

# **Integrating the Computer Systems and Applied Music Education - Focus on Sequencing Program-**

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## **Abstract**

*Human being's endless desire for comfort had lead to the invention of computer. Computer became a fundamental element in human life due to its technological development. For mid 1980s, music composition has started with computers. The beginning of computer music was done by a computer named Atari which was used only for musical purposes. After all several softwares for music production was made for desktop computers. It started with softwares for Dos, and latter on programs for Window OS was invented. Nowadays, due to the development of hardware and software capability of computers, the whole process of music production; recording, mixing, autotune, mastering, can be done with a single software. This thesis is research about the most popular MIDI used in popular music majors; Cubase and Logic Pro. Among several functions, this thesis would compare the strength and weakness of sequencing, and special features in an educational perspective*

**Keywords:** *computer, software, program, sequencing, logic, cubase.*

## **1. Introduction**

Human being's endless desire for comfort had lead to the invention of computer. Computer became a fundamental element in human life due to its technological development. For mid 1980s, music composition has started with computers. The beginning of computer music was done by a computer named Atari which was used only for musical purposes. After all several softwares for music production was made for desktop computers. It started with softwares for Dos, and latter on programs for Window OS was invented. Nowadays, due to the development of hardware and software capability of computers, the whole process of music production; recording, mixing, autotune, mastering, can be done with a single software Like any other field, the development of computer effected dramatically to the production of music.

Nowadays, the development of production modules has achieved a level enabling an 1 person orchestra[1].

Moreover, before the development of computer, equipments such as console, amp, speakers and a music studio was needed for recording and production. However, now a single laptop can replace all gears above. This means a lot in the music business. Development of computer not only decreased cost, but made the production process faster, easier, and more simple. Of course it has some negative effects but this made possible for a larger range of people be involved in music production and the width and depth of music industry increased[2].

In college, courses for computer music and MIDI became necessary. MIDI education is done concentrating to computer music softwares which has a variety of versions and brands. Therefore selecting a suitable one is important. Moreover instructors should

educate students so that students could use those softwares freely during music production[1,3].

## 2. Detours

This thesis is research about the most popular MIDI used in popular music majors ; Cubase and Logic Pro. Among several functions, this thesis would compare the strength and weakness of sequencing , and special features in an educational perspective[1,4].

### 2.1. Composed Function



**Figure 1. Cubase Main**

[Fig1] is the main page of Cubase. Cubase has the most various and usable MIDI sequencing, and composition functions. Through numerous upgrades, Edit Window enables the idea realization of melody and chord progression. Therefore it is an suitable program for beginners[5].



**Figure 2. Logic Main**

[Figure 2] is the main page of Logic Pro X which is the most advanced version of Logic. It has well designed modern interface with well set modules of composition,

arrangement, and mixing. Moreover, Logic Pro X has a variety of instruments, solid special effects and loop stations which enables a perfect sound[6].

## 2.2. Score Editor



**Figure 3. Cubase Score Editor**

[Fig 3] is the score editing page of Cubase. Melody score, drum score and guitar TAB score are supported. Moreover, Lead sheet, orchestral score and other various score layouts are supported with several musical marks and integration of VST instruments. These function provide comfort for musicians[7].



**Figure 4. Logic Score Editor**

[Fig4] is the score editing page of Logic Pro X. Basic functions are similar to Cubase. It has marks, notes, page mode, guitar code, lyrics, key signature, clef, rhythm, play style, text, edit page functions[8]. However it is true that MIDI programs lack expertise compared to music copy programs. But logic can work with only one file without drawing a new MIDI notation has the advantage that you can make the score

### 2.3. Mix Console



**Figure 5. Cubase Mix Console**

[Fig 5] is the main page of Mix Console of cubase with improved interface. It is a new for of Mix Console. It has 32 beat mix engine and 128 channel in, out with 8 insert channel with 64 FX send, 256 Group/ Verse. It enables limitless routing.

Cubase's unique setting such as full screen, channel zone. Link Group, Quick Link, system track icon, note pad are easily marked. Moreover Cubase supports drag and drop in the entire Mixing interface.



**Figure 6. Logic Mix Console**

[Fig 6] is the Mix Console main page of Logic Pro X. It enables a spacing feel in the sound through space designer conversion reverb. In Logic Pro it provides various multi-tape, vintage-tape, and stereo delay with ease. Moreover it can add movement with a variety of modulation to the track. In addition it has a full set of EQ, dynamic and mixing tools with mastering plug- in which enables a perfect finish of a project[9].

In addition, the logic can be controlled at a time, mixing all the necessary functions for each channel in one window You can mix the songs by simply adjusting the working volume and frequency.

## 2.4. Professional Music Program



**Figure 7. Logic Main Screen**

[Fig 7] is the main screen of Logic. Computer's music education that targets students in the castle for the input and modification of MIDI Note is very important. In previous Logic 9 Version of the MIDI Note, one should modify one more use to modify keyboard shortcuts or mouse because we were going to continue changing the required Tool is very inefficient. But Flex Pitch feature 10 Version has reinforced the program to be modified very simply the MIDI Note. And Convert -to -midi features were added in the Audio File Monophonic can be called function is also very convenient feature that Convert to MIDI Note.



**Figure 8. Cubase VariAudio**

The picture above is a screen VariAudio 2.0. VariAudio is in the Audio Pitch / Timing editing features that are integrated into the Sample Editor in Cubase students easily and without much difficulty, can be used conveniently. Melody Line analyze the staccato part of the Vocal start, it represents the pitch of a sound one note with the Pitch Envelope with Mic. Drag the MIDI Note also be indicated by the syllables in the Key Editor, in the

Sample Editor can be modified to adjust the Pitch and Timing. VariAudio 2.0 by mutual cooperation with the Chord Track, Pitch correction is possible across the Harmony of the song. In addition to the default and Lead Vocal Track, soprano / alto / tenor / bass Chorus Track by Harmony Voicing it can also speak freely[10].

As illustrated in the above figure, the recovery on the Sample Editor window Track, which is configured to handle the Part. While the Harmony Monitoring and VariAudio to be edited.

## 2.5. Channel Strip



**Figure 9. Cubase Channel**

The picture above is the Channel setup screen in Cubase. The one with all Audio Channel Channel Strip can be quickly completed with quality in the Sound recording when working with a large number of excellent songs by Process Computer feature. Cubase, comprises also a variety of Dynamic Insert / Send function. A / B of the cross-comparison, verification and validation of the Audio Effects, Plug-in & Channel Search. Talk Back Mix and stand-integrating Control Room queue 4 is able to, as well as the operation without using the mouse. Therefore all the control in the Parameter Keyboard is designed to be[11].

## 2.6. Sourround



**Figure 10. Cubase**

Multi Channel Audio Signal provides a variety of Sound and Stereo from input to output, and Surround input, Plug-in VST3 adapted to output are arranged efficiently. In addition, the delivery is also good, Export feature convenient MP3 Surround Format. Due to such features Cubase provides a detailed and consistent Surround Walk Flow[12].

Each of the Channel Strip shall perform the following duties.

-Audio Channel Strip Control The recorded sound is played in the background signal and Audiotrack.

-Instrument Channel Strip enables the use of Software Control instrument.

-Expansion Control MIDI Channel Strip is an extended MIDI Track.

Mixer Channel Strip is generated automatically when you create an Audio, Instrument, extended MIDI Track in the Arrange window. Inspector Arrange Channel Strip can be seen up to show the selected Track Audio or Instrument Channel Strip is on the left, right, it shows the main target of the Channel Strip.



**Figure 10. Logic**

In the case of Logic Channel Strip are for Audio and instruments to create the basic Arrange Style (Software or MIDI Track), is dealing with AUX jack and an auxiliary output Channel Strip. The Track of the Arrange Screen Control by each one of the Channel Strip. Arrange Track are also performs the function Route to a particular Channel Strip[13].

## 3. Analysis

Each MIDI has its own strength and weakness. Logic provides a variety of mixing plug-in with comfortable interface. However it only works in Mac OS. On the other hand Cubase has a limited library compared to Logic; which actually became better after the

upgrade of Halion Sonic, and the newly designed Cubase 7 decreased the difference of the mixing interface between the two. Cubase works both in Window and Mac.

Main education goal of 2014 NCS education process is learning the basic knowledge of sequence programs, be enable to use it and have the ability to finish a project with connected softwares. Nowadays Cubase is more professional for musicians than Logic. On the other hand Logic is more suitable for students[14].

In college, Logic and Cubase are the most widely used sequence softwares. However since Mac is very expensive, Logic is used only in limited schools. Recently all MIDI follow the DAW program method which is a all in one style sequence; enabling composition, mixing, mastering at once. However most MIDI programs have a unbalance strength point among the music production process. Therefore it is needed to enhance the integration and fluency between processes. In this point of view, Cubase needs to have more various effector, instruments and free sets. Logic needs to be more open to other sequence programs and audio edit method should be more easy.

#### 4. Conclusion

In popular music majors, the college's education style is designated by the professors' music styles. Jazz players focus on jazz instrument education, and pop musicians focus on the fundamentals of popular music. Professors majoring computer music and composition educate their students in this point of view. However, the education style should not be done according to the professors' style but for the students future. Recently, with a high unemployment rate, popular music institutes should focus on job acquirement. Music major main goal is to be a professional music player. However the reality is not that easy and computer music education can be a great alternative. MIDI skills can be applied in a variety of fields and provides more opportunity to students. Therefore, professors should consider which sequence program is the most suitable one for the students future

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