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Orchestrating Space by Icosahedral Loudspeaker (OSIL)

1. OSIL aims at increasing the practical and theoretical understanding of electroacoustic sound phenomena in computer music that are defined by their sculptural-choreographic nature, i.e., exhibiting localization, motion, and extent. In particular, the research process focuses on the icosahedral loudspeaker (ICO) constructed at IEM in order to project auditory objects into space, a feature that has already been successfully employed in various compositions that have been performed in concerts in different spaces and environments. The ICO is a compact playback device that uses acoustic algorithms to project sound beams into freely adjustable directions, also wall reflections leading to the listener. In the existing compositions, presented at festivals like Darmstädter Ferienkurse für Neue Musik 2014, International Computer Music Conference and venues like ZKM Karlsruhe or Forum Alpbach listeners perceived auditory objects that move away from the ICO and which can have various shapes. However, currently we can neither precisely describe the required ingredients or outcomes yet, nor their psychoacoustic background. In 1991 Marco Stroppa wrote: . *"Even supposing that all of the scientific and technological difficulties are resolved, it remains unclear as to how we can organise space in its diverse meanings as a musical material." (*"Die musikalische Beherrschung des Raums," in *Musik in Gesellschaft anderer Künste*, 1991). - As of today we still seem to be in the same situation. The art research is based on three core principles: (1) In a sequence of consecutive **electroacoustic compositions**, the sculptural-choreographic properties of sound phenomena are examined in an empirical study. (2) **Parallel** to the compositional process, an explorative **intersubjective verbal description** details the phenomena produced in such a way that it is generalizable and can be dealt with as a quantitative psychoacoustic question. Exploratory and psychoacoustic descriptions provide well-defined comprehension of the auditory objects created, enriching the art research and promoting a clear discourse with other disciplines. (3) To find these explorative verbal descriptions and their psychoacoustic quantization, methods known from **psychoacoustics and an expert listening panel** shall be employed. The intermeshing descriptions will progressively inform the **ongoing compositional process,** resulting in a new, broader understanding and a generalizable approach of the artistic work with plastic sound objects that is not restricted to works using the ICO.

2. The overall idea of this artistic research project is not to chart a collection of experimental practices. The investigations shall result in an aesthetic practice that composes space, using space as a plastic sonic material, aiming to find a poetic approach in contemporary media art to use complex environments for creating self evident and unique experiences that make a strong difference to ordinary setups like in cinema, television or home 5.1. and invite the listener to share an extended ontology of sonic spatial arts. OSIL will disseminate the methods of working with, understanding, and composing spatial auditory objects projected into space with the ICO internationally. The ICO will be turned into a mobile (and available) tool for an advanced style of electroacoustic composition and sound projection into the performance situation. The interdisciplinary experiments and results are going to appear in a series of publications. The nomenclature system for sculptural-choreographic auditory objects will interconnect the disciplinary linguistic cultures of composition and psychoacoustics/audio engineering, and will be made available on a website. The compositions will be presented in a series of concerts and at a concluding international workshop.