William Kleinsasser

Polymer Thread

for improvising instrument with computer processing

(2011)

Duration: c. 15 minutes

For Dave Ballou

PERFORMANCE NOTES

Instrumentation

improvising instrument

computer processing using composer-developed Max/MSP software entitled "Spectral Prism Polymer" is used throughout as an expansion on the sound of the acoustic instrument. See note below.

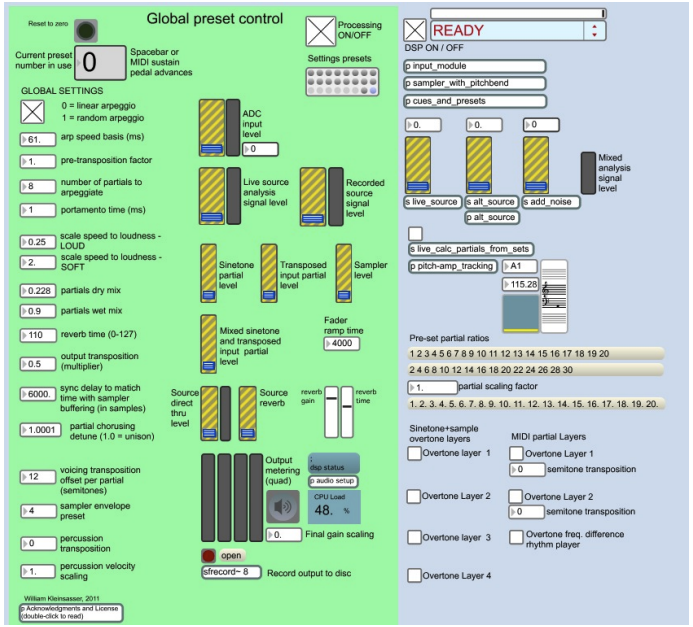
Notation Details

Accidentals apply to all notes of that pitch class regardless of octave and are cancelled by bar lines.

Rhythm in this score is notated using proportional notation[1] in which complex rhythmic events are notated across a graphic measure without traditional symblic durational notation. This notation is intended to represent complex, subtly non-synchronized event timing without overly complex notational symbols.

[1] In order to simplify the production of this form of notation, the composer commissioned Tobias Giesen to create a Finale software Plug-in that converted complex rhythmic patterns into simplified, proportional, beamed notation. This plug-in is now part of the TG Tools plug-ins for Finale software available from Tobias Giesen (www.tgtools.de).

To use the software, a close-position microphone is used for the improvising instrument ideally with no pickup of instruments other than the improvisor.



ABOUT THE MUSIC

About this piece the composer writes: *Polymer Thread* for freely improvising instrument and computer was composed in 2011 for Dave Ballou. It is a fifth iteration through the design of *Innocent Proteins,* which was composed between 2001-2003.

Interconnections with other compositions

The composition, and its related works, *Innocent Proteins, Protean Profile, Gossamer,* and *Folded Gossamer*, are part of a larger set of pieces made from an original set of three pieces, entitled *Triptych*, which presents an expanded design based on the musical expression of beginning, continuation, and endingand can either be performed independently or together with the other pieces. *Polymer Threads* presents one of (at the time of its composition) five paths through the second piece in *Triptych* and thus expresses musical continuation as an underlying metaphor. This metaphor is also expressed in the musical rethinking and redevelopment of several previous works composed for Daniel Koppelman and Ruth Neville over the past several decades *(Spiral* (1986), *Free Shadows* (1994), and *Available Instruments* (1998)). In addition to its connections to *Triptych, Gossamer,* and *Folded Gossamer,* the computer music in this piece is composed from elements taken from the composer's work for symphony orchestra entitled *Many Rivers* (2010). *Polymer Threads* is similar to *Gossamer* just as *Protean Profile* is related to *Innocent Proteins* in that it is a reconsideration of the work with an added element of computer music that is connected to the acoustic ensemble of the original *Gossamer.* In *Polymer Thread* the music of *Gossamer* is realized in the computer music allowing the piece to be performed as a solo work by a single instrumentalist.

The Musical Design

Unlike *Innocent Proteins* and *Protean Profile,* which are composed of repeating phrases following classic rhetorical models that control repetition and presentation of new ideas, the composed parts of *Polymer Thread (*and its related pieces *Gossamer* and *Folded Gossamer)* are made as a set of through-composed continuous variations providing a musical space, field, or context for the discursive improvisation by the solo improvising instrument.

The Computer Processing

In performance, the software tracks the pitches played by the improvising soloist (using Miller Puckette's sigmund~ Max/MSP external object) and creates synthesized harmonic and non-harmonic partial arpeggiation layers and a pre-composed MIDI seqence layer that track the pitch inflections of teh soloist and respond in kind. These layers are mixed in a quadraphonic speaker array around the audience with the slightly-amplified solist performance. The balance should result in a fully-integrated layering of sound without obscuring the acoustic instrument, which can be slightly amplified and mixed into the quad speakers along with the computer music.

Acknowledgements and Attributions

SPECTRAL PRISM POLYMER PERFORMANCE SOFTWARE is based on standard-issue Max/MSP objects with the exception of the NewVerb by Richard Dudas and sigmund~ by Miller Puckette.

SPECTRAL PRISM POLYMER PERFORMANCE SOFTWARE owes to the following Max/MSP developers who have offered models and suggestions during development: The sampler and buffer playback approaches are modifications based on Les Stuck's anticlick and anticlick-voice sampling examples in the Max/MSP distribution. The reverb module is based on Richard Dudas' NewVerb external with modification including addition of buffer clearing and NAN protection using Joshua Kit Clayton's bitsafe~ object.

Samples percussion, bass, piano, and electric guitar are from the Community Audio Open Source Library. Other samples of piano are from samples made and shared by Soeren Bovbjerg [http://www.hum.aau.dk/~bovbjerg/piano.html]. These recordings are used with permission by these creators for a composition context such as this but are not to be used for general sampling outside o fthe context of this use.

SCORE IN C

Polymer Thread

For Dave Ballou

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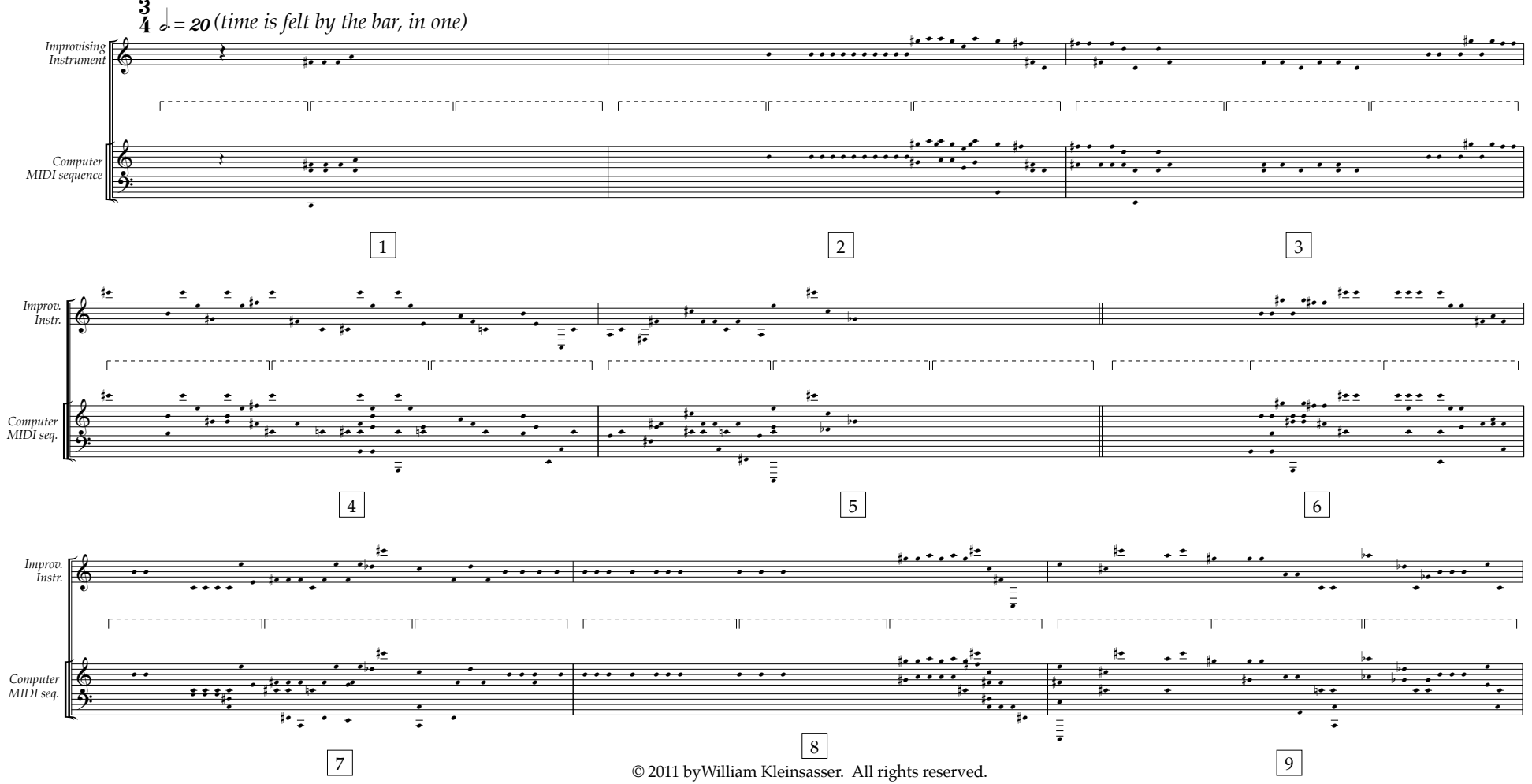
Solist improvises completely freely throughout with pauses as determined by the improviser playing with and/or against the musical context of the computer. The notation, which can be disregarded, indicates pitches of the composite computer pre-recorded MIDI sequence is playing during each measure (some octaves removed for clarity). The computer also adds layers of overtone spectral synthesis based on the pitches and dynamics played by the soloist. An additional percussive layer can also be included in the computer, which plays rhythms based on the ratios of the synthsized overtones.



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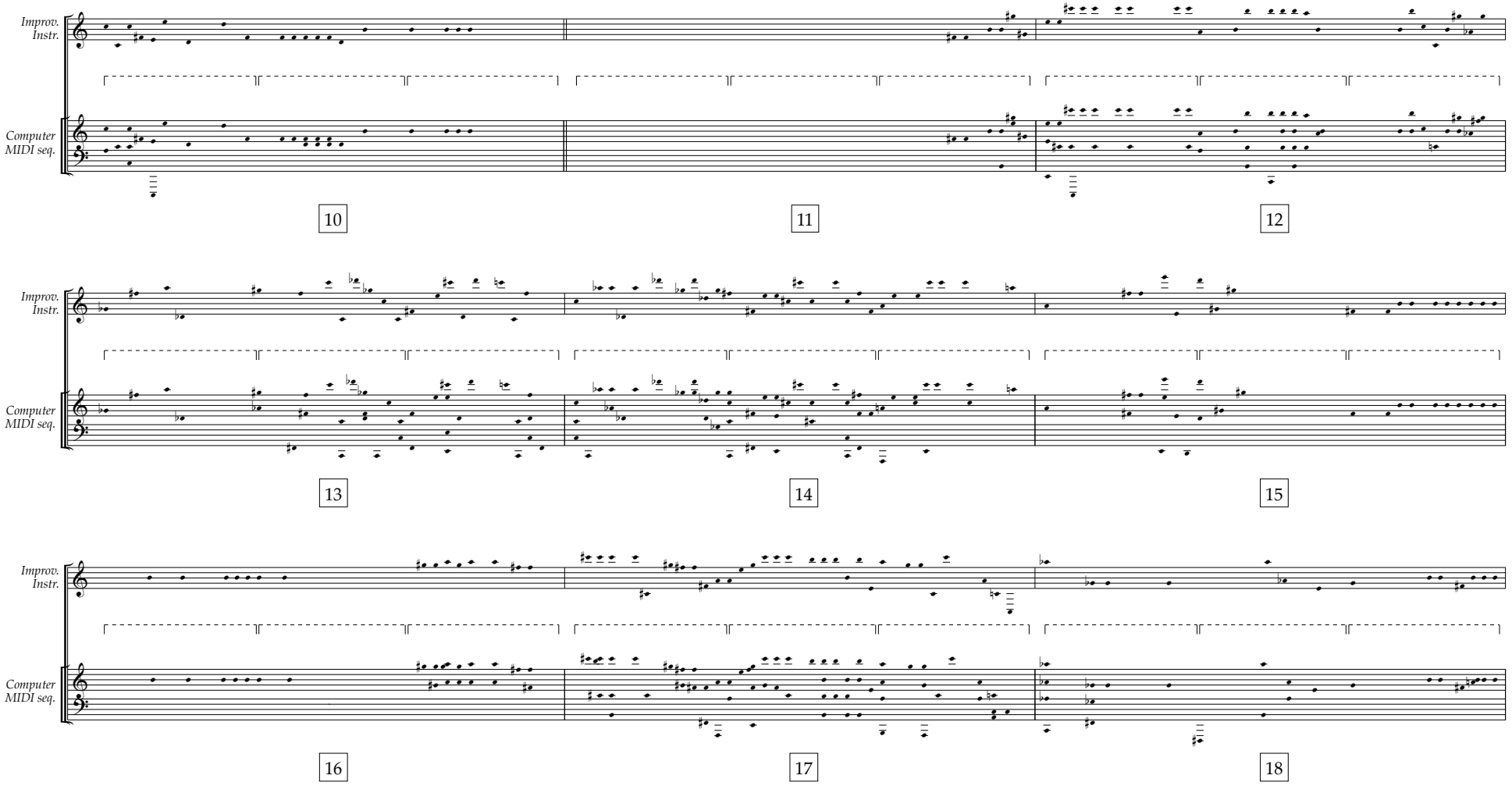
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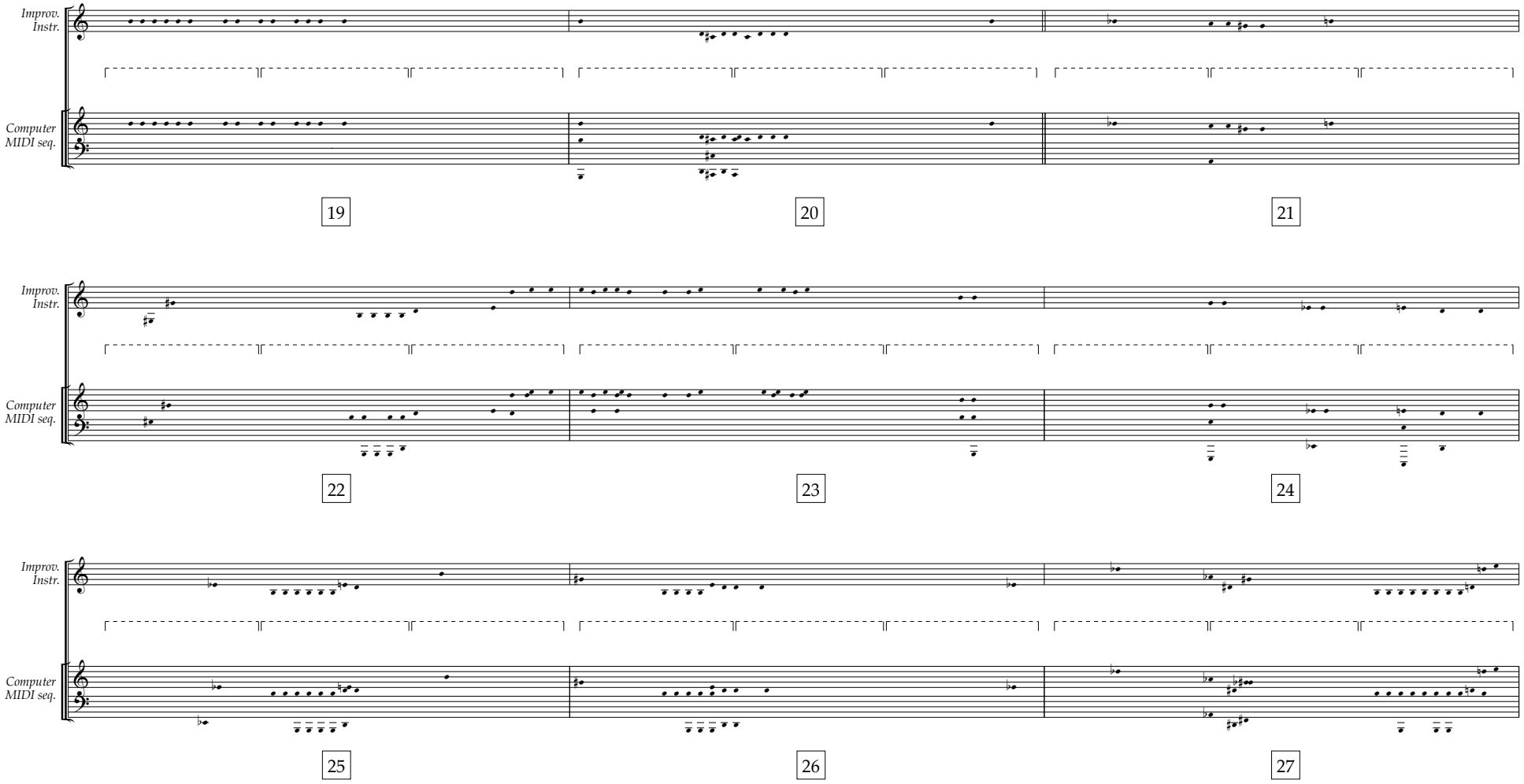
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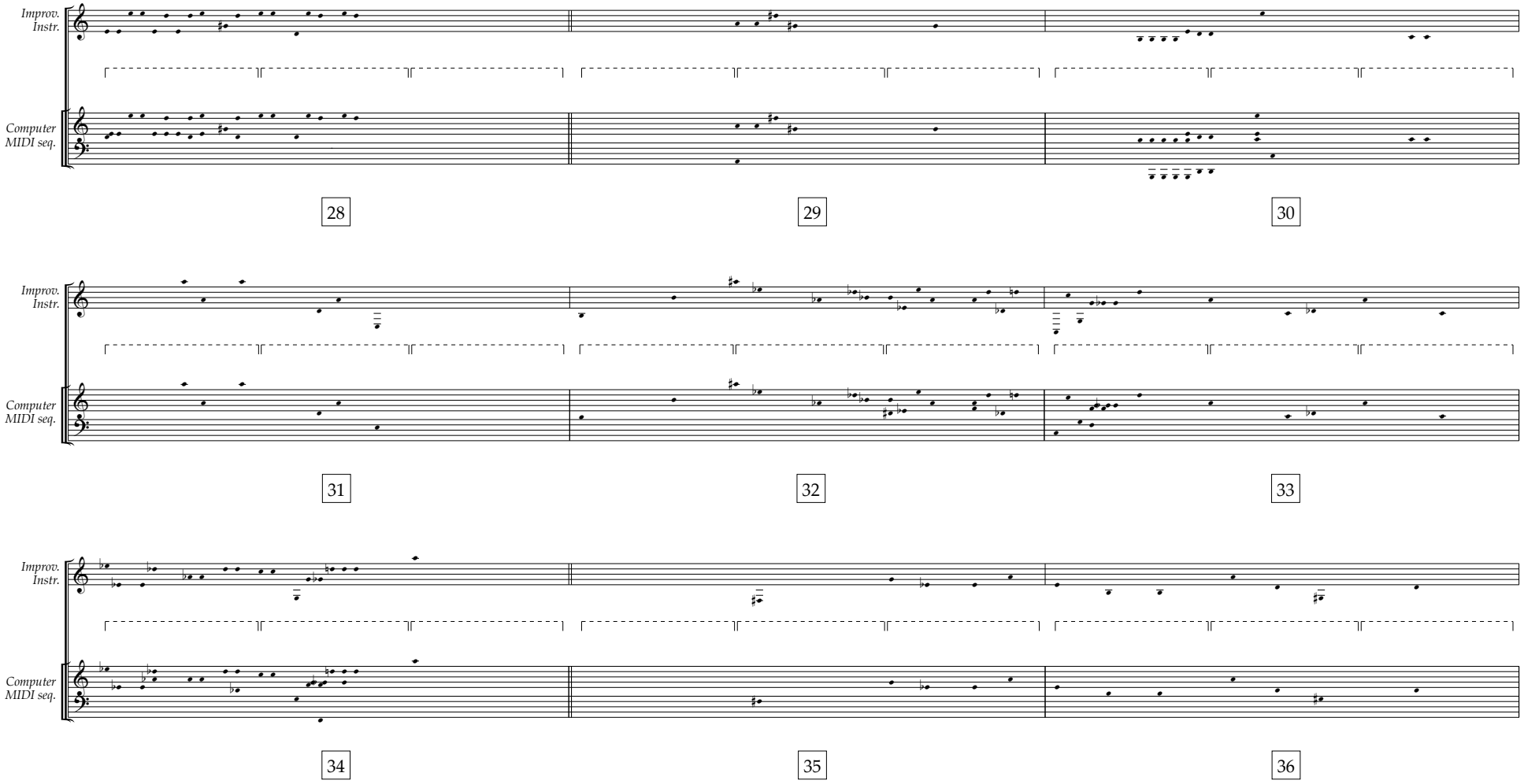
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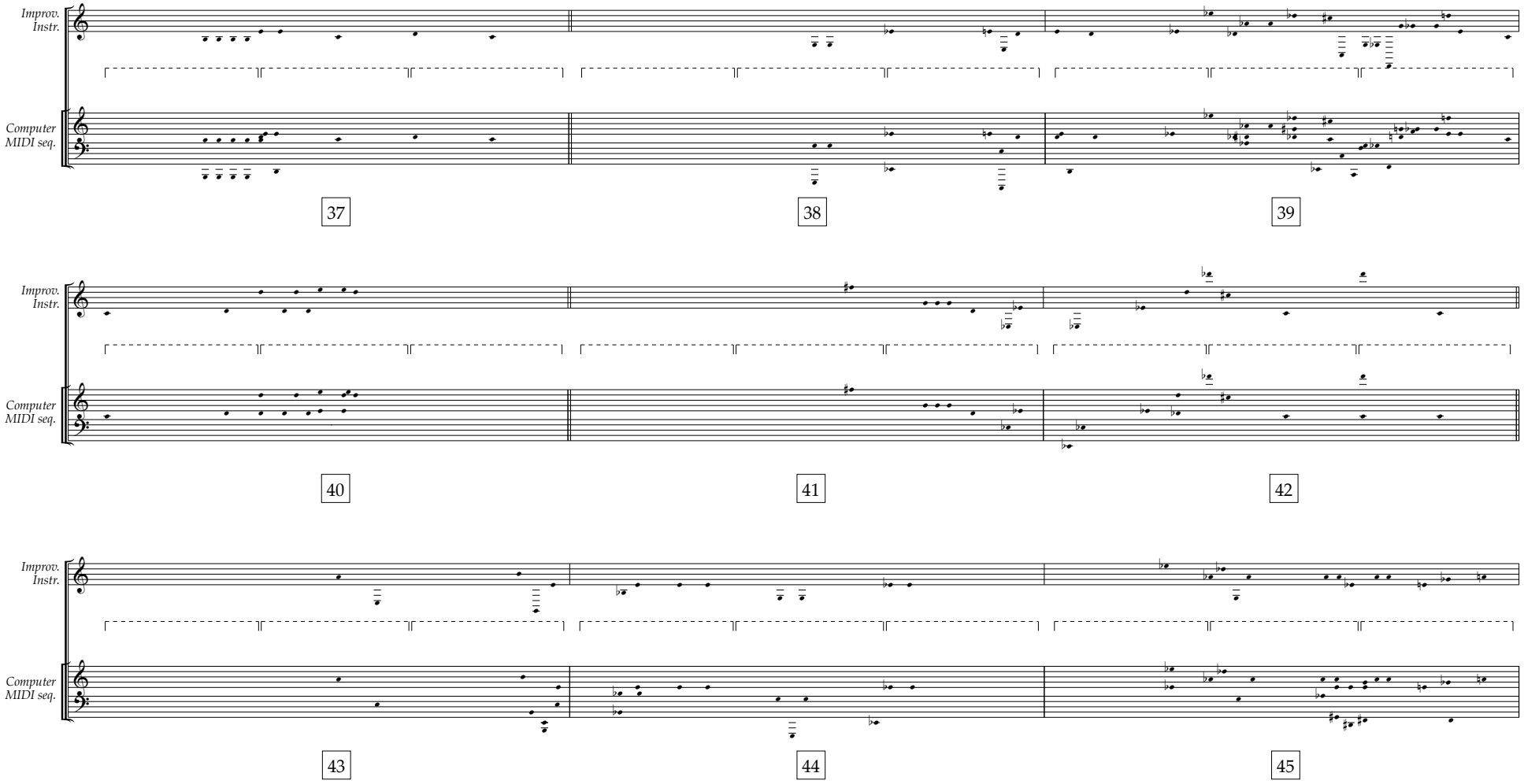
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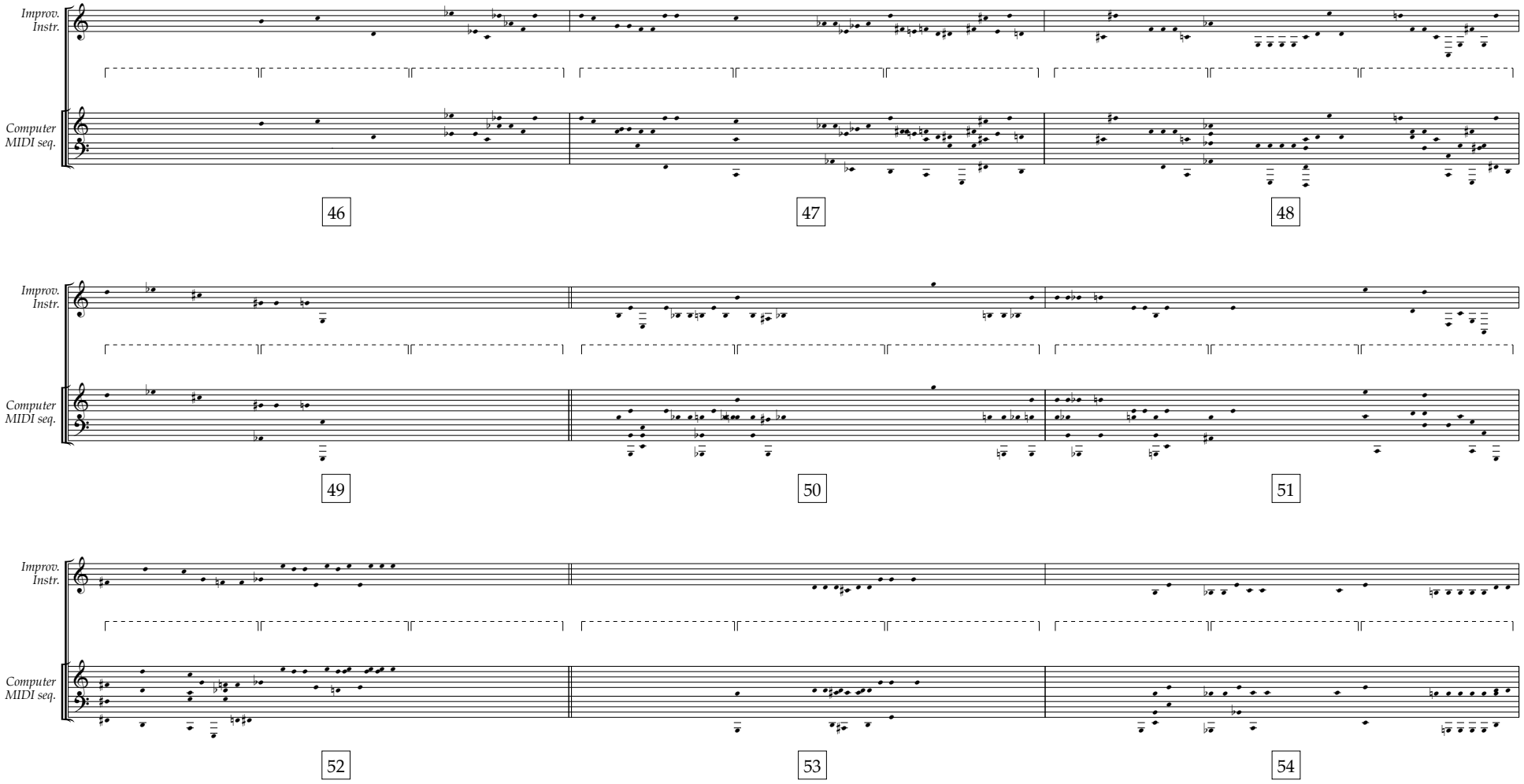
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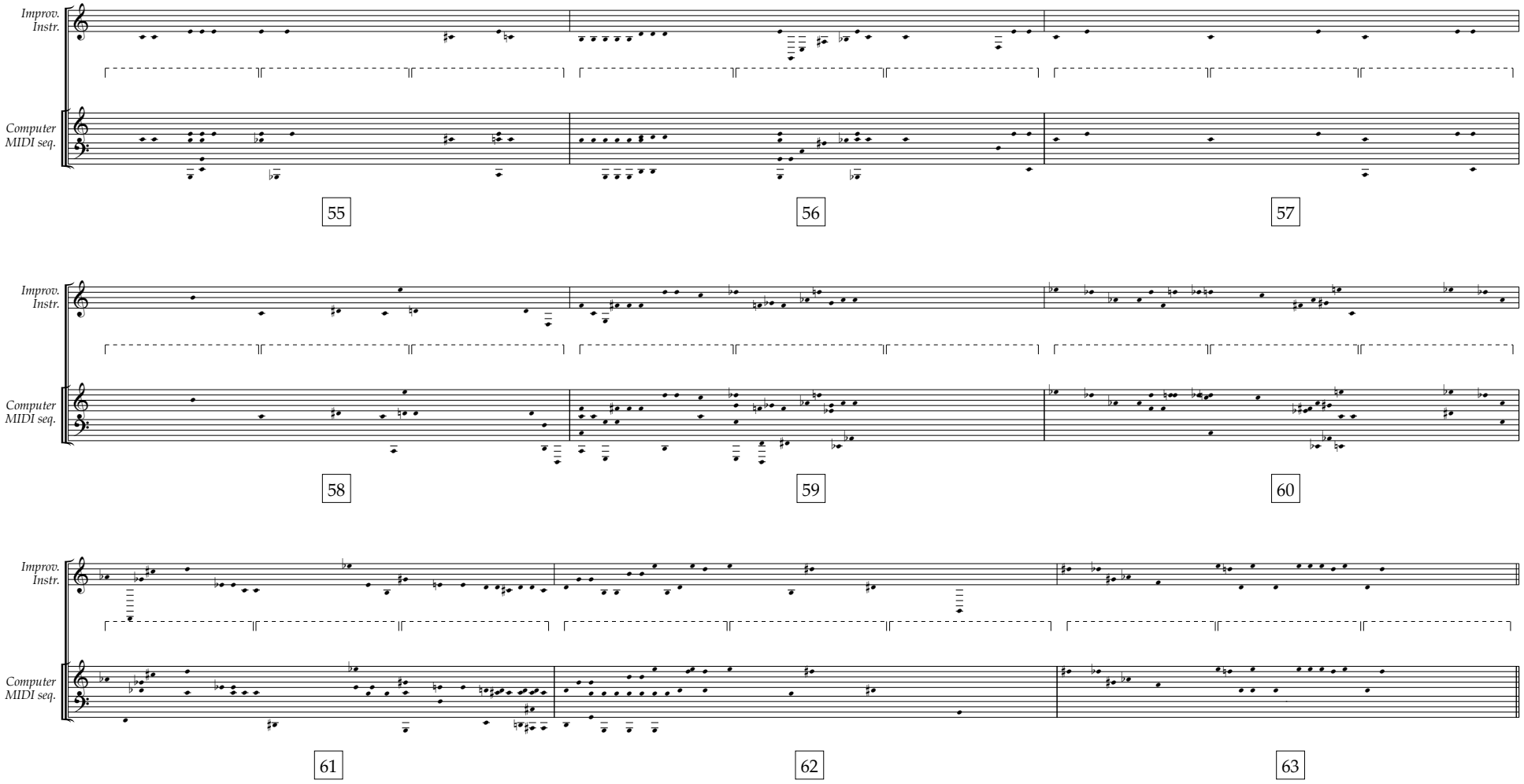
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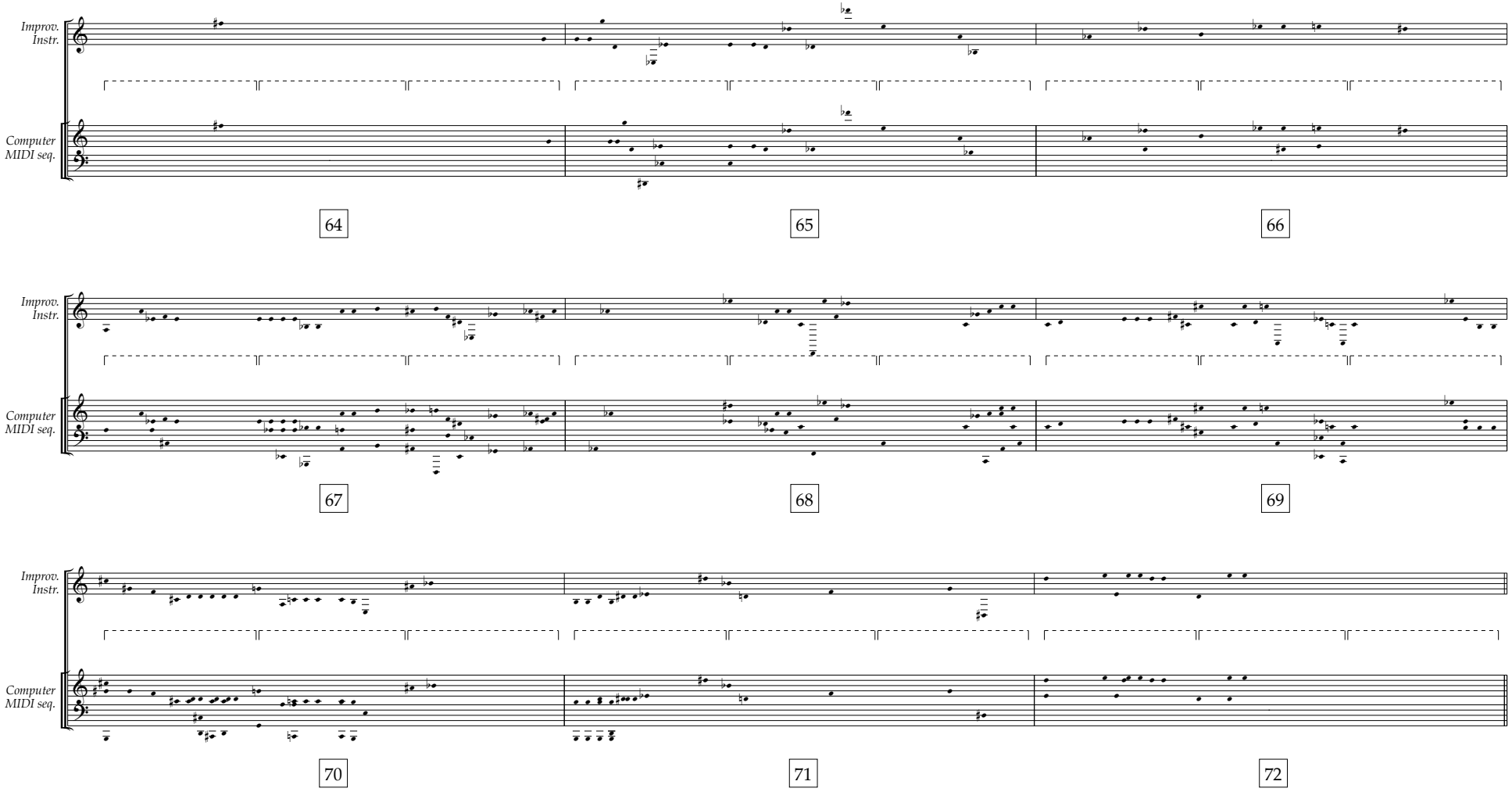
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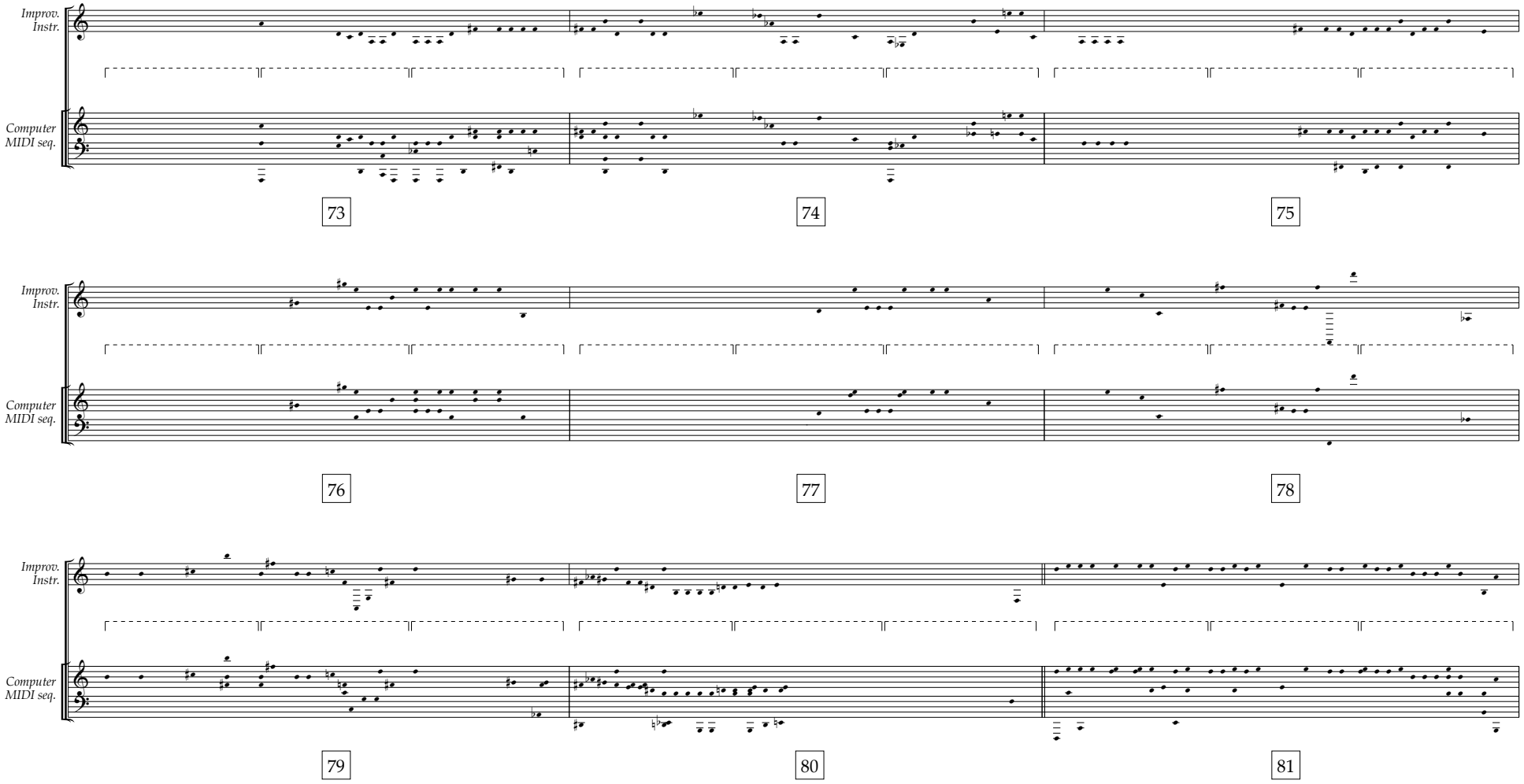
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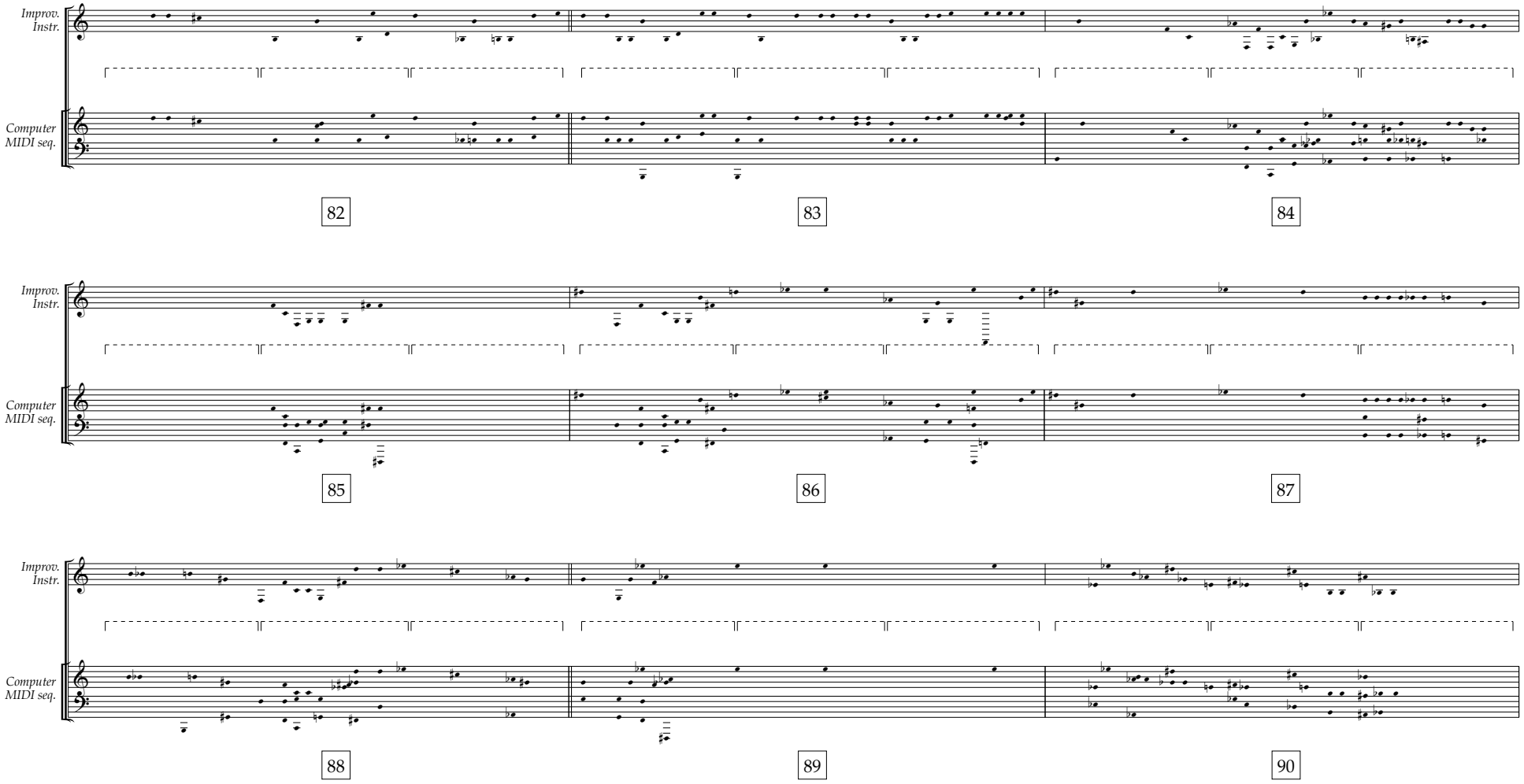
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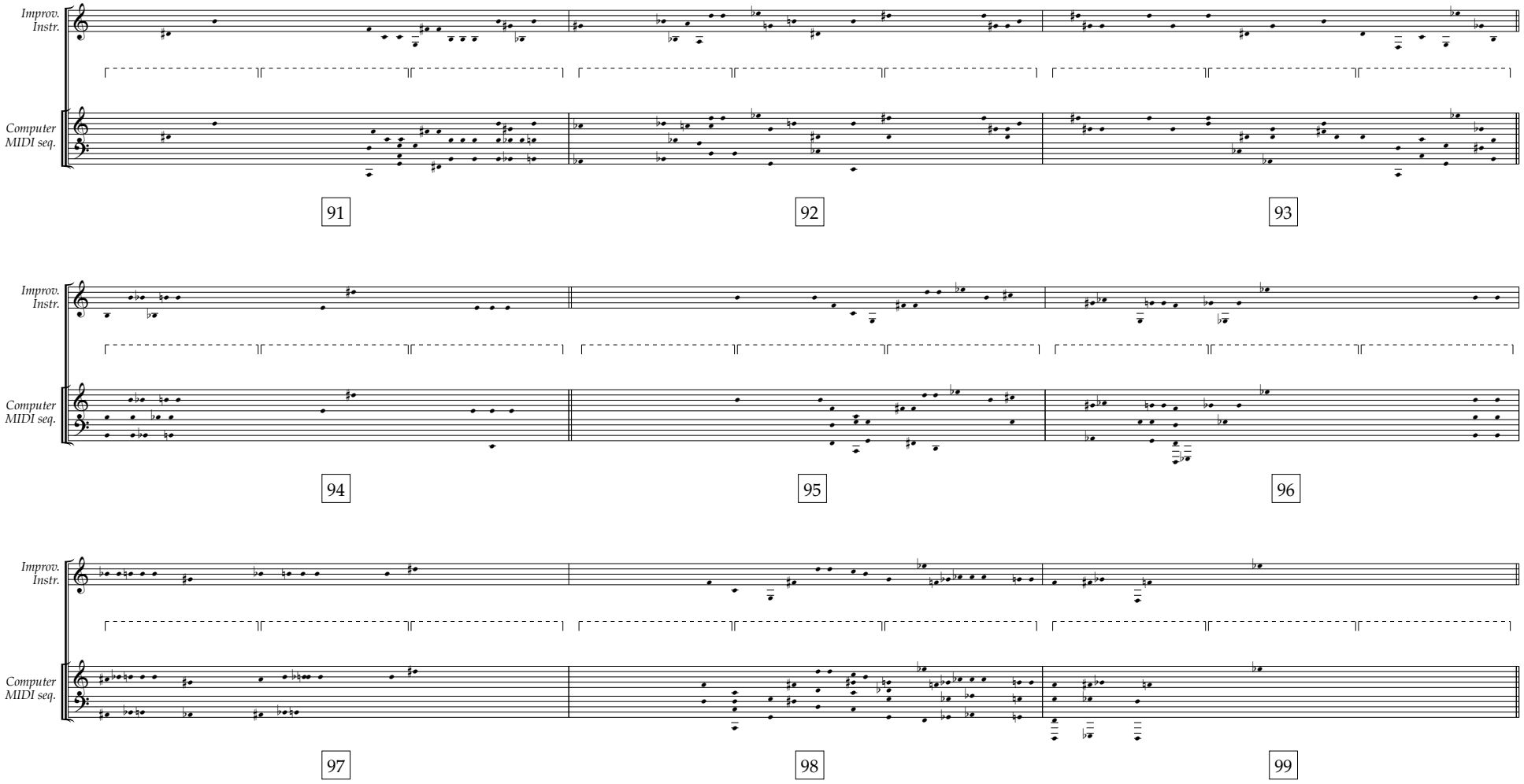
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