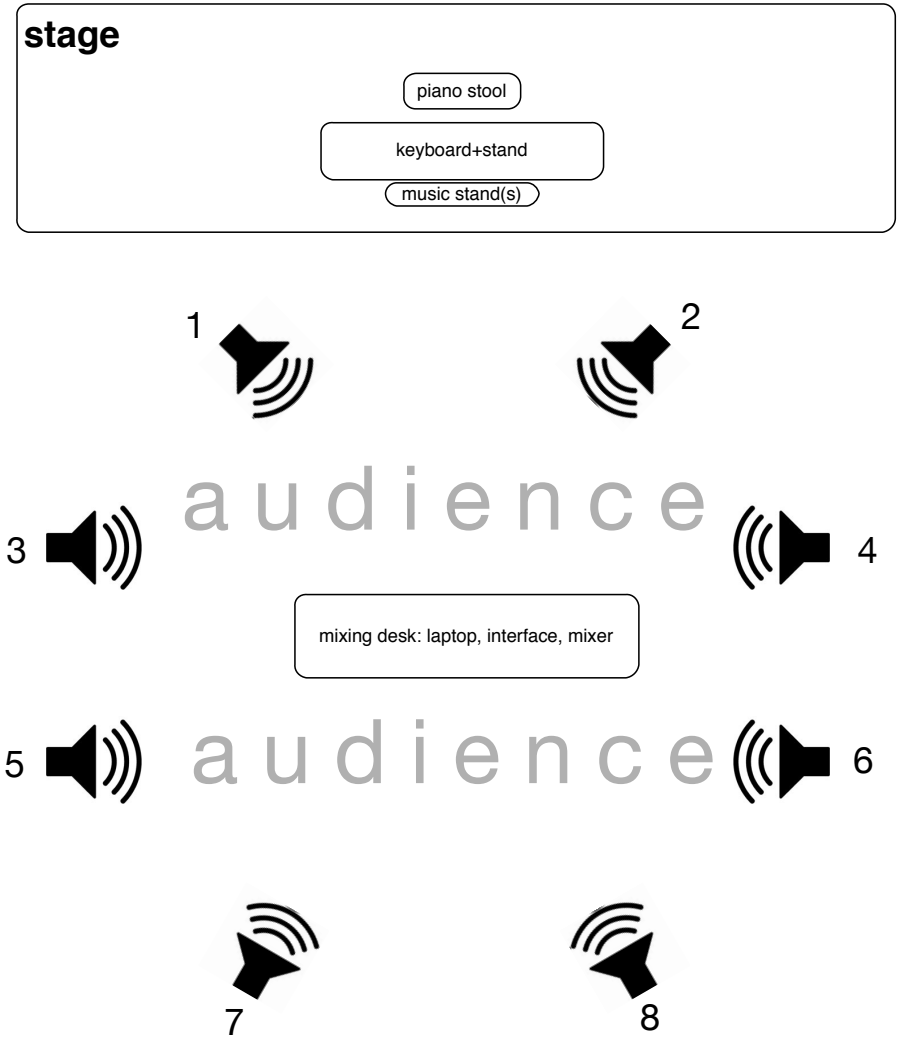
people
– pianist
– sound director

software
– max/msp 6
– ableton live 9 + max for live

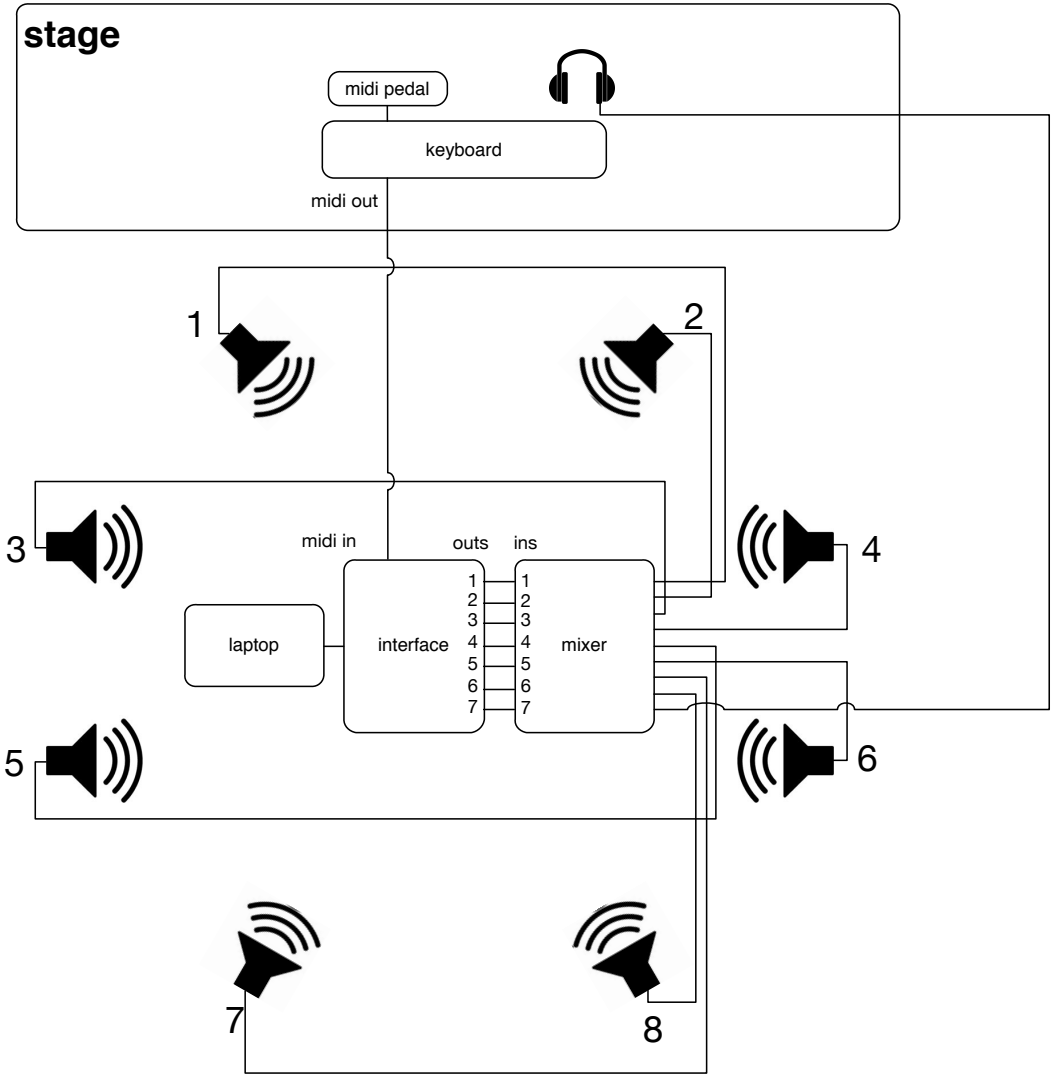
hardware
– 8 loudspeakers (+ amps in case of passive loudspeakers) (the piece can be performed with any number of loudspeakers, see below)
– subwoofer if possible (+ amp if passive)
– closed headphones
– keyboard, 88 weighted keys
– midi sustain pedal
– apple computer (laptop)
– audio-interface: 7 inputs, 7 outputs, midi input
– mixer: 7 inputs, 11 outputs (8 for speakers + 1 for subwoofer + 2 for headphones)[1]
– piano stool
– music stand(s)
– cables: audio, midi, electricity

[1] the number of the outputs depends on the number of the speakers the piece is realized with: see the part „routing" of this description.

disposition



electronics



description of the ableton live set

the ableton live set consists of six instruments and an auxiliary piano sampler, which is a monitor for the player. the first six instrument tracks (piano sampler, filtered piano sampler, frequency modulated signal, loop shifter 1, loop shifter 2, sampler) are sent to the speakers, the seventh instrument track (another piano sampler) must be sent to the headphones of the keyboard player, so he/she hears only piano sound.

sampler [sampler]
TAP
120.00
4 / 4
1 Bar
NEW
KEY
MIDI
Search (Cmd + F)
CATEGORIES
Sounds
Drums
Instruments
Audio Effects
MIDI Effects
Max for Live
Plug-ins
Clips
Samples
PLACES
Packs
User Library
Live 8 Library
Current Project
Library
Add Folder...
Name
Analog
Collision
Drum Rack
Electric
External Instrument
Impulse
Instrument Rack
Operator
Sampler
Simpler
Tension
1 - piano
2 - f-piano
3 - FM
4 - stockhausen
5 - MJ
6 - sampler
7 - monitor
A Return
B Return
Master
MIDI From
Monitor
Audio To
Sends
Cue Out
Master Out
Velocity
Keys-Grand Piano
Zone
Sample
Pitch/Osc
Filter/Global
Modulation
MIDI
Drop an Instrument or Sample Here

description of the max/msp patcher

the task of the patcher is to route the midi information to the appropriate ableton live track. when a key pressed, the patcher gets the midi information from the keyboard and decides, to which track in the ableton live set this information must be sent (i.e. which instrument must play).

decision-making

when a key is pressed, the patcher randomly chooses a so called alteration type and the time it keeps this configuration.
an alteration type determines how far is the resulting sound of the ableton live set from the original piano sound: it is nothing more as a collection of probabilities, which define how oft a certain instrument track in the ableton live set is triggered. for example, at type 0, the first instrument (piano sampler) has 100% probability and the rest of instruments has 0, so that only the piano sounds. at type 1 the first instrument (piano sampler) has – 70% and the second one – 30%, in 70 % cases plays instrument 1 (piano) and in 30 % of cases plays instrument 2 (filtered piano), and finally at type 7 – the fifth and the sixth instrument tracks have 50 %, so either loop shifter 2 (billie jean) or sampler is triggered. in this case we are quite far away from original piano sound.
in addition the patcher chooses the time, which it stays at the appropriate alteration type. during this time no type change can take place.
the patcher has elements to control the alteration types, time and communication with the ableton live set.

probability setting for ableton live tracks

in the top part of the patcher there are six dial-blocks (one for each track in ableton). the dials define the probabilities at different alteration types for each instrument (p0-p7). these probabilities you can change manually and save as a preset at the left part of the patcher. default settings are recommended.

sustain routing

the purple area in the left bottom corner serves to map correctly the sustain signal to the tracks in the ableton live set. this feature you need to set manually the midi mapping in ableton if you do not have at the moment a sustain pedal.

midi recording / keyboard

in the left part of the patcher there is a green area. it gives a possibility to simulate a live performance with a midi recording of the piece. there you can choose the source: recording or keyboard (you input midi port). in the case of midi recording you must drag-and-drop your .mid-file into the white area and press start to play it.

time and step

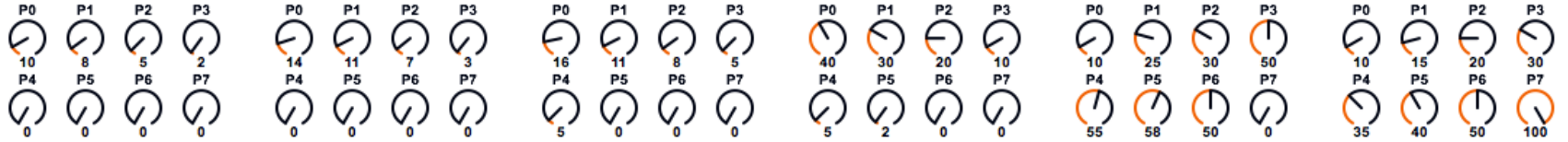
in the center of the patcher there are three dials. by means of them you can set the time range, in which the system stays at a certain alteration type. also you can define the step that this time is generated with. for example, min = 100 ms, max = 1000 ms, step=100 ms, so only time intervals 100 ms, 200 ms, 300 ms … 1000 ms are possible.

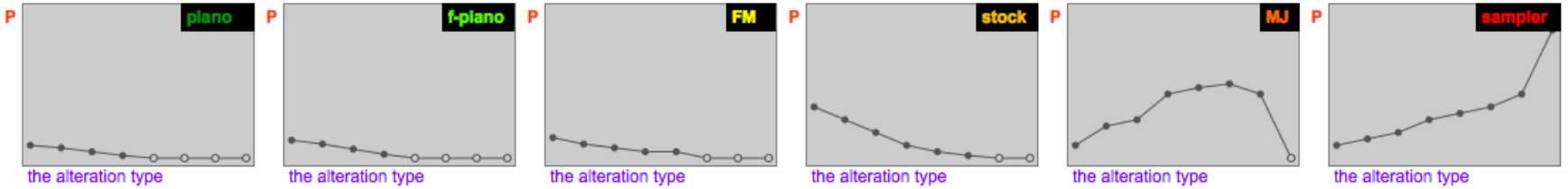
all notes off and pedal off
in the bottom of the patcher you can see two areas: all notes off and pedal off. by means of pressing appropriate keys you can send note off signal to the tracks in the ableton live set. (8 – all tracks all notes off; 1 – track 1; 2 – track 2 etc.) also you can turn off sustain signals with keys q (for the piano sampler in track 1), w (piano sampler in the track 2), e (tracks 3, 4, 5, 6) and r (track 7, monitor).

sound check
for sound check there is a possibility to send single notes to the tracks with a certain velocity, duration and pitch. either in cycle from channel 1 up to the channel you set, or only to the channel you set. this feature is located in the right part of the patcher.

sustain pedal
function: when the pedal is pressed, all piano samples get a sustain like a normal grand piano; the frequency modulated signal (track 3), both loop shifters (track 4, 5) and the sampler (track 6) get a longer release.

to adjust the alteration type manually





minimal and maximal time, in which all the instruments have a certain alteration type and the step of random generation.

nota bene

init:

patcher help

save

delete

call a preset

save presets as a file write

help

delete all presets clearall

level time

7 400

pedal from the input port on/off -------->

pitch: 60
vel: 127
dur: 1000
up to: 7
on/off:

pitch: 60
vel: 127
dur: 1000
to: 1
on/off:

help

from keyboard/midifile: Keyboard

start/stop playback:

start stop

not playing!

drag and drop your file!

to ableton: all notes off

8

1 2 3 4 5 6 7

to ableton: pedal off

help

piano(q) f-piano(w)

the rest(e) monitor(r)

to pass midi controlls from the input port only to the output port and to channel:

select all

deselect all

piano

f-piano

the rest

monitor

send ctrl 64

help

please set your input device:

IAC-Treiber Bus 1

please set it to "from MaxMSP 1":

IAC-Treiber Bus 1

to start

1. open file /max/main.maxpat
2. open ableton live set /live/sampler\ project/sampler.als

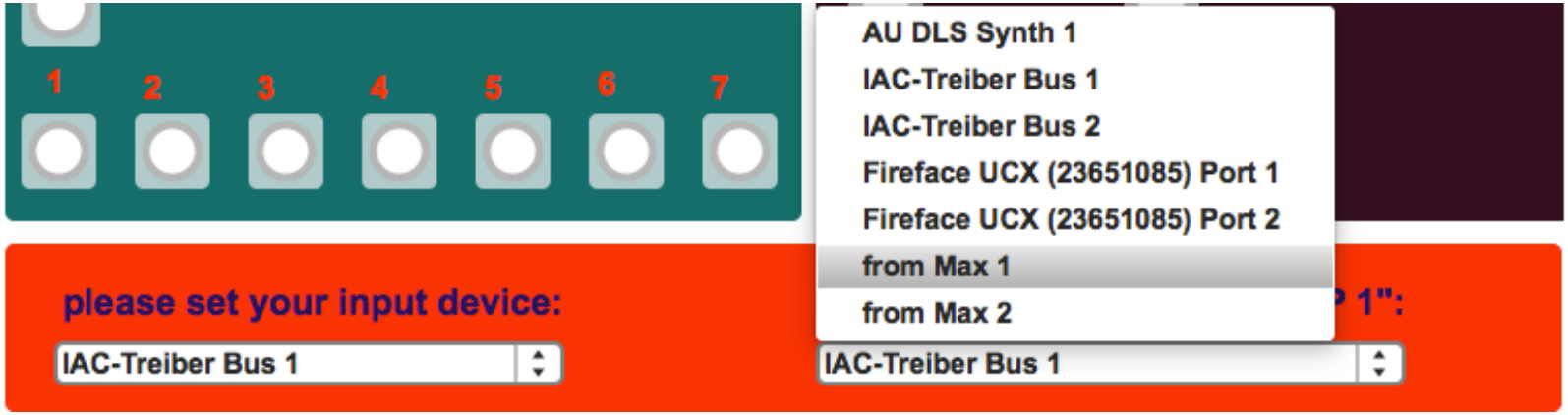
max patcher:

3. set input and output midi ports:

   in the bottom part of the patcher you can see two menus: for setting input and output midi ports. as input port choose the port, which you physically get the signal from the keyboard from; as the output port please choose “from max 1”.

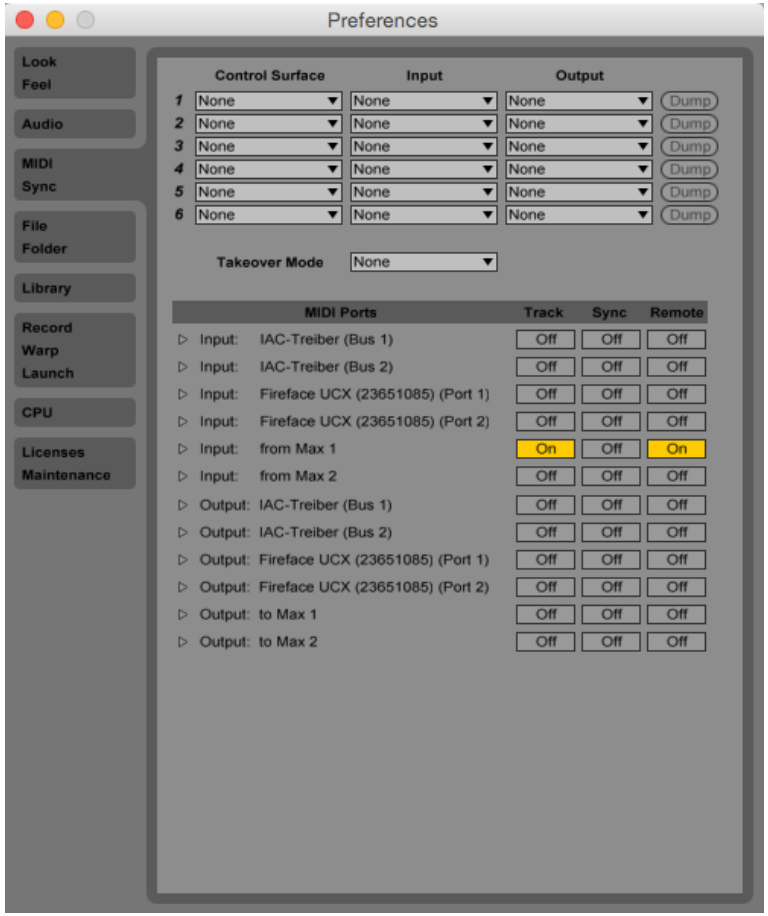
   physical input:

   output to ableton:

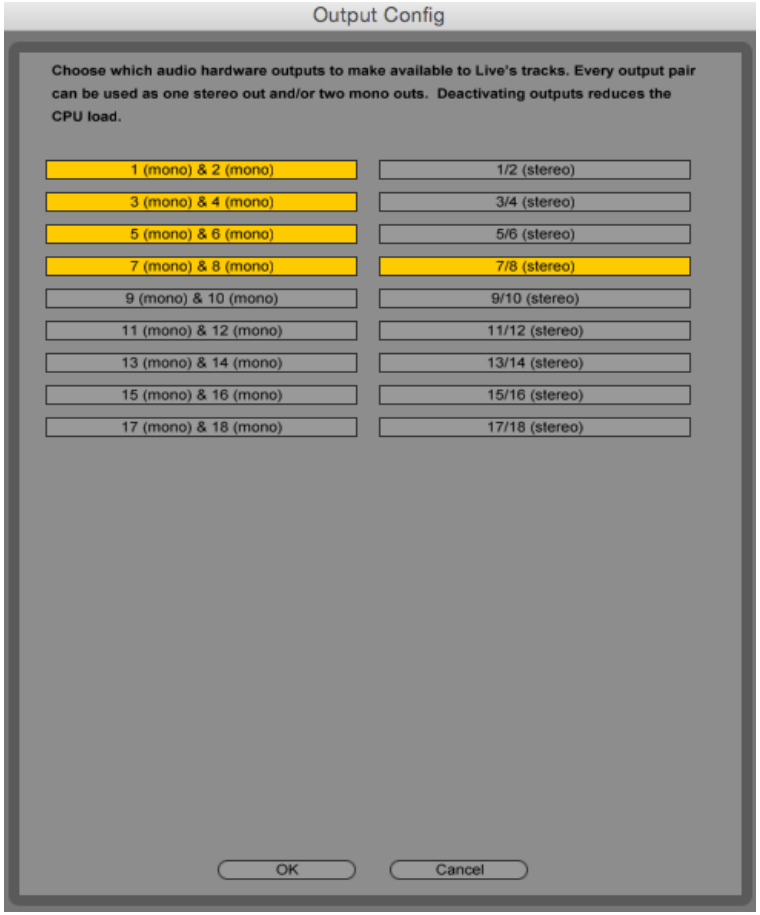


ableton:

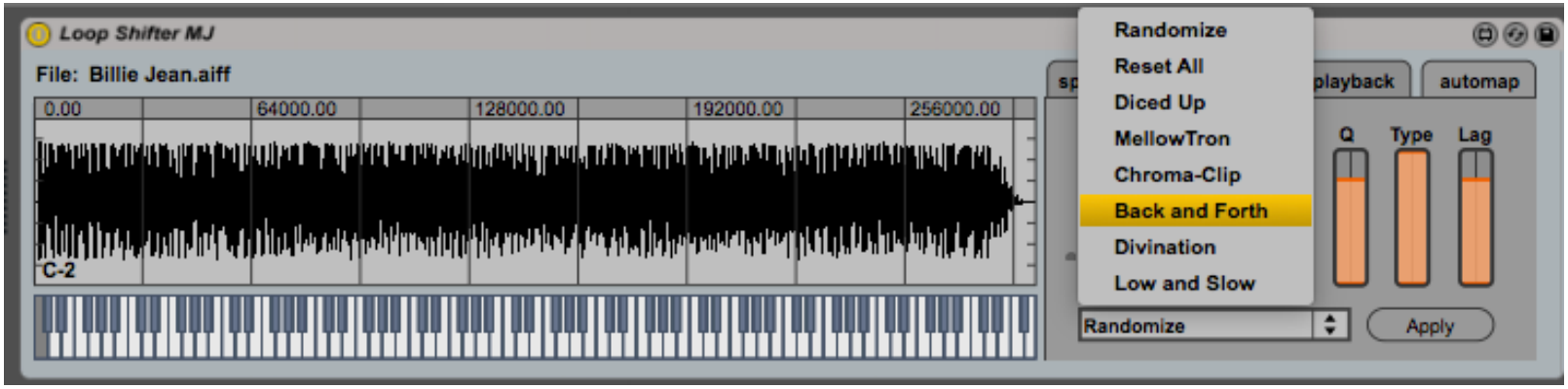
4. go the preferences in ableton ⟶ midi
5. turn all midi devices off accept “from max 1“
6. set “track” and “remote” of this port to on! (the max/msp must already run)



7. preferences ⟶ audio setup: set your audio output device and its 8 output channels (6 to speakers + 2 to the monitor for the pianist)

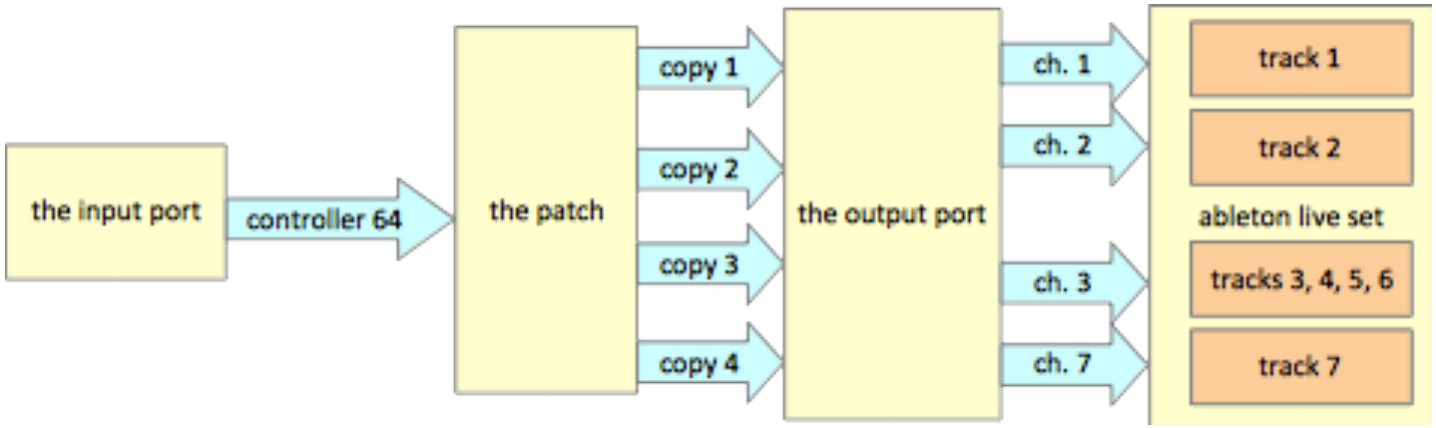


8. go to track5 (michael jackson loop shifter) ⟶ loop shifter ⟶ automap ⟶ choose „back and forth“ in the menu ⟶ press the apply button

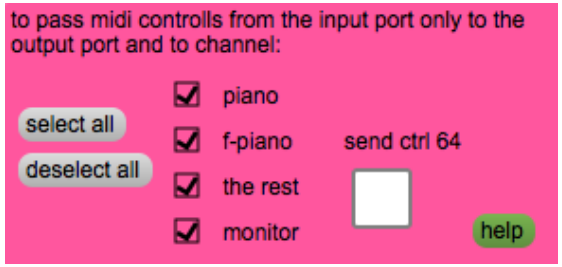


max patcher:

9. if needed set midi mapping for the sustain pedal.
   the signal comes from the keyboard to the computer via the input midi port. in the patcher this signal is split into four other signals, which are exact copies of the input signal.



in the left bottom part of the patcher you can see a purple area. it has four check boxes and a toggle. the check boxes work like gates, which pass or not pass the sustain signal from the input port to the appropriate channels of the output port: four copies are routed inside this bpatcher:
via channel 1 of the output port – sustain for the track 1;
via channel 2 of the output port – sustain for the track 2;
via channel 3 of the output port – sustain for the track 3, 4, 5 and 6;
via channel 7 of the output port – sustain for the track 7.
the white toggle you may need only as a substitution of the sustain pedal for mapping midi in ableton. you can set the mapping with the sustain pedal as well.
during the performance the four check boxes must be checked an the white toggle unchecked!



the correct setting of the midi mapping of the sustain signal must be already saved in the ableton live set. but if for some reason these settings have been changed you have to set them yourself:
using the midi mapping feature in ableton live you can correctly route four channels from the port “from max 1”. the sustain signal for piano samplers (tracks 1, 2, 7) must not be routed additionally, this works automatically. they get the sustain signal from the channels 1, 2 and 7 of the output port respectively. but for both loop shifters and the sampler the standard sustain must be re-routed, otherwise the sampler loops the samples instead of giving them a longer release.
in the purple area in the left bottom corner you can route the sustain controller (64) from your input midi port to an appropriate track in the ableton live set. with this feature you can independently organize the necessary midi mapping in the ableton live set. there you choose with the check boxes the channel, which you want to pass the controller 64 to. and to send the signal, you can check the toggle or press the sustain pedal. if the toggle is checked, the sustain is on, if it´s unchecked the sustain is off. the pedal and the toggle function independently.

to set the mapping in the ableton live set you have to do:
9.1. go to the ableton live set.
9.2. in the right upper corner of the window click the midi button. aufter pressing it you will see the midi mapping menu in the left part of the window.

9.3. in this mode go to the following elements and set cc64-mapping for them:
9.3.1.: track 3 ⟶ max/msp instrument ⟶ yellow number box
press the sustain pedal and then set the values for the mapping: 15 ms (pedal off: 64 0) and 2.5 s (pedal on: 64 127)
9.3.2.: track 4 ⟶ loop shifter ⟶ tab “playback” ⟶ release dial
press the sustain pedal and then set the values for the mapping: 3 (pedal off: 64 0) and 30 (pedal on: 64 127)
9.3.3: track 5 ⟶ loop shifter ⟶ tab “playback” ⟶ release dial
press the sustain pedal and then set the values for the mapping: 3 (pedal off: 64 0) and 30 (pedal on: 64 127)
9.3.4.: track 6 ⟶ sampler ⟶ tab “filter/global” ⟶ release number box
press the sustain pedal and then set the values for the mapping: 1 ms (pedal off: 64 0) and 2.5 s (pedal on: 64 127)

the mapping must look in this way:
for track 3 (frequency modulated signal)
controller 64 of the ch. 3 from the port “from max 1” ⟶ track 3 ⟶ max/msp instrument ⟶ yellow number box:
from 15 ms (64 0) to 2.5 s (64 127).

for tracks 4 and 5 (loop shifters)
controller 64 of the ch. 3 from the port “from max 1” ⟶ track 4 (5) ⟶ loop shifter ⟶ tab “playback” ⟶ release dial:
from 3 (64 0) to 30 (64 127).

for track 6 (sampler)
controller 64 of the ch. 3 from the port “from max 1” ⟶ track 6 ⟶ sampler ⟶ tab “filter/global” ⟶ release number box:
from 1 ms (64 0) to 2.5 s (64 127).

routing

the piece can be realizied with any number of speakers. but the principal idea of distribution of the audio signals in space (from the ableton tracks) has to be the same:

tracks	speakers
track 1 (mono)	front
track 2 (mono)	back left + center left
track 3 (mono)	back right + center right
track 4 (mono)	center left and right
track 5 (mono)	back right
track 6 (mono)	front left

of course in case of two loudspeakers this concept has to be strongly reduced.
for 8 loudspeaker the audio mapping could look like this:

tracks	tracks midi in	tracks audio out	interface ins	interface outs	mixer input channels (fader)	mixer outputs	speakers
track 1 (mono)	from max 1 / ch1	1	1	1	1	1	1-4
track 2 (mono)	from max 1 / ch2	2	2	2	2	2	3, 5, 7
track 3 (mono)	from max 1 / ch3	3	3	3	3	3	2, 4, 6
track 4 (mono)	from max 1 / ch4	4	4	4	4	4	3-6
track 5 (mono)	from max 1 / ch5	5	5	5	5	5	6,8
track 6 (mono)	from max 1 / ch6	6	6	6	6	6	1,3
track 7 (mono)	from max 1 / ch7	7	7	7	7	7, 8	headphones (stereo)

sound direction

the person at the mixing desk ensures during the performance, that all audio signals from 6 ableton tracks are in balance.

karlheinz stockhausen

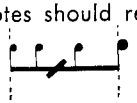
nr. 4
klavierstück IX

Bücherei
der
Musikhochschule
Köln
C3 3274 IX

ue 13675 e
universal edition

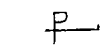
General Foreword

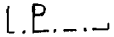
Piano Pieces V–X may be played singly, in any order desired, or mixed together with Piano Pieces I–IV.

Small notes , are independent of the tempo fluctuations indicated and are played "as fast as possible". They are just as important as large notes; they should be articulated clearly and not quasi arpeggiated. Therefore they must be executed more slowly in the lower registers than in the upper. The various intervallic leaps within groups of small notes should result in a differentiation of the actual intervals of entry (do not make them equal). Groups of small notes between vertical dotted lines () interrupt the tempo indicated.

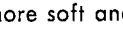
An **accidental** (♯ ♭) applies only to the note before which it stands.

= depress right pedal all the way down.

 = depress right pedal just so far down that the duration of the attack and a soft continuation of the note are audible after releasing the key. Depress pedal about halfway for notes in the middle register, one-third for the low register, two-thirds for the high register and completely for the highest register.

 = left pedal is indicated at only a few places; it may, however, be used at any other place desired.

 = depress the key for the duration indicated. = notes follow each other closely.

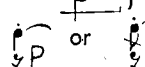
 = depress key completely and gradually release, so that the note still continues but becomes more and more soft and bright.  = „portato": a short caesura between the portato note and following note.

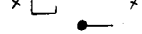
 = „staccato".

 = „legato": the attack of a note and the release of the previous one sound together very briefly. Use right pedal only at leaps.

= key remains completely depressed, begin right pedal as and gradually release. For longer durations, towards the end of the note as without pedal.

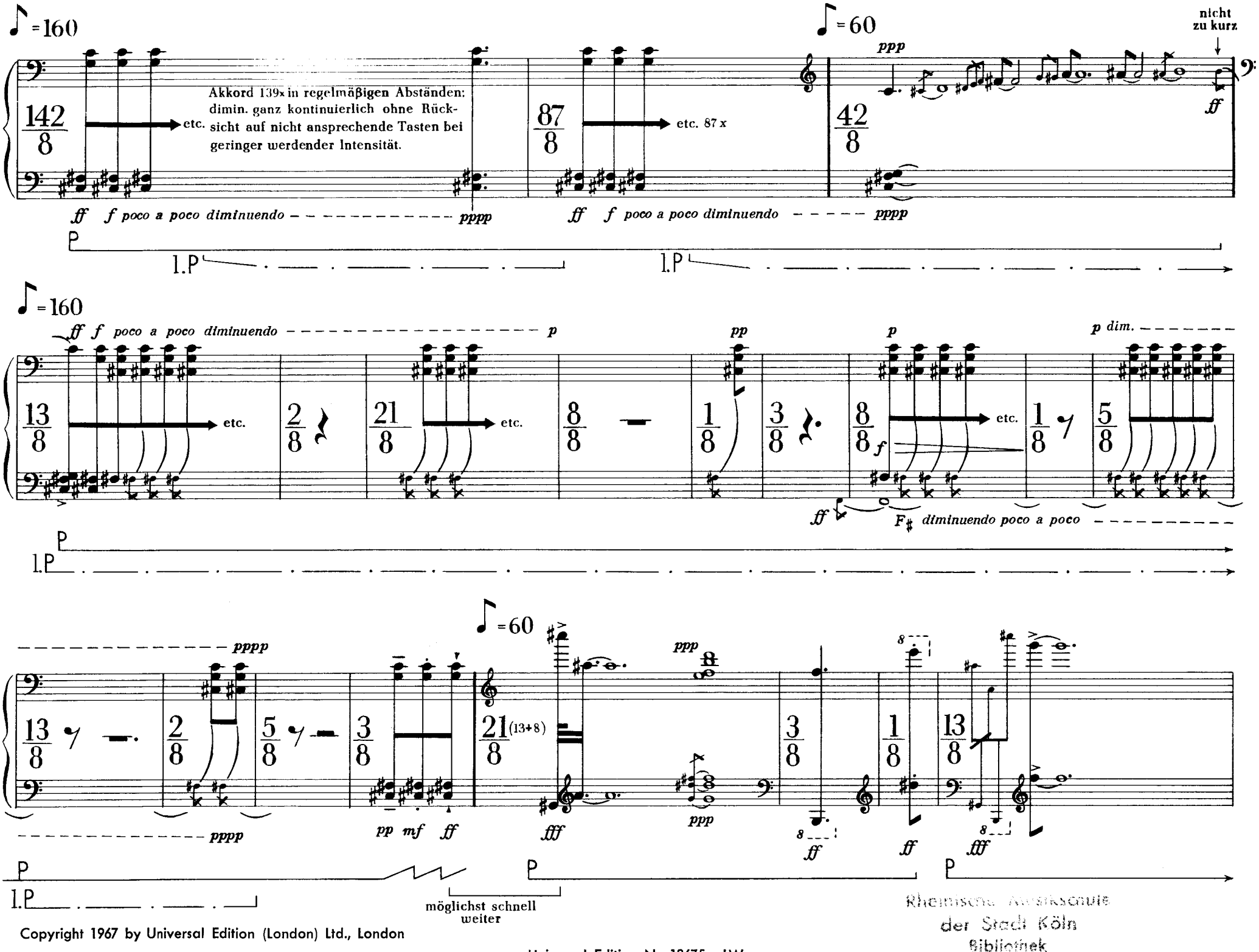
= staccato attack with sound continuing softly.

 = staccato attack immediately followed by depressing right pedal, so that the note continues softly. The time between attack and pedal relatively long in the lower registers, minimal in the upper.

 = staccato attack immediately followed by depressing the key silently, so that the note continues softly after the short attack ( ). The time between the two actions is again dependent on the pitch.

 = depress key silently.

C3 3274 Tx



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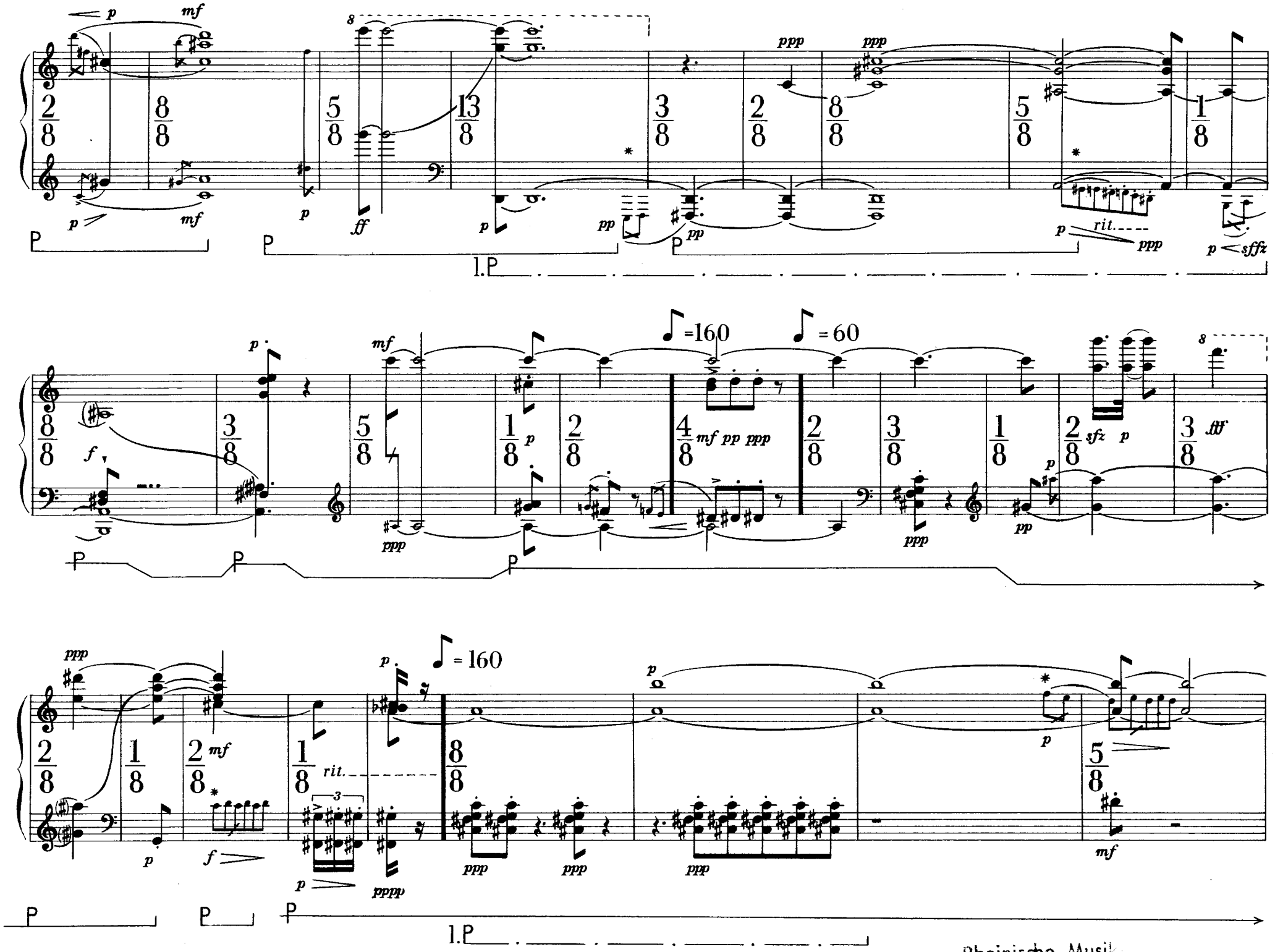
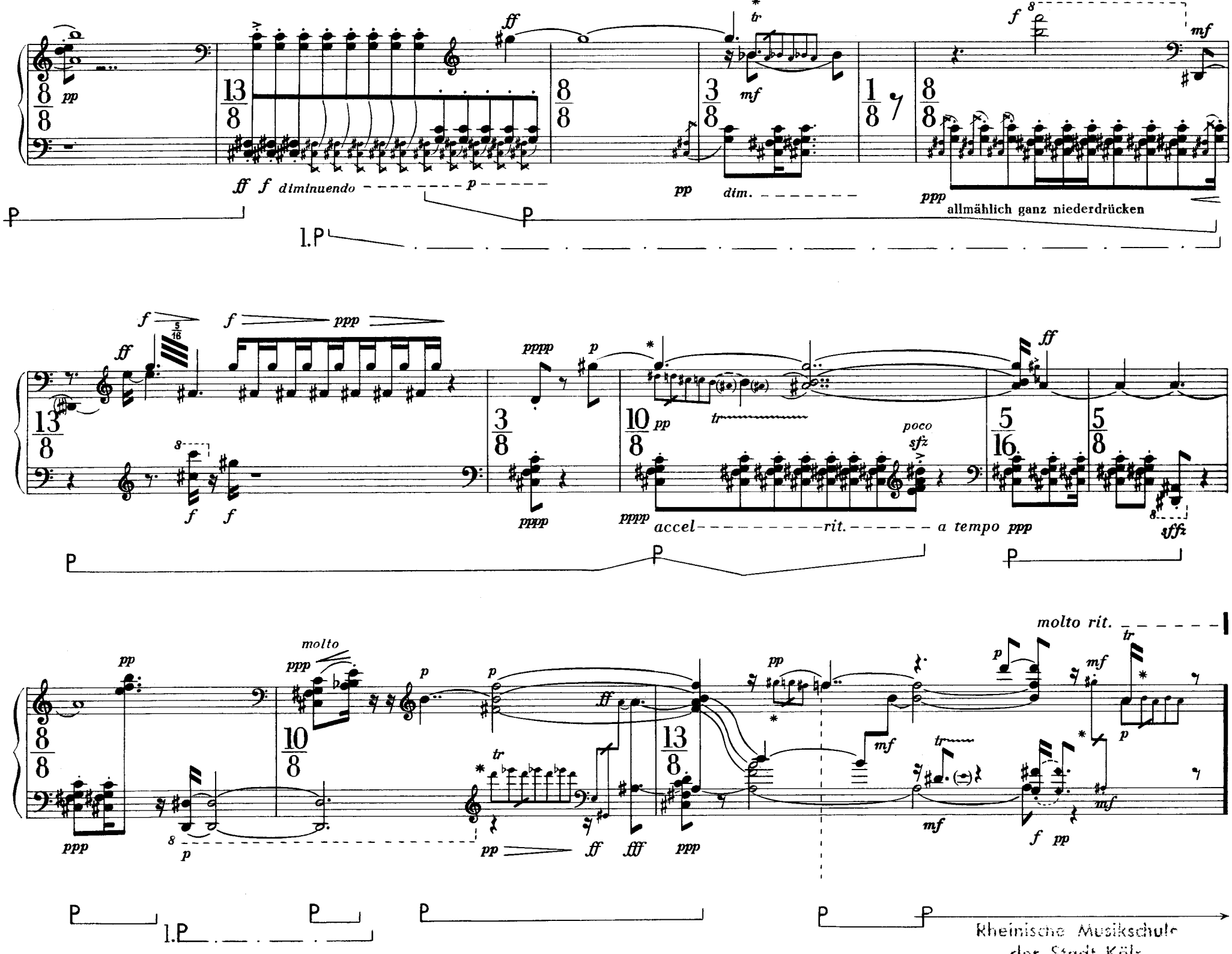
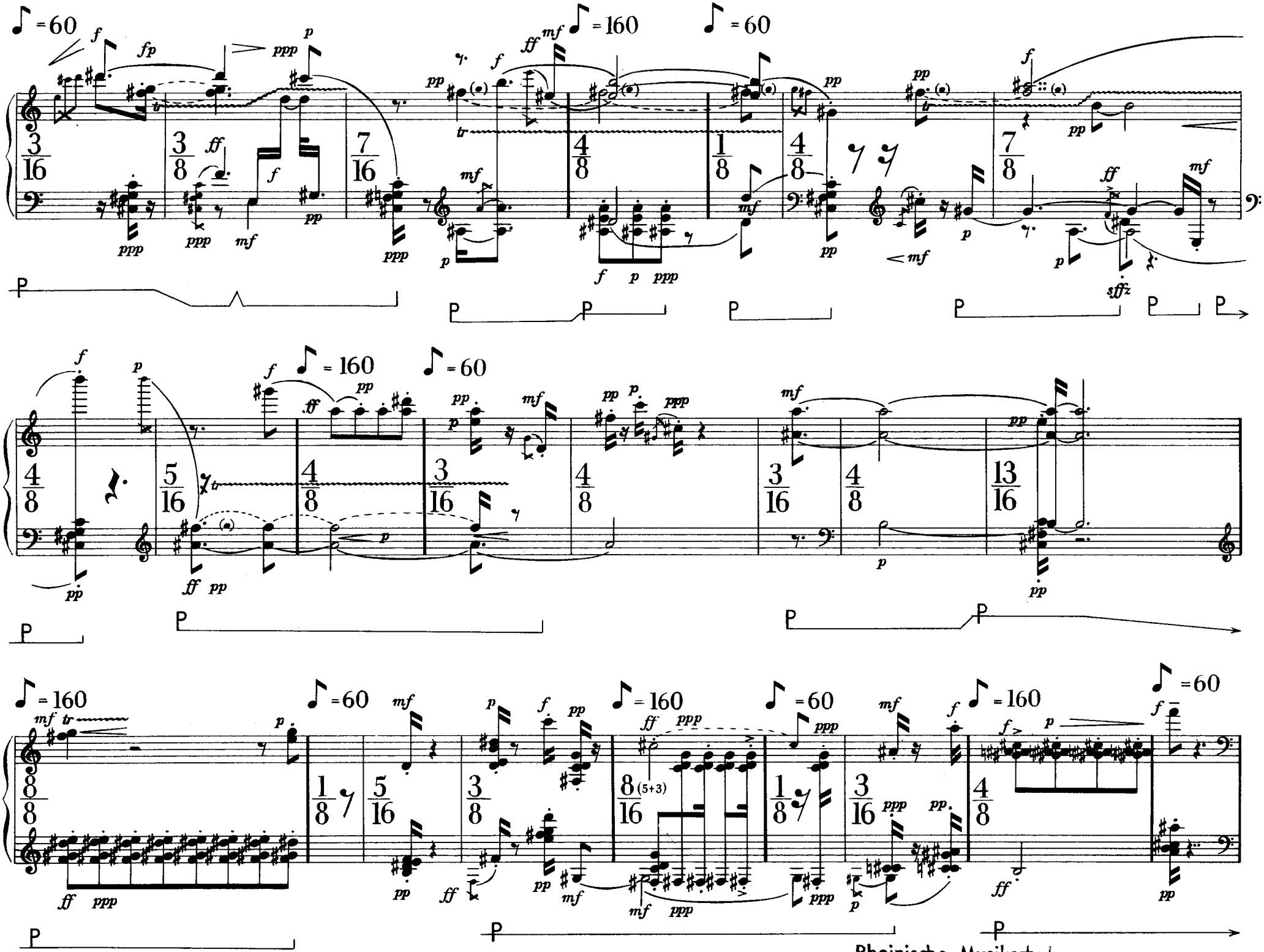
Rheinische Musikschule der Stadt Köln Bibliothek



Rheinische Musik
der Stadt Köln



Rheinische Musikschule
der Stadt Köln


♩ = 60
♩ = 160
♩ = 60
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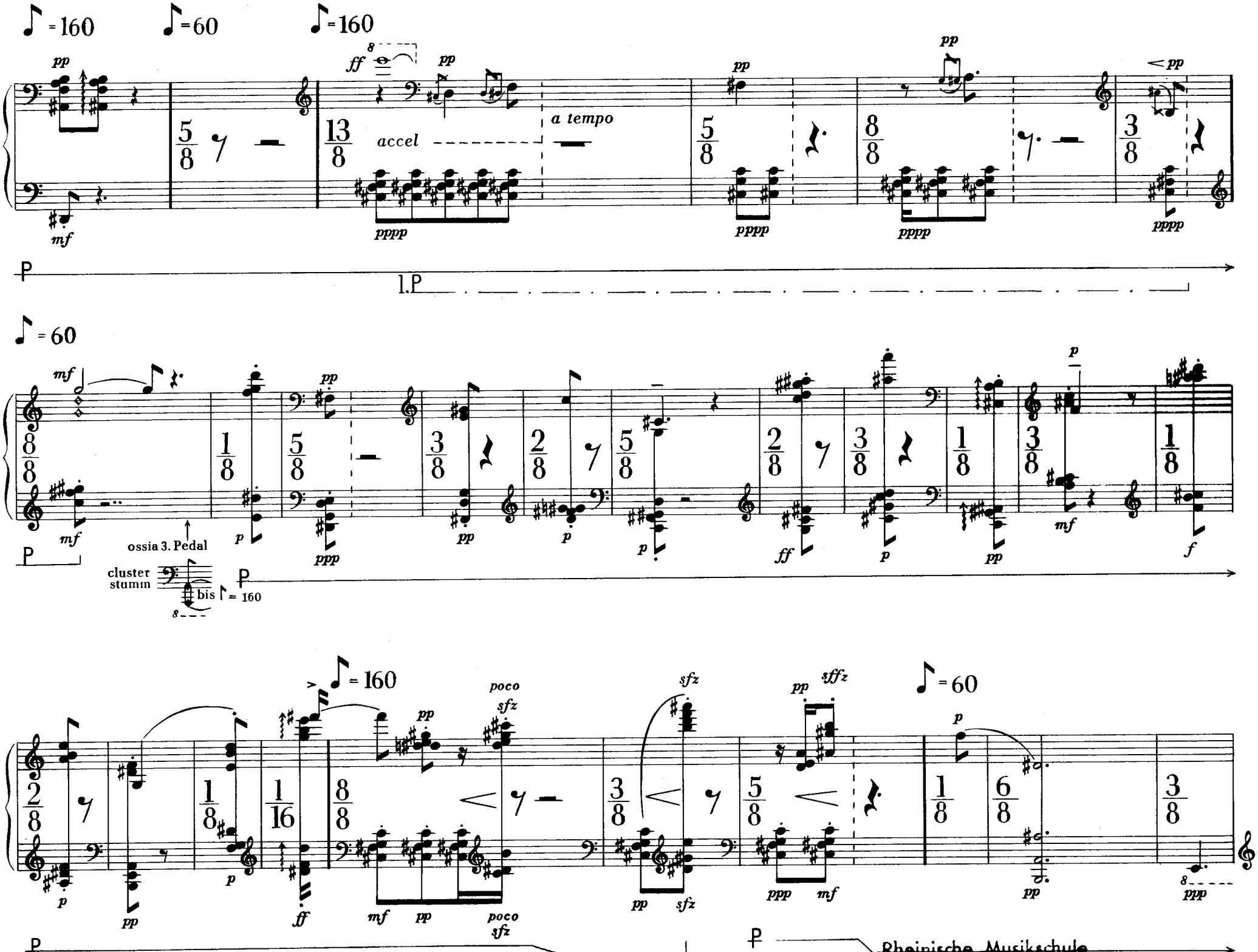
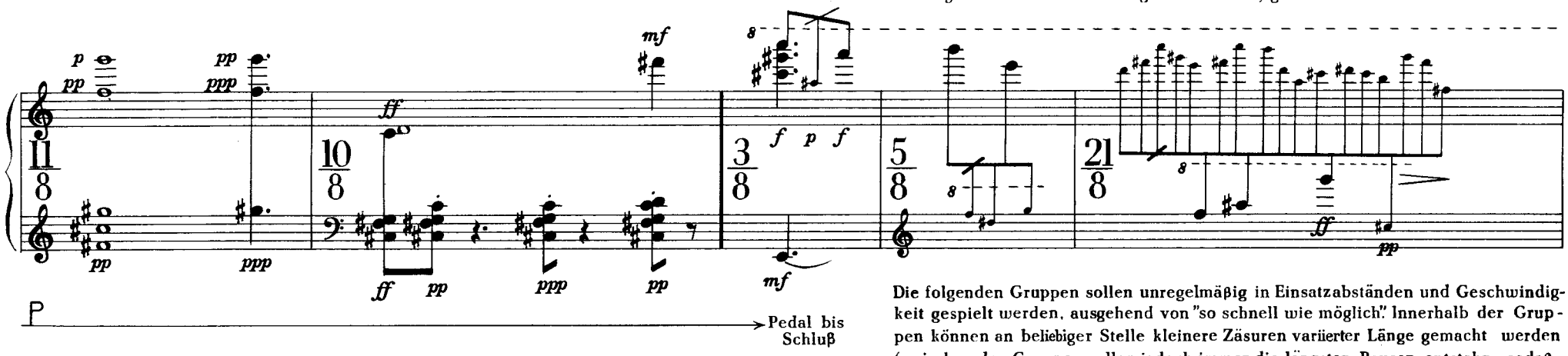
♩ = 60

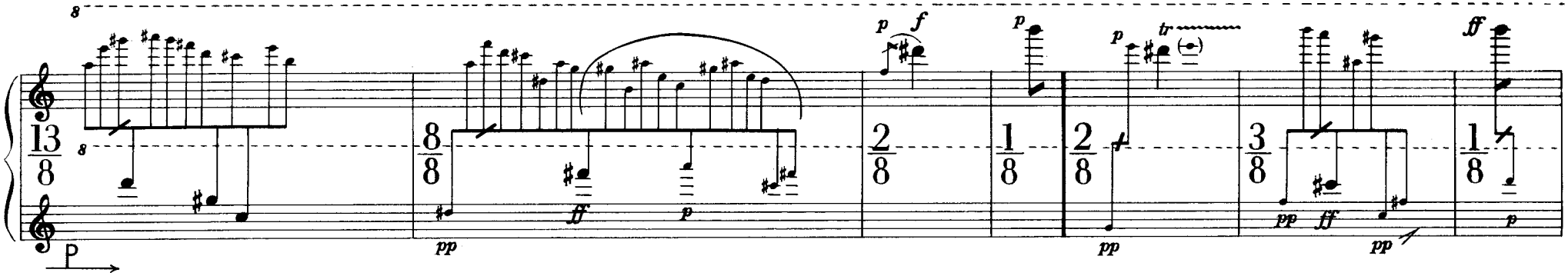

= 160
= 60
= 160
accel
a tempo
1.P
= 60
ossia 3. Pedal
cluster stumm
bis = 160
= 160
= 60
poco sfz
Rheinische Musikschule

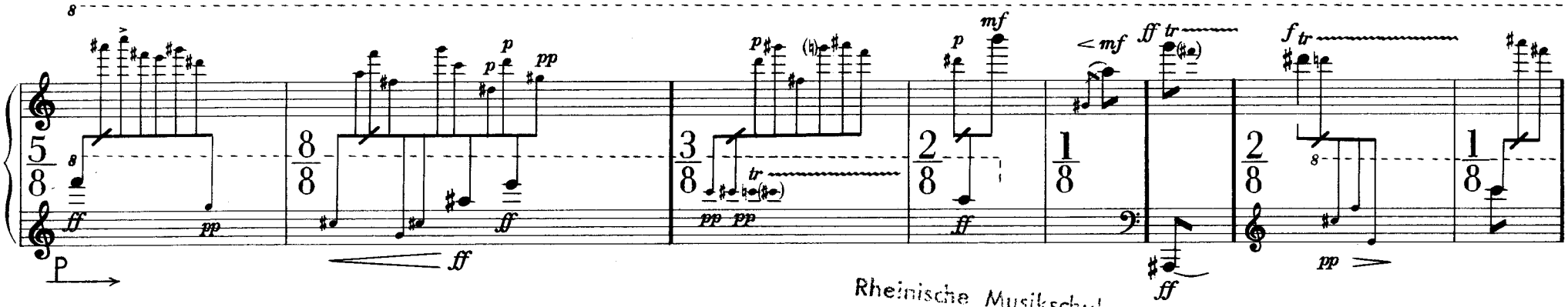
♩ =120

Dicke Noten *mf, f, ff*; kleine Noten *ppp, pp, p*.
Wo ein dynamisches Zeichen vorgeschrieben ist, gilt es nur für eine Note.



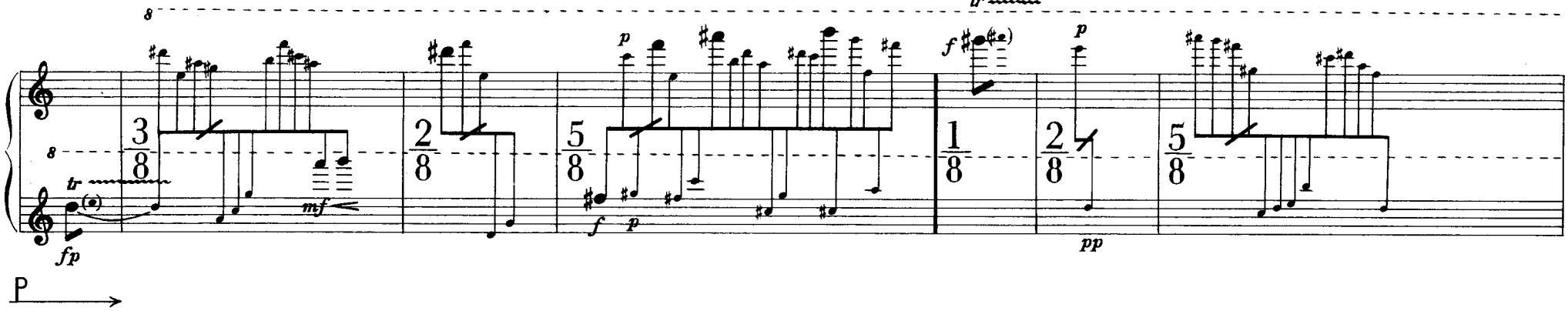
Die folgenden Gruppen sollen unregelmäßig in Einsatzabständen und Geschwindigkeit gespielt werden, ausgehend von "so schnell wie möglich". Innerhalb der Gruppen können an beliebiger Stelle kleinere Zäsuren variierter Länge gemacht werden (zwischen den Gruppen sollen jedoch immer die längsten Pausen entstehn, sodaß man deutlich die Gruppen taktweise unterscheidet).



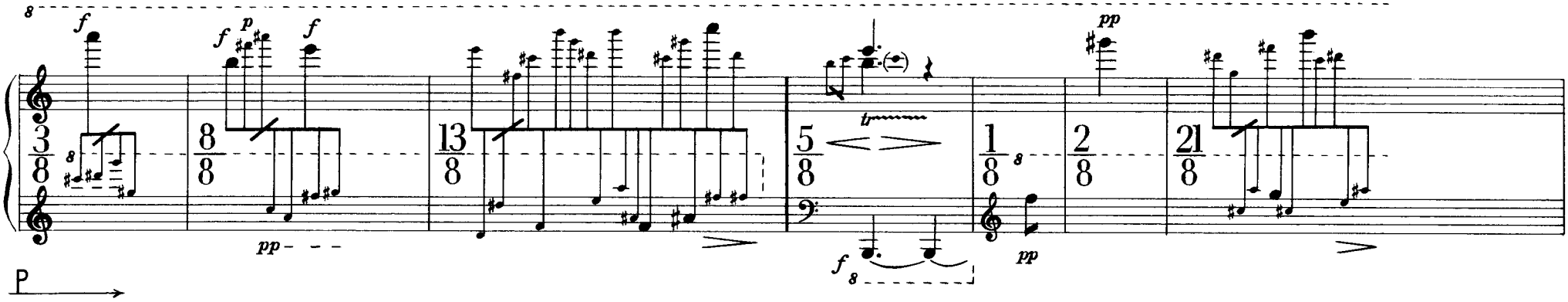


Rheinische Musikschul
der Stadt Köl

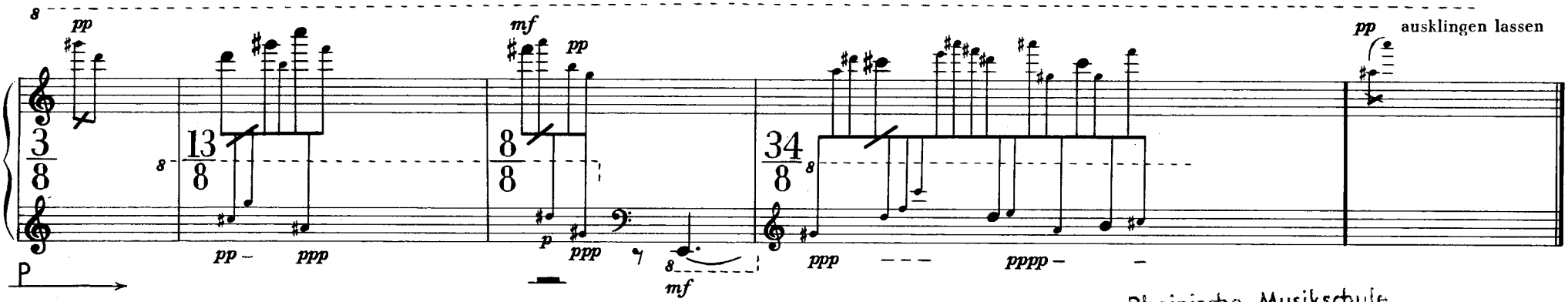
Gruppen immer mehr auflösen bis Schluß
(zunehmende Unregelmäßigkeit der Einsatzabstände).



nach und nach leiser werden



sehr unregelmäßig



Rheinische Musikschule
der Stadt Köln