piano_prosthesis

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Indicative Score & Instructions

Introduction

This score can be used as a creative starting point, as a open-form score that defines all materials you use, or ignored.

The overall aim is to establish clearly differentiated musical materials, characterised by pitch, loudness, density, rhythmic activity, sustained-ness and the degree of internal variation (within a timeframe of 10-20 sec.) Having decided upon materials, either in advance or during the performance, the improvisation should focus on recalling and varying these types. Silence is recognised as a material. As you introduce new materials or recall previous ones, you should hear complementary responses from the computer improviser, which should seem both reactive and pro-active in its behaviour.

Technical Guide

A. Setup (please refer to Max patch).

1. Put DSP ON : adjust input volume to ensure there is a good response from **Event** detect light, **Pitches** and **Features** windows. Adujst *Event threshold* if necessary to ensure a good noteson/notes off response, and to determine when a sustained note decay can be considered 'silent'. NB: If the threshold is too low, this will impair the system's ability to recognise rapid series of note onsets.

2. Learning will only occur if **Features** are steady. This is indicated by the **blue light** in the **Net Training panel**. Adust the *stability* if necessary: higher values make the Network less 'choosy' about what it may learn, and the blue light will tend to light up more often.

3. You can test the computer audio output if you have played notes that have registered in the **Pitches** window. Select a playback behaviour from the *Test Output* menu in the **Controls panel**. Click on the playback toggle (turns purple). After testing, **Pitches** can be reset by clicking on *Pitch Reset* in the **Controls panel**.

4. Choose *scramble* option (only do this if the default is not wanted). This determines how the system generates the sequence of new musical behaviours that appear as new input states are learned. The order is reshuflled every time the patch is opened, reset, or one of the options are chosen (or re-chosen). The options are:

- GROUPED (default): random order ensuring contrast from one behaviour to the next.
- RANDOM: random ordering of all 37 states.
- MORE SILENT: same as grouped, but ensures that more 'silent' modes are chosen in the first 12 behaviours: I.e. system is less active generally.
- AUTO: same as grouped, but re-scrambles every two minutes or so. (best avoided unless you have a very low boredom threshold!)
- ZEROAUTO: same as grouped, but the behaviour assigned to input silence is changed randomly every two minutes or so. I.e. the response to your silence changes every two minutes or so.

B. Rehearsing

The best way to prepare is to be familiar with the response of the **Features** window and **Pitches** window. Experiment with these, particularly try to get a feel for how easily the **Features** window settles into a fixed state (indicated by blue light in Net Training panel).

C. Playing

1. NB: there can be no audible playback until pitches are shown in the **Pitches** window. You can clear the pitches to start afresh with by pressing *clear pitches* in the *Controls panel.*

2. The individual pitches of chords are not recognised! So chords will usually not contribute new pitches to the **Pitches** window. Only single notes, keyed or plucked, will appear in the **Pitches** window. This limitation can be used creatively to avoid pitch detection when appropriate

3. Sometime after you begin playing, activate Net learning and playback by pressing the large ***BEGIN*** button, which turns yellow and cannot be deactivated without a system reset or reloading the patch. The Net will learn a first state soon after that, shown by the red light in the Net Training panel.

4. Playback is then ON by default. Toggle playback to toggle playback off/on during performance if you wish, (ideally this should never be necessary) and to end the performance. You can use the 'sleep' option if desired: system tends to stop when you stop, if sleep is ON.

5. The *Net Training Comparator* value will decrease after the first two states are learned. If necessary, adjust the *Comparator threshold* to encourage/discourage new learning. You can monitor your current playing, represented by the blue horizontal bar. When this bar meets the current *Comparator value* (shown in the slider) your playing is now sufficiently different from previous states to be allowed to train the network. Higher comparator values discourage learning: a value of 1. prevents learning. A value > 0.3 will usually ensure that the current **Features** are learnt as a new state. About 0.4 is a good value to work with. If the system learns input states without enough discrimination, the system will work but will tend to sound more jumbled and ‘grey’ overall.

D. Adding user controllers.

Ideally, it should not be necessary in performance for you to interact directly with the Max patch. However you may wish to have access to controls; e.g. The Comparator threshold can be manipulated in performance to control the rate of learning.

In which case, it may be preferable to use a control interface rather than the computer screen. The following parameters can be controlled via *receive* objects that are already built into the patch (but not used for any other purpose). Create your controller interface Max patch with send objects to conform to the following specification:

Parameter	*Send name*	*Message type*	*Input Range*
BEGIN	s custom-begin	on (int)	1
playback	s custom-play	off or on (int)	0 or 1
sleep	s custom-sleep	off or on (int)	0 or 1
Comparator threshold	s custom-compare	continuous (int)	0 – 100
Stability	s custom-stablility	continuous (int)	0 – 100
Clear pitches	s custom-pitches	bang	bang
Scramble type	s custom-scramble	menu items (int)	0 – 4
System reset (screen confirmation needed)	s custom-reset	bang	bang

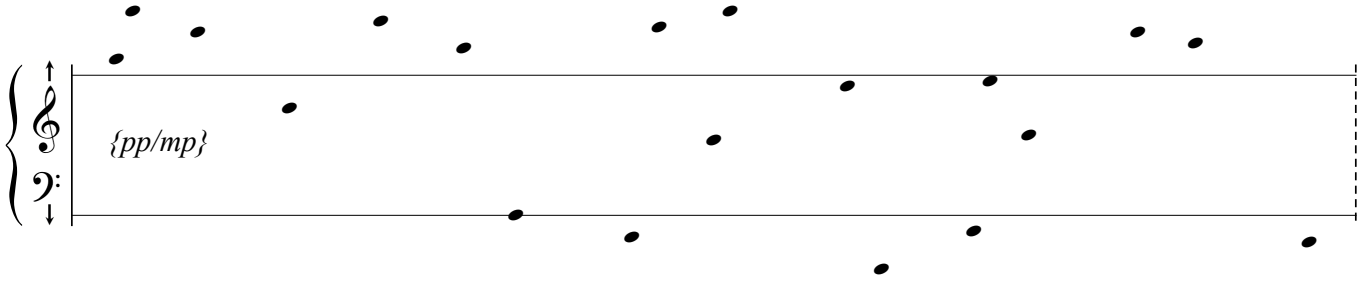
Score Notation

A definitive pitch range should be established for each occurrence of a material type. The range can be small (one octave or less) or the maximum range of the keyboard, or any range in between. Two bass or treble symbols denote that only the lower or upper half of the full range should be used as a maximum range.

All other notations and instructions are open to interpretation ad lib.

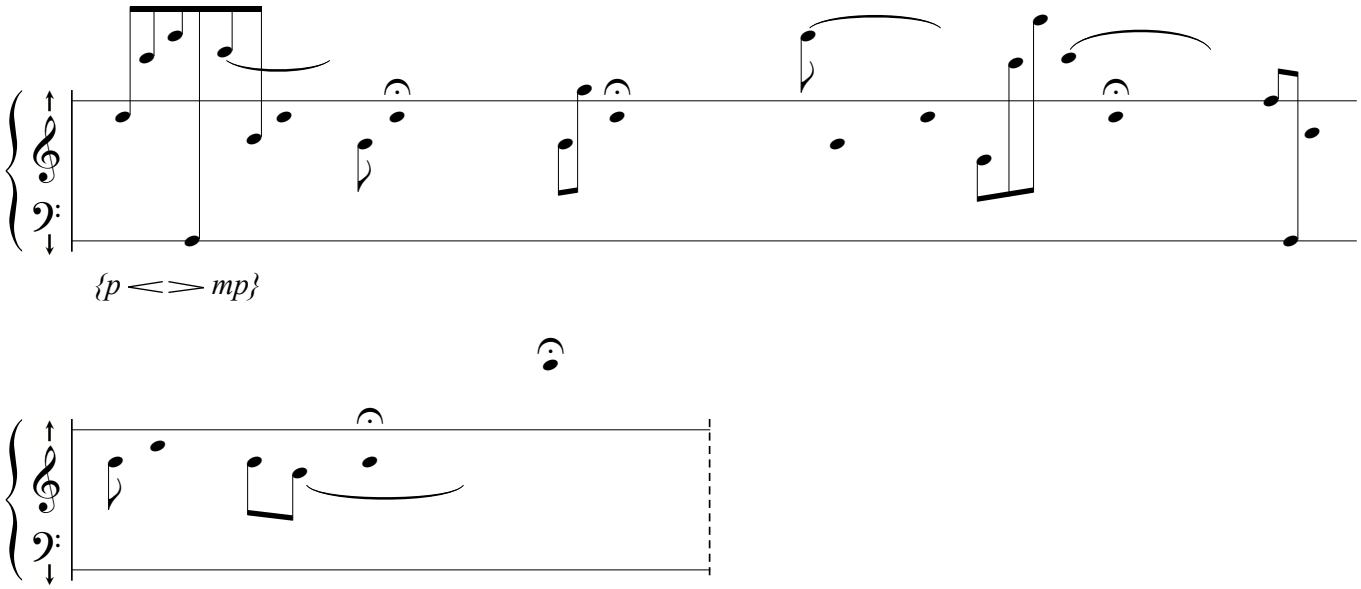
M.Y. May 2009

separates



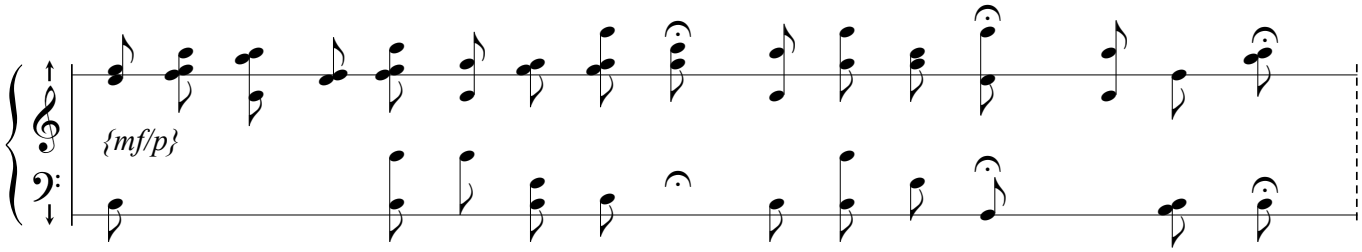
unphrased; slightly detached & uneven;
wide pitch space; effortless

remembering



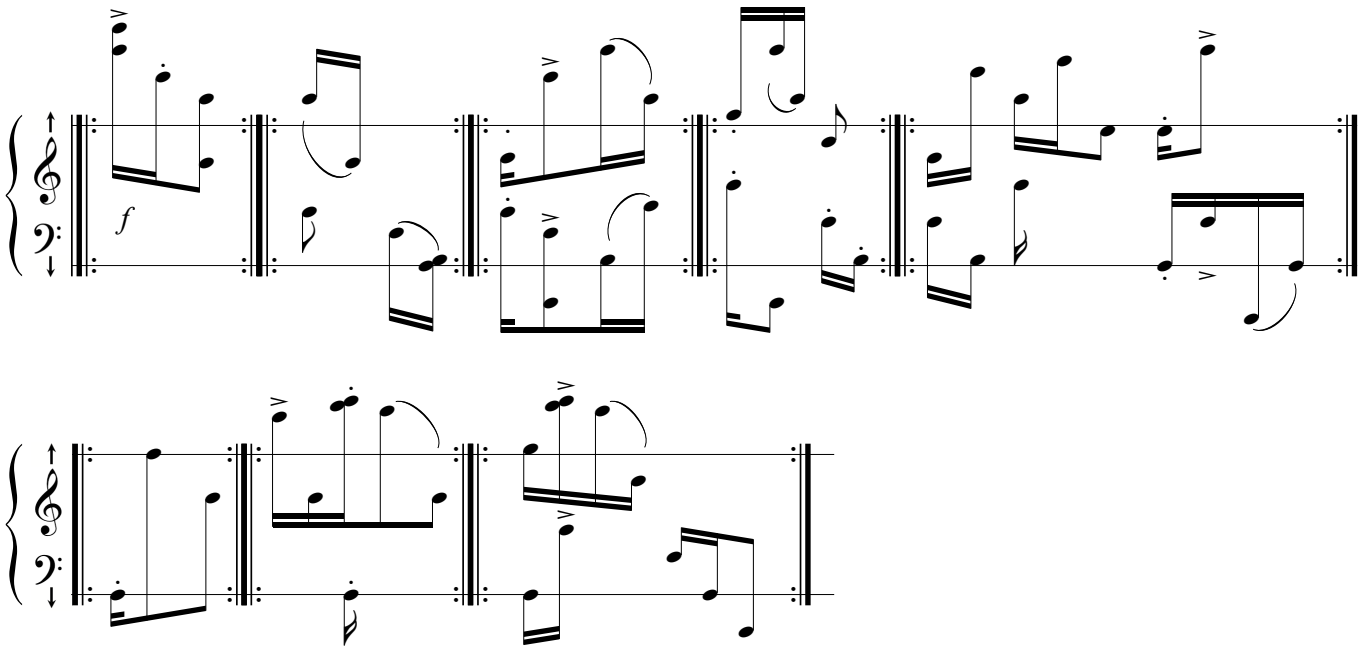
narrow pitch space; even rhythms with pauses;
some notes sustained through;
little phrases hint at each other; whistful

pulsing



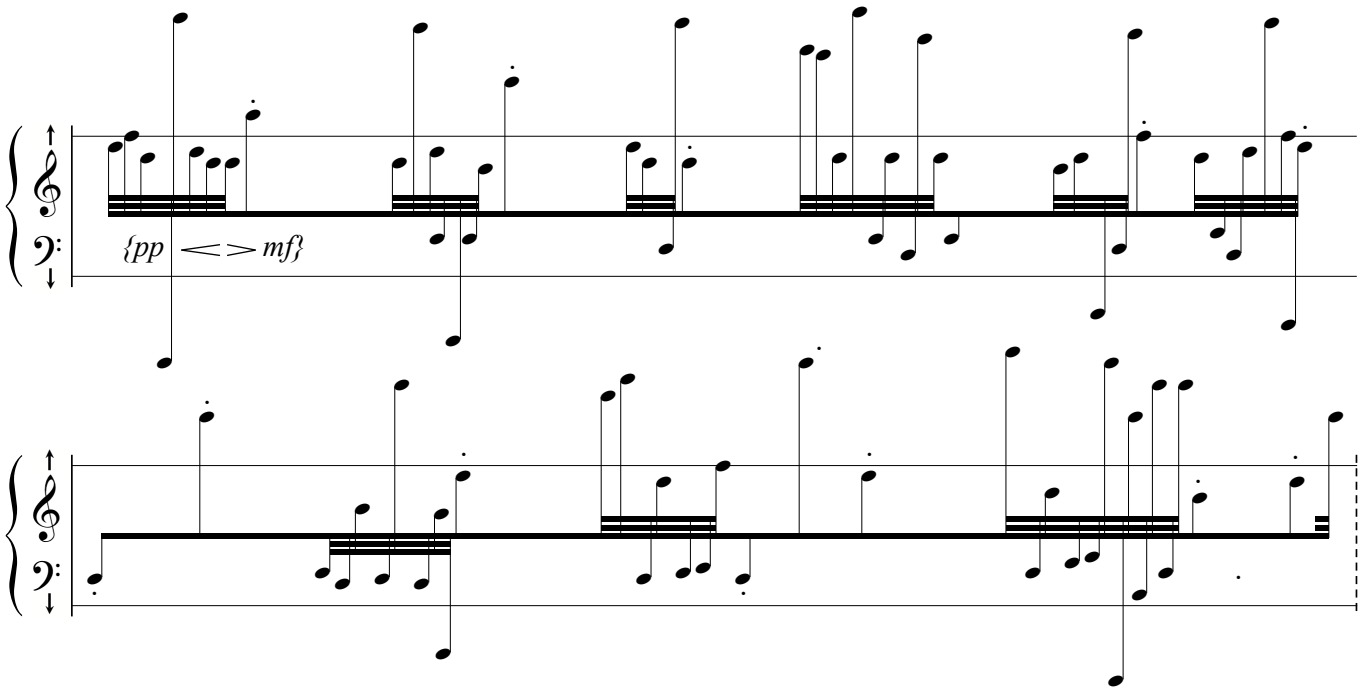
reinvent fixed-pitch chords in new groupings;
restrict pitch space; regular with short pauses now and then;
mildly insistent;

locking



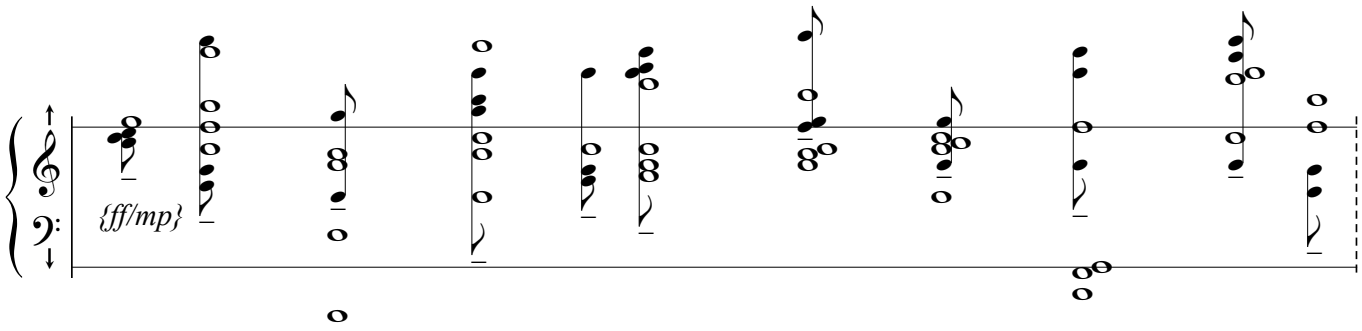
vary repeats - sometimes don't repeat;
alter tempo on repeats; pitch space is wide or narrow;
well-articulated; emphatic, not agressive

frantic



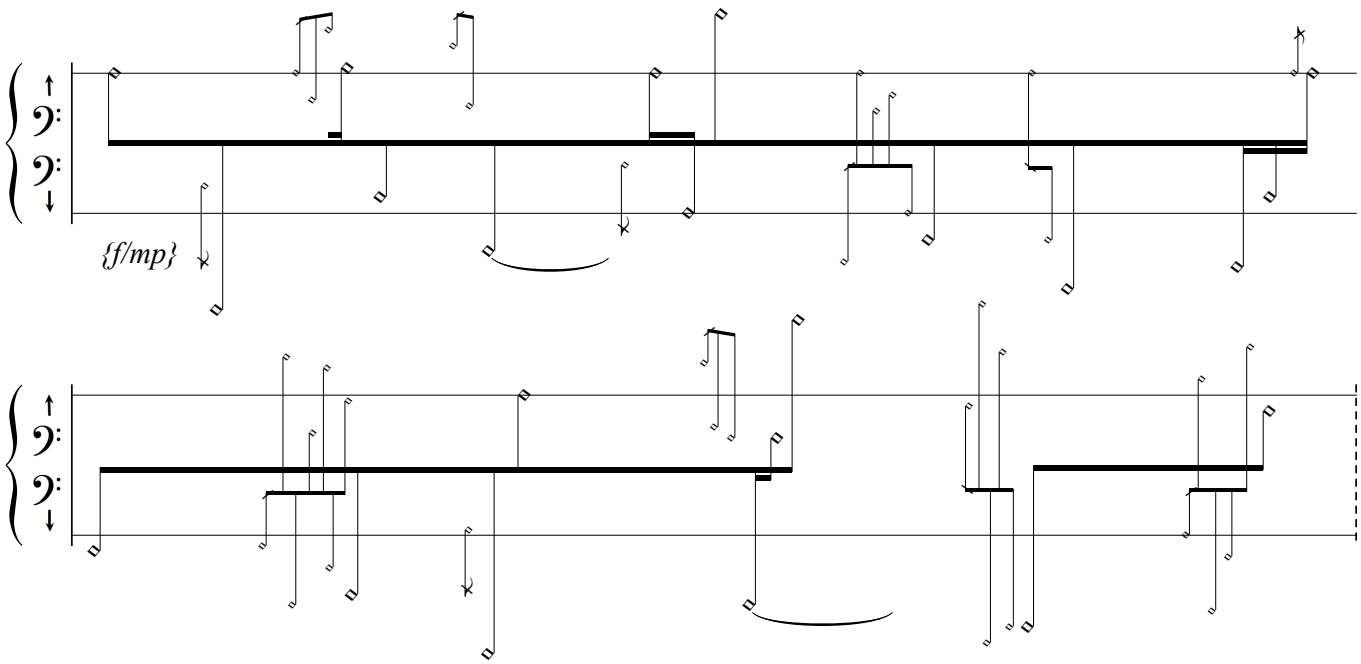
mid-pitches stretch out to extremes;
suddenly irregular; you can take a breath;
not assertive, hesitant;

resist



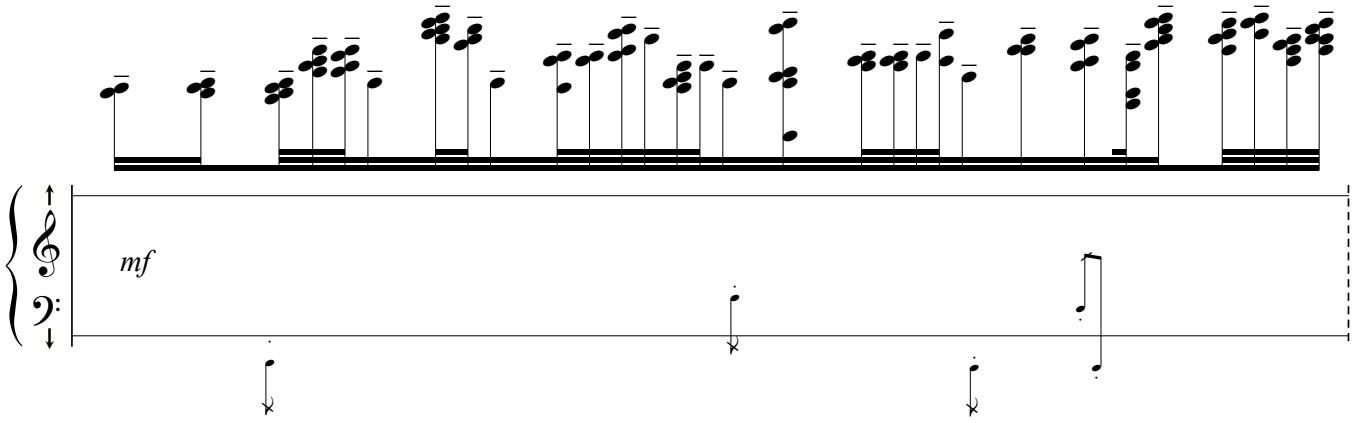
hold & release; very long or less long;
clusters and sometimes far reaches;
appearing to have purpose;

deep pluck



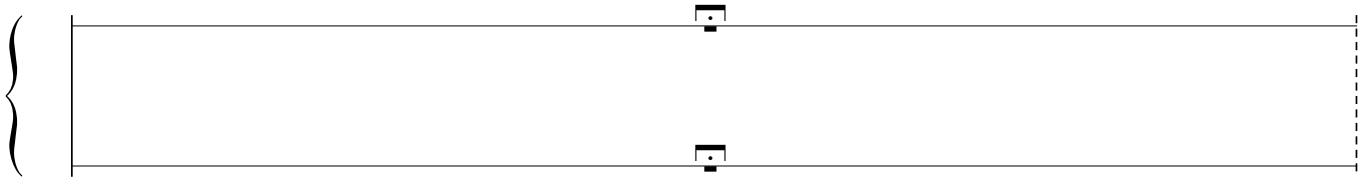
nail or thumb; find harmonics, or not;
easy or forceful;
allow some to resonate; animate

morse



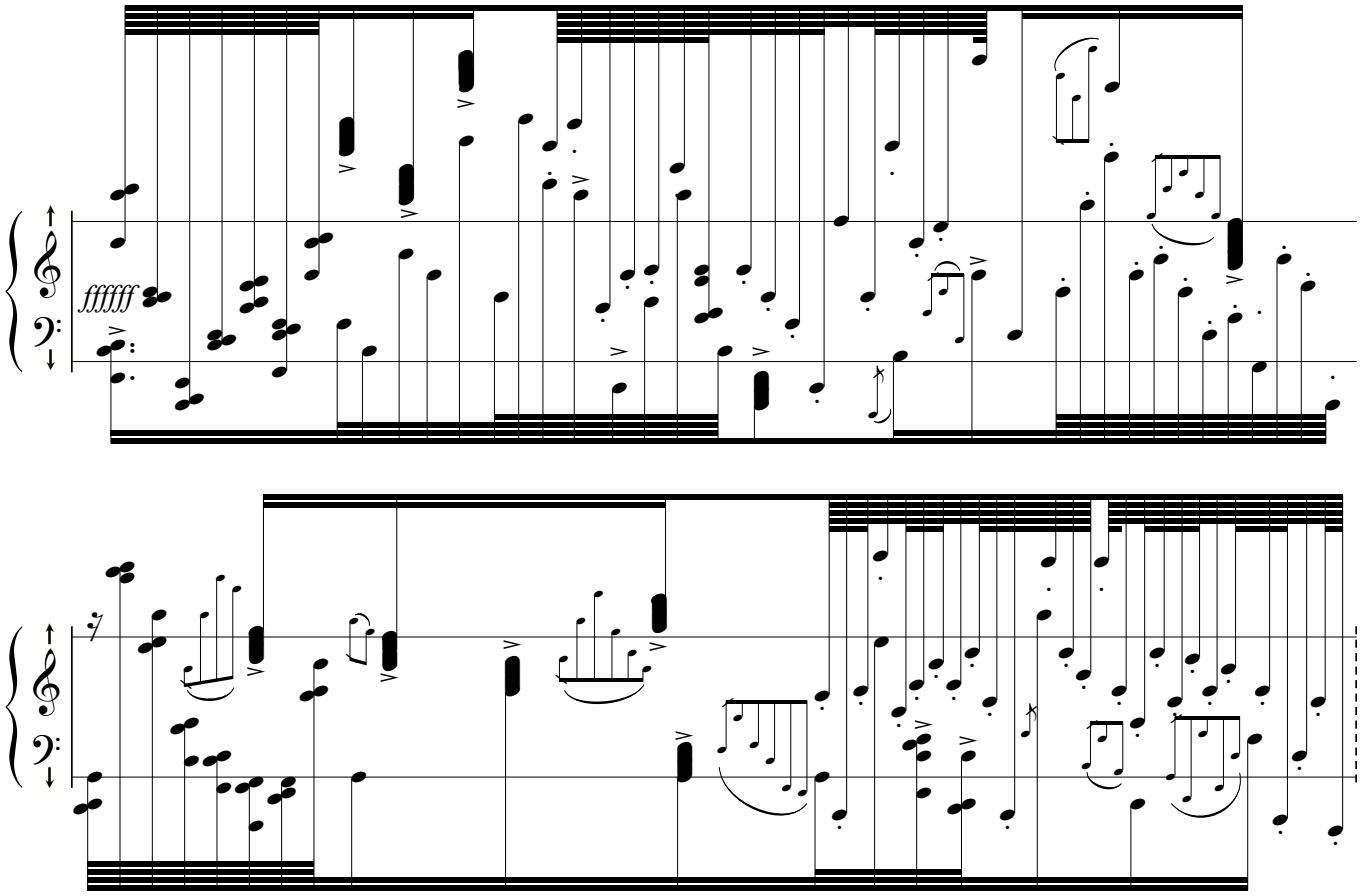
regular, a little; tap it out, detached;
articulate below;
as if there's something to say;

listen



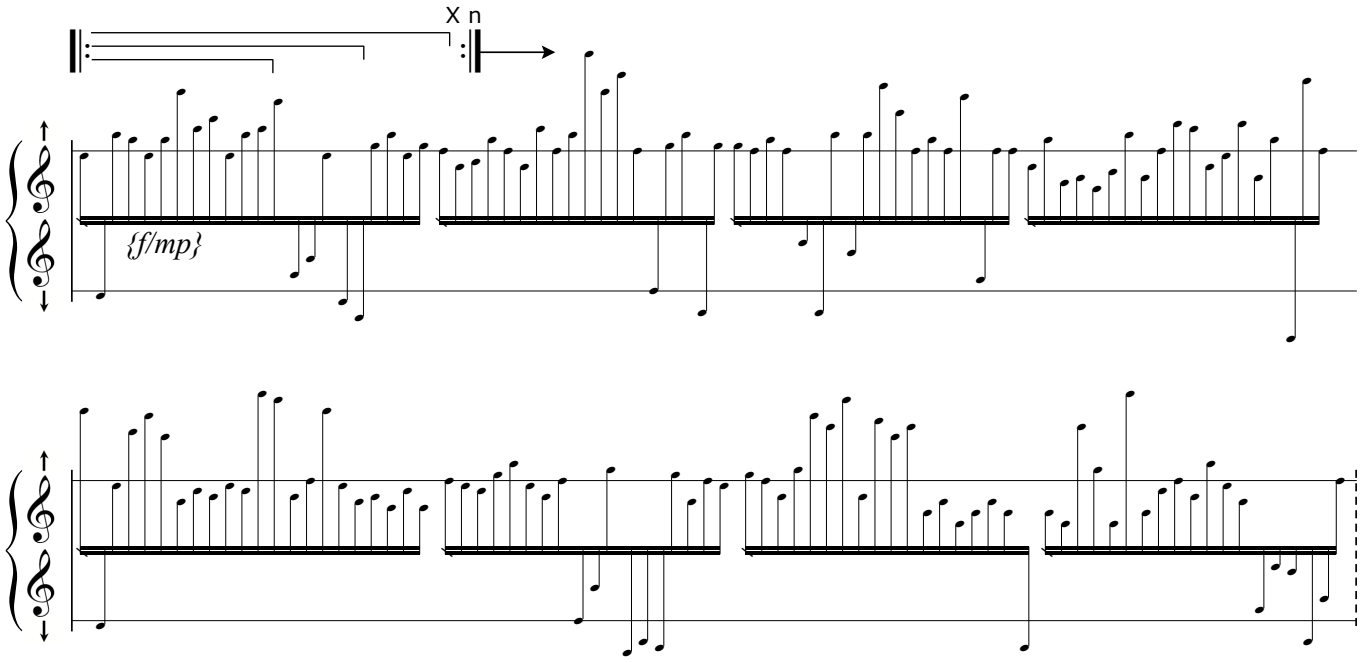
as if something is being said;

monster



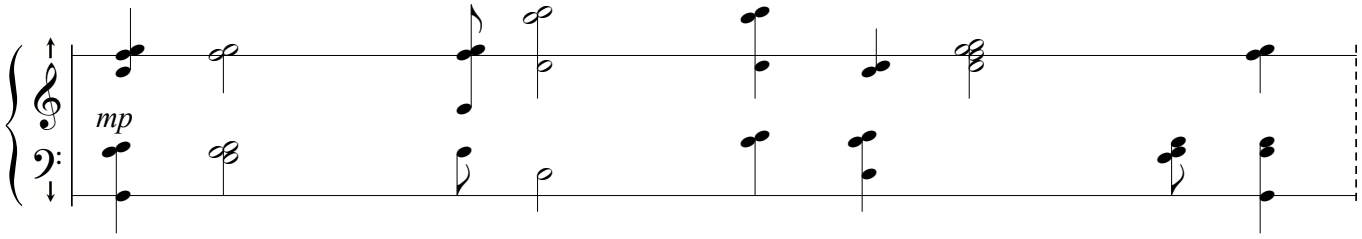
almost in control; excessively loud & unremitting;
mechanical maniacal;

roundabout



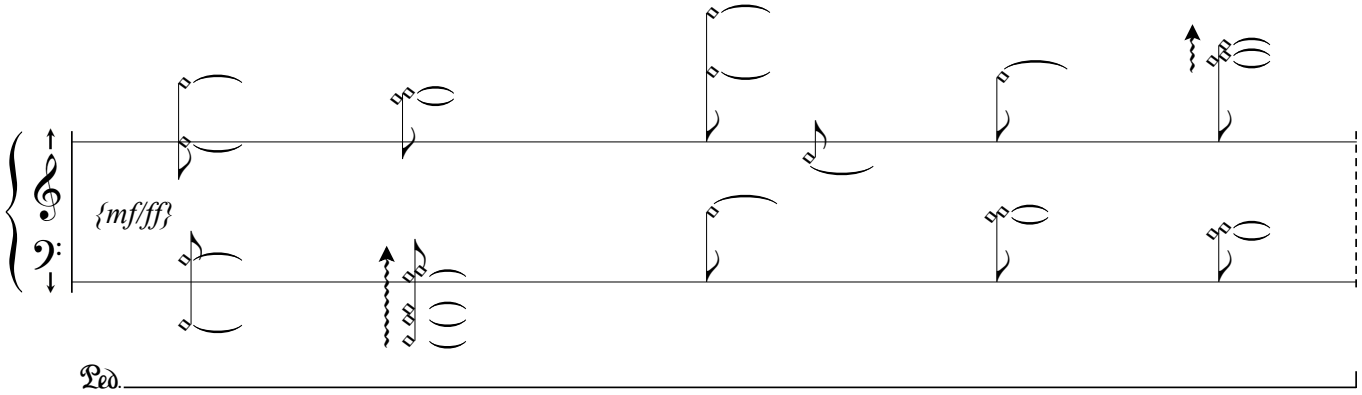
even, well-articulated; not forceful;
always in-and-out of repeats to vary in length & number;
flighty;

sweeet



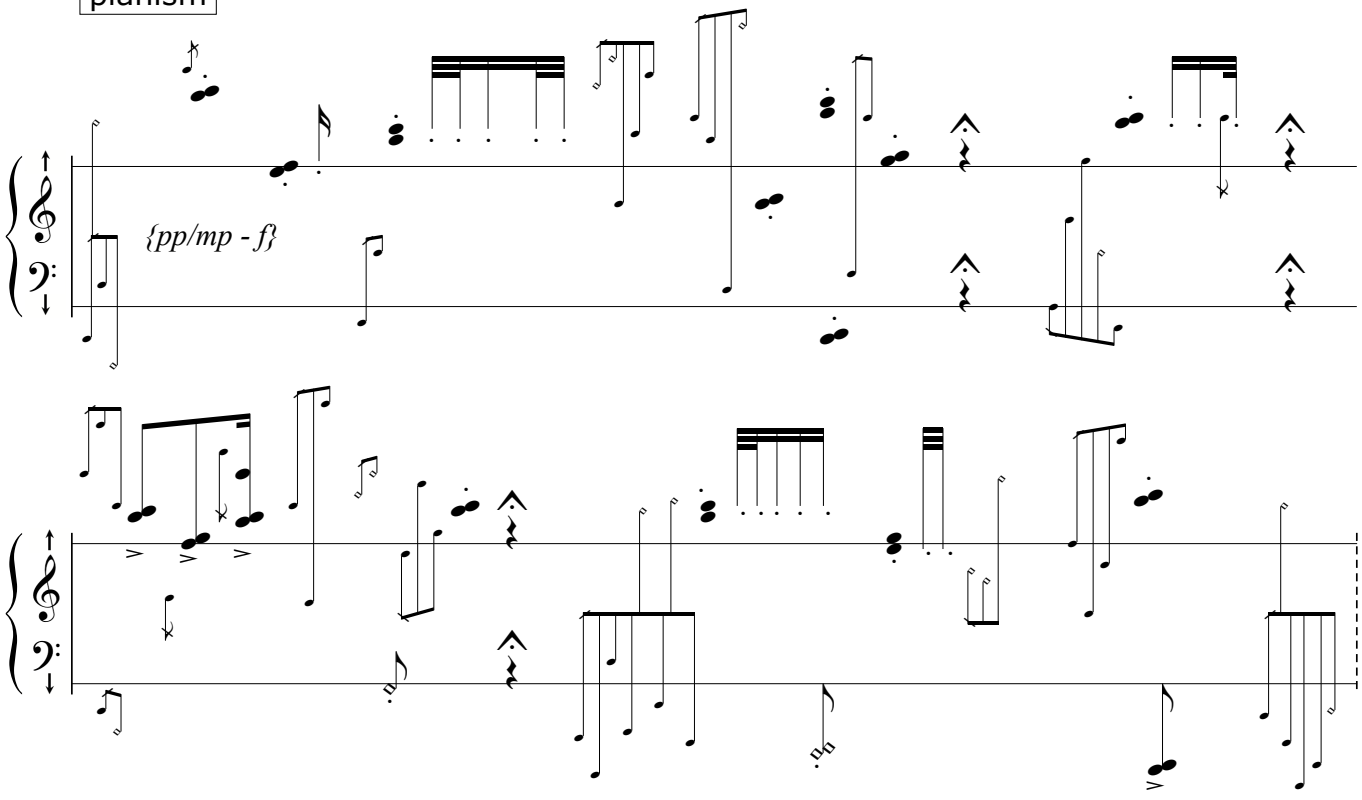
try to sound out-of-tune; favour clusters;
explore similar groups with slight changes;
sickly;

aurora



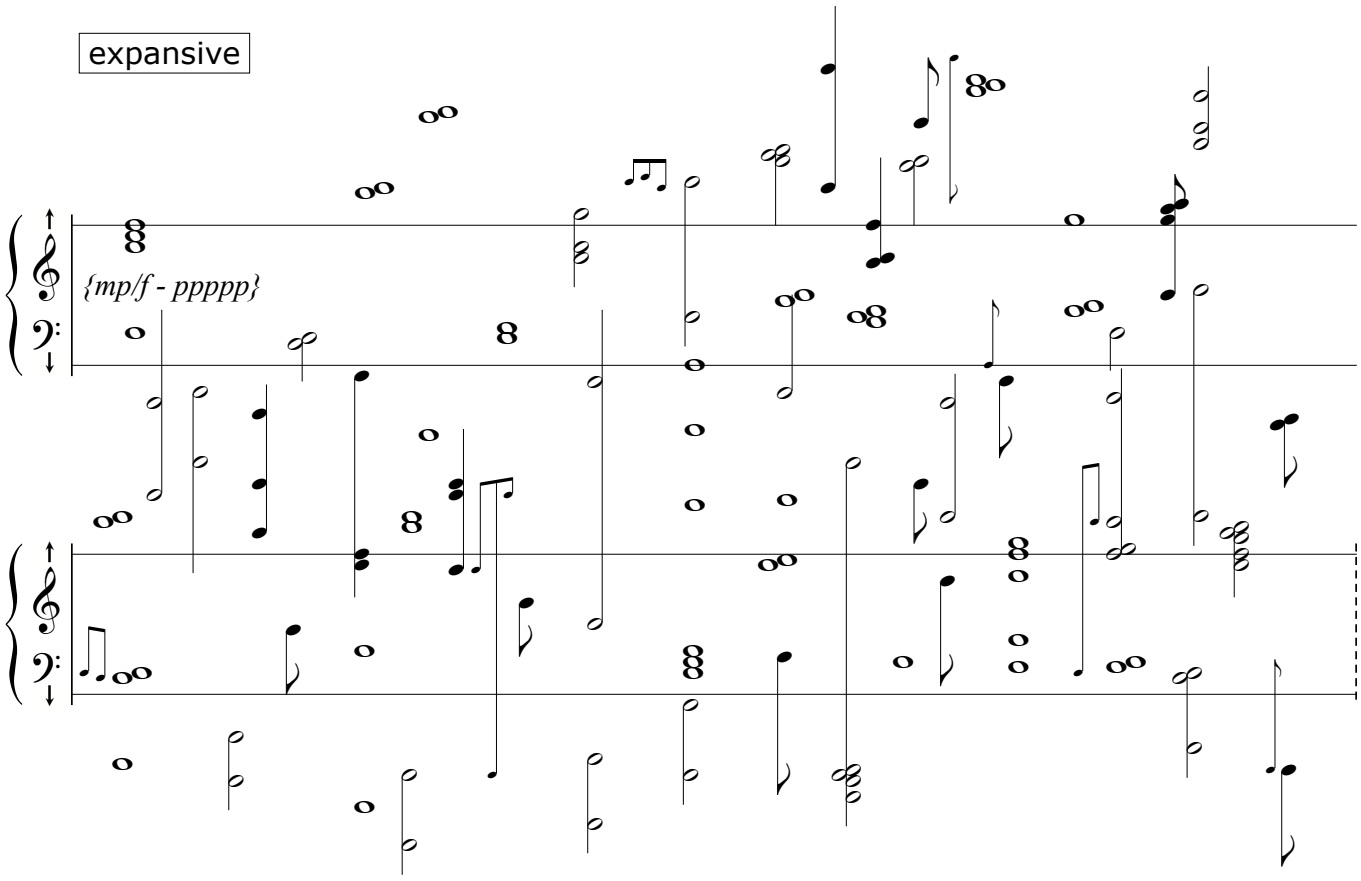
plucked or swept; experiment; dampen or harsh;
ring, finger or nail on string; resonant;

pianism



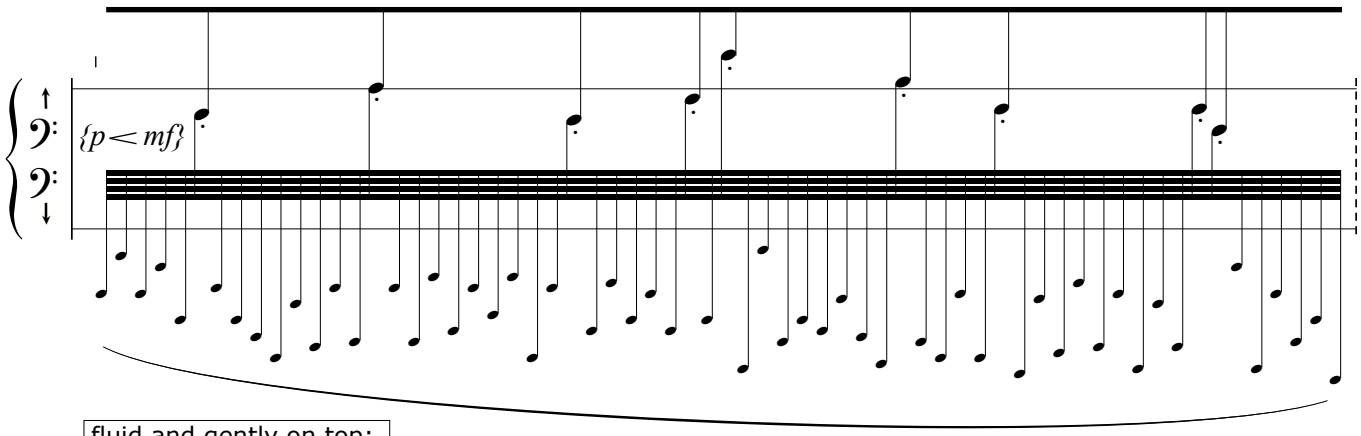
constant change; lightly, mildy percussive;
vary hammer & pluck; caprice no consequence;

expansive



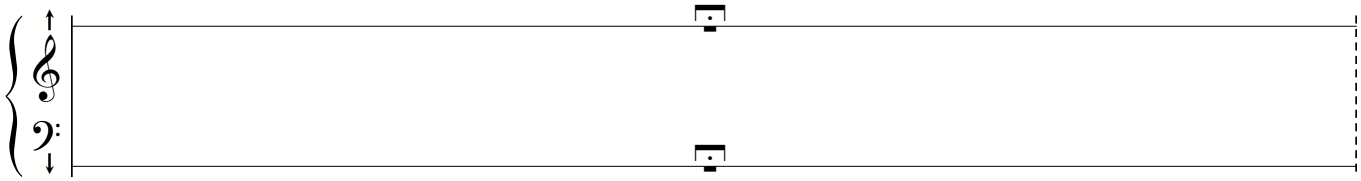
full range with a far reach; chordal in extremis;
pondering but aimless;

notwalking



fluid and gently on top;
breathing with pause;

listen again



as something might yet is said;