The Computer Music Education in the Music Composition & Engineering Department of Wuhan Conservatory of Music

The Computer Music Education in the Music Composition & Engineering Department of Wuhan Conservatory of Music

Tong Zhongliang

I. Person with Compound Abilities and Computer Music Studio

The so-called the "Person with Compound Abilities" refers to the specialist who is skillful either at the music composition and producing. Reviewing the modern music history, these kinds of person with compound abilities grow up originally in the music studio along with the representation of the electronic music.

There was no electronic music studio in any radio station in China in the past. Neither music department set up in the common universities, only few of them had an ordinary acoustic studio, but no electronic music studio especially for the musical composition; nor any music acoustic or electronic music studio in the music conservatory or composition subject.

The Computer Music Studio was firstly established in Wuhan Conservatory of Music in 1987. With some of computers and the MIDI equipment, a recording studio equipped 16-track analog recorder, was the first one in China and was noticeable by other conservatories in the whole country at that time. The Studio has got the financial support from the Educational Committee of Hubei government since 1991, and it keeps on using the newest multimedia and the digital technique. So that, the Computer Music Studio of Wuhan Conservatory of Music turned into one of key subject ones in Hubei Province at that time. From this point, though the music acoustic or computer music studio established in China is quite late, but from the beginning it leaps the period of Tape Music of 1950s, went straightly high start-point to use the sequencer as the tools of computer music composition.

As the key subject studio in Hubei government, for further developments, the conservatory has equipped some new hardware recently. It include a digital recording studio with 32-track hard-disk recorder and 64-channel mixer; a few music audio workstation based on Pentium II-350. This studio is charged by the Music Composition & Engineering Department, but it also open for the whole conservatory. As the base of the teaching and researching, all of the college students and postgraduate students on the Music Composition & Engineering Subject have the courses with the computer in here. Besides the Four Main Courses of the Composition, the course in the Composition of Electronic Music is also taught here. Furthermore, the studio is used for teaching the courses of Bases and Practice of Computer, MIDI System and Music Recording for all of college students; and some ones for Adult-Education Class of Hubei province. The effect of teaching and research are not only on our school, but also on the public. We provided the technique assistance for Shanghai Conservatory of Music, and trained the technicians for The Pedagogic College of JIMEI University of Fujian Province, who got a loan from World Bank to build up the computer music system.

II. The Result of Combining Music With Science-Technology

"To Join Traditional To Contemporary, To Combine Music With Science-Technology" - is the characteristic of running the school by Wuhan Conservatory of Music. "One Department Combination Composition and Music Engineering, Merging Musical Composing And Producing Into Organic Whole" - is the main embodiment of the characteristic of running the school by Wuhan Conservatory of Music.

The so-called "One Department Combination Composition and Music Engineering" refers to combine two different subjects, the composition in traditional concept and the music engineering in one faculty. The composition department of the conservatory established in 1953, but the music engineering came out just recent 10 years. The subject of the Music Engineering in Wuhan Conservatory of Music has taken in and graduated the two-year-term-college students in last five years, undergraduate students in last four years and postgraduates in last three years. It has also trained a lot of musicians, recorders, sounding engineers and so on in this subject for short period course. It has made Bachelor and Master a coordinated process studying on this subject. Meanwhile, teaching and studying with multimedia computer are used for all the senior students on the subject of music composition. They shall learn the electronic music composition and MIDI recording courses, so that the means of music composition has been update.

In a certain degree, that to establish the Music Composition & Engineering Department itself means the result of combining music with science-technology.

For "Merging Musical Composing and Producing into Organic Whole", it not only refers to the composer who's abilities both on the composition and the music production, but also means the musician is good at combining the traditional composition with the top scientific technology. Those students whose subject on the composition was able to composing in the past, but now they are required to use the computer with the pertinent hardware and software to produce their own music works.

We believe that this kind of "musician with compound abilities" on both the composition and the music producing is just what the society need urgently.

III. The CAI To The Four Main Courses of The Composition

The CAI music teaching and studying is an available method to foster students with multi-ability for music composition and producing. In the Music Composition & Engineering Department of Wuhan Conservatory of Music, all of those

undergraduate students and postgraduates, whose subject either on music engineering or composition studies their courses through the computer. In view of teaching the four main courses of the music composition, The CAI music teaching and studying plays an important role either for the teaching substantial content or the method. Taking the Four Main Courses of the Composition as an example, to explain separately in the follow.

The harmony course: it is an important foundation of the theoretic courses in the compositional technique. The students on the subject of composition and the music engineering has done the exercises and correction of four-part harmony writing on the multimedia computer since the end of 1992. It makes the harmony study getting the score, sounding, and tone color realtime. So it excites the students enthusiasm on practice, improve the level of the harmony writing, and shorten the distance between the practice and the application of the harmony. That the CAI software to four-part harmony writing and the automatic identification has been designing nowadays.

The polyphonic course: it is a course that has a close relationship to the harmony. In its teaching method, We have tried to do it through the top scientific technology and got a good effect. Some technique such as double horizontal-vertical counterpoint, for example, is a difficult unit with various possibilities, it was usually easy to get confusing since its complicated procedure in the traditional teaching method. We are trying to set relative context into the multimedia computer environment, so that to "stretching", "shorten", "inversion", "retrograde" and "retrograde of inversion" the music elements, as well as variations and possibility of double horizontal-vertical counterpoint can be actualized instantly. The elements of the different voices' tone colors, registers, dynamics and tempos can be set up and deal with in computer at will, and meanwhile the sound can be heard that played by different instruments. It makes the pure technical counterpoint course activity, and its effect is obviously.

The orchestration course: teaching and studying were usually doing on the paper in the traditional course. So that the students, at most, were enlightened to imagine the sound effect of their homework by listening the records or tapes, as for the real sound, it always almost could not be heard at all. The CAI of music software Orchestration Mentor, which developed by the teacher of orchestration, made this case completely changed it. The students nowadays have done their homework are on the micro floppy disk without staff and pencil since the latter half of 1993, and the different orchestral sound effects can be heard as soon as done the correction on the floppy disk. So that, this course gets a qualitative leap no matter of the form or the content, the teaching effect is much improved than the regular method.

The music analysis course: we have been establishing the Music Analysis Database, the multimedia software. It is believed that the music analysis course will be innovated from the content to the method by the time the Database set up.

We pay attention on the teaching contents of the music compound and sound synthesis in the postgraduates' course: firstly, the characteristic of computer music language and the individuality of the pattern; secondly, combining with the Chinese music to research the Csound programming, which has been the gaps in China Mainland.

IV. The Works of Computer Music and the Development of the Software

Those persons with multi-ability grow up in Wuhan Conservatory of Music have also done successfully on the works of computer music and researching.

Some of the recent compositional works:

Len Censong-*WU XING* (The Five Elements) for tape and *THE LOST WORLD* for Realtime MIDI system; **Zhao Yuan**-*JIU KUAN AND PAPER MUSIC* for tape; **Xue Huaming**-*BELL SPIRIT(*For Sample China Imperial Bell)for sampler and *DISTANCE* for tape; **Liu Jian**-*BLACK AND WHITE* For MIDI and Voice; **FengJian**-*layman Heart* for Xiao, voice and tape.

Besides to write some papers on computer music, they developed some music applications software and music educational software. The developed and developing software are Orchestration Mentor, Music Theory Fundamentals, Encyclopedia for the Temperament Sound, Numbered Musical Notation Design and Input method, Multimedia Instruction of Electronic Synthesizer, Database of China Bell Set, Hang Zhong Music Master - Music Editing System, Database of Chinese Traditional Music, Music Analysis Database, Multimedia CAI for Polyphonic Music, CAI for Keyboard Harmony, Timbre Bank of Chinese Traditional Instruments (disc), PC-MIDI Multi I/O Interface. All of those software have provided the impetus for the development of music creation and teaching though they need to be perfect to commercialize.

Because of keeping on introducing and researching the foreign new composition technique and theory, as well as to training successfully the musicians with the multi-ability, the academic level of the Music Composition & Engineering Subject of Wuhan Conservatory of Music has got further improved. Therefore, we are full of unparalleled confidence to go into the new century.

English Translated by Meng Qiu

武汉音乐学院作曲系