Studies for electroacoustic music consist of complex ensembles of electroacoustic devices which emerged in the middle of the 20th century. They form a young, highly diverse and challenging niche category, relating to musical instruments, technical heritage and new media-based heritage. Their scientific investigation and documentation therefore require inter- and transdisciplinary approaches. Their relatively recent appearance, their small surviving number and unique characteristics might contribute to the fact that no standards or guidelines have been yet established on how to handle, investigate and document them for long-term heritage preservation. The following dilemma aggravates this challenge: On the one hand, the regular operation of sound studios leads to wear and catalyzed material deterioration by high operating temperatures. On the other hand, a permanent shutdown does not appear to be the ideal solution either, because long periods of disuse cause irreversible damage to electrolyte capacitors. These components need regular operation to guarantee and extend their service life. When both operation and shutdown of sound studios finally correlate to a diminishing long-term access to sound and performance information, how to preserve them for future generations?

The ‘Siemens-Studio für elektronische Musik’, which is considered a key contribution to the development of music in post-war Germany, exemplifies the particularities and challenges of this group of cultural heritage objects. Founded in 1960, the studio equipment had been consistently extended by highly customized devices. Famous composers like Joseph Riedl, Maurizio Kagel and John Cage worked in the Siemens-Studio, before it was shut down and abandoned from about 1968 until 1993. Since 1994 the studio has been exhibited in the Deutsches Museum and has been regularly operated for demonstrations and for maintenance. Based on an alerting maintenance report in 2020, the curator of the musical instrument collection and a team of conservators and other specialists decided to develop a concept for a significant change in the preservation strategy of the object. To explore future options for the preservation, documentation and possible partial reconstructions of the Siemens-Studio for educational purposes, a pilot study on a small part of the whole Studio—namely the sine wave generator No. 14—was initiated in February 2021.

The study design was shaped through methodologic reviews of related studies and by extensive discussions involving the curatorial and conservation team, electronic experts from the museum and external engineers and musicologists. The case study aims to explore different options for the preservation of intangible assets of electroacoustic devices and to develop a set of transferable guidelines and a risk assessment method for the (operational) documentation of the complete Siemens-Studio in particular and for that niche group of heritage objects in general.

During the project, the sine wave generator No. 14 will be documented with nondestructive methods such as the reconstruction of its electrical wiring diagrams and damage mapping, revealing its structure, function and condition. A review of archival material and the documentation of other generators will supplement the results. A risk assessment comprising a risk analysis matrix, qualitative analysis of plastic materials via FTIR and an operational monitoring via thermography will identify and quantify risks linked to different preservation strategies, operational documentation and object handling. The operational risk analysis is crucial to evaluate how sound recording may affect the object’s condition.

In conclusion, the project illustrates the importance and future chances of interdisciplinary studies for long-term preservation of complex electroacoustic devices and furthermore highlights the need for a longer research project with an extended team.

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