DIEM
The Danish Institute of Electroacoustic Music

Studio Report
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Abstract
DIEM is Denmark's national center of electroacoustic music. DIEM is an independent, non-profit organization whose purpose it is to assist in the production, teaching, research and performance of all styles and forms of electroacoustic music in Denmark. The institution is funded by the Danish Ministry of Culture. The staff includes an artistic and administrative director, an audio engineer, a software coordinator and a secretary. This report is a description of the facilities and recent activities that have taken place at DIEM.

1 Location
The institution is located in the concert hall of Denmark's second largest city, Aarhus. The concert hall, consisting of a symphony hall as well as a chamber music hall, is owned and operated by the city of Aarhus. DIEM, which is a national institution, is leasing studio and office space from the concert hall. The building also houses the Aarhus Symphony Orchestra and The Danish National Opera. The studio itself consists of two rooms, 60 square meters each, which were designed and constructed as a recording studio and control room when the concert hall was built in 1982. Three offices are also located in the building.

2 Equipment
In July, 1993 the main recording studio was redesigned to provide fully automated and completely digital mixing and recording facilities. The mixer is a Yamaha DMC-1000 digital mixing console with 22 inputs, 8 digital outputs and full automation. Connected to the console, via a digital patch bay, is a Power Macintosh 8100 with a 32 channel ProTools III hard disk recording system with several 1 Gb and 4 Gb disks and an 8-channel ADAT digital tape recorder as well as two SampleCell cards. This system is integrated with two stereo DAT mastering tape recorders and a CD audio recorder. Software includes Soundsculpt, Sound Designer, SoundHack, MAX, Patchwork and Symbolic Composer. A NeXT cube with a wide variety of software for synthesis, analysis and processing, as well as numerous MIDI synthesizers and effects units are also available. Studio II includes a 16 channel mixer, a Power Macintosh 8100 computer with 16 channels of Pro Tools III, a sampleCell card and a number of synthesizers. The two studios and offices are linked via ethernet and there are direct audio links with both concert halls for live recording and playback. DIEM also has a full range four channel D&B F-1 PA sound system with subwoofers used for indoor and outdoor concerts with electro-acoustic music.

Studio 1 (L - R): Wayne Siegel, director; Steffen Brandorf, programmer & Claus Pedersen, engineer

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3 Productions
Studio time is made available to composers of all types of electroacoustic music regardless of their artistic background or stylistic orientation and there is no charge for working in the studio. For most projects, an audio engineer is also provided. The digital recording studio is of course attractive for work in the tape medium, and many tape pieces have been produced at DIEM. But there has also been a great amount of interest in live computer music, and DIEM has provided studio time and technical and financial assistance to several projects involving live electronics and interactive computer systems. A short description of a few works recently produced at DIEM follows.

Michael Nyvang: Kinematograf
A 40 minute tape work commissioned for a multimedia film and theater performance by the Boxiganga Performance Theater and premiered in November 1995. A version for tape and slide show for performance at the Aarhus Planetarium was commissioned by DIEM and premiered in October 1995.

Birgitte Alsted: Sorgasang
The last of six Danish Radio coproductions. Sorgasang (Lament) was commissioned by the Danish Radio and premiered as a radio broadcast in July 1995. A new version was later created for a multimedia performance with tape music and a slide show commissioned by DIEM and pre-miered at the Aarhus Planetarium in December 1995.

Brian Bevelander: Synthecisms no. 4
for two pianists, orchestra and tape. American composer Brian Bevelander spent three weeks at DIEM creating the tape part for this work, which was selected for performance by the international jury and premiered at ICMC 94 in Aarhus with pianists Philip Mead and Stephen Gutman and with Soren K. Hansen conducting the Aarhus Symphony Orchestra.

Gunnar Møller Pedersen: Glass Music
A 75-minute installation for four channel tape commissioned by DIEM and presented at The Glass Museum in Billings, Denmark.

Wayne Siegel: Lustigen (Signs of Life)
A science fiction opera in five acts involving 4 singers, 9 musicians, video, computer graphics, live video and interactive computer music. This work was commissioned by the Danish Music Theater and performed 9 times in Copenhagen in November 1994.

Wayne Siegel: Tunnel
A four channel tape work commissioned by choreographer Warren Spears and the New Danish Dance Theater for the ballet MCMVC. The ballet was premiered at the Copenhagen Dance Theater in September 1995.

Wayne Siegel: Jackdaw
A work for bass clarinet and computer commissioned by the Dutch bass clarinetist Harry Sparnay. The work was premiered at the Musiana Festival in August 1995.

Anker Feld Simonsen: Kyrie
Microtonal work for live performance that was premiered in September 1995.

5 Teaching
DIEM has organized several seminars and workshops during the past year. In June 1995 a MAX workshop-weekend was presented in the city of Odense. In Fall 1995 an intensive seminar in software synthesis and digital sound processing was initiated. The seminar began in conjunction with the Musiana Festival with five days of lectures and hands on workshops covering acoustics, sound perception, digital signal processing, and aesthetics of computer music and an introduction to Csound. The seminar was followed up by two weekend workshops, where participants had an opportunity to discuss problems and experiences. In May 1996 an intensive four-day seminar on Interactive Computer Music and Algorithmic Composition was held in Aarhus.

6 Research: Digital Dance
This is a project to develop and build a general purpose interactive dance interface. The system being developed will report precise data regarding the movement of neck, shoulder, elbow, hip and knee joints of up to six dancers via wireless transmitters to a Macintosh computer. Several other sensing devices will also be used to track the position of the dancers on stage. The system is being developed in cooperation with a leading Danish contemporary dance company. Four works by Danish composers and choreographers for interactive ballet will be commissioned by DIEM. Three engineers are currently working on this project, and they will work in close co-
operation with the choreographers and composers involved from an early stage.

7 Concerts & Festivals

ICMC94

DIEM hosted the 1994 ICMC in Aarhus September 12-17. The conference featured many outstanding soloists and ensembles, including The Royal Danish Ballet, The Aarhus Symphony, Michel Waisvisz, The Cikada Ensemble and the Athelas Ensemble. A total of 11 concerts, 4 listening room sessions and 4 installations were presented, including an outdoor performance with fireworks and computer music.

More than 150 papers, posters and demonstrations were presented. Special talks were given by Miller Puckette and Trevor Wishart. Four workshops were held prior to the conference.

About 400 delegates attended the conference including staff and crew. The geographical breakdown of official delegates was 220 from Europe, 96 from North America, 25 from Asia, 10 from Australia/New Zealand and 1 from Africa.

Musiana95

In August 1995 DIEM organized the second biannual Musiana International Festival of Electroacoustic Music at the Louisiana Museum of Modern Art in Humlebaek, Denmark (about 50 km north of Copenhagen). The festival theme was Japanese computer music and the festival was held in conjunction with Japan Today, a major exhibition at the museum featuring contemporary Japanese art. Several Japanese composers and performers participated, and there was a perform presentation was done in close cooperation with Professor Takayuki Rai of Kunitachi College. A total of 8 concerts were held over two weekends with Japanese and Danish computer music performed by Mari Kimura, The Ensemble from the East (Tokyo), the Spartaay/Koosits/Abe trio and Harry Sparnø/Koosits/Amsterdam along with several Danish soloists. The festival was organized in cooperation with the Danish Radio and the Danish section of ISCM.

Computer Music at the Planetarium

In October 1995 DIEM started a new concert series with computer music and slide shows at the new planetarium in Aarhus. The dome theater is equipped with a star projector and 30 slide projectors that can cover the entire dome and can be synchronized with 8 channel digital tape recorders for multimedia productions.

9 Conclusion

Since it was founded in 1997, DIEM has established itself as a significant cultural institution in Denmark. The institution is comparatively small, giving it the advantage of flexibility and enabling it to change and grow with the needs and demands of Danish composers. The fully digital recording studio, NEXT and Macintosh computers and wide range of MIDI equipment and software have supplied composers with useful musical tools, which have been used in many different types of computer music productions. The 1994 ICMC has brought DIEM into focus within the international computer music community and helped established valuable contacts with institutions and individuals around the world.