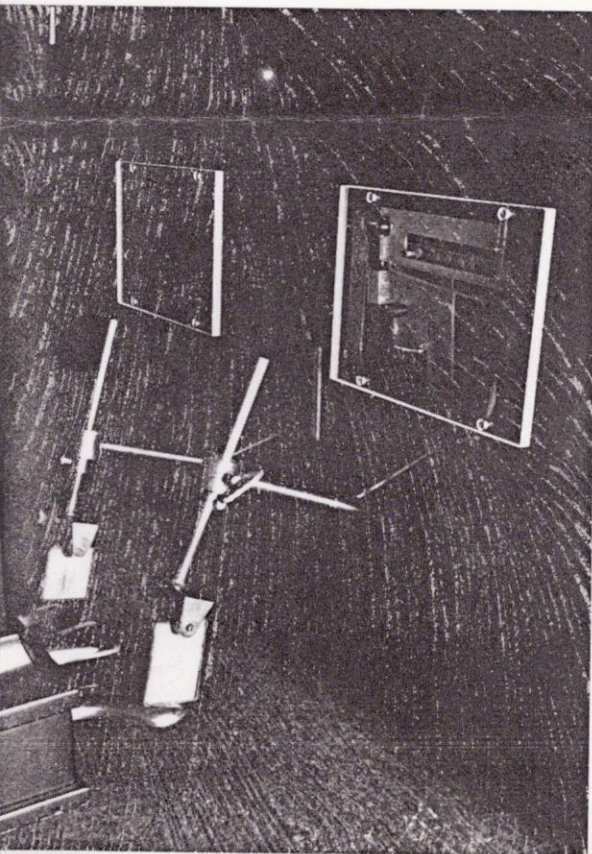
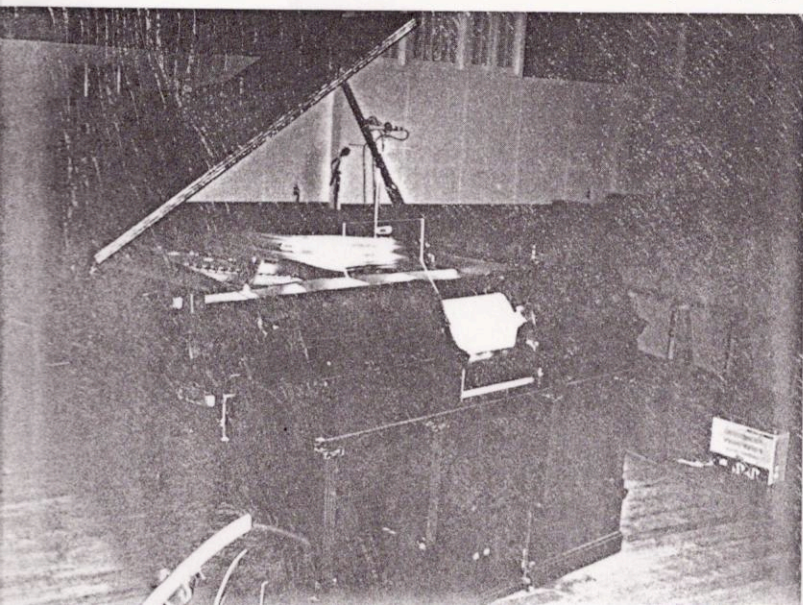


*The insides of the device invented by Welte*



*The pedals are operated by a system of mechanical feet*

*The Steinway concert grand used for the Welte recordings. At the keyboard, the mechanical piano-player*



**D**URING A recording session for Welte-Mignon, the famous Polish pianist Theodor Leschetizky stated: 'I must consider this invention, which is known under the simple, unobtrusive name of "Welte-Mignon", to be really wonderful, and can only express my regret that this marvel was not known one hundred years ago. How much would youth and age have learned from it! What happiness there would be in being and remaining young, that we might harvest the fruit of this wonderful invention for all time!'

- In a letter to Welte, the French composer Claude Debussy wrote: 'It is impossible to attain a greater perfection than that of the Welte-Mignon apparatus. I am happy to assure you in these lines of my

## *Welte-Mignon – a cofinanced project for radio*

astonishment and admiration at what I heard.'

Between 1905 and 1931, Welte-Mignon released some 3,500 rolls. If Welte-Mignon was such a household word at that time, who, then, was Welte?

In 1875, Michael Welte, a maker of musical clocks, the Orchestrion – a huge mechanical instrument – and player pianos, opened a factory in Freiburg in Germany. In the late 19th century, player pianos became popular all over the world. But these instruments had problems. Depressing the keys when making a recording activated a series of mechanical levers, which resulted in an incredibly heavy keyboard action. There were two shadings, loud and louder, as one contemporary music historian put it.





### Sven-Åke Landström

Senior Music Expert,  
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Then, in 1904, Edwin Welte, Michael Welte's 29-year-old scientist nephew, demonstrated in Freiburg a piano reproduction mechanism that was destined to attract the world's great keyboard artists, as Welte's 'electrified' piano was capable of recording a pianist's exact interpretation.

In this system, the electrical impulses were recorded on an instrument like a seismograph, with an inking device for each key and pedal tracing the performance on a paper roll mounted on a slowly-revolving drum. Afterwards the ink tracings were meticulously punched out by hand, thus capturing forever the playing of the great keyboard virtuosos.

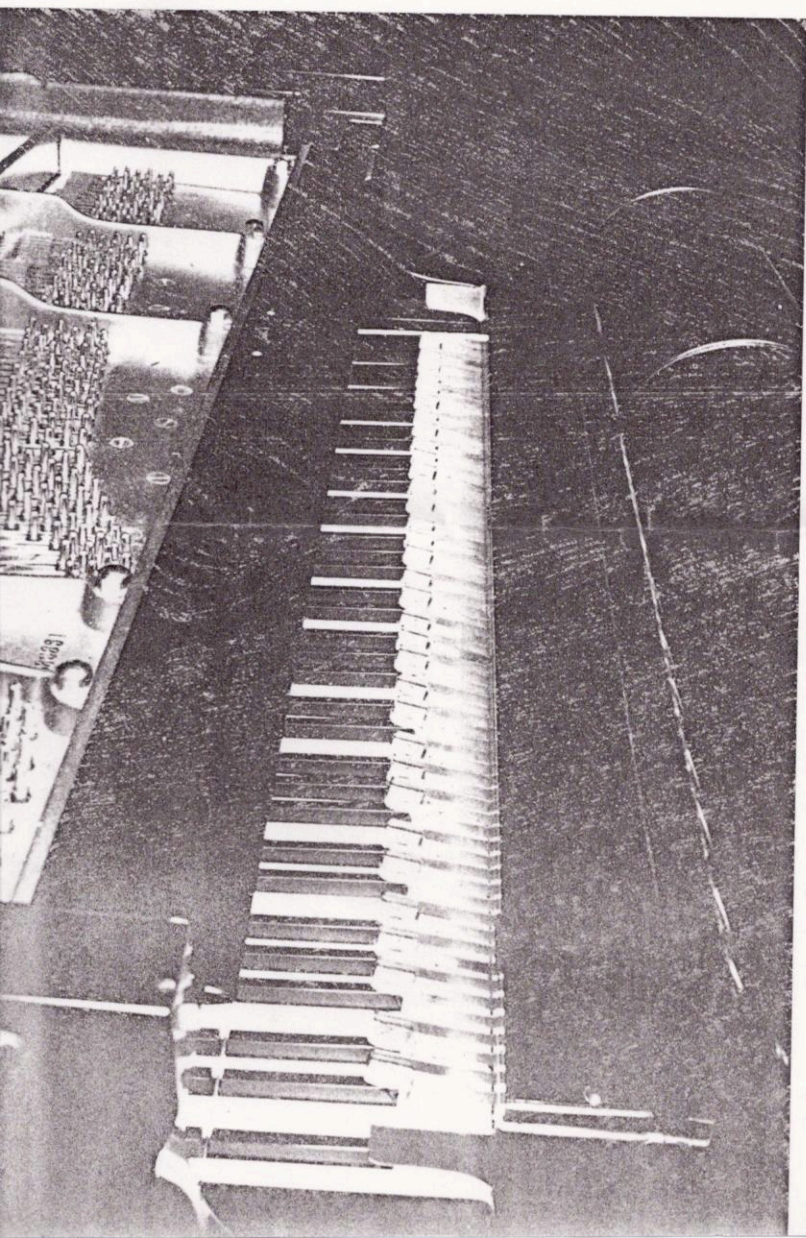
But what about the reproduction? For this, Welte invented a robot piano player. This was a huge wooden cabinet with 80 fingers and two feet for the pedals. He called it the *Vorsetter* – something sitting in front. That is exactly what the *Vorsetter* does: it can sit in front of any piano, and its wooden fingers will then play with the same subtlety of expression as a human pianist.

The *Vorsetter* receives its instructions from the perforated paper roll. The fingers are activated by negative air pressure (vacuum) acting through the perforations.

This, then, was the device that made it possible to listen to famous piano players in one's own home. To the modern music-lover this is a goldmine for learning about significant pianists of the past and their performances. How did they play? Was their interpretation of classical piano works different from what we hear nowadays. And if so, how? Thanks to the EBU's Welte-Mignon project, listeners in many countries can answer many of these questions for themselves.

How did Welte reach his customers? Well, he used the usual methods of his time: information on new releases was included in catalogues printed and distributed on a regular basis from which customers could order, just as book publishers used to distributed monthly magazines.

For many years now there has been a tradition in Sveriges Radio of taking care of equipment and technology related to the production of various kinds of piano roll. Welte-Mignon is just one of the makes concerned, albeit the most famous and widespread. Transferring and recording the rolls digitally for future use has therefore been a



Felt-covered fingers on  
the Steinway's keys



challenge to us for many years. However, because of the resources required for the project we had to seek international support to be able to start.

This was the background to SR's proposal, made at an EBU Plenary Meeting of Serious Music Experts in Geneva in 1988, for a co-financed operation to transfer some 450 Welte-Mignon rolls using digital recording technology. Altogether, 13 broadcasting organizations within the EBU expressed an interest in taking part in the project. These were ORF/Austria, BRT and RTBF/Belgium, CBC/Canada, DR/Denmark, YLE/Finland, ARD/SWF and ARD/WDR/Germany, AIR/India, RTHK/Hong Kong, NRK/Norway, RNE/Spain, and BBC/UK.

The more the project developed, the more we looked on the 450 rolls as a bank from which rolls to be transferred were to be selected. But on what criteria? There were four main lines of interest:

- ▶ Liszt's pupils performing Liszt's music;
- ▶ composers performing their own music;
- ▶ important pianists of the past representing a well established genre of repertoire: Wagner/Chopin/Brahms/Russian music;
- ▶ pianists of the past having important links with modern pianists.

In principle we used a selection of the 578 Welte-Mignon rolls existing in the SR archives, but we also used rolls from a number of important Swedish collectors, together with some material from a Swiss collector. Incidentally, the general impression we got after contacting many private collectors was that the latter were very disorganized as regards their collections. SR had transferred a number of rolls to analogue recordings in 1977 and 1978, and when we asked for the

rolls again we were surprised to learn that the private collectors concerned could not find them. This was even the case with some rolls from the very limited series of recordings done in 1985.

We also found some rolls where the paper had deteriorated with age. And then the banal but devastating fact that when people move house they throw things out, even piano rolls.

The aim of the project was to transfer 450 rolls, but for various reasons – not least a refusal to make compromises as regards technical quality – it terminated after 228 rolls representing 48 pianists and of a total duration of 23 hours, 55 minutes and 43 seconds. Included is Sergei Lopatnikoff's *Scherzo* with the special comment on the roll 'not played by hand'. This is an interesting example of writing directly for the machine.

In general, we avoided transferring rolls that we knew were already available on the commercial record market, although we did decide to make a transfer when we thought we could achieve better quality.

In the transfer process we did not try to change any of the information contained on the roll. We found ourselves in a strange situation when the recording team discovered how easy it was to correct wrong notes. It would be like changing history. We listened to some examples of this on commercial recordings where the editor made special mention of the fact that 'wrong' notes had been corrected.

A team of four experts was assigned full-time to the project from August 1988 to December 1989, the only interruptions being for editing.

The recordings were made in Studio 2 in Broadcasting House in Stockholm. Studio 2 is SR's second largest studio – the Berwald Hall is the largest – with a floor area of some 16m x 24m. There is a platform, and seating for an audience of 200. This studio is used regularly for recording chamber music and

choirs. The Steinway grand was placed in front of the platform.

The following microphones were used:

**two** Schoeps BLM 3's placed on the floor in front of the piano about 60cm apart;

**two** Schoeps CMC MK 4's as an x/y pair placed in front of the piano about 1.4m from the ground;

**one** V 89 placed at the end of the piano.

All microphones were phantom-fed from own units.

A temporary control room was set up in an artist's room just outside the studio. New microphone cables were installed from this room.

Recordings were made using a SAM 82, a Swedish eight-channel portable mixer of very good quality. For additional reverberation a Lexicon 480 was used.

The recording machine was a Sony DASH PCM 3402, connected via a digital interface to a Sony DAE 1100 digital editing machine. This arrangement was not without its problems. Interface and software for the 3402 were not fully developed when the Welte-Mignon project began. This led to time-wasting editing sessions.

During a break in the recording sessions the Sony DASH PCM 3402 was replaced by a Studer with Dolby SR with excellent results and it was possible to shorten the editing sessions. However, the main reason that we changed to the Studer machine was that we found the sound better.

Thanks to this project, names like Fanny Bloomfield-Zeisler, Teresa Carreno, Felix Dreyschock, Richard Epstein, Arthur Friedheim, Osip Gabrolovitch, Alfred Hoehn, Frederic Lamond, and May Pauër, to name but a few, are no longer mere names. We know how they played, even though it happened in 1905 – and you can hear it on radio, today. ■



Denis,

I found this article by accident & photocopied it  
in case you haven't seen it before.

It comes from

EBU Review. Programmes, Administration, Law.  
Vol XL1, No. 6 November 1990.

Cheers

John Bartholomaeus