"IF MOZART HAD ONLY
Music "Plugs In" to New Technology

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The musical composer of today flips a switch and programs the dimensions of the sound he or she has in mind; volume, pitch, timbre, duration, articulation. He flips another switch and immediately hears the sounds played back. He next programs the entire formal design of the composition with all its multi-dimensional complexity as a computer algorithm and has the computer execute the work in a flawless, perfect performance. If he prefers to have humans perform the composition, he flips another switch and has the work orchestrated, transposed, notated and printed. Eventually, the composer walks away with a recording of his composition, the entire work stored on a floppy disk, and a complete set of printed parts and score. He knows exactly what his piece is going to sound like, because he has been his own copyist, proofreader, publisher, conductor, and orchestra; and his orchestra consists not only of traditional strings, winds, and percussion, but of any sounding instruments imaginable. He has been in full control of his musical intentions to a degree undreamed of a generation ago.

The scenario described here is only a part of the applications possible by students and faculty using the Electronic and Computer Music Studios located in the Music Building at Kennesaw State College. Any person entering the music profession today, as a performer, conductor, composer-arranger, historian, recording engineer, or educator, can not escape the eventual encounter with electronic instruments and computer music programs. The studios at KSC are intended to provide the student with the information and skills to function and excel in an increasingly technological profession.

The studios' goals for service to the music department are two-part — pedagogical and performance-oriented. As a tool for classroom instruction, the Listening Lab contains three Apple IIe computer work-stations which offer a range of software programs from basic music fundamentals to advanced ear-training. Students at these work-stations are able to communicate with the computer either with a standard ASCII computer keyboard or a piano type keyboard. Currently, use and completion of the ear-training programs have become a requirement for many of the music theory courses. These programs have proven invaluable in the teaching of aural recognition skills which are a major component in the music major's curriculum. Most of these programs contain their own grading systems and record keeping files which has greatly reduced the amount of time that instructors had been spending on individual testing. The computer grading systems also specifically identify the deficient and strong areas of each student.

The other aspect of the studios is the performance-oriented facilities which are located in the Electronic and Computer Music Studio. This facility is essentially a commercial recording studio design. It provides the students with the opportunity to learn and utilize the latest equipment in the study of the creative disciplines in music, particularly composing, arranging, performing, and recording. The equipment and software used in this studio fall into four broad categories of application:

— sound design and generation
— processing
— recording and storage
— notation and printing

Sound design and generation refer primarily to the programming of electronic synthesizers and tone modules, both analog and digital models. Yamaha Corporation's Frequency Modulation digital synthesizers (DX/TX series) are the main types of instruments used. These are the universal standard synthesizers in most recording studios today.

Once a desired sound has been created and generated, it can have further manipulation and contain additional information through routing it into the various signal processing devices. These may add varying degrees of digital reverberation or different kinds of special effects, such as gates, delays, chorus, flange, echo, compression, and noise reduction.

Recording of the sound information is possible in both a digital and analog format (that means either on a computer disk or a standard magnetic tape). Digital information may be received and stored on computer disk via a MIDI (Musical Instrument Digital Interface) connection. MIDI is an extremely important dimension of this or any other recording and composing studio today. It has become the main form of communication between electronic instruments and computers. Entire symphonies of musical information can be stored and retrieved for playback using this environment. As labor costs for orchestra musicians have been increasing, the possible alternative of a computer and electronic instruments is being seen more and more as an economically sound option. Recently, the New York City Ballet gave a performance without an orchestra, just one person sitting in the pit with his MacIntosh computer and an "electronic" orchestra. Many performers of traditional musical instruments are having to adapt to the new technology or find themselves being "booted" (excuse the pun) out of a job.

The final component of the studio environment is the notation and printing capacity. Any music created may be edited, transposed, scored and printed using the advanced graphic capabilities of the MacIntosh and Apple IIe computers and a Laserwriter IINTX printer. Many music students who have access to computers in their homes are already using these programs and are doing all of their classwork

HAD A COMPUTER!"
at Kennesaw State College

assignments on them.

For the advanced student composer with a computer programming background, experimentation in computer-generated composition is available using the HMSL (Hierarchical Music Specification Language) software in which computer algorithms are designed for real-time sonic manipulation. This is the latest phase of computer research being undertaken at the major computer music centers-IRCAM (Paris), MIT, and Stanford University.

All of this equipment provides support for the training of today's musician, and also helps to establish an environment which promotes creative experimentation and exploration.

For those interested, several courses are currently available at KSC which address the use of these facilities:

Music 355 — Electronic Music & Recording Techniques
(Prereq: Music 120) 3 hrs. credit

Music 356 — Computers & Music
(Prereq: Music 355) 2 hrs. credit

Music 370, 373 — Composition
(Prereq: Music 220) 1 or 2 hrs. credit

Music 470, 473 — Composition
(Prereq: Music 370 or 373) 1 or 2 hrs. credit

At this time, these courses are elective offerings in the music curricula. Some, however, ultimately may be required, as skills in this area become an increasingly important prerequisite for a successful career in music.

Kennesaw State College is the only college or university in the State of Georgia with as extensive a list of course offerings and facilities for training in this field, even though it is a major component in the primary music schools and conservatories in other parts of the country. The music facility is proud to be the leader in Georgia for training opportunities in this field.

Future plans are to continue to update the studio's equipment and software holdings to keep pace with the technological advancements. More educational software will be included, which will offer more support to the instructors and students. Plans are already underway to develop close ties with professional audio and video recording studios in the area (in particular, New Age Sight and Sound in Smyrna — one of the few studios in Atlanta with digital mastering and editing facilities). We hope to offer a type of apprenticeship program for the advanced students. Video production is another area that the KSC studios hope to address in the near future.

An electronic synthesizer or a piece of software will not substitute for training, discipline, or talent in the music profession. This field is not viewed as a replacement of any of the competencies being taught in current music curricula. It is seen as a tool to assist in the process of learning and hopefully achieve more dramatic results as a bi-product. The "electronic or computer instrument" is as complex a machine and has as great a potential for expression as a piano or violin, but also requires equal amounts of practice and technique to produce something of substance. The machine does not "make" the musician, but it is highly probable that it will assist in becoming a better one. I imagine that the "Beethoven" or "Mozart" of today is already working with a Mac, a mouse, and a MIDI keyboard!