SPOTLIGHT

A new vocabulary for new frontier of music

By Paul Emerson

Computer music has been around for well over a decade now but the state of the art is still so complex and esoteric that laymen and experts have a difficult time communicating about it.

The concept of a computer being simultaneously both a musical instrument and a score, for example, is one that most outsiders find exceedingly hard to grasp.

Evidence of this problem was very obvious during a press conference on Thursday at Stanford's Artificial Intelligence Laboratory, where a distinguished group of Paris-based musicians and scientists, headed by conductor and composer Pierre Boulez, is spending 10 days in residency at the university's new Center for Computer Research in Music and Acoustics.

Purpose of the press gathering was to give Boulez the opportunity to make the first public announcement in this country of IRCAM, a new research institute being built in Paris for the study and solution of problems emanating from current evolutions in music.

During the Q-and-A session which followed Boulez's detailed description of IRCAM's innovative architectural and organizational scheme, it quickly became apparent that laymen who hope to stay abreast with the latest developments in computer music are going to have to become familiar with a whole new vocabulary.

Either that, or the specialists working in the field are going to have to come up with simpler or more easily understood terms for psychoacoustics, analog and digital synthesis, arbitrary timbral characteristics and modified articulated input.

Those are just a few of the words and terms that have become part and parcel of this new frontier in music.

Credit for forging much of the new ground in this arcane new area of music must go to the pioneering efforts of the Stanford Music Department's Computer Music and Acoustics Group. Members of the group include Prof. John Chowning, the director, Prof. Leland Smith, John Grey, James Moorer and Loren Rush.

One of the reasons Boulez and his colleagues from Paris were at Stanford was to get acquainted first-hand with the developments made there. The Stanford team also has been participating in the planning for, and research within, the new Institute in Paris.

When the Stanford music department first began getting into the field of computer music about a decade ago, the consensus in most universities was that such work was anti-humanistic or a waste of time.

Accoridng to Prof. Chowning, it was then an open question as to whether technology could make a serious contribution to music. "However, we believed that the audio-loudspeaker was indeed the 'instrument' of the future and that the most promising method of control was by means of computers," he said.

The movement emerged shortly after World War II with the development of electronic music and the use of the analog synthesizer. Since that time most musicians and scientists working in the field have become convinced that computers (or digital synthesis techniques) provide the best general solution for the composition of electronic music.

Stanford's research and success in this field later led to the adoption of similar programs at Columbia, Princeton, Carnegie-Mellon, Michigan State and Colgate, and was responsible for the close ties that have developed between Stanford's computer music center and the multimillion dollar new facility nearing completion in Paris.

Many of the developments pioneered at Stanford since 1966 were accomplished by Chowning, Smith and their colleagues virtually on their own time. The computer musicians had to do much of their work late at night or early in the morning (as early as 5:30 a.m.) when time on the Stanford computer was available.

But those many years of hard work and unpleasant hours have paid off handsomely. Representatives from the National Science Foundation and National Endowment for the Arts came out last year to look at the Stanford computer music program and were so impressed they arranged for major grants to underwrite it for the next two years.

The NSF award is a $254,000 grant for research in musical acoustics, or "computer simulation of music instrument tones in reverberant spaces." Co-principal investigators are Smith and Chowning. The NEA gave a grant of $160,000 for the purchase of computer equipment designed for use as a new musical medium. The equipment is to provide long-term service for composition, performance and related research.

Thanks to the two grants, the music department now has established a new Center for Computer Research in Music and Acoustics. The emphasis will be on an interdisciplinary approach involving computer scientists, mathematicians, electrical engineers, psychologists and musicians as part of the same team.

Many of the principal members of the team possess impressive credentials in both music and science. Chowning, who earned his master's and doctoral degrees in music at Stanford, was trained in classical music but since has become an international authority and composer in computer music. Smith, a professor of music, is a widely known American composer.

The Stanford computer music team will be trying to come up with new knowledge regarding psychoacoustics as a source for new music and works which reflect the scientific-technological advancements of modern times. Simultaneously, these scholars will seek to eliminate the problem of the time loss between a musician's final musical decision for a complex, multi-voiced passage and the actual production of the sound.