Computer Music Studio and Sonic Lab at Anton Bruckner University

Andreas Weixler
Anton Bruckner University
Computer Music Studio
Linz, Austria/EU
a.weixler@bruckneruni.at

Se-Lien Chuang
Atelier Avant Austria
Austria/EU
chuang@mar.at

1. History

The Computer Music Studio was founded in 1995 as the SAMT (Studio for Advanced Music And Media Technology) by DI Adelhard Roidinger and the Rector of the Bruckner Conservatory, Hans Maria Kneifeis in the buildings of the Software Park Hagenberg. The staff consisted of three teachers and a technician: Adelhard Roidinger, Kartheinz Essl, Andreas Weixler and Gerald Wolf. The staff was then gradually reduced to one person and the studio lost all its budgets. Since 2008 the University studio, as it became, has been under the direction of Ao.Univ.Prof. Andreas Weixler, who was at that time the only member of staff in an environment concerned with media archaeology; this firstly prevented the studio from being closed and, secondly, helped restore funding and activities. At the same time an institute director changed the name of the studio to CMS (Computer Music Studio). In October 2015, Univ. Prof. Volkan Klien was appointed to a new professorship with emphasis on media composition and computer music. Prior to moving into the new building in September 2015 the CMS consisted of 3 rooms, a lecture studio, a production studio and an office/archive. With the new premises the Bruckner University caught up on international standards, after 10 years of efforts by the authors.

2. THE FACILITIES

The Computer Music Studio has been proudly conceived, constructed and expanded under the direction of Andreas Weixler throughout 10 years (2005-2015) of negotiations with the university direction. Now it comprises a prestigious computer music concert hall named Sonic Lab with an adjacent production studio, a lecture studio (Lehrstudio), a project-oriented space with personalized working desks (Projekträum), an experimental research zone (Computermusik-Forschungsraum), a workstation, an archive room/depot and (last but not least) offices for colleagues and the directors.

2.1. Sonic Lab

The Sonic Lab is an intermedia computer music concert hall with periplectic speaker system, created by Andreas Weixler for the Bruckner University to enable international exchanges for teaching and production with other developed computer music studios. 20 full range audio channels plus 4 subsonic channels surround the audience, enabling sounds to move in space in both the horizontal and vertical planes. A double video and data projection capability allows the performance of audiovisual works and also the accommodation of conferences, etc.

The speciality of the CMS is interactive audiovisual performances, in which the sound of acoustic musical instruments produces images and spatial sounds in interplay. However, the Sonic Lab is also a perfect venue for concerts of jazz and improvised music (which often features strong percussive and amplified sounds) and for contemporary music (which frequently requires dry and clear acoustics) thanks to its special acoustic treatment. The Sonic Lab is thus a place for the music of the future.

2.1.1. Opening Sonic Lab

The opening ceremony took place on 17th of November 2015 with concerts and workshops featuring honorary guests John Chowning (Emeritus Professor at Stanford University), Jonty Harrison (BEAST, Emeritus Professor at Birmingham University), Kartheinz Essl (University of Music and Performing Arts, Vienna), Gerfried Stocker (Ars electronic Centre Linz) organized by Andreas Weixler and Se-Lien Chuang. Keynotes were given by Jonty Harrison (Tuning In to the Future) and John Chowning (Loudspeakers as Spatial Probes).

Copyright © 2016 Andreas Weixler et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License 4.0 Unported, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
ed to another concert hall in the building, with an eight channel surround sound and a live video transmission. We were very honoured by the presence of Laurie Anderson and Dennis Russell Davies in the audience.

2.2. Multichannel Concept

The teaching studio (Lehrstudio), the production studio and the Sonic Lab itself are all equipped with compatible devices based on a Digidesign C24 DAQ controller and 32 channel ProTools system as digital mixing console, playback and recording device, together with basic software including ProTools, Ableton Live, Cycling ’74’s MaxMSP and Final Cut Pro.

2.2.1. Teaching Studio (Lehrstudio)

This has a circle of eight Genelec 1032 speaker and a Genelec 7070 sub. The studio has an on site machine room to keep noise out of the studio.

2.2.2. Production Studio

This has a circle of eight Genelec 1032 speaker and a Genelec 7070 sub as well as 12 more speakers, a sound dome in 3 quadrophonic layers corresponding to the production studio: 2x Klingen & Freitag CA1215-9SP 2x Klingen & Freitag SW 115-E SP 4x KS Audio CPD 12M (monitors) equipped with a 24-channel analog Soundcraft GB 4 and a digital Yamaha 01V mixing console. Throughout the building there are rings of MADI lines which can connect to the sound recording studio/TON, located in the basement of the university, and to its other concert halls, as well as to the rooms of JIM.

2.3. Replica Room - The Production Studio

As the usage of the Sonic Lab is also for the JIM and open to everyone in the building, as with all the concert halls at Bruckner university, the production studio is a complete replica of the Sonic Lab, where you can work for longer period with the same settings as in the Sonic Lab. Both share a machine room to accomplish silence. An acoustically treated window between the two rooms create a great combination of production and performance venue.

2.4. Project Room

This room aims to develop social interaction and the sharing of collective know-how between CMS students. It has six computer workstations with Macs and basic software including ProTools, Ableton Live, Cycling ’74’s MaxMSP and Final Cut Pro. Workstations can be dedicated to individual students or, if necessary, a group.

2.5. Experimental Research Zone

This is dedicated to future PhD candidates. In the meantime, it has combined functions: as a place for experimental work (enabling set-ups to be left for longer periods of research), a laptop lecture room and a second social room where students can work freely.

2.6. Workshop (Werkstätte)

This is a room for soldering, repair and construction. It also contains a media archeological workkshop to read out dated formats such as DAT, VHS, ZIP, IAJ, SCSI, etc.

2.7. Depot / Archive

As well as storing the equipment of the CMS computer music studio, this has computer facilities for the digital archive and also provides a physical archive for scores, flyers etc.

There also is a PA System comprising: 2x Klingen & Freitag CA1215-9SP 2x Klingen & Freitag SW 115-E SP 4x KS Audio CPD 12M (monitors) equipped with a 24-channel analog Soundcraft GB 4 and a digital Yamaha 01V mixing console.

3. THE STUDIES

Since its start in 1995, music and media technology was the main aim of former GAMA (Studio for Advanced Music and Media Technology). In 2008 when the Studio was renamed CMS (Computer Music Studio), graduate students - mainly in Jazz and improvised music among others - could choose an emphasis in music and media technology for their degree as well as a pedagogical Masters in music and media technology.

In 2014, a new Bachelors program was established in media composition and computer music. The four-year study includes:

- composition in computer music, intermedia works
- performance computer music, machine musicianship
- production and programming

4. CMS SERIES

Since its new incarnation in 2008 under the direction of Andreas Weixler, the CMS has initiated several series of concerts and exchanges:

4.1. SonicIntermedia

This series of intermedia concerts and lectures for international exchange in Deep Space [8] at the Ars Electronica Center started in 2009. SonicIntermedia is a media concert series initiated by the composers and media artists Andreas Weixler and Se-Lien Chiang with the artistic director of the AEC, Gertfried Stocker, to give contemporary intermedia computer music a presentation format in Linz. With SonicIntermedia a new concert format for interdisciplinary music was presented as a co-operation between the Anton Bruckner University and the Ars Electronica Center. The intention of SonicIntermedia is to create exciting concerts of experimental computer music and give the public an insight into the world of contemporary art. It is an open call for showcasing work of composers, performers, artists and musicians.

Guests of SonicIntermedia have included:

- 2009: Pedro Rebelo (Portugal/UK), Franziska Schroeder (Germany/UK), Imgene Newland (UK), David Bird (UK), Brian Cullen (UK), Orestis Karazanties (Greece/UK); 2010: Simon Waters, Ed Perkins, Bill Vine, Anton Lukoszevieze (UK) and a piece by Nick Mehta & Ed Kelly; 2012: BEAST: Jony Harrison, Scott Wilson, Chris Testa and Tim Mozes; 2013: NOVARs: David Berezan, Constantino Pomp, Mark Pilkington and pieces by Manuela Blackburn and Claudia Larcher.

4.2. Sound & Vision

This is an experimental series for students and artistic research projects across institutions and cooperating universities. Events to date: Sound and Vision I - AVI: with the ensemble for new music and audiovisual interactivity, Linz; Sound and Vision II - musical inspiration and digital concepts: interaction and improvisation with students of Andreas Weixler; Sound and Vision III - Double Concerto: Electronics and three pianos. Concert of music and music technology with improvisation, composition and collaboration with students of Martin Stepnuk and Andreas Weixler; Sound and Vision IV - KUNST/MUSIK in cooperation with the University of Arts and Industrial Design, Linz; Sound and Vision V - concert of music and media technology and alternative concepts for ensembles; Sound and Vision VI - intermedia concerts of CMS students; Sound & Vision VII - InterAct: computer music and intermedia concert, pieces with sensor technology, Kinect and others; and Sound & Vision VIII: react: concert music with students and guest of the CMS; Sound & Vision IX - InterFace: intermedia concert in cooperation with InterfaceCulture students of University of Arts and Industrial Design, Linz; SonicIntermedia: first Sound and Vision concert in the Sonic Lab using the periphonic multichannel sound system.

4.3. CMS Invited Lectures Series

This is the international lecture series of the Computer Music Studio at the Bruckner University for external guests. So far we have hosted CMS invited lectures up to #27: 2009: Pedro Rebelo, SARC - Sonic Arts Research Centre, Belfast, Northern Ireland; 2010: JYD - Julian Weidenheller, Linz, Austria; Dr. Simon Waters, UEA Studies, University of East Anglia, Norwich, UK; 2011: Martin Kaltenbrunner, InterfaceCulture, Kunstanstalt Linz; Thomas Grill - Austrian Research Institute for Artificial Intelligence (OFAI) and Institute of Composition and Electroacoustics at the University of Performing Arts and Music, Vienna; André Bartezki, co-director of the electronic music studio at the TU-Berlin; 2012: Jonty Harrison and Scott Wilson, BEAST - Birmingham Electronic Acoustics Studio, Sound & Vision, University of Birmingham, UK; 2013: João Pais, composer, Portugal; David Berezan, Electroacoustic Music Studios, Novars, University of Manchester and MANTIS, Manchester Theatre in Sound, University of Manchester, UK; Constantinos Pomp, PhD researcher of CMS at Novars, University of Manchester, UK; Mark Pilkington; composer and performer of electroacoustic music, Novars, University of Manchester, UK; 2014: Gonzalo Diaz Yerro, Composer, Superior de Música de Caracas; Andrew Lewis, Bangor University, Wales/UK; Mike Frangeli, Northeastern University, Boston, USA; Tony de Ritis, Northeastern University, Boston, USA; Sebastian Fisch, freshmen 2015: Andreas Zingerle, University of Arts and Industrial Design, Linz, Time-based and Interactive Media; Tristan Murail, composer, Paris; Jonty Harrison; BEAST (Birmingham Electronic Acoustics Sound Theatre), Emeritus Professor of the University of Birmingham;
The CMS Research Program allows external artists to work with professors and students of the CMS to explore the arts, new concepts, technologies and interactions. The projects so far have been: 2013: Sina Heiss (ANYC), Lia Bonfilio (NYC), Daniel Rikker (A), “display - mind leap”, Tanz, interactive visuals, Stimme, live processing, skeleton tracking; 2014: The CMS CEUS Project, research week for students of computer music, music and media technology and guest. This was a workshop in open access for visitors to explore the possibilities of the famous Bösendorfer CEUS grand piano. It was a collaboration of between CMS and Austrian piano manufacturer Boensendorfer hosted by the piano house Merta. The final concert and installation works were by and with: Hasan Zanjirani Farahani, Michael Enzenhofer, Se-Lien Chuang, Andreas Weixler, Daniel Rikker, Thomas Ecker, Martin Sugiyama, Elvire de Paiva e Pona and Barbara Mayer; 2015: CMS - composer in residence Jens Vetter (Berlin/Linz) with his project of DMX controlling, video tracking and interactive sound generation; 2016: Christian Tschinkel, “The Kuiper Project” for the Sonic Lab, 2-Track sound distribution for the Sonic Lab.

4.6 CMS Instructional Series

This is a forum for students, undergraduates and professors of ARPUs dedicated to a specific topic related to computer music and production to share the in-house expertise. The Admission is free and open to the public. Series I - 2013: Software, die sich wie ein Instrument spielt: Live Tutorial by Daniel Rikker giving an introduction in Ableton Live - performance, sequencer and producer software. Series II - 2015: Hasan Zanjirani Farahani Realtime Processing showing audio realtime processing and performance in Ableton Live and Max. Series III - 2015: Hasan Zanjirani Farahani, technical realization of the composition - Das unlogische Notwendig für Soprano, live-electronics and interactive DMX light design; Series IV - 2015/2016: CMS Sonic Experimental Demos Introducing the Sonic Lab and Live Processing with Andreas Weixler, Se-Lien Chuang and CMS students, as well as the demonstration of multi-channel works by Jonny Harrison, John Chowning, Fernando Lopez-Lezcano and Christian Tschinkel among others.

4.7 Cooperations

The CMS is cooperating with and supporting other institutions and institutions. JHM communicate, for example, is a monthly concert series with faculty and students of the Institute of Jazz and Improvised Music, but also projects with the actors and the dulcimer class are on the list, among many others. There are currently co-operations with and connections to many institutions. Internally, these include: the former Institute for Composition, Conducting and the Theory of Music (DKM), Institute for Jazz and improvised Music (JIM), Institute for Theatre and Drama (ACT), Institute for Keyboard instruments (TAS), Institute of String Instruments (SAI), Institute for Music Education (EMP). One of our goals is to be a competence centre for computer music in the region in cooperations so far with the AEC - Arts Electronic Center, University of Arts and Design, Linz, InterfaceCulture, JMU - Johannes Kepler University, Elisabethinen Hospital, SCCH Software Park Hagenberg, Klangerlebnis (Soundscape), Musik der Jugend (Youth Music), Province of OÖ, DorFV, Klavierhaus Merta. The CMS is also reaching out to other related institutions in Austria, such as the ELAK (Institute for Composition and Electroacoustics, Vienna), MDW (University for Performing Arts and Music, Vienna), Prima la Musica, Salzburg and the piano manufacturer Bösendorfer. Through the personal contact and art work of the authors and a lively connection to international conferences we created a series of international cooperations withISEM (Japanese Society for Electro Acoustic Music), TU Studio, Berlin, SARC (Sonic Arts Research Centre) Queens University Belfast, Northern Ireland, University of East Anglia, UK, BEAST (Birmingham ElectroAcoustic Sound Theatre), University of Birmingham, UK, NOVARS, University of Manchester, UK), Hope University Liverpool, UK, Northeastern University, College of Arts, Media and Design, Boston, USA, Center for Computer Research in Music and Acoustics (CCRMA), Stanford University, California.

4.8 Students Projects

Beside a large number of pieces in the field of electroacoustic composition, interactive and algorithmic composition, sensor technology and light design by CMS students in the field of contemporary composition, beat music, vocal, instrumental and electronic music within audiovisual realtime processing and also time based music and video, there are outstanding Bachelors and Masters theses recently published in the library of the Bruckner University: The score at the touch of a button - Die Partitur auf Knopflück? Computergestützte algorithmisch notierte Komposition mit MAX and LilyPond, a master thesis 2015 by Michael Enzenhofer, as well as Daniel Rikker’s Masters thesis Hands on MAX for Live, a great introduction to learning Max4Live and Ableton Live – and emphasis Kinect driven music - last but not least Christoph Hörmann’s very informative Mixing with Digital Audio Workstations - A guide for home recording musicians Bachelors thesis in 2015, among a large number of others. Outstanding pieces worth mentioning are: Highway Lights for drums, four channel audio and light design by Markus Rappold 2015, installation for the CEUS grand piano by Michael Enzenhofer Wahrscheinliche Wahrscheinlichkeiten, in the above mentioned cooperation by Hasan Zanjirani Farahani - Das unlogische Notwendig für Soprano, live-electronics and interactive DMX light design.

5. OUTLOOK

With the new facilities of the Computer Music Studio, its outstanding arrangement of multichannel computer music studios and the acoustically specialized Sonic Lab, as well as the new appointments of Volkmar Klien as professor of electroacoustic composition and Carola Bauckholt as professor of composition for music theater, in combination with the long time existing professor for music and media technology, computer music and electroacoustic music and director of the Computer Music Studio (CMS) Andreas Weixler, we are looking forward to a new generation of students and a continuing wide range of cooperations, and we hope to contribute with our artistic work, research and educational offerings to the music of the future.

6. REFERENCES


3. CMS concert and lecture series http://avant.mur.at/weixler/studinfo/studinfo_events.html


6. Group Improvisation OSL, © Shayan Kazemi

7. lecturing studio showing Hasan Zanjirani Farahani (©).