

# Brain Composer—'thinking' melodies onto a musical score

September 11 2017, by Tu Graz

---



Gernot Müller-Putz, head of TU Graz' Institute of Neural Engineering and expert on brain-computer interfaces. Credit: Lunghammer - TU Graz

TU Graz researchers develop new brain-computer interface application that allows music to be composed by the power of thought. They have

published their results in the current issue of the journal *PLOS ONE*.

Brain-computer interfaces (BCI) can replace bodily functions to a certain degree. Thanks to BCI, physically impaired persons can control special prostheses via their minds, surf the internet and write emails.

A group led by BCI expert Gernot Müller-Putz from TU Graz's Institute of Neural Engineering shows that experiences of quite a different tone can be sounded from the keys of brain-computer interfaces. Derived from an established BCI method for writing, the team has developed a new application by which music can be composed and transferred onto a musical score through the power of thought. It employs a special cap that measures [brain waves](#), the adapted BCI, music composition software, and a bit of musical knowledge.

In the BCI the researchers used, options such as musical notes, pauses and chords flash consecutively on a table. A trained subject focuses on the desired option while it lights up, causing a minute change in their brain waves. The BCI recognises this change and draws conclusions about the chosen option.

## **Musical test subjects**

Eighteen [test subjects](#) chosen for the study were asked to "think" melodies onto a musical score. All test subjects were in good health during the study and had a certain degree of basic musical and compositional knowledge, as they all played musical instruments to some degree. Among the subjects was the late Graz composer and clarinetist Franz Cibulka.

"The results of the BCI compositions can really be heard, and most importantly, the subjects enjoyed it. After a short training session, they could all compose, read the score and then play the compositions. The

very positive results of the study are the first step in a possible expansion of the BCI [composition](#) to patients," says Müller-Putz.

"20 years ago, the idea of composing a piece of [music](#) using the power of the mind was unimaginable. We still need a bit more time before BCI is mature enough for daily applications"

**More information:** Andreas Pinegger et al. Composing only by thought: Novel application of the P300 brain-computer interface, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0181584](https://doi.org/10.1371/journal.pone.0181584)

Provided by Graz University of Technology

Citation: Brain Composer—'thinking' melodies onto a musical score (2017, September 11) retrieved 11 September 2024 from <https://phys.org/news/2017-09-brain-composertinking-melodies-musical-score.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.