musical invention kit

Meet Ototo

Projects

Welcome to the world of Ototo!

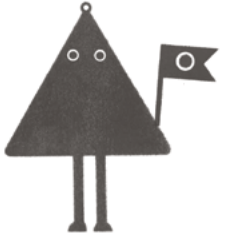
With *Ototo* you can make music from anything, whether you're a musician creating new ways of interacting with sound, looking to use sensors to transform your next project or exploring music and electronics for the first time.

At *Dentaku*, we've spent years working in interaction design and electronic music, building interactive sound installations and inventions. We saw how difficult it was to create simple experiments and we wanted to create something that makes it easier for people to realise their musical interaction ideas.

This guide introduces you to the *Ototo* board, and shows you the basics of making sounds and how to use the different sensors with your board. There's some suggested projects from page 21, and while with *Ototo* you can get making sounds straight away, make sure to check out pages 6 and 7 to see what you can and can't do.

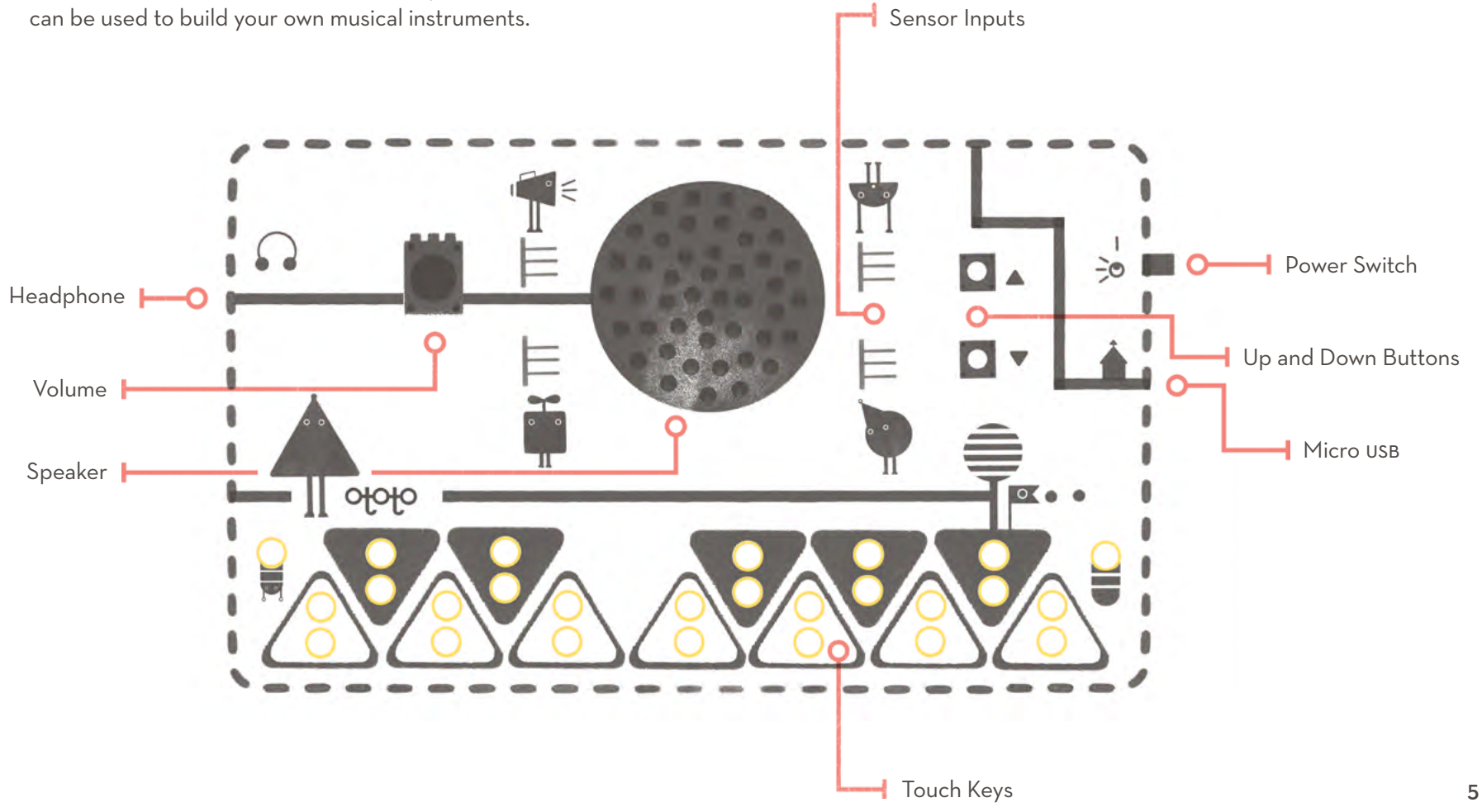
Use *Ototo* to power your imagination, leave traditional sounds behind and create something completely unexpected.

Let's make some noise!
Team Dentaku



Meet *Ototo*

Here is the *Ototo* board. It is a circuit board synthesiser that can be used to build your own musical instruments.



Before you get started there's a few things to note:

Ototo might not work with larger objects

Don't place *Ototo* on metal surfaces

Ototo is powered by 2 x AA batteries or a Micro USB cable

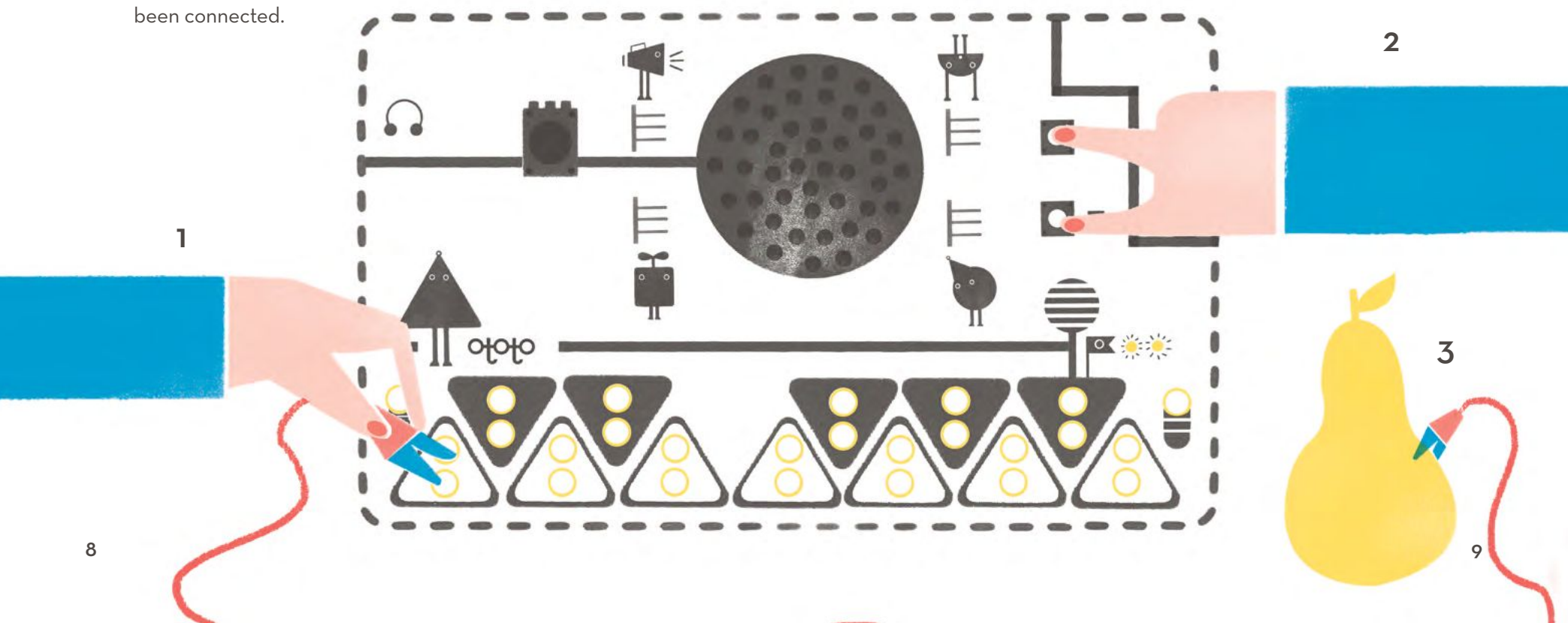
Be careful not to get *Ototo* wet

1• Connect a conductive material to a touch key using one of the crocodile clips.

2• Press the *Up* and *Down buttons* at the same time so *Ototo* can detect that something new has been connected.

3• When you touch the material it will make a sound! Connecting a different material doesn't change the type of sound that is made; each touch key is a trigger.

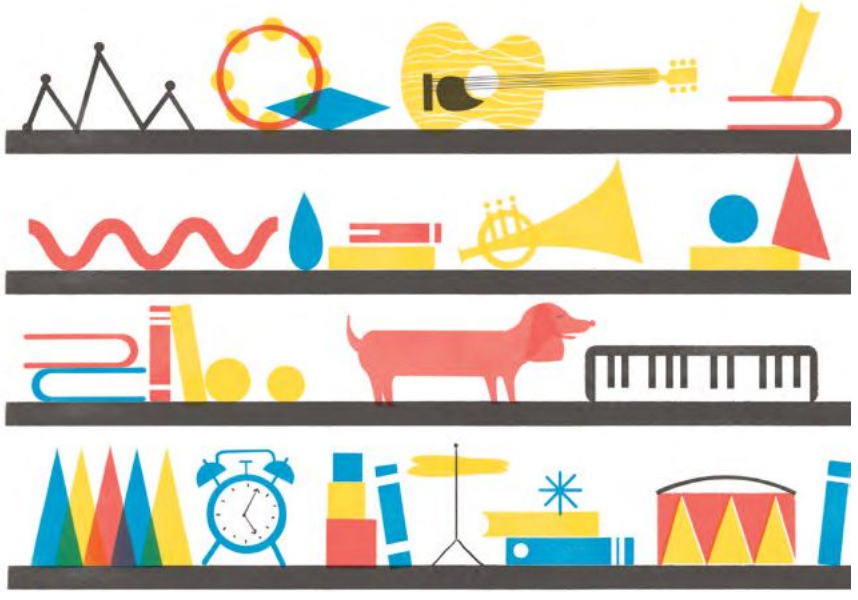
At the bottom of the board there is a touch sensor with a set of 12 touch keys. Each touch key represents a musical note— when you touch *Ototo* it makes the sound of that note. Using the crocodile clips you can connect conductive materials and use them to trigger the notes.



The touch keys work by using a technology called capacitive sensing. This is similar to how many smartphone touch screens and laptop trackpads work. *Ototo* is measuring the capacitance on each of the touch keys. When touched by a human the capacitance on that touch key increases, we use this increase to trigger the sounds to play.

It works with anything that is electrically conductive— so it has to be a material that allows electricity to flow through it.

Lots of everyday materials such as aluminium foil, metal objects, and even pencil leads work a treat. The material only has to be slightly conductive, so plants, fruit, vegetables and water can also work! There is a wide range of specialised conductive fabric, thread, paint, ink, tape and more which are great to use with *Ototo*, but you can start with the objects around you right now.

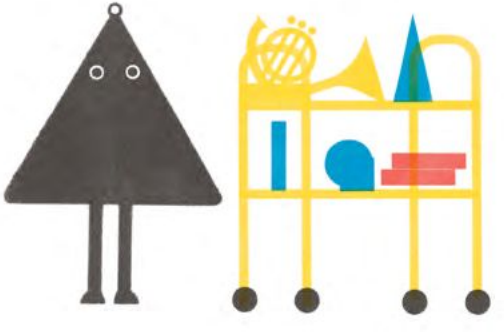


Ototo comes with a library of sounds which are called presets.

You swap between these presets using the *Up* and *Down buttons*. Some presets you can play melodies on like a piano. Other presets are samples which play back a recorded sound, like a drum kit or science fiction sound effects.

Try out the different sounds for each thing you make, you may find the type of sound changes how you play your instrument.

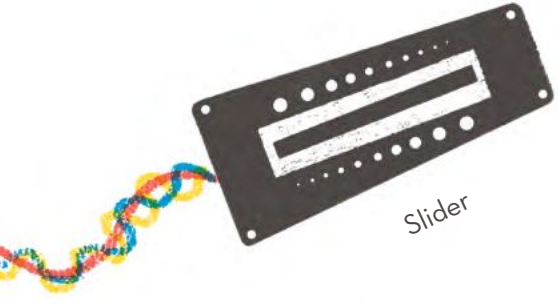
Double press the Up or Down Buttons to change the pitch by an octave.



Sensors are add-on controllers which you can plug into *Ototo*. Each sensor changes the sound depending on how you interact with it.

Rotation

Light



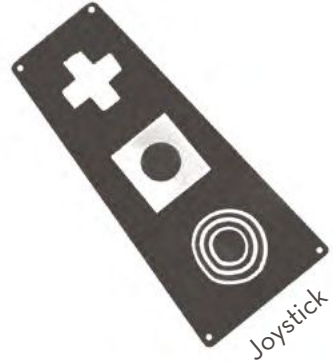
Slider

Touch Strip

Breath

Force

If you change the sound as you play, you can be more expressive with the kind of music you want to make.



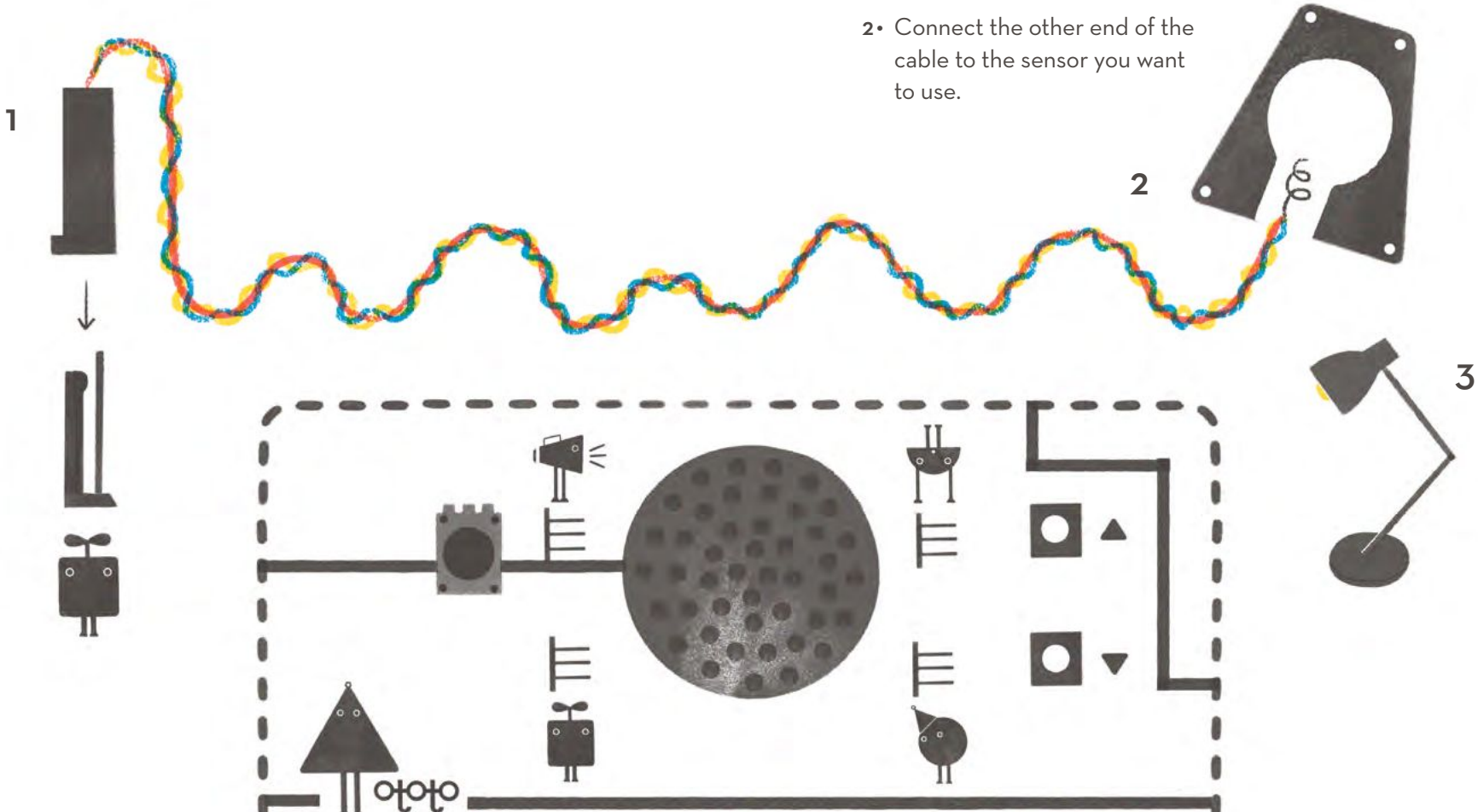
Joystick

Depending on which input the sensor is connected to, you can control the sound in a different way.

1• Attach the sensor cable into one of the sensor inputs on *Ototo*.

2• Connect the other end of the cable to the sensor you want to use.

3• Now you can try interacting with the sensor!



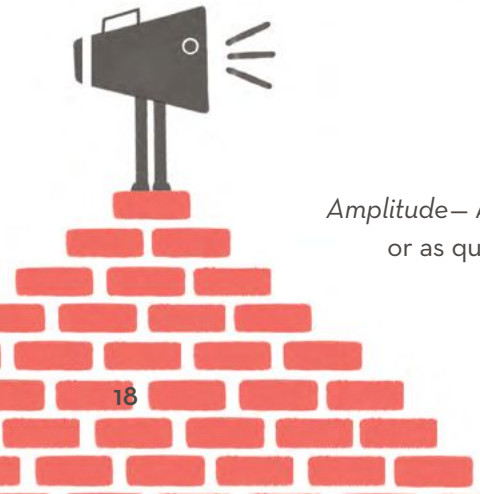
Each character represents a sensor input, here's what they do:

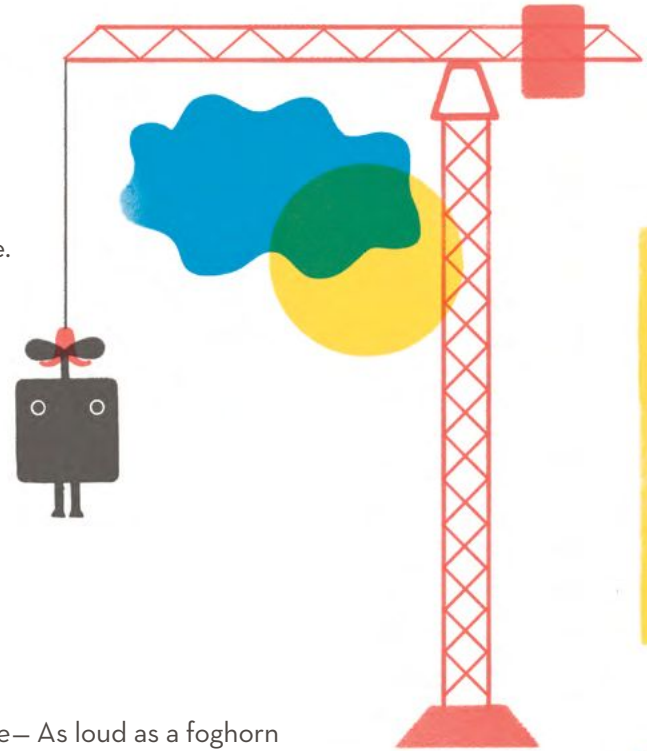
Pitch— Change from a high pitched squeal to a low rumble.

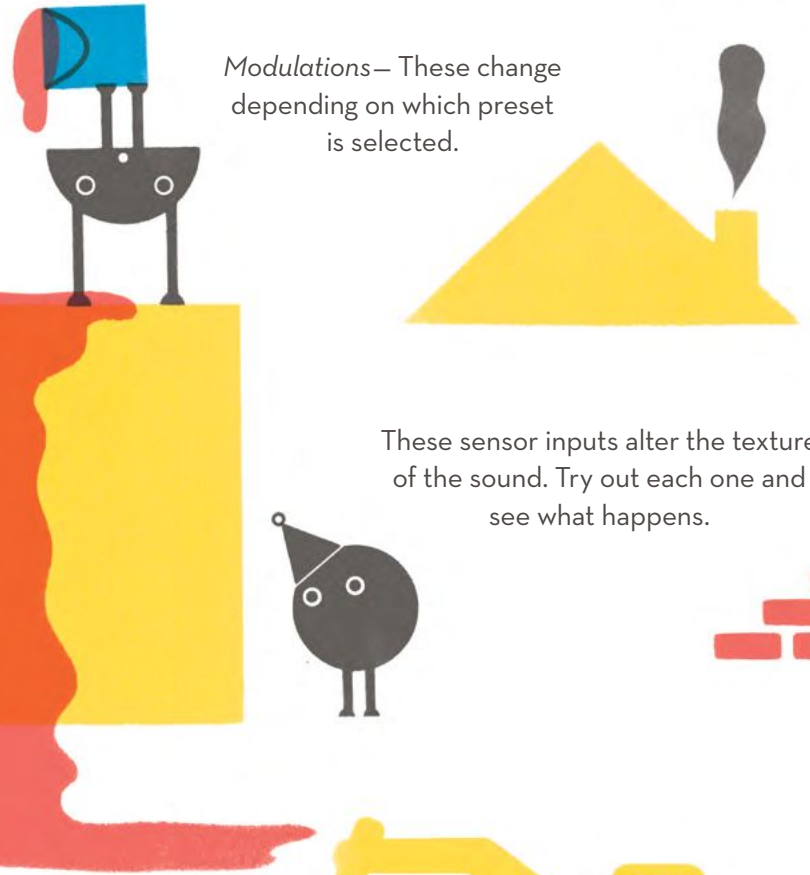
Amplitude— As loud as a foghorn or as quiet as a mouse.

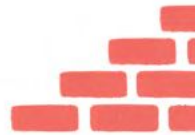
Modulations— These change depending on which preset is selected.

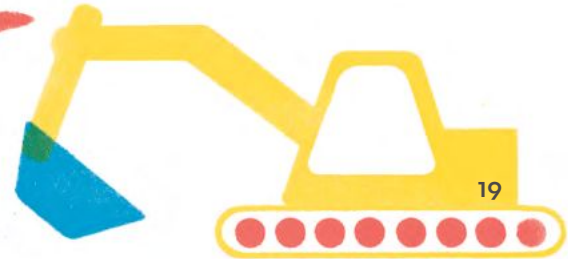
These sensor inputs alter the texture of the sound. Try out each one and see what happens.





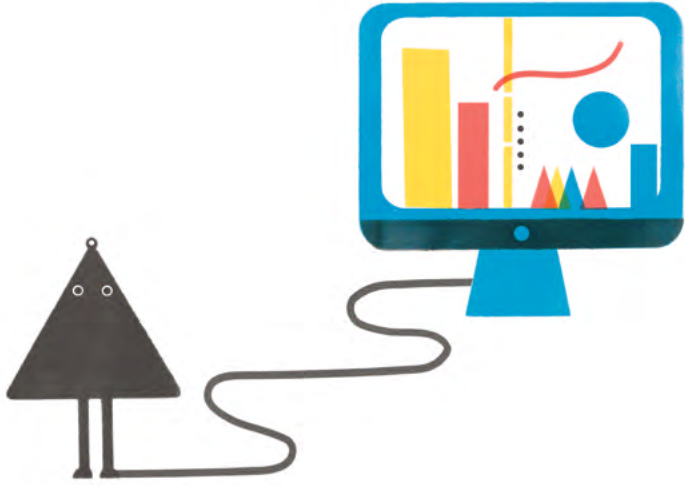




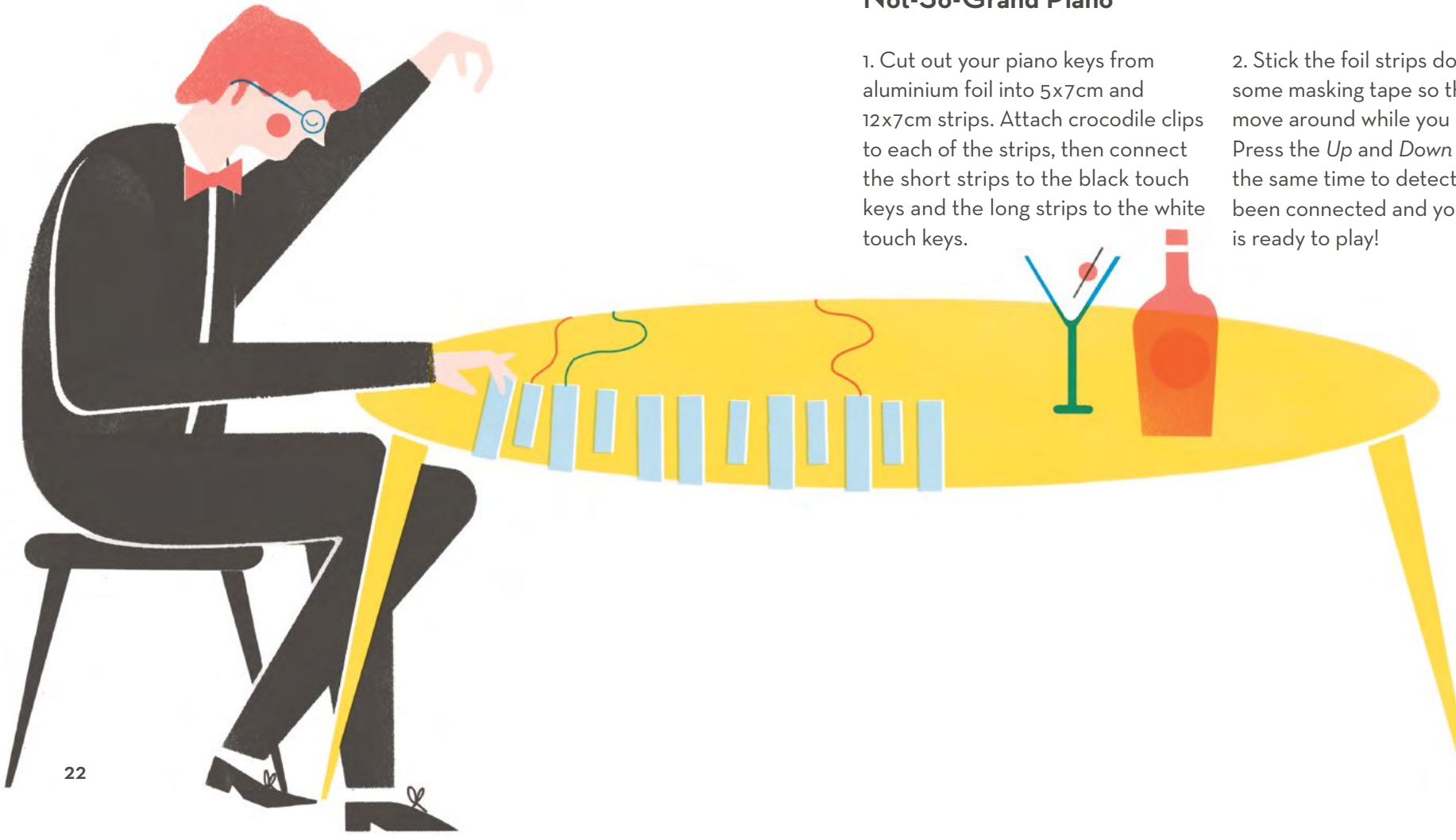


Ototo can also be used as a MIDI controller, meaning you can control things on a computer or other MIDI-compatible devices using *Ototo's* sensors. You could play a DJ set, play other synthesisers or control video and visual effects!

Simply connect Ototo to the computer using a Micro USB cable. Most music software already works with MIDI—look at its user manual or check out the Ototo website for help setting it up.



Projects



Not-So-Grand Piano

1. Cut out your piano keys from aluminium foil into 5x7cm and 12x7cm strips. Attach crocodile clips to each of the strips, then connect the short strips to the black touch keys and the long strips to the white touch keys.

2. Stick the foil strips down using some masking tape so they don't move around while you are playing. Press the *Up* and *Down buttons* at the same time to detect what has been connected and your piano is ready to play!

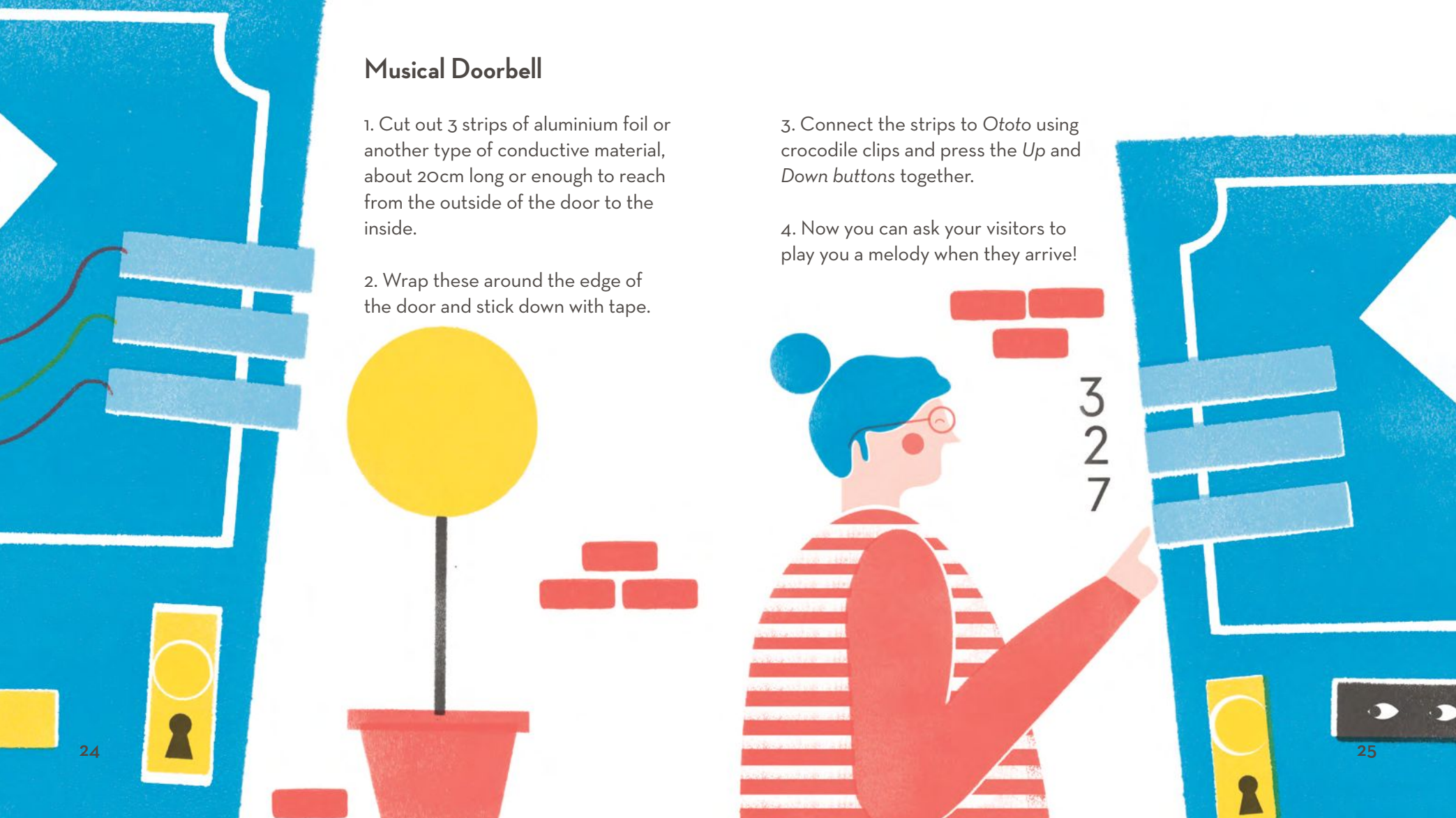
Musical Doorbell

1. Cut out 3 strips of aluminium foil or another type of conductive material, about 20cm long or enough to reach from the outside of the door to the inside.

2. Wrap these around the edge of the door and stick down with tape.

3. Connect the strips to *Ototo* using crocodile clips and press the *Up* and *Down buttons* together.

4. Now you can ask your visitors to play you a melody when they arrive!

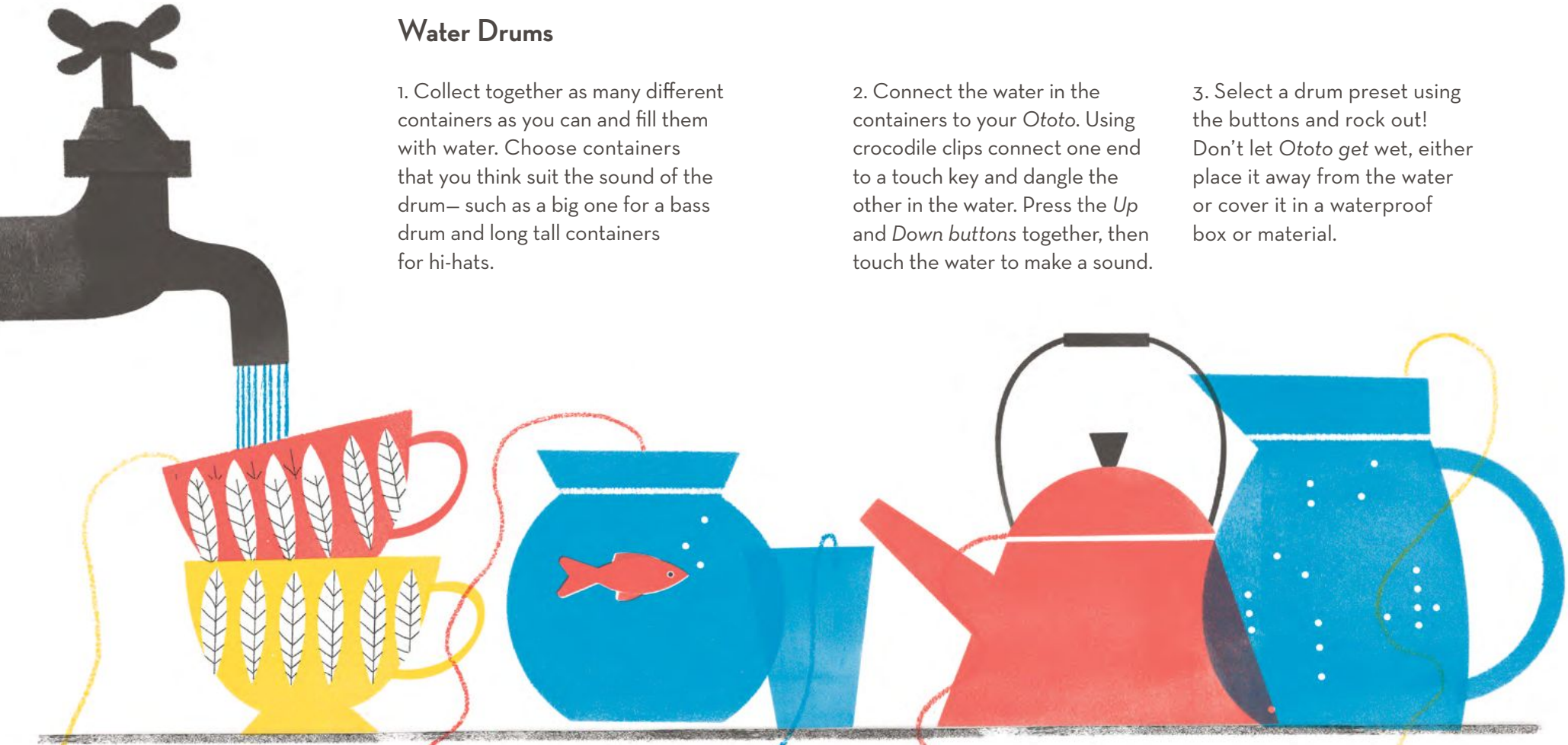


Water Drums

1. Collect together as many different containers as you can and fill them with water. Choose containers that you think suit the sound of the drum— such as a big one for a bass drum and long tall containers for hi-hats.

2. Connect the water in the containers to your *Ototo*. Using crocodile clips connect one end to a touch key and dangle the other in the water. Press the *Up* and *Down buttons* together, then touch the water to make a sound.

3. Select a drum preset using the buttons and rock out! Don't let *Ototo get* wet, either place it away from the water or cover it in a waterproof box or material.



A Light Breakfast

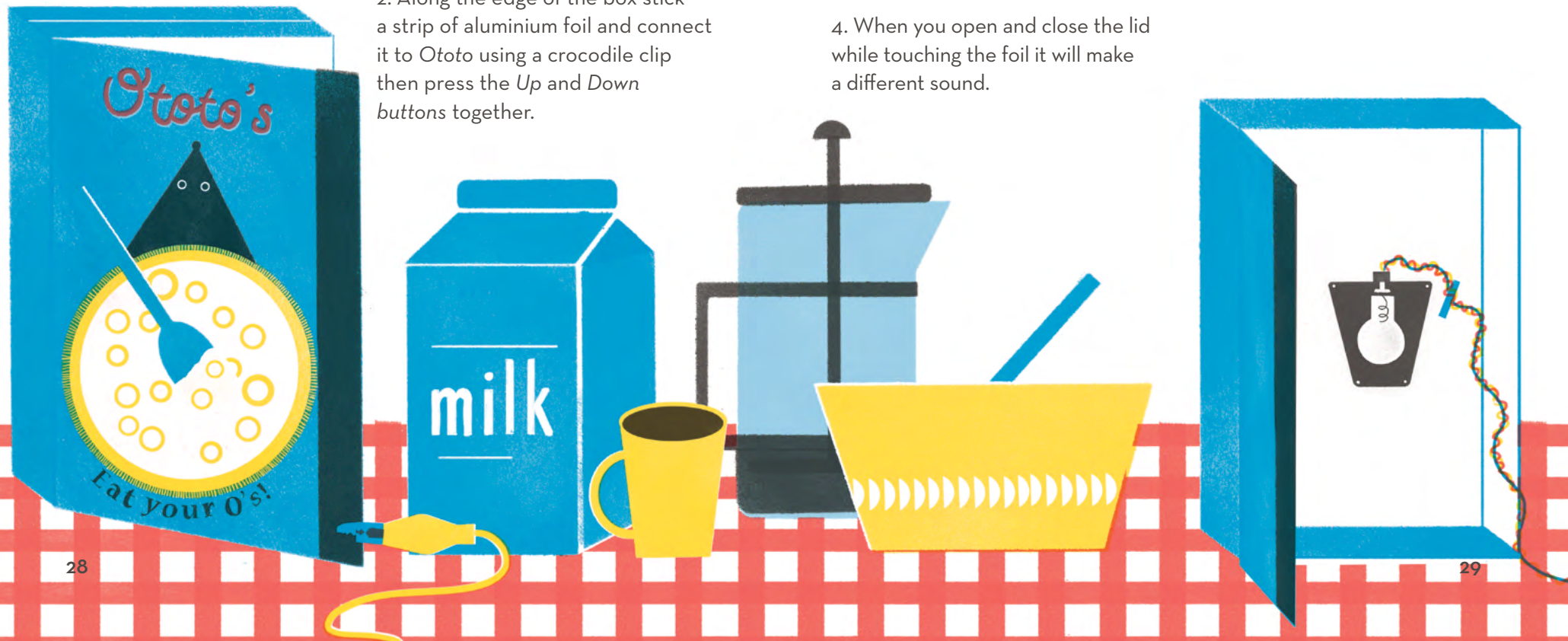
1. Find a box and make a door that can open and close by cutting around three sides of the front of the box.

2. Along the edge of the box stick a strip of aluminium foil and connect it to *Ototo* using a crocodile clip then press the *Up* and *Down buttons* together.

3. Connect a light sensor to one of the sensor inputs on *Ototo*, then place it inside the box securing it in place with some tape.

4. When you open and close the lid while touching the foil it will make a different sound.

Try out connecting different sensor inputs and see what sounds you can get.



Balloon Pitch

1. Take one un-inflated balloon and make a tiny cut in one end around 1-2mm long. Insert the breath sensor so it is inside the balloon. Once the balloon inflates it will tighten around the sensor so the air won't leak out.

2. Attach the breath sensor to one of the sensor inputs on *Ototo*, blow up the balloon and tie it up. You don't have to inflate the balloon too much, the less inflated the balloon is the more sensitive it is.

3. Squeeze the balloon! Depending on which sensor input you've connected the sensor to you'll get different sounds. Try using it to alter the pitch to make lots of weird noises.

Now it's your turn!

We'd love to see and hear what you can come up with— so please drop us a tweet or an email and tell us how you're using *Ototo*.

Sharing your project with the world?
On Twitter use @Ototo to keep us informed!

For help and support or just thoughts and comments get in touch with us by emailing support@dentakulondon.com.

Check out our website to keep up with all of our latest discoveries in the world of *Ototo*.

www.ototo.fm

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