

## **Claus Peter Gallenmiller**

„Re-engineering of the 78 RPM recording process based on a restoration project for a real historic acoustic recording lathe“

Many details about the recording and manufacturing process of 78RPM are unknown today. This knowledge and skills of those days have been lost since it has been kept as a secret of the recording engineer or the record company. Most of the documents are lost today and a lot of things have been never been documented at all. In the sense of “industrial archeology” we need to re-engineer these processes in order to understand the characteristics of acoustical or electrical 78RPM recordings. The most efficient way to do so is to restore the few surviving recording equipment as close as possible to their original working condition. Based on surviving equipment available in the GHT and the available fragmented know-how it should be possible to re-engineer this lost knowledge up to a real acoustical recording on wax.

## **Charlotte Desvages**

„Modelling wave propagation in a pipe with the finite difference method“

This workshop will present an algorithm simulating the propagation of a wave inside a 1D pipe, using a finite difference discretisation of Webster's equation. After a short introduction to the principles of the numerical method, participants will have the opportunity to produce time-domain simulations in Matlab, and to explore the influence of the choice of input parameters (e.g. bore profile, nature of the excitation, boundary conditions...) on the simulated results. Recent model refinements and sound synthesis applications will be discussed. For the second part of the workshop participants are invited to bring laptops with MATLAB installed. Some laptops will be provided by the organisers.

## **Malte Kob**

„Challenges and methods of transfer path analysis from singer to record“

Voice recordings require an intimate relation of artist and recording engineer. Since instrument and artist are identical, the presence of a recording device has an intense effect on the performance of vocalists. In the wake of voice recordings limitations of the technology and the large expressive range of voices, together with unknown acoustic properties of devices and singer, challenged various skills of recording engineers in mechanics, chemistry and acoustics. Most adjustments and developments have been based upon experimental findings that resulted in the selection of both: appropriate parts in the signal chain as well as singers with compliant voices that were able to bear the recording conditions. The investigation of voice signal changes by acoustic properties of the recording and reproduction devices is one of the main goals of this project. Among the voice parameters that are investigated are: dynamic range, distortion, and formants. The second major research goal is the identification of voice modifications that singers had to perform to achieve the best possible recording quality. Since historic recordings only document those results that were successful, the ultimate goal of our project part is the reconstruction of the signal path from singer to record to listener by means of mechanical and numerical models.

## **Dorota Habasinska**

„Insights into recording practices applied at the Victor Talking Machine Company gained by the analyses of the company’s recording ledgers“

One of the goals of [the acoustically-oriented part of] the project Technologies of Singing is to learn more about the practices applied in recording studios of the first two decades of the XX century. We can certainly say that invention, experimenting and testing new technological ideas was inherent in the work of sound engineers of those times, however, we still lack detailed information about these processes. To shed some light on this problem, one of TdS researchers, Karin Martensen, visited the archive containing recording ledgers from The Victor Talking Machine Company (1901 – 1929). These documents, dated from 1901-1925 and containing some coded information about the recording procedure of all recordings ever taken at “Victor”, has been photocopied and thoroughly inspected. The content of about 45% of the total amount of photocopies has been transcribed into digital form and served as a data set for further quantitative and statistical analyses. These analyses are meant to reveal some development trends and steps regarding the use of recording equipment (e. g. soundboxes, horns, connecting ducts) depending on the recording situation. We would like to present the process and challenges of working with such unique data as well as our to-date outcomes, hypotheses and first conclusions.

## **Tobias Andreas Weege**

„Preliminary results from measurements of different gramophone parts' influence on the sound“

The knowledge about the influence of the gramophone on the sound, whether in recording or playing situations, goes necessarily through understanding how the individual parts and their combination change this sound before it arrives to the listener. An important activity for achieving this goal is to submit the different parts to acoustical and vibrational measurements. In the context of the research project “Technologies of Singing”, pilot measurements were performed on horns (playing horns and replicas of recording horns), tonearms, playing soundboxes and on their combinations. The resulting data provides relevant information on the potential of the applied measurement techniques for further steps in the research project and are here presented as preliminary results.