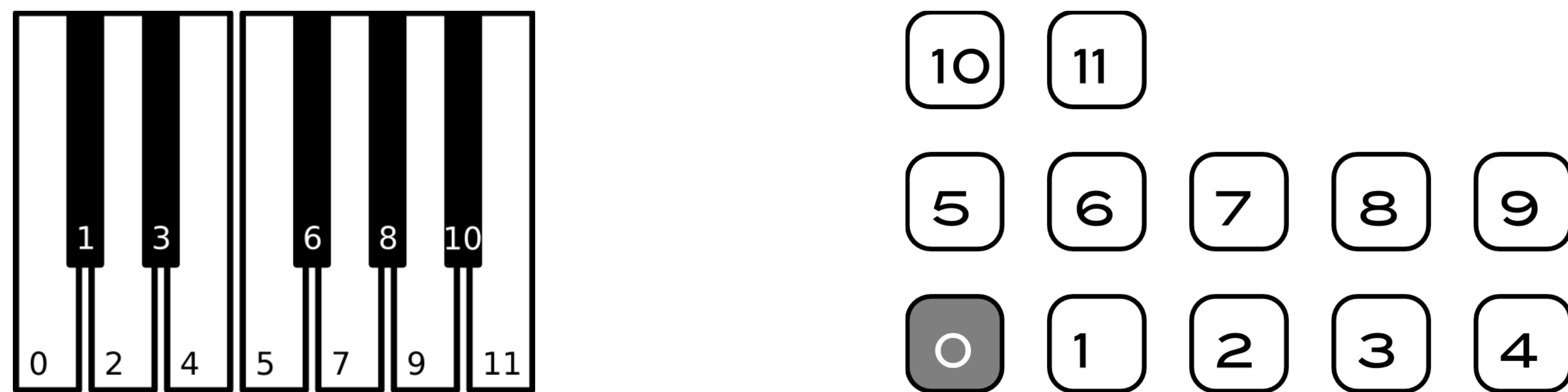


Playing the QWERTY Keyboard

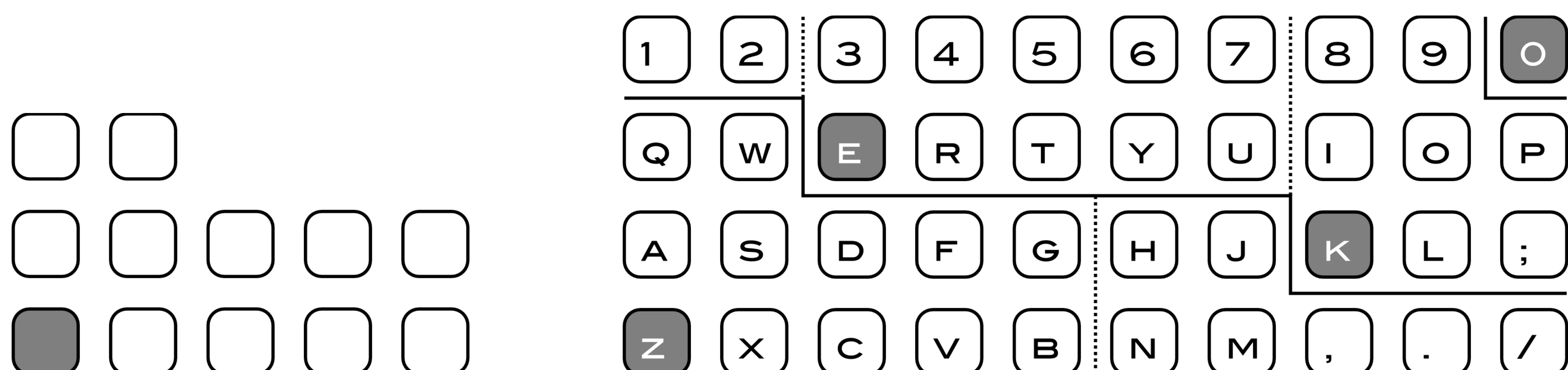
Marcelo Cicconet, Paulo Cezar Carvalho

visgraf.impa.br

Notice how the notes of the chromatic scale are arranged in instruments which are tuned in fourths: they form a tile.

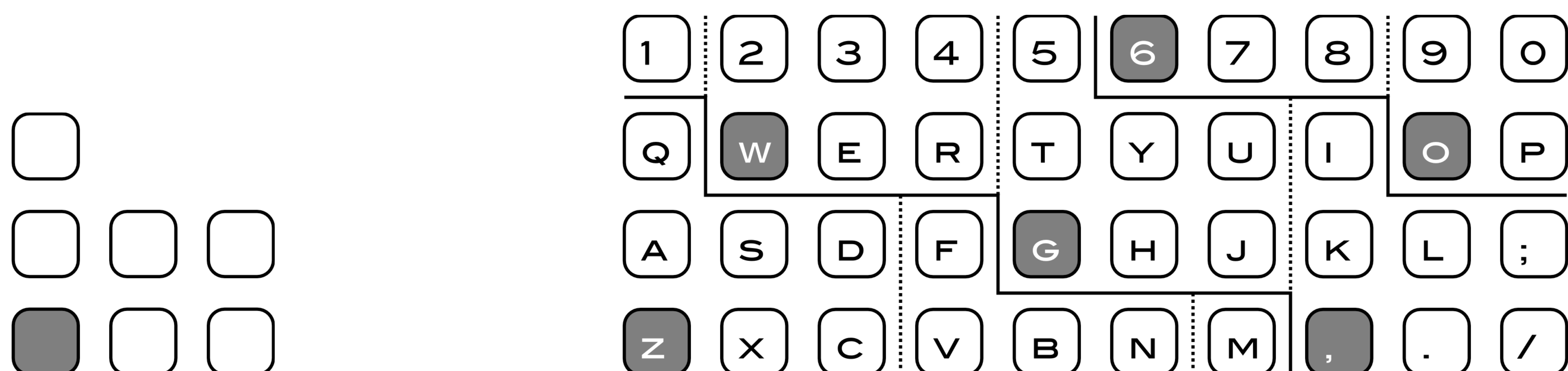


By tessellating the plane with these tiles we obtain the first possible mapping between keyboard keys and musical notes. With a 4x10 grid of keys, this representation covers two whole octaves of the MIDI keyboard.

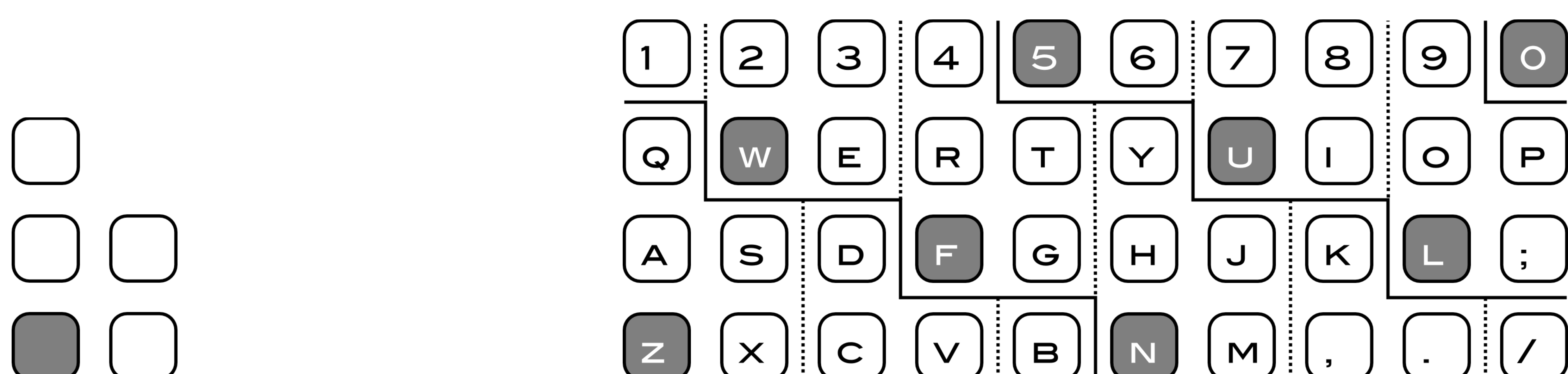


But we can go further, by observing that most of the modern songs (at least regarding Western music) are written using scales of 7 or 5 notes. So we could use tiles for 7 or 5 notes, instead of 12.

These would be the tile, the tessellation and the key-to-note mapping for scales of 7 notes. It almost covers three whole piano octaves.



Now the tile, the tessellation and the key-to-note mapping for pentatonic scales. Three whole piano octaves are covered.



In our implementation of the discussed mappings, some hardware-related limitations were verified. First, the used keyboard was unaware of key-down velocity, a feature that imposes some limits on the performance expressiveness. Second, polyphony is not the same over the keyboard: there are combinations of three or more keys that cannot be played simultaneously. We expect keyboard manufacturers to eventually work on this issues.

For music performance examples, search for "Playing the QWERTY Keyboard" (quotes included) on YouTube.