Title: Music Notation in Unconventional Applications

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Among musicians, there is an increasingly widespread trend, in the last few years, to edit and print musical scores in a digital environment using the computer and specialized software. The applications Sibelius (by Avid Technology) or Finale (by MakeMusic) or the free software MuseScore are already very well known. All have the advantage of being created for the above purpose, but the disadvantage that they cannot be used in real time with all the features, as it happens with DAW – Digital Audio Workstation software. DAWs are specialized software programs for musical production in all its complex aspects: digital orchestration, audio recording (voice or musical instruments) and mastering of sound recordings and have the advantage of being able to work with any virtual devices that can emit musical sounds, such as samplers and synthesizers, if they are designed to recognize the protocol of the DAW program in which they are inserted. Most of them include a rudimentary music notation editor, which is usually far from the quality of dedicated software.

For a musician working digitally it would be perfect to have an application combining both music production and better editing of musical scores at the same quality as the dedicated software. One such possibility exists in Cubase, developed by the renowned German company Steinberg Media Technologies GmbH (Hamburg). Here are several examples of music editing.

One of the most complex editors included in Cubase[1] is the Score Editor. It can be accessed using the command with the same name in the MIDI menu. There are two ways to use it: editing a music part that is already recorded, or step input of events included in a musical score. In the first case, in a recorded part there are musical notes in the form of MIDI events, laid on the grid. When the

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[1]   Steinberg Cubase Pro 10 Music Production Software.

Score Editor is accessed, they appear as standard music notation. Initially, the notes are exactly as recorded. If the intent is for a MIDI recording to end up as a musical score, it is recommended to use the quantize function, before or after the recording, so that the notes appear exactly where they should be in the score.

Often during a recording, a player might not play the notes with their real length. For instance, a quarter note will be represented by a double dotted eighth note followed by a sixty-fourth note. The score gives the impression of being loaded with unnecessary elements. Cubase has many ways to deal with this very quickly. If the recorded notes are longer than the value of the score, this should be rectified in the main work editor, the Key Editor. This is a very complex work tool that unfortunately does not appear in dedicated music notation software such as Finale or Sibelius. Select the notes with problems and select from the MIDI menu – MIDI function submenu, the command Delete Overlap Poly. During playing, some notes may appear longer than the real value. By using the above command this can be resolved. Notes are usually played with shorter length. To repair them, in the MIDI menu, MIDI function submenu, select the command Legato. Each selected note will have its length increased to the next one in the part, thus removing unwanted pauses. The two commands will quickly solve the problem of having a correct representation. It may make the part lose its emotional content, so it is recommended to save two projects, one for proper notation and the second for emotional performance.

A host application gives the advantage of simultaneous editing in all included editors. Any change made in an editor will be automatically reflected in all others. Due to this, the musician can edit a command in the editor where the desired function is quickest to access. The problem of correct note viewing can be solved directly in the Score Editor. A recorded part that was intended to be a measure with four quarter notes can appear as shown in Fig. 1.

Fig. 1. *Inadequate representation of a group of quarter notes.*

As you can see, instead of the desired values we have eighth notes accompanied by rests. To resolve this, press Q button in the upper part of the Score Editor. The dialog includes three text boxes. The top one is used to enter the desired value – quarter note in this case – and the other values in the next two boxes remain unchanged. Press Apply. With the control device, access the desired measure. The note values will be shown correctly (see Fig. 2).

Fig. 2. *Correct display of note values.*

In the Score Editor it is possible to show as many staves as parts selected in the main work window. Initially, these will be organized in a single system. We can change its appearance later. Using the Erase tool, delete the bar between the staves that we want to group over several systems. By double clicking a measure bar, a window is displayed where we can select several types for it, using the Select tool. There are 11 options, i.e. all existing categories. If we want to have no bar lines in the score, we should select all bar lines and press the H button located in the upper part of the editor, which will hide them from the score. The same button can be used to hide any graphical sign, including the bar.

Another important function in the Score Editor is Explode. If there are several voices at the same time on a stave (i.e. chords), these can be split into individual melodic lines. Each line will have its own stave. From the menu Scores, the submenu Functions, select Explode. In the dialog that is displayed we can specify the number of staves, number of voices present on a stave, the note where the key changes, or, as the case may be, the bass clef on the last stave. When we are done with settings, press OK. The score will have the desired form (see Fig. 3 and Fig. 4).

Fig. 3. *Music score with four voices before using the Explode function.*

Fig. 4. *The same score after using the Explode function.*

The chord symbols for jazz scores can be obtained automatically throughout the musical part. After selecting the notes that form the chords in one or several staves and pressing the C7 button, located in the upper part of the editor, the chord symbols will appear (above each chord). This can be then edited manually by selecting the chord with double click, accessing the window Edit Chord Symbol. In that window we can select the chord type, inversion, ornamental note symbols and enharmonic version.

Fig. 5. *Chord symbols in the Score Editor.*

As you can see in the image above, in addition to chord symbols, the time signature changes in the second bar from 4/4 to 3/4, and in the third bar it is back to 4/4. Also in the third bar, the key signature changes from F major to D♭ major.

In Cubase it is possible to change the time signature and tempo in any place of the musical piece from the application. The change of time signature can be done in two ways. In the Score Editor in the Time Signature palette, in the Tempo Track window from the Project menu – using the pen tool – or in the Browser window in the same Project menu.

Therefore, in a program that is not dedicated for this purpose it is possible to create high-quality music notation for the most demanding requirements. As in any dedicated music notation software, it is possible in Cubase to create compound meters, modal key signatures, polyphonic writing, guitar tabs, an extended palette of graphic signs and many others.

English version by Cristian Stîlpeanu