
Conservation and restoration of electroacoustic musical instruments at the Musée de la Musique, Paris

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The Museum of Music in Paris possesses a collection of 280 instruments from the twentieth century. Most of them belong to the general families of electric and electronic musical instruments, which we will call ‘electrophones’, in deference to the name chosen by Curt Sachs (1940). The instruments are gathered in families so that the whole collection illustrates the milestones of the twentieth century; for instance, the museum has a large set of diverse Ondes Martenot. However, due to its scarcity, the Trautonium is represented by one of Oscar Sala’s Mixtur-Trautonia.

Like any museum, we have to encourage the conservation of this heritage. To maintain a large collection of electrophones like the one we have, a specific knowledge base has to be developed. We have been working on this aspect of the project for the past two years. From the onset, it was decided to start the collection with the Ondes Martenot. Our aim was to define a model approach that could also be applied to other electric and electronic instruments. This work involves organising the instruments, studying them in order to outline conditions of appropriate conservation, and determining which kind(s) of restoration should be undertaken.

A first step has been to gather all information necessary to understanding the instrument and its mode of performance. With this goal in mind, we have taken a complete inventory of our collection with the aim of coming up with a first assessment of the state of the instruments and determining whether to allow performers to play them. Thanks to this work, we were able to start taking precautionary measures against degradation; we are now also able to answer many questions relevant to the restoration and conservation of this collection.

1. INTRODUCTION

Preventive conservation includes management of age-dependent parameters and the conservation of collections. Essentially it is based on the conservation of material and forms. We have acquired valuable information concerning the conservation of metals or wood. Conservation of functionality still needs further study and definition.

Currently the museum possesses 280 musical instruments from the twentieth century in a collection of 4,300 musical instruments and a totality of 6,500 works. A planned acquisition programme commenced in 1991 when musicologist Marc Battier took charge

of the design of the twentieth-century collection. Over the time span of two years, he prepared the necessary steps to acquire electric and electronic instruments which would evolve to become a structured collection, reflecting the major steps of the century’s electric and electronic instrument making. A condition for the selection was that any instrument considered was to be a technological breakthrough and have generated a musical repertoire. Ten years later, the corpus of the twentieth century includes different kinds of instruments such as guitars, amplifiers, synthesizers, computers and peripherals, drums and so on. Such a collection invariably poses various problems of conservation and restoration for each of its instruments.

Electric and electronic instruments are an integral part of the collections of the museum and, therefore, they have the same prerogatives as all the other instruments; we have to acquire, conserve, describe and display them (cf. Statutes of the International Council of Museum Art, 2§1).

The acquisition of these instruments is fundamental and includes the gathering of all elements related to the history, fabrication and the performance of instruments. It is also a way of sharing and communicating with collectors, craftsmen, musicologists and musicians. This means that it needs to be as complete as possible and requires considerable research work. Through acquiring information that helps us to understand the instruments, we are able to define conservation, communication and exposition criteria.

The work on the electric and electronic instruments collection started following an agreement concerning the logic of this documentary work. In 2001 Emma Lavigne, curator at the Museum of Music, started to do some research on twentieth-century instruments and, more specifically, on the Ondes Martenot. We started studying this corpus for several reasons. Firstly, it has significant historical importance and, secondly, this collection is the most complete in terms of instruments and documentary resources. The museum also had the good fortune of obtaining the archives and the collection from the atelier of Maurice Martenot as a gift.

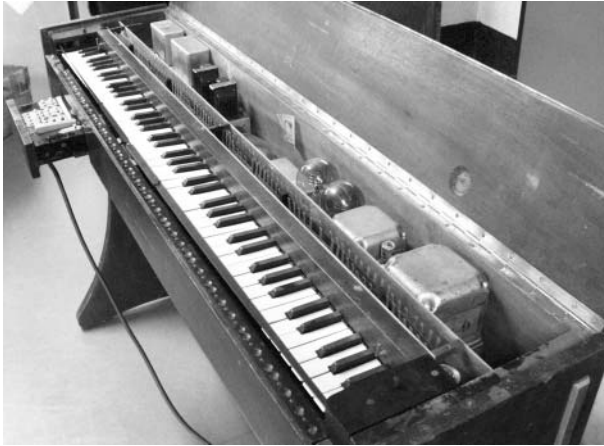


Figure 1

2. THE ONDES MARTENOT

Although the Ondes Martenot have generated a substantial body of musical compositions, very little has been written on the instruments, apart from the book by Jean Laurendeau (1990). Our purpose was, however, very practical, and needed to be quite systematic. Also, it consisted of defining an approach that could be applied to other twentieth-century instruments from our existing or future collection. One of the aims was to assess which aspects of restoration were needed, the levels of intervention and the most suitable procedures of conservation. Considering the quality and the importance of this corpus, Lavigne wanted to create a reference source on the Ondes Martenot, both from a documentary point of view and conservation policy.

We divided the study into four parts: documentation and study of instruments in collaboration with external specialists; the inventory and description of elements of the collection of the atelier and archives. Then we became interested in conservation and restoration of instruments.

A first step in the documentation phase was to observe, describe and classify the instruments. We composed a working group of a musician, an electronic specialist, a collector and a restorer in order to carry out a complete survey and to be able to accumulate different points of view.

We studied each component one by one; we photographed them and collected different observations in a conservation status report for each instrument. We made a model report including the different parts: console, frame, legs, slide, keyboard, electronics, speakers and recommended conservation mode. With these observations we aimed at evaluating the general state of the Ondes (keyboard and speakers), to place them in their historical context by keeping visual documents (iconography) and a written document (reports) of the state of the instruments. Our goal was then to

organise proper storage in a logical way according to the information thus obtained. With the help of the documentation centre of the museum, we also took this opportunity to update the description of the Ondes in the museum's database.

The work on the collection of the atelier that followed mainly involved listing and classifying the electronic components and the measurement instruments. In this way we were able to distinguish which components were made by Maurice Martenot and which ones were purchased; it was also possible for us to evaluate visually their state. The presence of those 'separated pieces' has an enormous value when renovating or making a facsimile.

On the question of *archives*, we collaborated with the documentation centre of the museum. Whenever possible, we made a link between the archives and the instruments in the collection, in particular with respect to plans, schemes and documents of agreement. This work allowed us to make the information in the archives more accessible. At the same time, we compiled a list of documents that had to be renovated and duplicated so that they could be salvaged and presented to the public without risk to the originals, which were sometimes in a very bad state. In addition to these documents, the documentation centre also carried out some research on the information and documents of other institutes such as the Institut National de Protection Industrielle (INPI), where we found the patents of the Ondes Martenot. Some of those documents are related to the Ondes in the museum's collection. Those patents represent an important extra information source.

3. CONSERVATION, COMMUNICATION

The first step in improving conservation of the instruments was to improve the storage conditions. We started to make a classification by typology

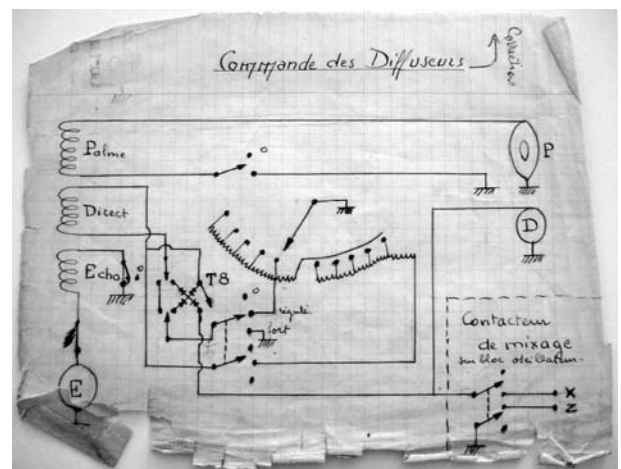


Figure 2

(keyboards, palms, speakers) after having dusted and numbered each of them. The keyboards were stored half-opened to avoid confinement and degradation of the materials. For the same reasons, palms have been stored without cover, as well as some of the keyboards.

Our second goal was the preservation of instruments in a musically playable state. When looking at experiences in other domains, such as scientific and industrial collections or even experiences in other countries such as Canada, we notice that reflection on preservation and the maintenance of functionality is highly developed. Therefore, we have to know about that work before starting to define our conditions of conservation.

Legitimacy of conservation parameters in the long term will have to be proved scientifically. That is why we decided this year to focus more specifically on the study of the efficacy and the potential harm of plugging in or even playing an instrument.

Currently we are working on a research protocol for the degradation of components and electric contacts when they are used. After that we would like to collaborate with experts who can make a comparative study on degradation and deterioration of different components in order to evaluate the pertinence of allowing instruments to be turned on to optimise their conservation. In case the results demonstrate that conservation of instruments is better when they are regularly turned on, we will be able to define a protocol of maintenance including verification of circuits before connection, and the frequency and possibility of turning each instrument on and off. Otherwise we will have to consider the dissociation of sensitive components such as condensers able to damage

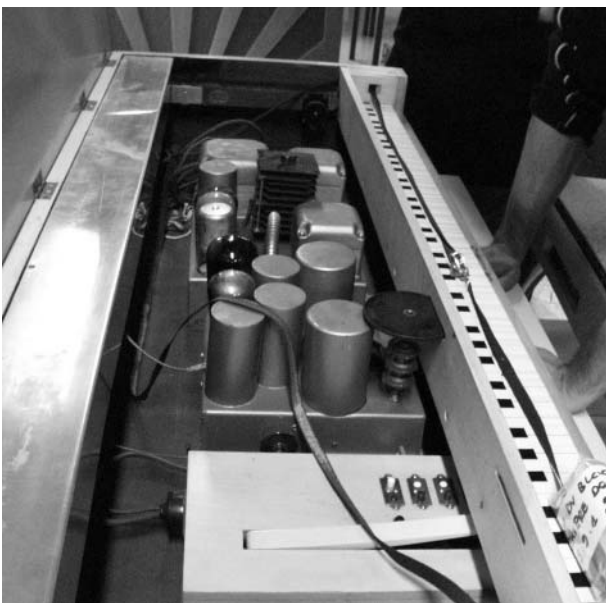


Figure 3

other components by corroding them. We will have to take measures adapted to the conservation of the constitutive materials of the instrument.

4. RESTORATION

According to the International Council of Museums (ICOM), 'The conservator-restorer has a particular responsibility in that treatment is performed on irreplaceable originals, which are often unique and of great artistic, religious, historic, scientific, cultural, social or economic value. The value of such objects lies in the character of their fabrication, in their evidence as historical documents, and consequently in their authenticity. The conservator must distinguish the necessary and the superfluous, the possible and the impossible, the intervention that enhances the qualities of the object and that which is detrimental to its integrity and be aware of the documentary nature of an object'.

Therefore, all interventions must be preceded by a methodical and scientific examination aimed at understanding the object in all its aspects, and the consequences of each manipulation must be fully considered. Whoever, for lack of training, is unable to carry out such examinations or, for lack of interest or other reasons, neglects to proceed in this way cannot be entrusted with responsibility for this treatment. Only a well-trained experienced conservator-restorer can correctly interpret the results of such examinations and foresee the consequences of the decisions made.

Following a correct deontological procedure would suggest that restoration only comes after having carefully inspected the object and taken the necessary steps for conservation. The question of restoration though comes later. Before deciding to do something with an instrument, it is necessary for us to know why we need to undertake any intervention and how we should do it. Any action upon an instrument should be justified, and, as the Venice Charter tells us, '[restoration] must stop at the point where conjecture begins'.

A restoration to improve the state of presentation or to restore the ability to play an instrument is obviously neither the same intervention nor involves the same level of intervention. One has to remember that the more an intervention is encouraged, the more one touches the authenticity of the instrument. Therefore, there is the risk of losing information that might seem unimportant at the moment of restoration but which might become relevant in twenty or fifty years time.

The experience the museum is gaining with old instruments allows us to be aware of the rarity of the instruments in their original state, something essential for the understanding of instrumental manufacturing. Once an intervention is finally chosen, documentation of the restoration will be necessary.

Moreover, when it comes to renovation, a museum whose duty it is to preserve the integrity of the works will have to achieve a so-called 'patrimonial' restoration, respecting the deontological codes defined by the ICOM which form part of the restorer's trade. Three principles are to be followed: compatibility, durability and reversibility. Any materials ought to be chemically and mechanically compatible with the other materials of the instrument, on a short-term basis as well as on a long-term basis. Furthermore, it should be possible to remove materials used in the restoration process without harming the instrument in any way.

When taking into account these principles, it is obvious that restoration of the instruments will be a complex matter and will involve great care. For instance, if part of an instrument needs to be replaced, the new part which takes the place of the old one should be removable at any given time, and the intervention should be logged into a report which documents the details of the piece and the reason for the action taken.

5. CONCLUSION

Work on the problems of conservation and restoration of electroacoustic musical instruments is a very recent matter. We still have many unanswered questions, but we hope soon to be able to offer better conservation conditions. For the restoration of instruments, we first have to start defining the levels of intervention. Before that, we have to have finished our work of documentation and research.

While waiting for the moment when we will be best informed about our choices regarding conservation or restoration, the research methods which concern performance aspects, as well as the progress of our work with collections from the twentieth century, are offered by the museum to researchers or craftsmen at the documentation centre of the Museum of Music. At last it is possible, even though they are not yet on display, to look at these instruments in the same way as all the other instruments in the museum, albeit by appointment and for specific research purposes only.

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