



Exhibit message

In this exhibit, light and computers are used to create music from a range of different synthesised instrument sounds, demonstrating one way in which modern technology can be used in music production.

Quick Fact

The oldest documented reference to a **harp** is from around 5000 years ago in Mesopotamia and Egypt. The harp may have developed from a the string of a hunters bow that was plucked to produce sound.

The first true **electronic** musical instrument was built by Thaddeus Cahill in 1906. The instrument was called a 'dynamophone', and used electric generators to produce tones. The dynamophone was almost 20 m long!

Graphic panel text

How many instruments can you play?

The 'light harp' is an example of how technology can be used to create music.

Light from the lower, inside edge of the harp reaches a camera mounted above it. When you move your hand over the light, you stop the light from that area reaching the camera.

This sends a signal to the computer to play a certain note.

You have a choice of seven different instruments from around the world. The sounds of all of these instruments have been synthesised.

Want to know more about how the light harp works?

The basic components of the light harp in the exhibit are: a **light source**, a **camera** to detect the light and a **computer**.

The light from the light harp comes from a strip along the lower edge of the harp. The light along the strip is broken up into individual components called **pixels**. The brightness of the pixels in the light strip has been set to a level which is considerably different from the ambient light surrounding the harp.

The camera detects objects via changes in the intensity of the light above a certain threshold. The threshold is set somewhere between 100% and 0%. A threshold of 100% would mean that there would have to be a complete absence of light detected by the camera.

This is unlikely to occur as a certain amount of the reflected and ambient light from the room will always be detected by the camera. Even a finger gives off some light, so if the threshold difference was set at 100%, no change would be detected.

When the camera detects a change in the contrast of the light coming from the light strip above the threshold, it sends a signal to the computer.

There are up to 480 individual pixels in the light strip. Groups of 5–10 pixels correspond to a single note.

Further information

- ★ Wikipedia: *Harp*.
<http://en.wikipedia.org/wiki/Harp>
- ★ Wikipedia: *Electronic musical instrument*.
http://en.wikipedia.org/wiki/Electronic_instrument

- ✦ *Sound, synthesis and audio reproduction.*
Syreeni, 2005.
<http://www.helsinki.fi/~ssyreeni/dsound/dsound>

Example of another type of ‘light harp’:

- ✦ *Bent Leather.* J R, Australian adlib.
<http://www.abc.net.au/arts/adlib/stories/s874216.htm>

To listen to examples of other synthesised sounds:

- ✦ Partners in Rhyme, 2002.
http://www.partnersinrhyme.com/pirsounds/WEB_DESIGN_SOUNDS_WAV/SOUNDFX.shtml