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## Mental ways to make music

Musicians can find it hard to persuade their fingers to play the notes dictated by their brain. At Plymouth University's Future Music Lab, Eduardo Reck Miranda and his team are writing a symphony to disinter-mediation by attempting to play musical instruments using brain waves alone.

By cutting out the middlemen – the fingers – they hope to develop methods by which, for example, the disabled could express themselves musically. The Plymouth researchers also envisage new kinds of entertainment devices and, possibly, the creation of brain-wave controlled instruments.

At this stage, however, the prototype is only a little beyond proof of concept. Dr Miranda attaches electrodes to the scalp – a “musical brain cap” – which detect brainwaves and display them as electroencephalogram patterns. The idea is to detect patterns which can be associated with particular types of music. If the subject can reproduce the mental processes which result in these eeg patterns, the brain waves can act as a crude switch, making it possible, for example, to change from classical music to jazz. The EEG patterns are used to drive a Yamaha Disklavier piano.

Dr Miranda says he is a long way from being able to “read minds” by interpreting the EEG readouts. But the research could lead to a new category of human-machine interfaces where brain waves replace keyboards and voice commands.

