Osvaldo Glieca

Metrical Structures

Percussion Sextet

Generative Rhythm Algorithm based on the Schillinger System of Musical Composition

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Metrical Structures

Essay of a rhythm generative system based on the principle of the Schillinger System of Musical Composition

The most fundamental feature of music and one which is, by its very nature mathematical, is rhythm. Primordially, music arises from rhythm and it is probably the most relevant feature in music. This has a particular relevance nowadays with the latest advent of music sequencers; the composition of many popular genres take rhythm or beats as the very first parameter to begin with. Music can be summarized as a temporal art in which the organization of a pulsation is defined within a given metrical framework. Compositional techniques in rhythm are generally quite flexible enough to create intuitively, rhythmic patterns that may be based on various combinations of short and long sounds.

This essay focus on diverse metrical arrangements as the basis for the formation of rhythm. The approach is to build rhythmical structures expressed as if is a written language formed by phrases with pauses, pulse-inflections, stresses, cadences, and accents; all of these which are present in music as well. (See Schoenberg on his “Fundamental of Musical Composition)

The arrangement of rhythm can be associated at first glance to a metrical process made by different pulsation. These pulsations are arranged into a timeframe of a certain number of beats. Essentially, it is like working with different time signatures at the same time; this creates a cross-metre and can produce poly-rhythmic results even when the figures are quite simple in their own nature.

Metrical Structures is divided into a structure of 12 crochet beats. Then a first subdivision take place to form two structures which determine the pulse-length inside the dominant metre (the 12 crochet beats); the first one is based on a 5+3+2+2 pattern, the second on 4+5+3. A second subdivision occurs to define the pulse of these bars to better accentuate their different length and relation. The third subdivision shapes the rhythm in the whole structure of the dominant metre. Here, the formal numerical subdivision, and by having a clear structure, it is possible approach the rhythm creation working intuitively against the system that has generated a logical metrical arrangement, but keeping the reference framework. Once the rhythm section is established marimba and vibraphone can add a touch of colour and interplay. The technique of shifting or phasing the rhythmic figures - borrowed by Steve Reich - is also used sporadically. However, it is interesting to see how creates particular textures.

A further implication is to introduce a range of poly-rhythmic complexities combining the two subdivisions at the beginning one against the other. Here is a good practical common sense assigning to an instrument - the triangle and clave in this specific case - the responsibility of signaling the strong beat of the time-frame so that the players have a fixed point to refer to. (See also Gamelan players where gongs signal the entrance of new sections)

Once the poly-rhythmic structures are established, and the players are accustomed with it, more complexities can be brought on easily. Note also at the final section a smooth ending composed by a time-frame of only 3 and 4 beats in order to have a regular repeated pattern. Finally, the pitch material used for the marimba, an A minor pentatonic scale and for the vibraphone, a F# minor pentatonic scale.

London, August 2014

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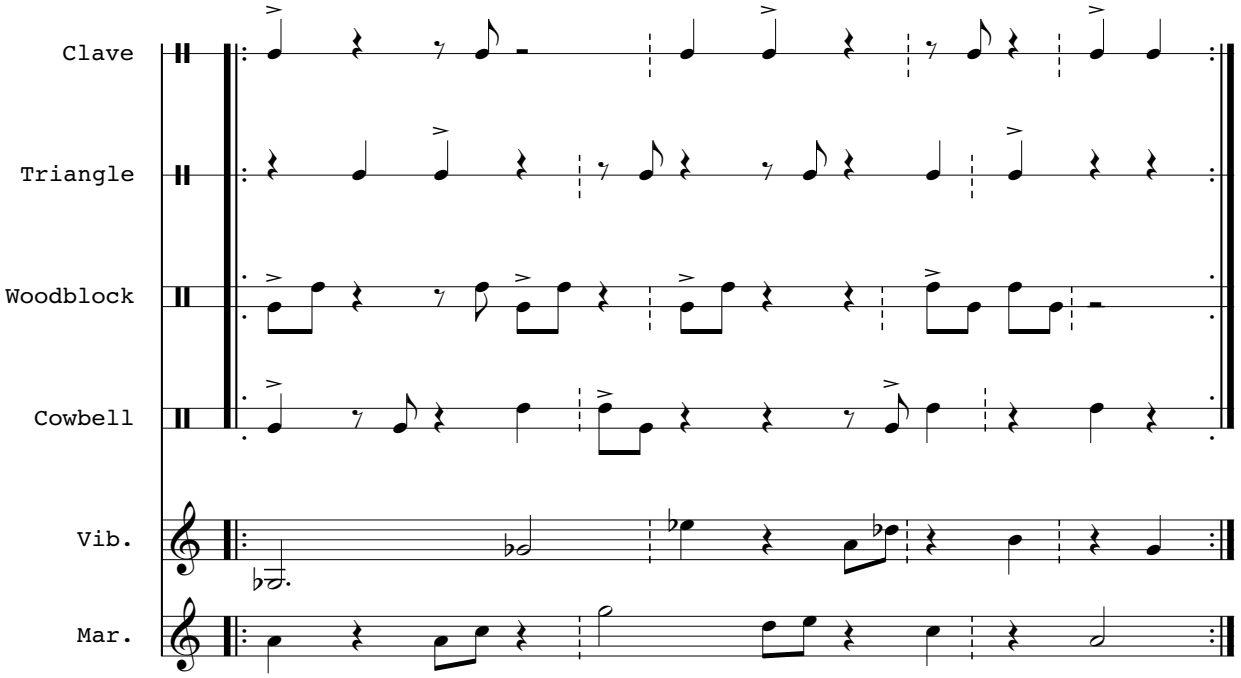
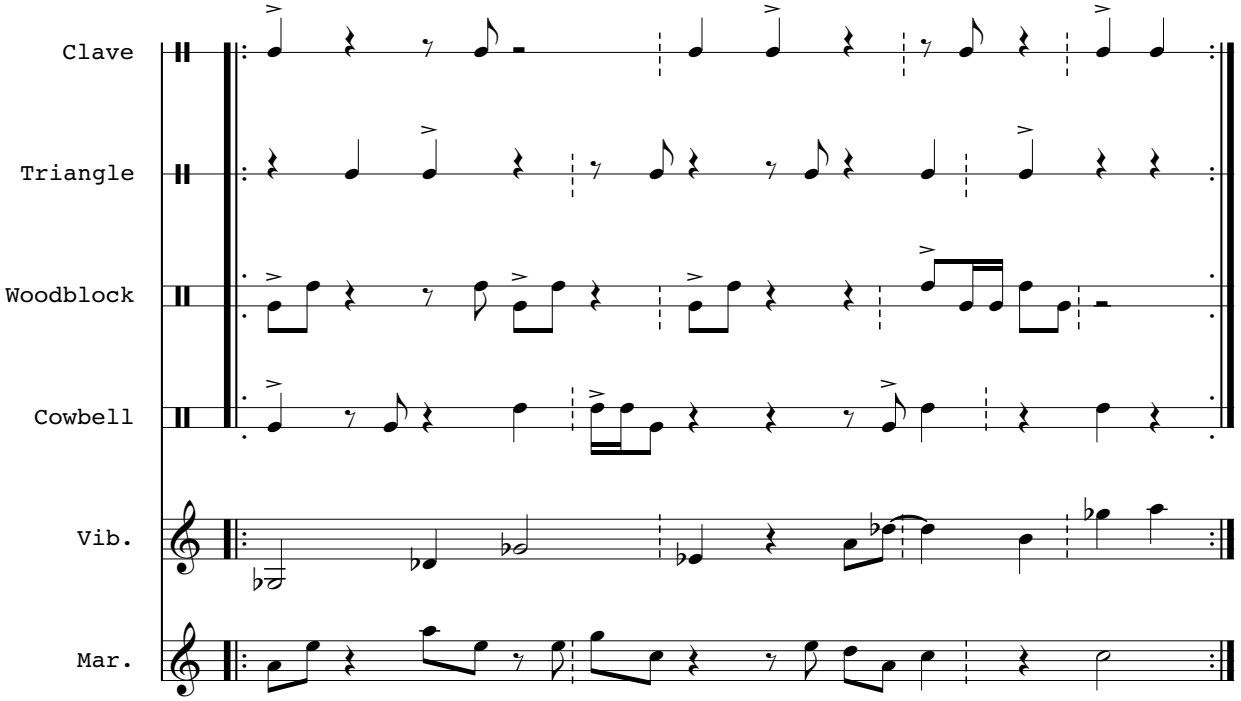
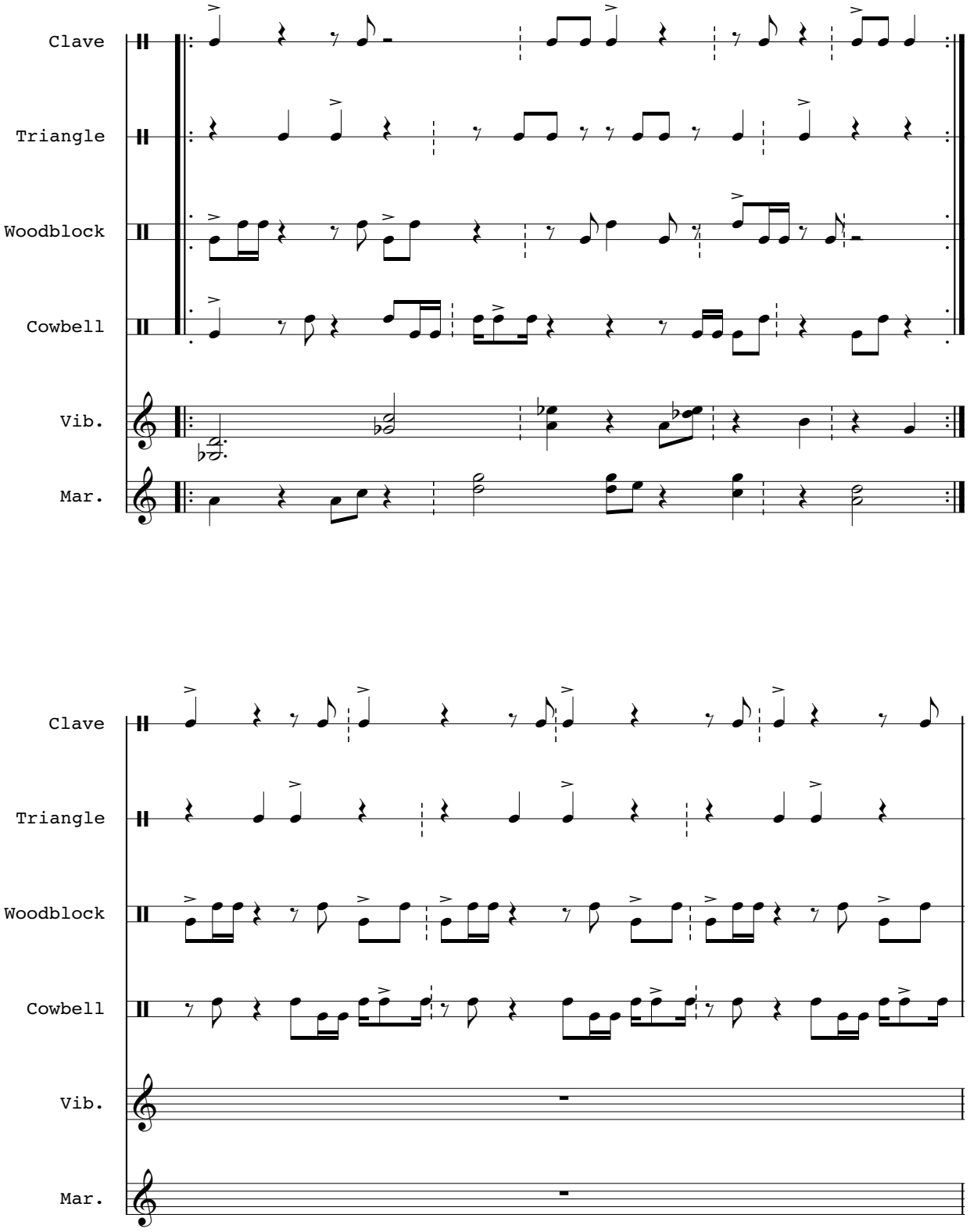
Triangle and Cowbell must be placed on a stand

Dynamics should be mezzo forte for all the ensemble
except for the Cowbells which should be mezzo piano



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Clave
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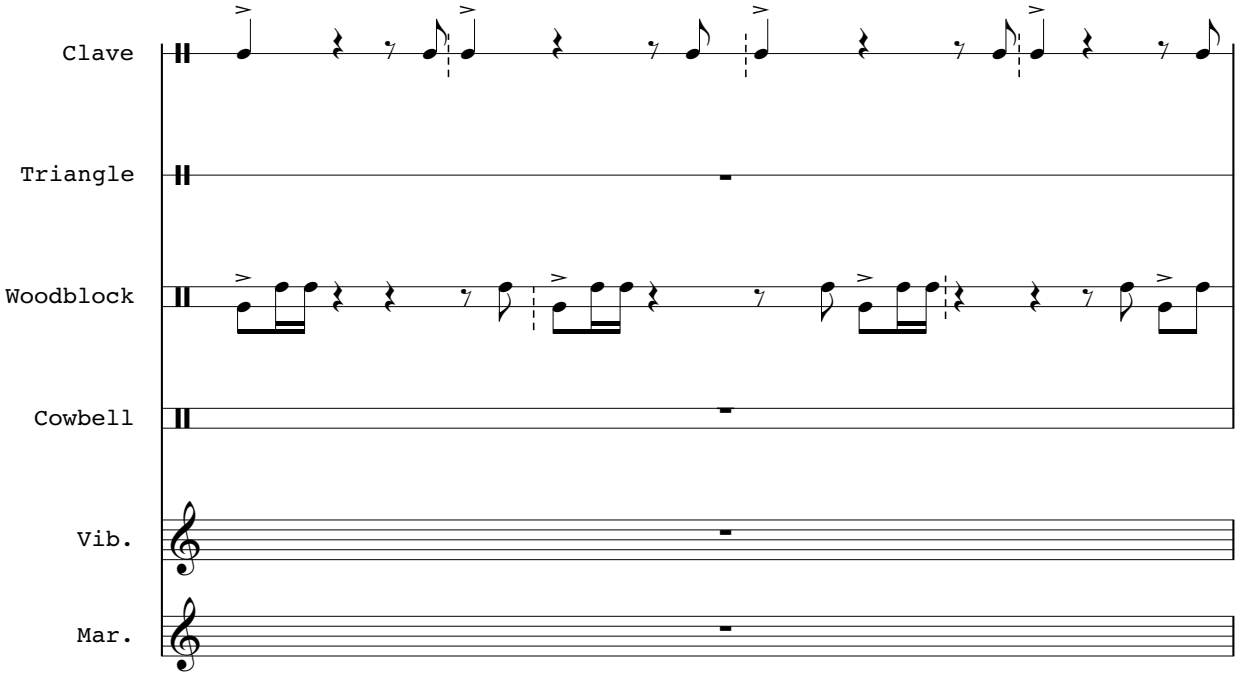
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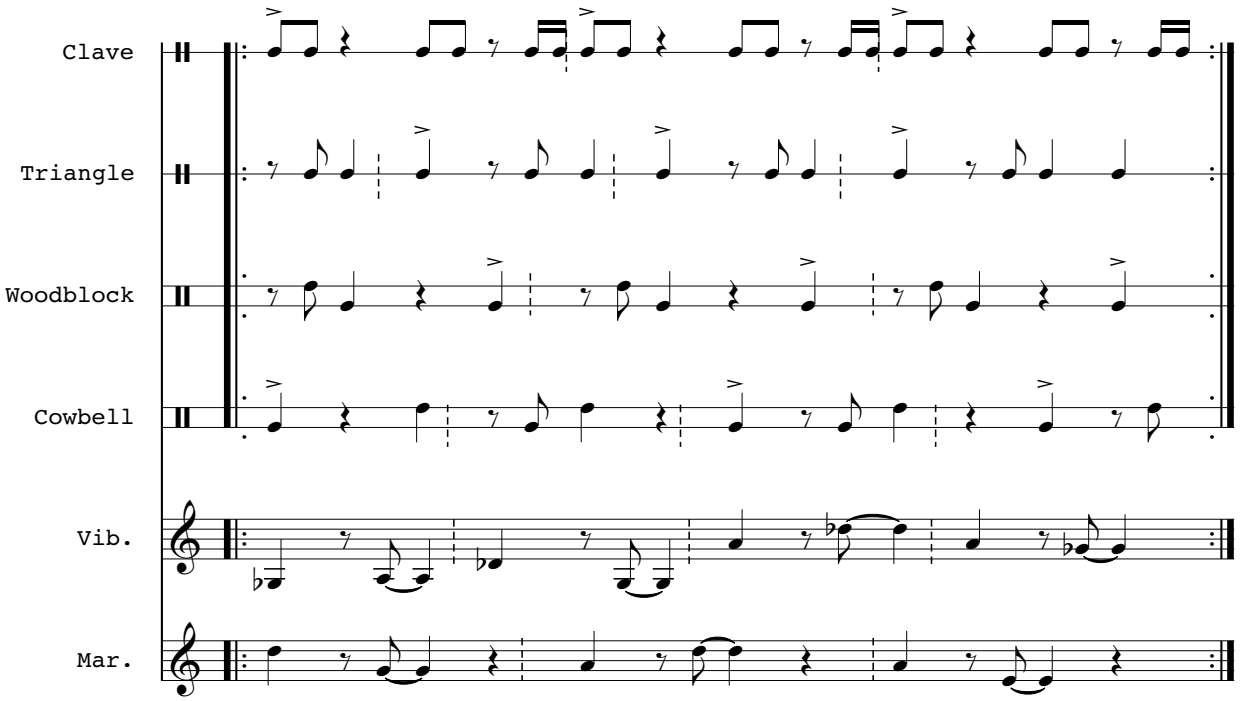
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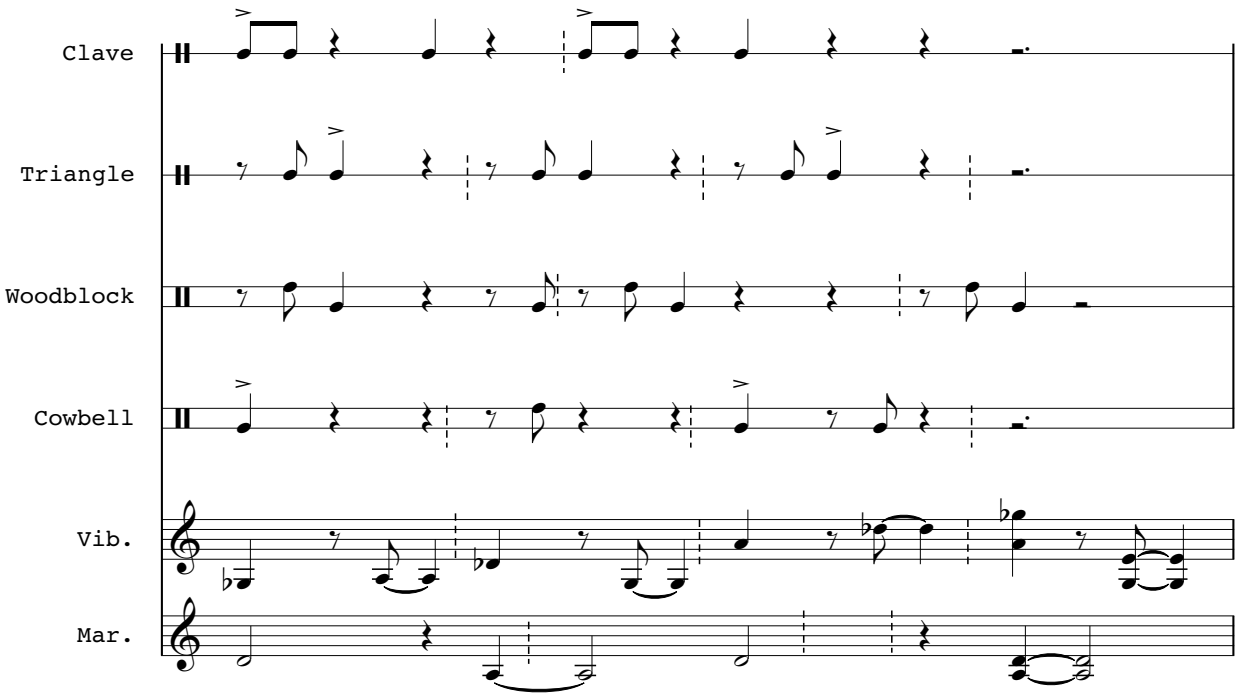
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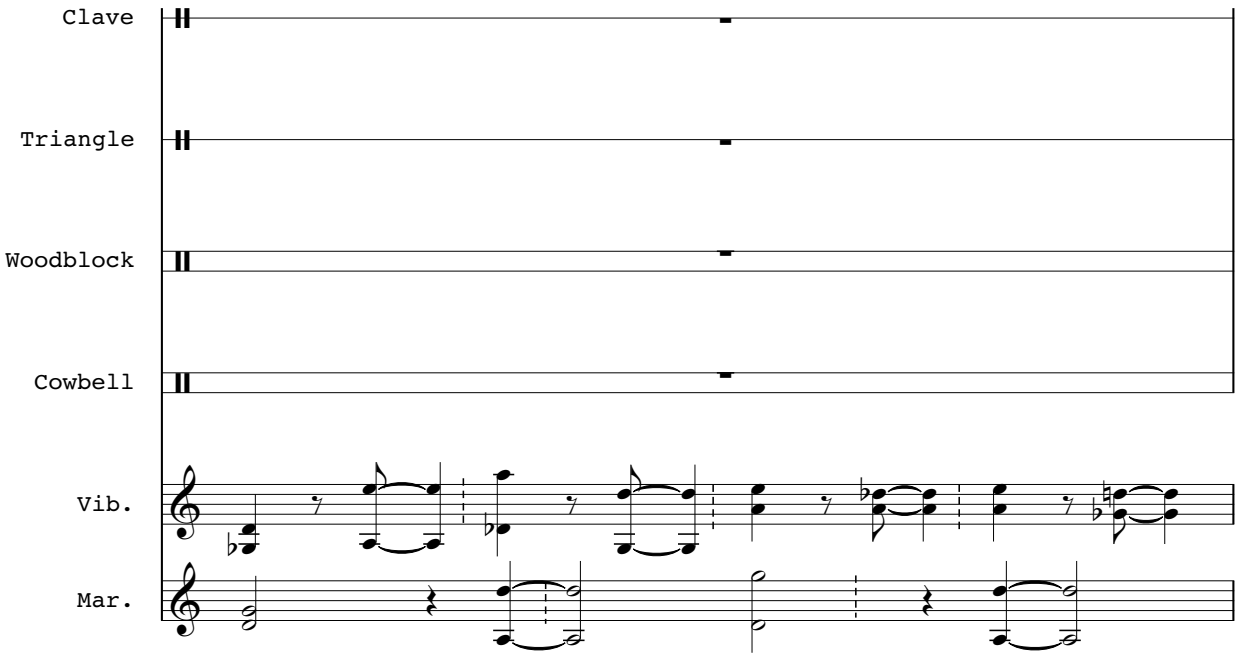
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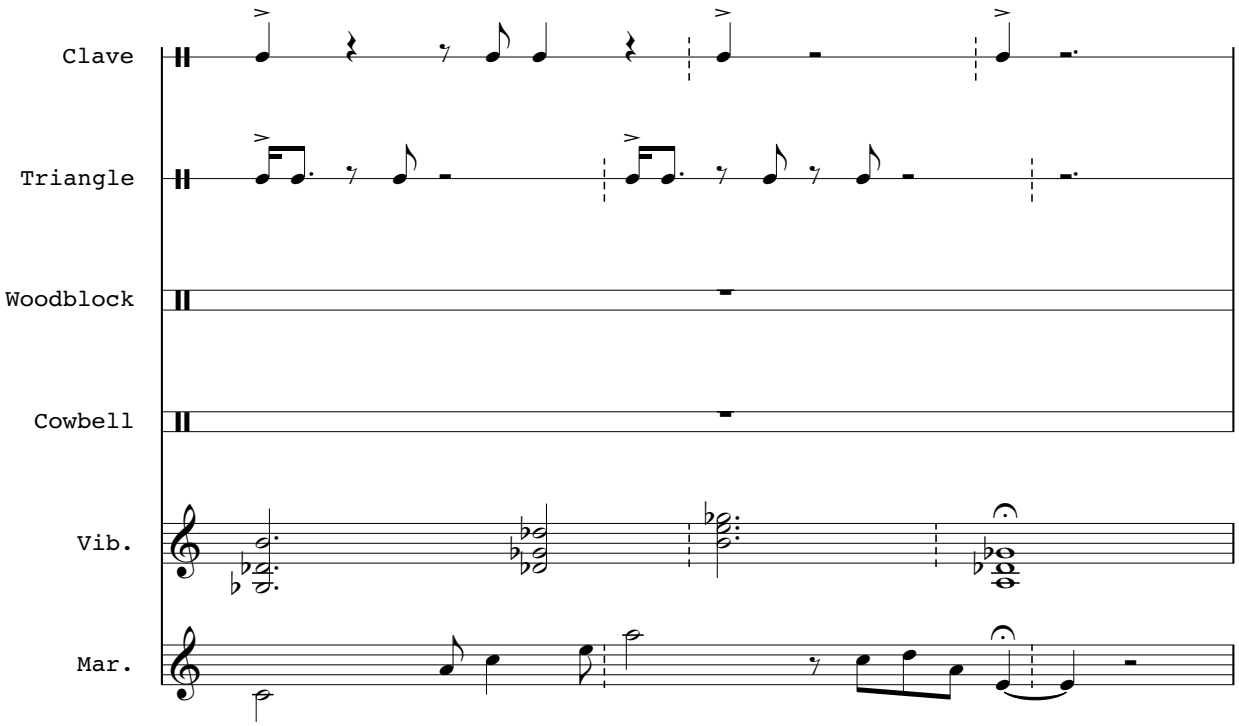
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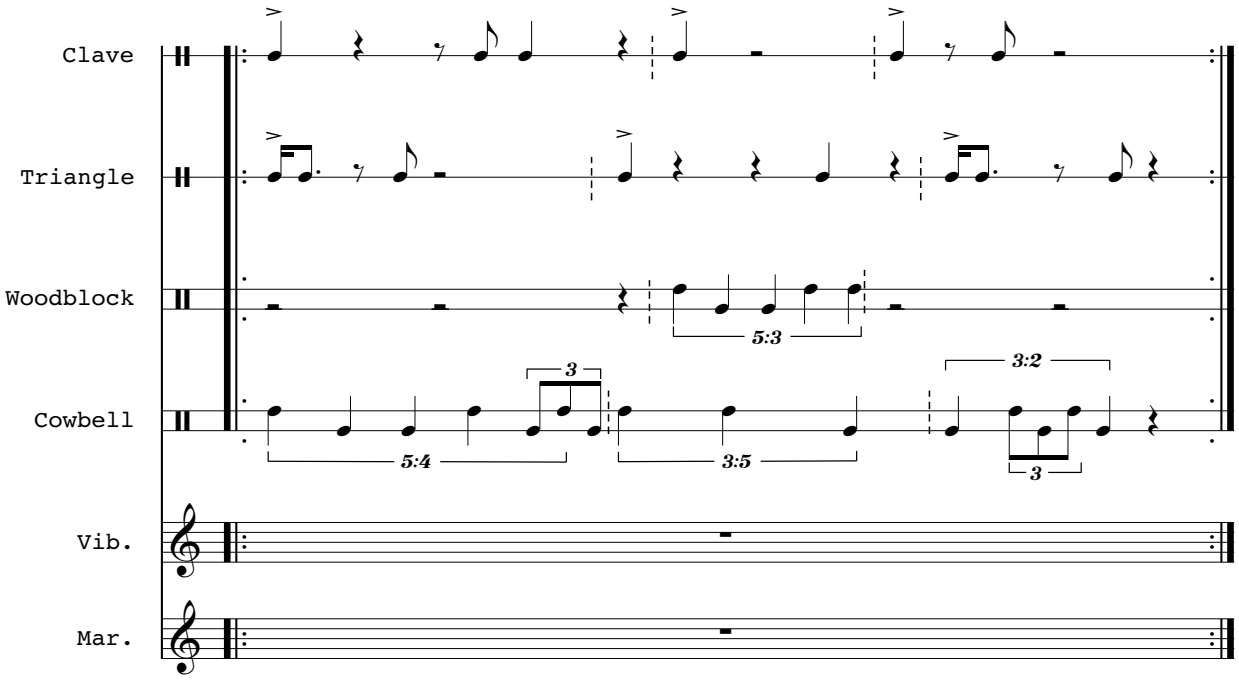
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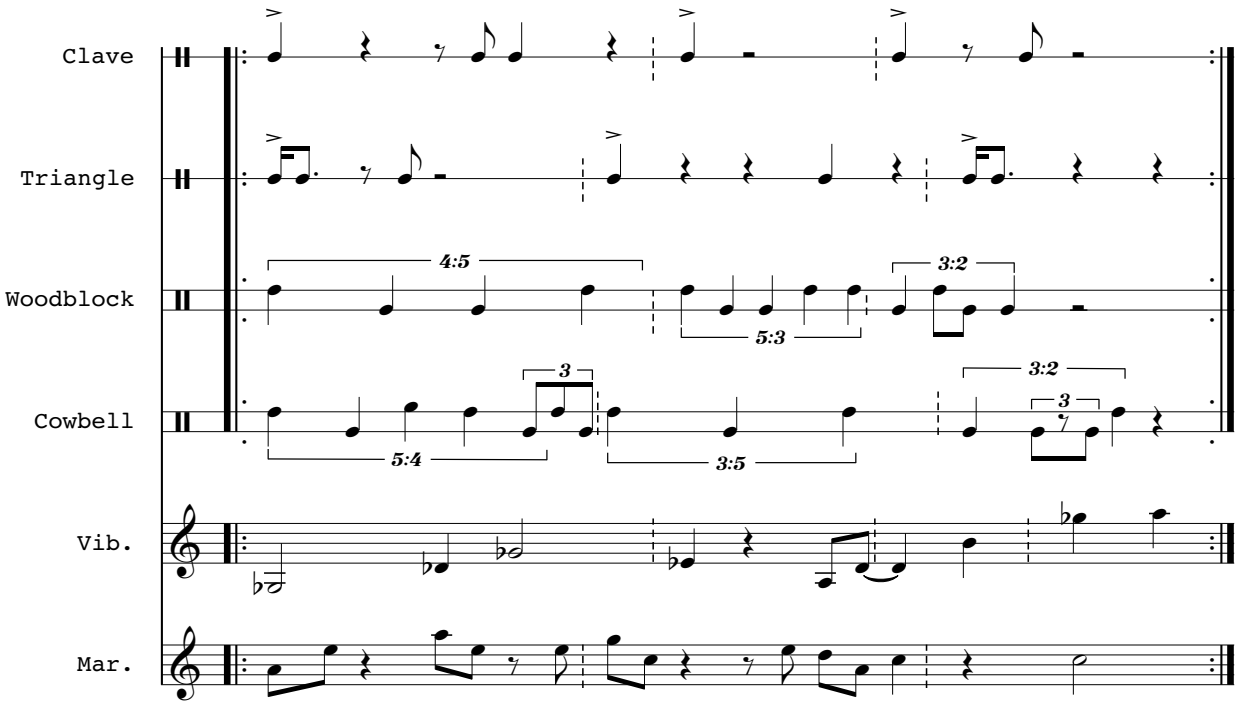
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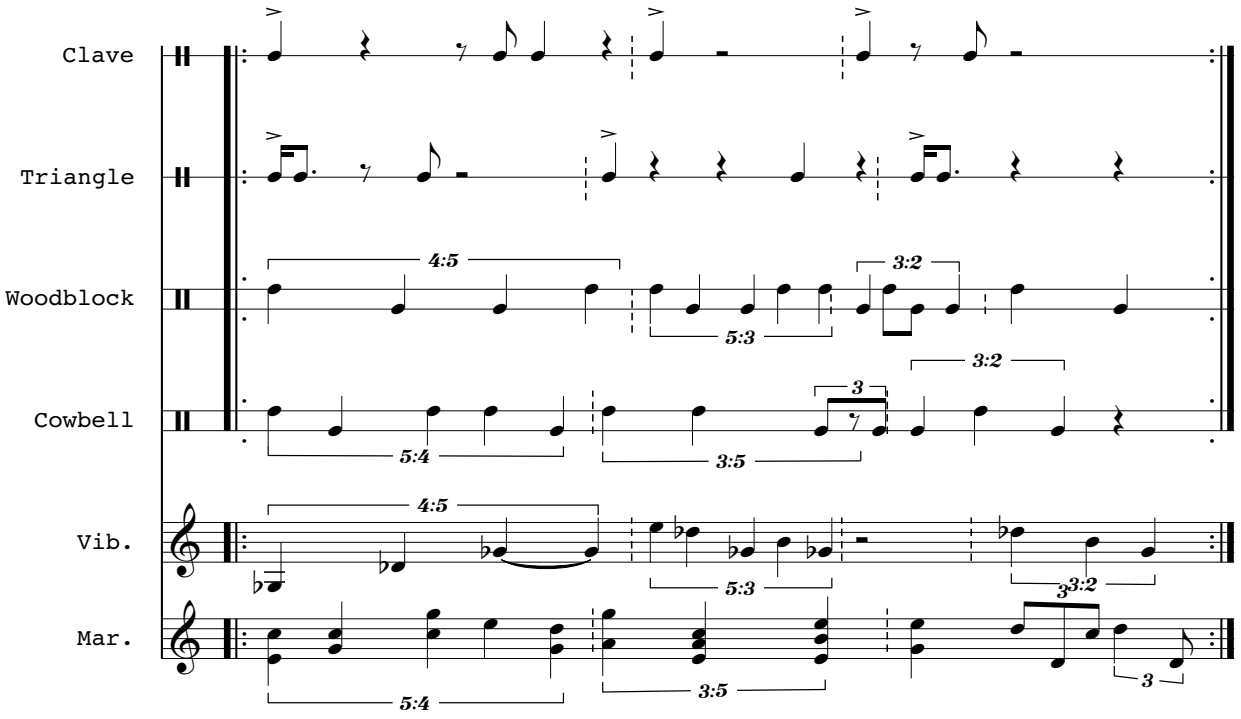
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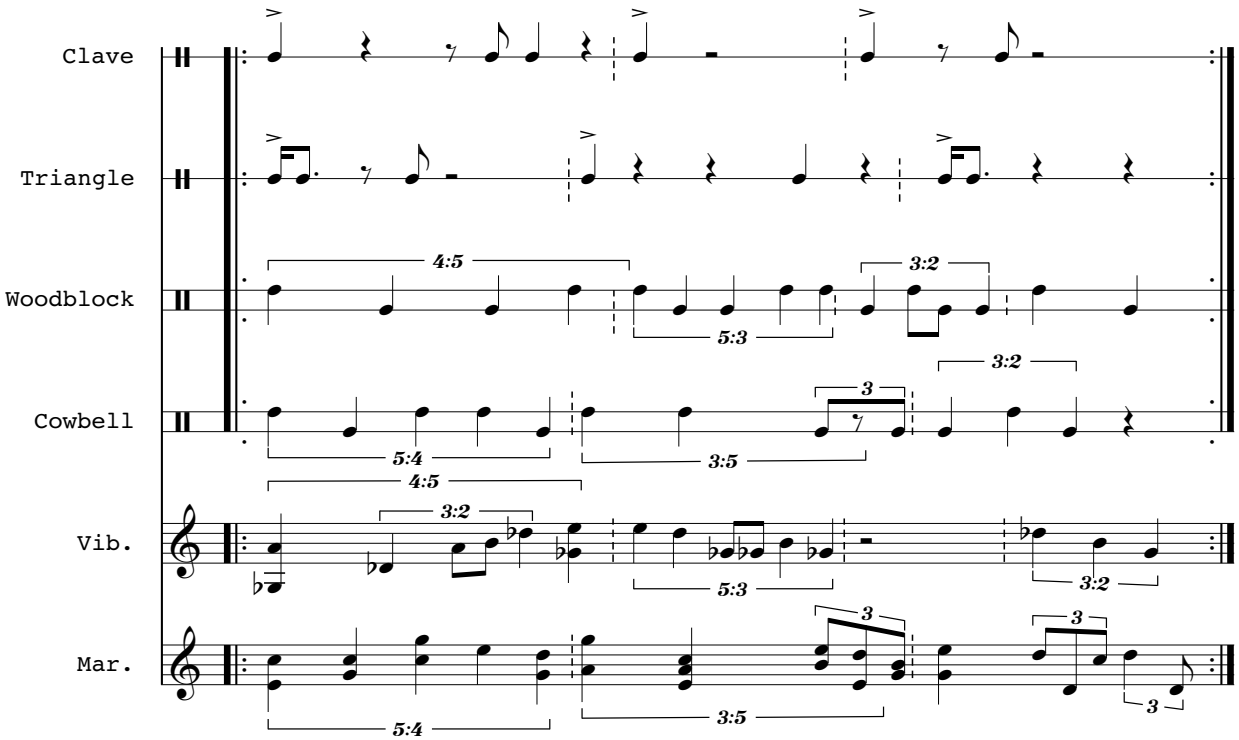
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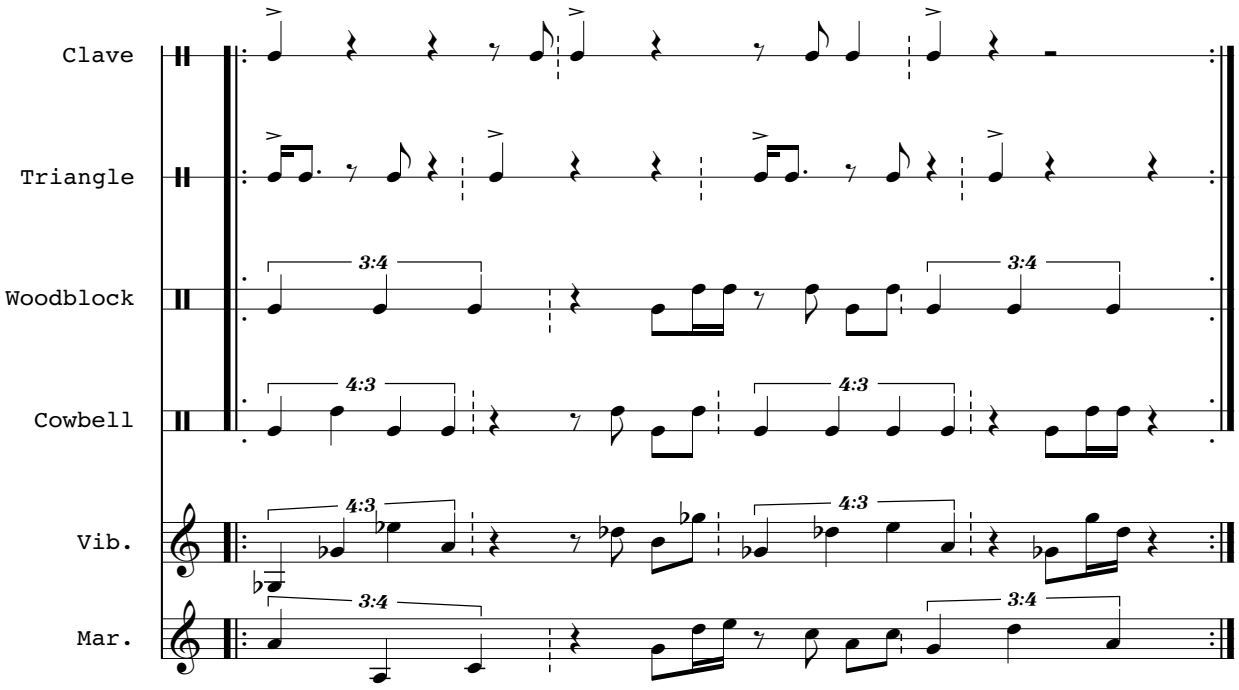
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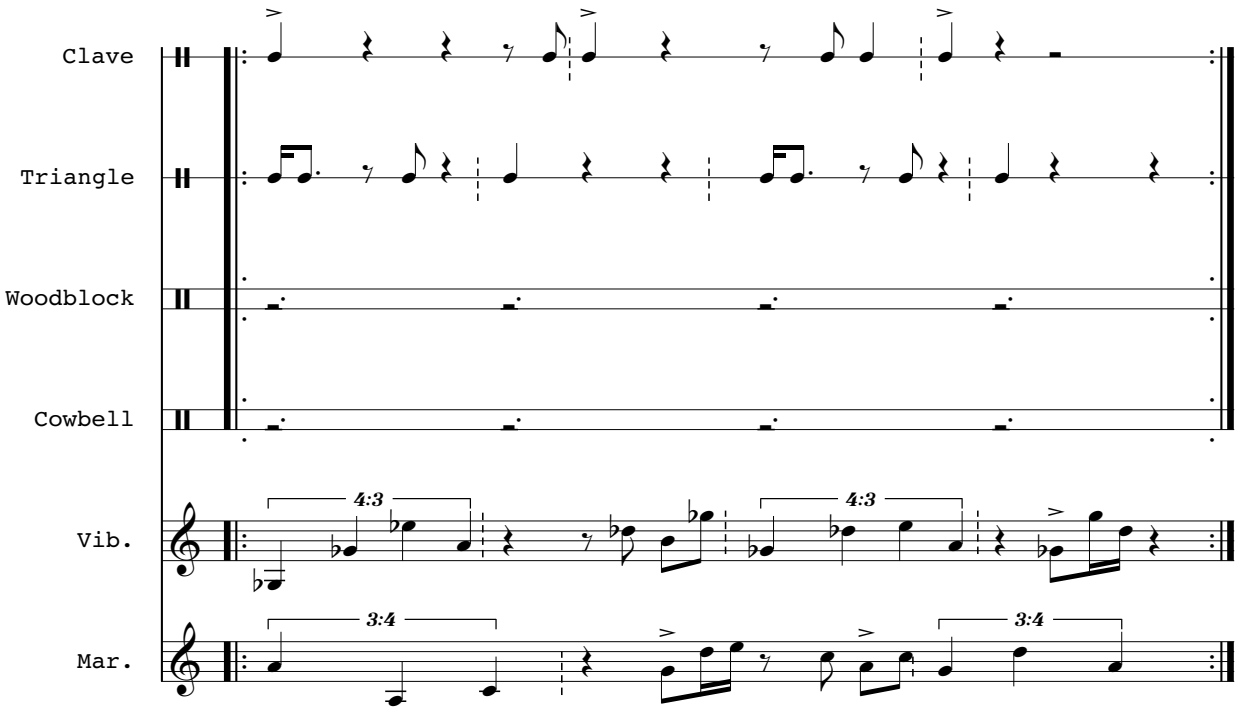
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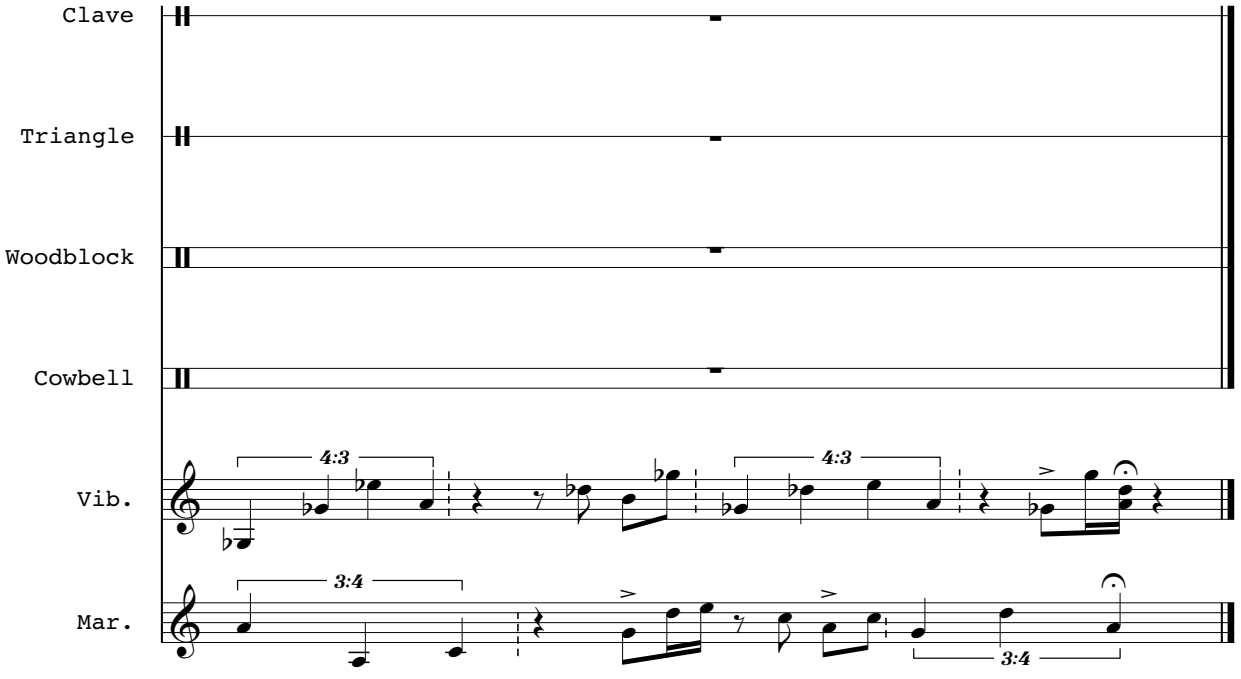
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