Presenting the LAPPSO-UEM: Laboratório de Pesquisa e Produção Sonora of the Universidade Estadual de Maringá, Brazil

Marcus Alessi Bittencourt

Universidade Estadual de Maringá - CCH-DMU
Av. Colombo, 5790 - Bloco 8, sala 2
87020-900 - Maringá, Paraná - Brazil
phone: (55)(44) 3261-4092

mabittencourt@uem.br

ABSTRACT
This presentation introduces to the international academic and research communities a new center for research and musical creation in the field of Electroacoustic and Computer Music, created at the Universidade Estadual de Maringá - UEM (State University of Maringá), in Paraná, Brazil.

Keywords
computer music, electroacoustic music, Music research and creation centers.

1. INTRODUCTION
The Laboratório de Pesquisa e Produção Sonora - LAPPSO (Laboratory for Research and Audio Production), founded in 2006, has been emerging as an axis of research in the fields of Electroacoustic and Computer Music, enriching the cultural and academic life of northern Paraná, a Brazilian region without a solid tradition in these areas of study. By means of research and universitary extension activities, including programs in undergraduate research (Iniciação Científica), the LAPPSO-UEM intends to foment, promote and make viable the creative musical work of professors, researchers, undergraduate and graduate students from the UEM, as well as from the neighboring and collaborating communities.

2. THE ORIGIN OF THE LABORATORY
The LAPPSO-UEM started out as a result of a research project by Marcus Alessi Bittencourt, a professor of Music at UEM and a Doctor of Musical Arts from Columbia University. This project, named "Solutions for the implementation of complete chains of digital audio production and post-production by means of open-source software in Linux-powered computers", received a grant from a governmental Brazilian agency, the Fundação Araucária de Apoio ao Desenvolvimento Científico e Tecnológico do Estado do Paraná, to acquire equipment and assemble a pilot production studio at the Music Department of UEM. This research involved the exclusive use of open-source software tools and intended to map the tasks and procedures necessary to the confection of electroacoustic compositions and works of audio production and post-production, describing the minimum hardware necessary for such a studio, the open-source software collection available for the execution of all the mapped tasks, and giving the basic instructions for configuration and efficient operation of all these elements. The LAPPSO grew around the activities and the pilot studio of this project.

3. THE OPEN-SOURCE CHOICE
The choice of working with open-source software [1] gives to a production studio a huge capacity for growth, adaptation, configurability and software inter-operationability, all this under a considerably much smaller budget than the one necessary in the implementation of studios with proprietary software and hardware. Nonetheless, the same characteristics that make the use of open-source software attractive to us also create a huge set of problems: the decentralization of the software research and creation, the lack of warranties of any sort such as software quality, operationability and workability, lack or disorganization of documentation and instructional materials, as well as absence of direct technical support. Such characteristics are inherent to the very nature of the work with open-source software and successful work in this field entails the creative dialog with this problematique, which demands a complete understanding of the audio production processes to be performed at every step of the production chain and the capacity of efficiently steering through the myriad of international groups of open-source software development, bundling together all the information necessary to retrieve, assemble and operate an efficient, integrated, always expanding and renewing collection of production software tools. We believe that the use of open-source software will make possible to a bigger array of musicians, producers, sound designers and researchers throughout the world, and specially throughout the developing countries, the access to the newest production technologies, allowing the creation of products and research without technical quality and scope limitations due to lack of financial resources. This universalization of technology access will serve to stimulate the growth and decentralization of the Computer Music research and creation both nationally and worldwide, in the very spirit of the international open-source software community: a multiplicity of borderless work groups, all equally and highly equipped to work by means of extensive knowledge interchange.

4. THE LABORATORY OBJECTIVES

The LAPPSO-UEM aims to provide the conditions for the execution of these basic activities:

a) The implementation of complete and efficient audio production techniques and studios by exclusive means of open-source software under the Linux operating system;

b) The distribution to the community at large of the methods and techniques researched and collected in the form of a specialized Linux distribution and through a complete multilingual documentation and instructional website in wiki style;

c) The stimulation of musical composition work and training, both instrumental and electroacoustic, aided by computational technology;

d) Creative research in the fields of musical composition, electroacoustic and computer music, computer-aided composition, ear-training, music cognition, just to name a few possibilities, including actions both in undergraduate and graduate research;

e) Undergraduate-level instruction, implementing a basic course in audio production and computer music composition as a core curriculum component for music majors at UEM;

f) Universitary extension activities, promoting and collaborating in scientific and cultural events, recordings, publications, concerts, radio broadcasts, lectures, as well as courses and workshops in subjects such as Pure Data [5], RTcmix [6], SuperCollider [7], masterization techniques, electroacoustic composition, solfege and orchestration of sound objects, sound diffusion and spatialization, and music-oriented physical computing with Arduino [2] and Freeduino.

5. PURE DATA AND THE LAPPSO-UEM

Together with RTcmix, the software Pure Data is one of the main workhorses in the instructional and creative activities of the LAPPSO. Throughout its courses and workshops, Pure Data is used as the main demonstration and experimentation tool for the instruction of subjects such as classic sound synthesis (additive, subtractive, FM, AM, etc.), sampling and algorithmic composition. As part of their training, LAPPSO students use Pure Data to construct from scratch simulations of analog synthesizers, as well as sampling and sequencing machines.

6. THE LAPPSO-LINUX PROJECT

Currently, the LAPPSO-UEM is developing a Linux distribution for audio work which consolidates the magnificent software collecting work done at Stanford University by the Planet CCRMA project [3], plus several other additions, into a very specialized Fedora 10 installable, live re-spin [4]. The LAPPSO-Linux distribution comes in two main flavors: a light version (LAPPSO-Lettuce) which comes as an installable Live-CD containing a smaller software collection geared for personal student work in the undergraduate courses at UEM, and a heavy-duty version (LAPPSO-Steak) which comes as an installable Live-DVD containing a real-time Linux kernel and a considerably larger collection of software, intended for system installation and uniformization for all of our studio computer machines. Both versions include a huge assortment of computer music and audio production tools such as Pure Data [5], RTcmix [6], SuperCollider [7], Ardour [8], NOTAM software [9], all loaded with a considerable amount of libraries and LADSPA plugins [10].

7. FINAL COMMENTS

The main purpose of this presentation is to state the LAPPSO's desire to join the complex worldwide electroacoustic and computer music research communities, expressing its intentions to exchange ideas and collaborate in joint ventures. The LAPPSO-UEM extends an invitation to all individuals, groups and centers, both nationally and worldwide, to propose creative, research and educational collaborations and interchanges with us. Among the types of work that can be developed under the LAPPSO's auspices are: music creation and composition, audio production and post-production for the phonographic media, radio, cinema, TV, theater, dance and publicity, including the creation of soundtracks, Foley and sound design, the composition of electroacoustic music, both in real and non-real time, the production of computer music concerts, providing the elements for live audio processing, spatialization and sound diffusion control, the digitizing and archiving of analog sound collections of libraries, museums and cultural centers, as well as research and experiments in the fields of Digital Signal Processing, physical computing, acoustics, psycoacoustics and Music Cognition. We specially welcome collaboration with our documentation wiki website.

8. CONTACT INFORMATION

Laboratório de Pesquisa e Produção Sonora
Universidade Estadual de Maringá
Centro de Ciências Humanas Letras e Artes
Departamento de Música
Av. Colombo, 5790 - Bloco 008, sala 6
cep 87020-900 - Maringá, PR - Brasil

phone: (55)(44) 3261-4092
website: http://www.dmu.uem.br/lappso
e-mail: mabittencourt@uem.br

9. NOTES AND REFERENCES

[1] for Open-source software see: Free Software Foundation. http://www.fsf.org

[2] Arduino, an open-source electronics prototyping platform. http://www.arduino.cc

[3] Planet CCRMA at home. Center for Computer Research in Music and Acoustics, Stanford University. http://ccrma.stanford.edu/planetccrma/software

[4] The Fedora Project, a Linux-based operating system that showcases the latest in free and open source software. http://fedoraproject.org

[5] Pure Data, a real-time graphical programming environment for audio, video, and graphical processing. http://puredata.info

[6] RTcmix, a real-time software language for doing digital sound synthesis and signal-processing. http://rtcmix.org

[7] SuperCollider, an environment and programming language for real time audio synthesis and algorithmic composition. http://supercollider.sourceforge.net

[8] Ardour, a digital audio workstation. http://ardour.org

[9] NOTAM, Norwegian network for Technology, Acoustics and Music. http://www.notam02.no

[10] LADSPA: Linux Audio Developer's Simple Plugin API. http://www.ladspa.org