International Journal of Innovative Research and Advanced Studies (IJIRAS)
Volume 5 Issue 5, May 2018

ISSN: 2394-4404

The Invaluableness Of The Computer To The Contemporary Music Composer

Okafor, Justina Enoh (PhD)

Department Of Music, College Of Education, Agbor, Delta State

Abstract: ***The development of modern computers which are either electronic or digital has a long drawn history. Though the historical modus or process of the development of the computer and software/programs is not the main focus, computers and software/programs have contributed immensely to aiding easy computation, programming and researches in various organizations, companies and fields of studies, music not excluded. Descriptive analysis formed the framework to achieving the discus on the invaluableness of the computer to the contemporary music composer. The historical perspective of the computer and computer music including some music software/programs available/accessible to the composer was briefly highlighted, the import of the computer and the use of music software/programs employed by the composer and recommendations were outlined.***

I. INTRODUCTION

Computers have not appeared on the musical scene overnight. They have been a growing presence for many years. Through the advancement in technological breakthrough before 1900 to the 1990s and beyond which is still evolving the size of computers gets smaller and smaller and the birth of nano-technology is on the explosion. To facilitate easy usage in various fields of study software were also developed. This facility has been a great asset to various fields of studies and organizations including the field of music studies.

The field of computer music can trace its roots back to the origin of electronic music and the very first experiments and innovations with electronic instruments at the turn of the 20th century. A computer is a machine that manipulates data. According to Aghware (2004), computers are electronic devices that can be programmed to accept data (input) process the input, store it and output useful information.

As a programmable machine that responds to specific set of instructions in a well-defined manner which can execute a pre-recorded list of instructions, the computer acts as an interactive device. It serves dual purposes by allowing interaction between the user who feed-in relevant information via the system unit and the hardware (appliance) by way of creating, editing and modification of data.

The use of computer in the field of music composition pre-dates the era of digital computers and other electronic data processing devices which began about 1948. The Encylopedia Britanica (p. 714-715) reports that;

Two leading groups that began with the experimentation of electronic music were based in Cologne and Paris respectively. The product of the latter group was referred to as *musique* concrete in acknowledgement of the principle that pre-existing or 'concrete' recorded sounds serve as the basis for all sonorities in the finished work. The basic sounds which may be derived from any source – musical, natural, or mechanical are modified electronically and arranged in any combination and succession suitable to the composer's purpose. The German group led by Karl-Heinz Stockhausen, was concerned with a purer form of the medium in that its basic sounds are electrically generated instead of being recorded from sources external to the electronic apparatus.

The digital electronic computer replaced the special electronic oscillators and wave-shaping circuits of the RCA instrument which synthesizes musical sound directly from mathematical functions supplied to the computer by the composer. Many systems for generating musical scores actually existed well before the time of computers; an example is *musikalisches wurfelspol* (musical dice game).

The 1970s saw a virtual revolution in the world of computers with the introduction by Inter of the first computer

on a chip or microprocessor. Two popular early microcomputers were the commodore PET and the Apple II which were both introduced in 1977. Though the hardware was very costly and rare, some musicians saw how useful a computer could be and few music systems mainly based on the Apple II were available.

The introduction of the IBM PC (personal computer) at the beginning of the eighties continued this trend so that every home can afford a relatively powerful computer. Hence, with the advent of PC and the growth of home recording, the term computer music was now sometime used to describe any music that has been created using computing technology. Iannis Xenakis was one of the first composers to write music with a computer program in the FORTRAN language that generated numeric data that he transcribed into scores to be played by traditional musical instrument. Other composers such as Gothfried Michael Koenig used computer to generate the sounds of their compositions as well as the score. Koenig produced algorithmic composition programs which were a generation of his own serial composition practice. Later, he extended the same kind of principles into the realm of synthesis, enabling the computer to produce the sound directly.

In the early 1980s, microprocessors were introduced into the designs of synthesizers. By 1981, a group of manufacturers led by Sequential Circuits Oberheim and Roland began working on a common standard for the communication of musical performance data. This standard, the Musical Instrument Digital Interface (MIDI) has been almost adopted universally by the music industry. Since the invention of the MIDI system in the early 1980s, efforts have been made to work on programs with map MIDI notes to an algorithm which can either output sounds or music through the computer's sound card or write an audio file for other program to play. The late 1980s saw the computer enter into every phase of music production from the sound source in the form of synthesizers to the production of recorded music in mixing desk automation and digital sound systems such as the compact disc.

The 1990s ushered in the era of multimedia personal computer (MPC) specification. This evolutionary step brought together the various computing 'threads' that were developed during the previous decade. From the 1990s onwards, more explosions in the advent of computers and computer programs/software for writing music have been on.

II. MUSIC SOFTWARE/PROGRAM AVAILABLE FOR MUSIC COMPOSITION

In order to manipulate information computers are fed instructions known as programs. There are many different types of computer program collectively known as software. Whether a program or software, they collectively the hardware – the machinery of the computer precisely what to do at some point in the process of communication or data handling. The machine does exactly what it is instructed to do by the software, only much quicker than a human. Adeleke (2013:146) posits that;

Software and computer programs are set of instructions that cause the hardware (machines) to perform certain functions in response to the command given through the hardware of a PC. Software(s) can be divided into a number of categories based on the type of work done. The two primary software categories are operating systems (system software) which control the workings of the computer, and application software, which addresses the multitude of tasks for which people use computers. System software handles chores as maintaining disk files and managing the screen, whereas application software performs word processing, database management, and the like. Two additional categories that re neither system nor application software, although they contain elements of both, are network software, which enables groups of computers to communicate, and language software, which provides programmers with the tools they need to write programs.

Programs have been written by individuals and presently different musical software are available in the market to aid musicians/composers in composing, sound synthesizing, arrangement of songs, harmonization and performance of the piece itself. Examples of such programs and software include sound synthesizer, incidental music, computer sound programs, sequencing and notation software to mention a few. These are briefly explained below.

SOUND SYNTHESIZER – is an electronic device system that uses sawtooth waves to filter sound to produce different timbres. It has punched card device that allows the use of typewriter like keyboard with 40-channel paper tape binary code for programming sound.

Ubani (2009:43) reports that Synthesizers are systems of electronic components which generate modify and control sound. They can generate huge variety of musical sounds and noises; the composer has complete control over pitch, tone colour, loudness and duration.

INCIDENTAL MUSIC – Incidental music is a composition that makes use of wood and brass instruments like trumpets, trombones and so on. The tunes of the music usually are gotten from a computer device called random numerical data.

COMPUTER SOUND PROGRAMS – Examples are music 4 and music 5, were the first computer sound synthesis program written in Fortran language which allows a score to refer to an instrument as a template which could be used as many times as possible. Other programs include PLF2, PR-1 (Project 1), Music 4B, Music 4BF, Music 360, Music II, Music 5 variants, Programming MIDI, Music mouse.

SEQUENCING – is computer musical software that has devices for producing any musical notes, adjusting volume and changing sounds. It allows the composer to record sequences of sounds generated on a MIDI device which in turn enables the composer to generate all the different lines for a composition which the composer can playback.

NOTATION SOFTWARE – is a program that allows quick entering of musical notes into the computer and at the same time playback the notes or rhythms of a composition. It also has score and editing facility that can edit and re-score musical composition fed into the computer that produces different meters, transpose and arrange both for instrument and voice parts. Examples include Toon Track, Forte-Notation, Voice-

to-Note MIDI music editor, Sibelius, Noteworthy software, Opust Music composition software, Pizzicato software, Cubebase, Fruityloops, Finale etcetera.

Among the varied notation software, Finale and Sibelius seems to be more trendy or extensive in usage. Adeleke (2013:149) states that these two notation software offers a wide range of sophisticated features, making them suitable for almost all kinds of music writing and for professional publishing.

When using the computer/software for compositional purpose, after booting the system, the composer comes across many options on the desktop clicks on particular software for writing music already installed in the computer hard disk. On the dialogue box different icons are displayed such as File Menu, Edit Menu, View Menu, Window Menu, Document Menu, MIDI Menu and Help Menu. Other icons used by the composer also displayed on the screen include Clef tool, Time Staff, Signature tool, Measure tool, Time Entry, Simple Entry, HyperScribe tool, Repeat tool, Mass Edit, Chord tool, Lyrics tool, Text tool, Printing tool, Playback, Keyboard Short court and Special Mouse clicks, Maestro Fond Character sets and so on. With the aid of these tools the composer is left with an array of choice to work with.

As a learner/beginner who is using any music software for the first time, there are certain set instructions one would follow in order to be able to carry out a particular task. For instance when using Finale software to compose a vocal or instrumental work, do the following; the steps below are only applicable to composers using the notation software.

- ✓ After booting your system, click on Finale (depending on the installed version) on your desk top
- ✓ Go to File, click on New; a dialogue box appears
- ✓ Click on either Setup Wizard or Lead Sheet, a dialogue box appears displaying Title, Composer and Page. After typing Title, name of composer and page
- ✓ Click on Next to either continue or cancel/stop. To continue click Next, a dialogue box appears displaying select instrument(s) or voice parts. Select instrument(s) or voice parts of your choice, click Next, Time Signatures displays, select preferred key and time signature then click Finish start intended musical task.

III. THE USEFULNESS OF THE COMPUTER TO THE CONTEMPORARY MUSIC COMPOSER

Computers have been used in an attempt to imitate the music of great composers of the past such as Mozart, for style analysis of atonal structure. Computer programs have been used to enrich and amend recorded sound materials. It can be used in a wide range of musical application such as scoring and sound generation. Egonu (2009:47, 49) reports that there is a large genre of music that is organized, synthesized, sequenced and created on the computer for the listening pleasure of humans. The availability of computer have resulted in almost a cottage industry of music composition for a variety of purposes – state, television, radio, background music for stores and other public places.

The use of computers/notation software/programs in composition has actually improved the quality of the music we hear today. Music composition has gone a long way into perfection with the advent of computer technology. Today, people with little or no knowledge of music can come up with creative musical ideas through access to the computer and notation software. Professional composers now have a variety of music composed with the aid of the computer and notation software enabling them to listen and edit necessary corrections.

Scored music sheets are mass produced with neater and better presentations without the limitation of time. Centuries ago, we would recur that the composer's basic tools were sheets of paper line with shaves, writing utensils and an instrument (usually a pianoforte), but with the advent of the computer/notation software, a host of tools has been created and developed for easy music computation. Alvan-Ikoku (2007:53), comments that;

In composition, the computer makes the composer's work easier by enabling him to his work as he notates them using the computer. This was not possible before the advent of the computer; composers initially relied on rehearsals to be the only means of having a feedback of their works. The benefits of the computer to the composer do not end with the ability to play back the composer's works. They extend to easy, faster and cleaner scoring and arranging, easy melody and harmony writing, easier approach to modulations and transpositions, balance of time and rhythms, selection and choice of time, in a case where the composer is not a fantastic instrumentalist, the computer makes it possible for him to write his works directly into the system and record immediately without looking for any instrumentalist. If a mistake occurs in a voice part or on the instrumental line, correction could be made at the particular point where the mistake occurs without tampering with the entire voice part or instrumental line. Initially such mistakes would amount to a complete repetition of what has been sung or played.

In line with Alvan-Ikoku's (2007) assertions above Loko (2013:134) relates that;

In the area of music making, the usefulness and importance of computer technology is clear and overwhelming. Computer technology is very essential to the composer from the time she conceives her ideas till when she rounds off her creative job. The computer makes the composer's work easier by enabling her to listen to her work as she notates them by using the computer as opposed to the initial reliance on practice or rehearsals as the only means of having a feedback on her works. It also provides the studio engineer ways of correcting mistakes without tampering with the entire work that is being recorded.

In summary, the invaluableness of the computer to the contemporary music composer cannot be over emphasized; composers can compose, orchestrate and arrange music through the use of music software and the computer. Computers can also be used to determine voices, instruments, harmonic structures, rhythms, tempo and tone balances required to achieve the effects desired in a musical composition. Through the aid of system software composers are opportune to experiment with different sounds, and types and pieces of music, composers can write directly into compositions or use computer software to make changes. Finally, creative musical tasks fed into the computer have

been produced, publishers now have neater and clearer music score for publication. Computers have made significant contributions to music and musical research such as retrieving of information, using the computer program for style analysis and sound generation and acoustic analysis.

IV. CONCLUSION

The writer delved into a brief historical account of computer music, definition of computer and software/program; mentioned some software/program and notation software available for music composition and a rundown of the invaluableness of the computer to the contemporary music composer.

Literacy on the computer and its software relating to the field of music is of utmost importance to the music composer. It is required for the contemporary music composer to be well acquainted with the computer and having a knowledge of its usage including how to use a software/program and or notation software. Apart from computer literacy and usage techniques, the contemporary music composer should purchase and have at least either a desktop computer or a laptop. Without a desktop or laptop computer and acquiring skills/knowledge of computer, the music composer cannot work or compose effectively using the computer the contemporary music composer might experience some difficulty to easy access to equipment usage.

Furthermore, the writer submits that now that we are in a technological age, the computer age to be precise, it would not be out of place to recommend to music departments in developing countries that quality and durable desktop computers or laptops be purchased and made available by school authorities/stake holders to the department of music. As a follow-up, computer studies as a course should be introduced into the music curriculum. This may commence as 'preliminary studies or introduction to computer studies'. Lecturers/teachers in the department of music should be made to attend induction training programmes as a way of developing and enhancing the teaching/learning process instead of employing personnel's without basic music knowledge. Finally, students should be taught how to use different music software/notation software available for music composition and recording.

REFERENCES

[1] Abugu, T. P. & Okafor, J. E. (2009). Relevance of Technology in sustaining Music for National Development in *Alvan Journal of Music and Humanities* Vol. 1 No. 111, 80-88.
[2] Adeleke, A. (2013). New Media in Digital Technology: Home-Grown Software for Music Production in Nigeria in *Journal of Nigeria Music Education* No. 4&5, 138-152.
[3] Aghware, F. (2004). *A Brief History of Computers and its Technology in Learning Computers* (A First hand Approach), 1-19.
[4] Alvan-Ikoku, N. (2007). Computer technology as Strategy for Advancing Art Music Composition in Nigeria in *Awka Journal of research in Music and the Arts* Vol. 4, 53.
[5] Animam, B. O. (2004). *Historical Evolution of the Computer a Systematic Approach to Computer Studies Book One*, 12-13.
[6] Brian, H. & Roger, E. (1996). *PC Music Handbook*, Second edition windows 95, 1-11.
[7] Duffy, T. (1991). *Computing Concepts Plus for Software.* Publishing Company, Belmont, Califonia.
[8] Egonu, J. C. (2009). Computers and Music Composition in *Alvan Journal of Music and Humanities* Vol. 1 No. 111, 47-51.
[9] French, C. S. (1992). *Computer Science*. D.P. Publication Ltd, Aldine Place, 142-144 Uxbridge road, Shephards Bush Green, London.
[10] Gimson, A. C. (1981). *Oxford Advanced Learners Dictionary of Current English.*
[11] Loko, O. (2013). Integrating Technology into Music Education in Nigeria in *Journal of Nigeria Music Education* No. 4&5, 131-137.
[12] *Harvard Dictionary of Music*, Second Edition, Revised and Enlarged.
[13] _____ (2004). *National Policy on Education* 4th edition, Federal Republic of Nigeria.
[14] _____ (1992). *The Guinness Encyclopedia*. Published in Great Britain by Guinness Publishing Ltd.
[15] _____ (1981). Encyclopedia Britainnica. Printed in USA.
[16] Osayande, R. I. (2011). African Art Music Composition Challenges and Prospects in a Technological Age. *A Seminar Paper.*
[17] Ubani, A. (2009). Music Information Communication, Technology and Development in *Alvan Journal of Music and Humanities* Vol. 1 No. 111, 43.
[18] WEBOPEDIA Internet.Com *Retrieved from* www.goggle.com 5-11-2011.
[19] http://www.onetonline.org *Retrieved from* www.goggle.com 13-02-2018.