Wheels Within Wheels: Brain-Computer Interfaces as Tools for Artistic Practice as Research

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Abstract. Practice as research (PaR) is concerned with practice both as a method for inquiry and as evidence of the research process, producing embodied knowledge. It has been proposed that it is the foundational strategy in *performative research*, a kind of research apart from quantitative and qualitative research, characterized by being expressed using forms of symbolic data different from quantities or words in discursive texts. In this context, practice requires constant reflection upon itself to yield insights that can be used in a never-ending loop of creation. As practice is performed by the body and produces embodied knowledge, tools that allow querying the body during the artistic process may provide information that supports this creation/reflection loop. Previous artistic BCI applications have shown that they are suited to work as introspection tools (affective states, correlation between performed actions and area activations), as the source of raw material to be used in the creative process (raw signal, patterns of activation, band power), and as controllers for artistic instruments. We believe that previous research has laid the groundwork for the use of BCIs as tools in PaR. In this paper, we propose a framework for this and review three examples of previous artistic work using BCIs that illustrate different aspects of said framework.

Keywords: Brain-computer interfaces · Practice as research · Embodied knowledge