

# The Martillófono (hammerphonium)

*By Unai Requejo*

The so called Martillófono is a musical instrument built with LEGO® parts and a toy xylophone (a glockenspiel in fact). When presented in exhibitions, the visitors can make music with it, and it also has some minifigure-spectators, bringing the dimensions and scale of a kind of factory in miniature to the machine.

In terms of technique and finish, it doesn't reach the standards that are usually seen in this magazine, but I hope it brings up the chance to comment and discuss interesting issues on the making-process and what we have learnt along its way. It has been shown in interactive and sound-art exhibitions in Bilbao, Madrid and Jaén. Last April, I took part in a LEGO® fan event for the first time, with the people of HispaBrick Magazine® in Mungia.

The aim of the project wasn't initially to make something with LEGO® bricks, what I wanted was to make a musical instrument and I also knew the kind of sound I was looking for: a xylophone sound with some hammers that rattle and preferably with the ability for adjusting the speed of the tremolo; that was the idea.

It took me a lot of attempts: I tried doorbells and also mechanic and electronic solutions that implied 8 motors, but I'm not so skilled in those fields. At that stage I made two prototypes of mechanisms to convert the rotary movement of the motors in a linear, percussive one; these prototypes were made with LEGO® Technic, but I still didn't know how to materialize it.

Then, I thought, why don't I make the whole thing with these parts?

Besides that, it was a medium that was familiar for me, as I played a lot with LEGO® as a kid. With this project I went back to the hobby and, as I had a nice amount of pieces, I started playing around with them.

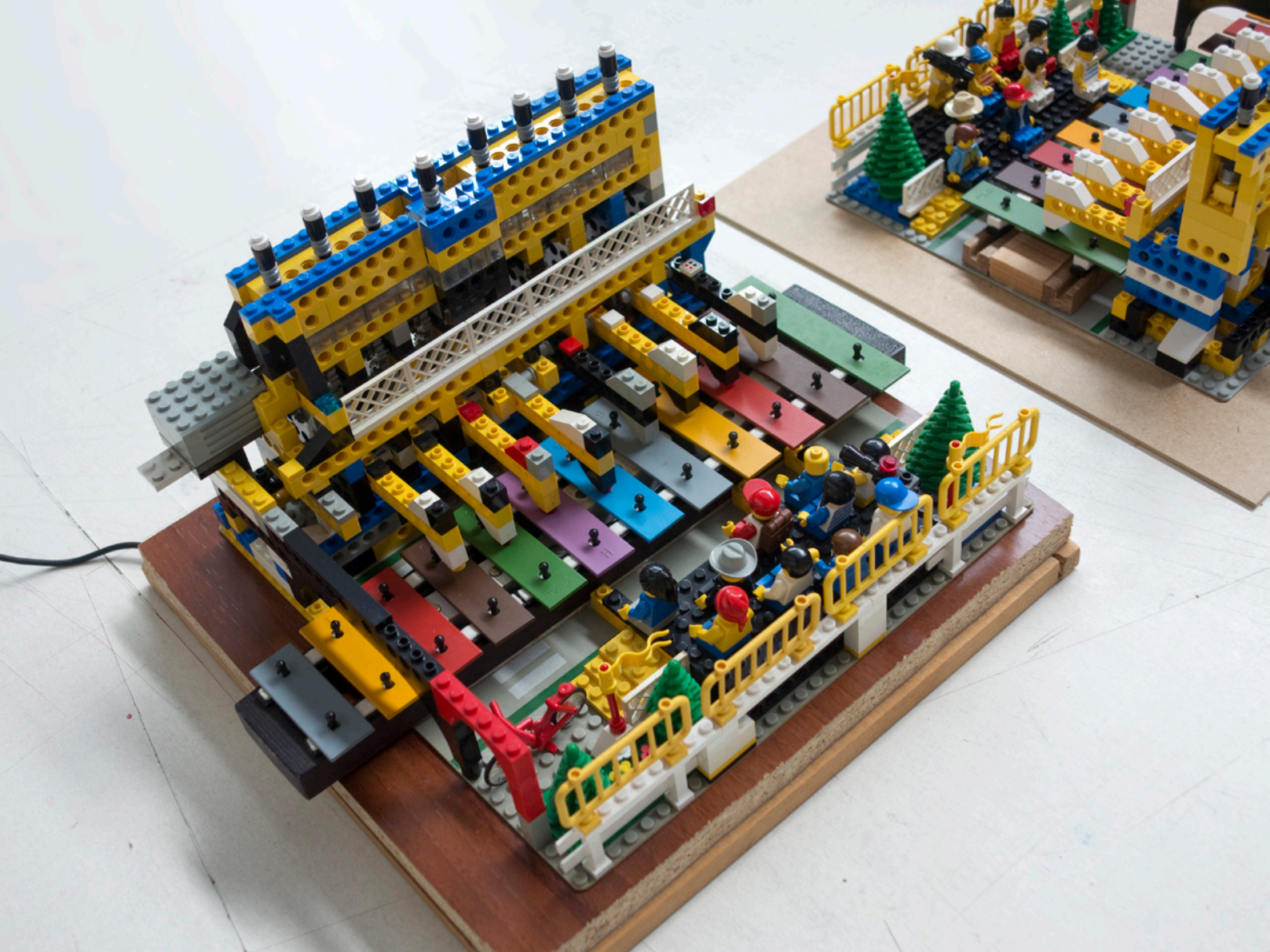
The way of building the Martillófono has been very playful, even if I was guided by a purpose, I didn't know yet what kind of shape the model was going to take, and the ideas weren't clear. Everything happened on the go, letting it flow, without planning much in advance, coming back to fix details when needed.

The LEGO® system, being a toy, is an easy material to build with, it's true that the techniques can be extremely complex but it also has some advantages: The parts are ready to be joint in multiple combinations, and without using any glue or cutting, so there is no risk in making mistakes; you can always change and fix it. This absence of risk is very related to the concept of "play", providing the creative freedom that is necessary; if we build with materials that are not toys, and we are going to saw, let's say an expensive wood piece, we know that once we cut it there is no way back and we will overthink, we cannot be playful then.

Building with LEGO® is fast and it's possible to think with the materials themselves, specially if you are familiarised with each







of the systems. (I'm not so acquainted with the new Technic system, the liftarm, and it doesn't allow me to improvise). The concept "easy material" was suggested by Alexander Calder, the sculptor, and he applied it related to wire, which he used for building, for example, the characters of his little circus. It's easy to think with the material itself, to build and disassemble, and this feature derives in constructions that are somehow alive, they tend not to be finished, static. Whenever you want, you can make small changes to them. Instead of being scale models that we observe in a passive way, they are still full of possibility to continue playing.

As usual, you have to deal with the limit of the parts you own, making substitutions among them. This limitation is something that I enjoy, not only it is a fun challenge but also it leads you to shapes that you wouldn't have come up with otherwise. At that moment I wasn't much worried about using colors in a consistent way and that's why the Martillófono looks the way it does. Its appearance and shape is quite chaotic, and it doesn't remind you at all of a commercial set.

Initially, I thought I would use a road baseplate. The xylophone would go on top of it and it would be the base for all the construction as well. At some point, this base, beyond its role as functional element, drew the attention for being in fact a road, and in this way the bleachers arise with the minifigure spectators and a bit of decoration around them.

The way it works is simple; while you press each key, the corresponding hammer stays hitting the xylophone. And if you push two or more keys, several hammers will play arpeggios with random rhythms. You can also vary the frequency of the hits, using the Train speed regulator.

Without knowing what I was really doing, the Martillófono ended up giving me the idea for the subject and key points for a research paper, focused on playing and art; the PhD thesis I'm developing in the Fine Arts school at the University of the Basque Country. Maybe it doesn't help for summarising it, even for structuring it, but definitely it condenses some of its elements: toy, scale model, audience, interactivity, music and the playful creation process that I have mentioned in this article.

On the occasion of an art exhibition where this piece was shown, I edited the graphic building instructions, so the visitors to the show could pick up a printed copy. Recently I was asked to make a replica, so we looked for the parts and, following these instructions step by step, we rebuild it. The experience was fun and a completely different process.

Now I put at your disposal the building instructions booklet in PDF, along with a video to see it in motion (<http://www.unairequejo.com/moc/>). If you would like to build your own I will be more than happy!

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