

# University of Helsinki Music Research Laboratory and Electronic Music Studio – The first 50 years and beyond

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## ABSTRACT

The University of Helsinki Music Research Laboratory and Electronic Music Studio is one of the oldest studios and research facilities of its kind in the Nordic countries. Originally named "Ääniteknillinen laboratorio" (Laboratory of sound technology), the studio was the leading electronic music facility in Finland from the early 1960s to the late 1970s. Built and maintained by Erkki Kurenniemi, the studio served also as an important center for the development of electronic musical instruments.

In the mid-1980s, the focus of the studio shifted toward research, first in the form of computer music software development and later in various fields of research. In the fall of 2012, the studio celebrated its 50th anniversary. In the same year, the studio moved from its long-time location at Vironkatu 1 to the Topelia building in the historic center of Helsinki. Lately, the studio has gained new interest in the Finnish media, especially through the pioneering work of Kurenniemi. This studio report describes both recent activities and the early history of the studio.

## 1. INTRODUCTION

The University of Helsinki Music Research Laboratory and Electronic Music Studio is currently part of Musicology and belongs to the Department of Philosophy, History, Culture and Art Studies in the Faculty of Arts. The University studio has had many official and unofficial names starting from the original "Ääniteknillinen laboratorio" (Laboratory of sound technology). The current name was established in 2002 [2]. The name reflects the dual role of the studio: As part of the discipline of musicology it serves as a research and teaching facility, and because of its history and equipment it serves as an electroacoustic music studio. Especially during the last decade, artistic work has gained an increasingly important role alongside research.

Previous activities of the studio have been described in two earlier ICMC studio reports [1, 2]. This text focuses on the work performed during the last decade including the recent research activities and latest developments of the studio. Current research has also involved the history

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of the studio as well as the early work of Kurenniemi and his collaborators.

## 2. A BRIEF HISTORY

The studio was founded by the initiative of professor of musicology Erik Tawaststjerna. Young nuclear physics student Erkki Kurenniemi was appointed to build the studio as a "voluntary assistant" during the academic year 1961-62. The emphasis in the 1960s was in Kurenniemi's instrument and studio design. Happenings and other avant-garde events arrived in Helsinki in the early 1960s and the studio was involved in some form or another in most of these events. Kurenniemi's close collaborator during the early years was composer Henrik Otto Donner, who also played a central role in bringing the happenings to Finland together with Terry Riley, Ken Dewey, Folke Rabe and Jan Bark. With Donner, Kurenniemi composed soundtracks for experimental films by Eino Ruutsalo. Other early studio users included composers Erkki Salmenhaara and Ralph Lundsten as well as avant-garde artist Mauri Antero Numminen.



**Figure 1.** The University studio at Vironkatu 1 in 1973 (Photo: E. Kurenniemi's archive).

For the first five years, the studio was located in Porthania, one of the University main buildings. In 1967, it moved to Vironkatu 1 with the Department of Musicology. There, it occupied four different spaces until the end of 1970s. Between 1981 and 1984, the Vironkatu 1 building was renovated and the studio was temporarily placed in the neighboring block at Vironkatu 7. After the renovation, the studio received a c.a. 100 m<sup>2</sup> space at the bottom floor of the Vironkatu 1 building including a dedicated recording room, two control rooms, a separate

tape music studio as well as office and service rooms. At the end of 2012, the studio moved from Vironkatu to the Topelia building at the University campus area in the historic center of Helsinki, a block away from its original location in Porthania.

Throughout the 1960s, the studio equipment consisted mainly of analog tape recorders and various Kurenniemi's sound generators and other custom-built devices. From the mid to the late 1960s, Kurenniemi's Integrated Synthesizer served as the central sound generator, mixer and sound processing unit. Due to the unconventional equipment, composers were dependent on Kurenniemi's help to accomplish their projects. In the early 1970s, with the aid of increased funding, new equipment, including more tape recorders and a Putney VCS 3 synthesizer, were purchased (see Figure 1). At the same time, composer Jukka Ruohomäki took control of the studio while Kurenniemi founded the Digelius Electronics Finland company to market and manufacture his instrument designs. In the mid-1970s, Ruohomäki developed the equipment setup into a more conventional tape music facility. Still, Kurenniemi's equipment remained its speciality, especially the digital synthesizer DIMI-A and the programmable patch bay and mixer DIMIX. Collaboration between the studio and Digelius Electronics remained vivid until the company's bankruptcy in 1976.

Ruohomäki also started the first informal studio courses for composers, musicians and students from both inside and outside the Department. Although the University studio was generally known as a working place for electroacoustic music composers, it did not have an aesthetic or stylistic policy. As a result, many kinds of projects were realized ranging from experimental works to film soundtracks and pop music recordings. However, practical constraints such as lack of a multitrack tape recorder or sound-proof control room restricted the use of the studio for conventional music production purposes. Still, the University studio remained the leading electronic music center in Helsinki until the late 1970s when YLE's Experimental Studio was developed into a fully equipped facility.

Certain shifts of trends can be seen to direct the studio activity across its history. During the first decade, the work concentrated on instrument design. The active collaboration with Finnish and Swedish artists gave the studio a status as a creative working environment with novel technology. With Ruohomäki and his courses the focus of the studio shifted toward composition.

Ruohomäki's successor Andrew Bentley strengthened this trend and stabilized the studio course as part of its regular training. Bentley maintained the studio during the renovation of the Vironkatu 1 building. After the renovation, Ruohomäki returned briefly to rebuild the studio and handed the responsibility of its maintenance over to a younger generation of composers and researchers including Pauli Laine, Kai Lassfolk and Kalev Tiits.

Starting from the mid-1980s the focus shifted more toward computer-assisted music research, although composition and concert performance activities continued on the side. The early 2000s saw a strongly growing interest in the history of Finnish electroacoustic music. This was partly due the new generation of musicians and artists finding Kurenniemi's almost lost life-time work as a pioneer of electroacoustic music. This has also reflected on the academic and artistic activities of the studio.

### 3. NEW STUDIO FACILITY

The new main studio facility consists of a 75 m<sup>2</sup> space divided into a recording room and two control rooms (see Figure 2). An additional 37 m<sup>2</sup> room is allocated as a service and study space. The studio audio and video cabling is also routed to a neighboring 76 m<sup>2</sup> music and lecture hall as well as to a small practice room. Both rooms are equipped with a Steinway grand piano. The main control room is equipped with a 16-channel computer-based recording system with stereo monitoring. A selection of analog and digital outboard equipment is also available. The second, small control room features a computer workstation and a 5.1 speaker setup. The recording room serves also as an analog tape music studio with equipment from the 1960s, 1970s and 1980s.



**Figure 2.** The recording room and analog studio of the new studio in the Topelia building. (Photo: K. Lassfolk.)

The computer system consists of an Apple Mac server and four client Mac workstations. Apple Logic Pro is used as the main DAW program. Besides the Sibelius notation program other software consists mainly of in-house developed and open source programs. Since the late 1980s, the main software development platform has been a Unix-compatible system. The first Unix systems were Intel 80286 and 80386 based Unix System V environments, followed by a NeXT computer system in the 1990s and a PC/Linux system in the early 2000s. The modern Mac OSX was set up in 2007.

The tape music studio includes a selection of Studer and Revox stereo tape recorders, an Eela Audio mixer, Roland System 100M and Putney VCS3 analog

synthesizers as well as Erkki Kurenniemi's DIMI-A, DICO and Electric Quartet.

#### 4. RESEARCH AND TUITION

Since 1993, the musicology students at University of Helsinki have been offered a curriculum in computer-assisted music research, coordinated by the studio. Currently, several regularly arranged courses are offered on both Bachelor's and Master's level. The subjects include music acoustics, basic and advanced sound engineering, analysis and composition of electroacoustic music, spectrum analysis of musical signals as well as musical application programming. Occasional one-off courses are also organized on various related subjects. The studies are available for European visiting students via the Erasmus program.

Throughout the 1990s and early 2000s, the main research areas were computer-assisted music analysis and development of audio signal processing software as described in previous ICMC Studio Reports [1, 2]. This research trend has continued by development and application spectrum analysis software [3], for example.

Since the early 2000s, the history of Finnish electroacoustic music as well as analysis of historic electroacoustic works have become central research areas. The research has been largely motivated by the growing general interest in Erkki Kurenniemi's work. The main contribution of the studio has been in the research of Kurenniemi's electronic musical instruments [4], musical works and other musical activities [5, 6]. Also, the work of many of Kurenniemi's collaborators has been studied recently, for example the music of his closest colleague Jukka Ruohomäki. With the aid of the Kiasma Museum of Modern Art, most of the remaining instruments were collected to the University studio to be used as research material as well as in artistic endeavors.

Another recent research area is music technology studies including studio and music technology in general. The studio also collaborates with researchers from both inside and outside the Department by providing technical and methodological support. One of such areas is music archaeology [7].

#### 5. ARTISTIC ACTIVITY AND COLLABORATION

Since 2004, the studio has organized regular concerts in collaboration with the Juvenalia music institute in the neighboring city of Espoo. A related artist group entitled 'Masiinat ja musikantit' (Machines and Musicians) was formed to promote artistic use of musical and technology for both research and educational purposes. The concert performers include both staff and students of both institutions.

The recent interest for Kurenniemi's work has also spawned new artistic collaboration projects. His early electronic musical instruments were used in concerts and put on display in various concerts and exhibitions. In 2012, Kurenniemi was one of the featured artists of the dOCUMENTA (13) modern arts exhibition in Kassel, Germany. This was followed by exhibitions in Kunsthall

Aarhus in Denmark (2013) and Kiasma in Helsinki (2013-14). The improvisational group Dimis Reconnected was formed in collaboration with sound artist Tarek Atoui to perform live with Kurenniemi's instruments at dOCUMENTA. Afterwards, the group performed in both Aarhus and Helsinki. Another group, DIMI Trio performs also with Kurenniemi's instruments. The instruments as well as material from his tape archive have been used by a new generation of composers and sound artists.

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