



<Temblo>

Temple blocks are in origin Chinese percussion instruments used in religious ceremonies. The instruments can also be found in this context in Korea and Japan. It is a carved hollow wooden instrument with a large slit. In its traditional form, the wooden fish, the shape is somewhat bulbous. From an acoustic point of view they function much like a tuning fork and their cavity like a Helmholtz resonator. The pitch of both elements should be matched for a good hollow and resonating sound. As such it is a synergetic construction.

Temple blocks are often found in the percussion section of classical orchestras in a simplified (and generally poorly sounding...) rectangular shape. Most commonly one will encounter them in a group of five blocks of different pitches. The original chinese instruments can be found in widely varying sizes: from close to 1 meter for the very largest ones up to really tiny ones not larger than 3 cm. The very small ones have a sharp and very penetrating tone. They are hand carved from a single piece of relatively soft wood and covered with a thick layer of mostly red chinese lacquer. The lacquer not only protects the wood against moisture and the impact of the beater, but also changes the sound somewhat in making the attack sharper. The traditional lacquer is derived from urushiol, a substance from the toxicodendron vernicifluum and has the property to form a natural polymere in the presence of moisture and medium heat. Once cured, it is hard and stable but the fresh substance itself gives cause to quite severe allergic reactions when brought in contact with the skin. In China the temple block is usually placed on a cushion. Mounting them in a stand is a western adaptation. Although they produce a quite distinct tone and pitch they are never used as pitched percussion instruments. Each temple block has its own individual beater, as the weight and hardness of the beater head has to match the size and weight of the block to be struck. The original chinese beaters are rarely used by percussionists in western ensembles and orchestras. Medium hard cloth covered vibraphone or marimba mallets give a good sound. Using too hard mallets (drumsticks, hard nylon beaters...) lead invariably to destruction of the templeblock, first by cracking the lacquer, secondly by destroying the wood itself.

The idea of making an automated set of temple blocks arose from educational needs: In 2012 we were asked to teach a class on modern instrument building and automation for the students enrolled in the instrument building program at the School of Arts (Ghent University College). After discussing the topics to be treated, we decided with the students to set up a building project that could be finished within a single academic year. Hence the choice of a percussion robot, as this seemed to require the minimum of preliminary research, without being a trivial undertaking. The fact that it would constitute a most welcome addition to the robot orchestra and not merely an academic project seemed a challenge to the students involved. The building project was started in october 2012 and the first automated sounds came out in february 2013. By the month may, Temblo made his final entry into the robot orchestra and many composition students wrote a piece for the newborn robot

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note mapping

The image shows a musical staff with a treble clef and a key signature of one sharp (F#). The notation includes notes with stems and beams, and a series of horizontal lines above the staff representing pitch contours. Below the staff, there are several labels and numbers indicating specific points in the piece:

- 60: six low blocks
- 65: ratchet
- 69: six high blocks
- 72
- 77
- lights
- 4x8va: a bracketed section above the staff from measure 120 to 122.
- 120 — 122: RED lites
- 123: blue
- 124-125: White
- 127: Red
- nc: no control