



Musica Parlata* : a Methodology to Teach Music to Blind People

A. Capozzi
Liceo Musicale
Alfano I
84132 Salerno, Italy
info@musicaparlata.it

R. De Prisco, M. Nasti, R. Zaccagnino
Dipartimento di Informatica
University of Salerno
84084 Fisciano (SA), Italy
robdep@unisa.it,
michele.nasti@gmail.com,
roccojazz@gmail.com

ABSTRACT

Music education for blind people heavily relies on Braille. The use of Braille for music causes difficulties for the blind student: new meanings for the Braille symbols have to be learned and the reading of the music is not immediate. Moreover, in the majority of the cases, music teachers don't know Braille. Although Braille remains the primary means for music education for blind people, alternative methods can help. We propose a new methodology that helps the reading of music scores by means of a software that *sings* the *name* of the notes. Singing the name of the notes provides to a blind user a direct perception of the score. Moreover the information is directly conveyed to the student through the ear. Although the method has several limitations we believe that it is effective. The methodology is not intended to “replace” Braille, but only to offer a different approach to the study of music.

Categories and Subject Descriptors: L.2.1 [Learning]: Individualised Learning Solution

General Terms: Human Factors, Experimentation

Keywords: Music learning, Accessibility, User interfaces for blind people.

1. INTRODUCTION

The standard approach to music for blind people requires reading Braille music. However reading Braille music is a specialized skill and even if one already knows Braille reading Braille music requires further efforts. Not every blind person is able to read Braille music. This means that if a blind person wants to approach music there is a serious first obstacle.

In order to use Braille for music, it is necessary to give new meanings to symbols already used for letters and numbers and mathematics notation. The “symbols” needed to represent music (i.e., clefs, key signatures, notes, notes duration,

*“Musica Parlata” means, in Italian, “Spoken Music”. We have decided to keep the Italian name because “Spoken Music” has already been used for another project [1] and thus using the same name could have caused confusion.

accidentals, fingerings, irregular note-grouping, ties, slurs, musical markings, repetition symbols, etc.) are much more complicated than the symbols used for regular text (letters, numbers, punctuation). Some music symbols require several Braille symbols (even 3 or 4) to be represented. A complete explanations of the Braille music symbols can be found in the Music Braille Code [3], published by the Braille Authority of North America.

In many cases the blind person will just decide to abandon the studies. This is particularly true for people wishing to play music only for fun and thus do not have the time nor the desire to go through a difficult learning process in order to become skilled in reading Braille music. A more direct way for taking the first steps in the study of music would encourage the student in pursuing the goal.

Often, the teacher too is not able to use Braille. In such cases also the teacher has to go through the same difficult learning process and if the teacher is not able to become skilled with Braille music the resulting lessons will be poor. This can be very frustrating both for the teacher and for the student. A tool that allows to teach music to blind people without using Braille can be very useful in such cases.

Hence, methods to study music without using Braille can help blind people to approach the study of music. *Musica Parlata* is a methodology developed to help blind students reading music scores without using Braille. The software provides a direct perception of the notes by singing (with the correct pitches) the names of the notes in melodic lines and by speaking the name of chords.

2. RELATED WORK

The creation of computer assisted tools to help blind people with music has been an active area. However most of the tools available today involve Braille. Due to space limitations, we will not cite Braille oriented work. One project that is somewhat similar to *Musica Parlata* is the *Spoken Music* [1] project. However there is a fundamental difference: while Spoken Music “reads” the score, *Musica Parlata* “sings” the scores. *Musica Parlata* sings the names of the notes and also reads the chords “in time” with the music, that is, in the exact moment in which the notes (or the chords) have to be played. The information that *Musica Parlata* is able to convey is restricted to the notes of melodic lines (and the chords) but it is given on the fly with the music and the blind student gets a precise perception of the temporal

position and duration of the notes. This is a fundamental difference with *Spoken Music* and we believe that it is also an innovative idea that can be very effective.

3. MUSICA PARLATA

The idea of *Musica Parlata* has been developed over a long time and it sprung from direct teaching experiences by Alfredo Capozzi. *Musica Parlata* helps the reading of a score sheet by singing the name of the note (using the correct pitch) or speaks the chord. Earlier version of the software were ad-hoc solutions which caused several troubles to the blind user. The current version of the software, that we are presenting in this paper, is a stand-alone program, with a 1-click installer and a easy-to-use interface. The audio engine uses Csound [2].

The *Musica Parlata* player is multi-track, allowing a maximum of 20 tracks. The tracks contain normal audio material but can also contain special audio with the names of the notes. Clearly we can add any other information we like. For example we can add the chords (this is especially useful if we are dealing with pop music), or the click of a metronome. The musical material has to be prepared by the “programmer” of the song. Figure 1 shows the screen-shoot of the graphic interface of the program. Obviously, every functionality can also be used through the keyboard.



Figure 1: The *Musica Parlata* graphic interface. All the functionalities can be controlled through the keyboard.

As in any multi-track audio software the user can mute or un-mute each track, create loops, adjust the volumes, control the execution speed, etc. All these functionalities are pretty obvious and every software dealing with multi-track songs does provide them. However *Musica Parlata* has special tracks that are used to sing the names of the notes. The visually impaired student will hear the names of notes to play: memorizing the notes will be much easier (compared to memorize them after reading the notes in a Braille score) and the student can try to play immediately while “listening” to the score. The method is immediate in the sense that the student does not need any special study to start using the proposed learning method.

Musica Parlata has two major limitations: it is difficult to “read” simultaneously several melodic lines, although the

reading of two melodic lines is quite comprehensible. Notes with a very short duration are also a trouble because it is difficult, if not impossible, to sing the name in the short time of the duration of the note.

Download and demo. The software is freely available for download in the website music.dia.unisa.it, in the Download page. The current version has been developed for Windows. The site contains also some videos that show the use of the software.

4. USABILITY TEST

We have administered a small-scale usability test involving 30 people, 10 of which were blind. The non blind people have used the software through the graphical interface. In the test we have provided a series of tasks to be performed using the software. For each task the user had to use a specific song and perform several actions ranging from moving within the song, adjusting the volumes, muting or un-muting specific tracks, listening to specific parts of the song, speeding up or slowing down the playing, using either the visual interface (for non-blind) or the keyboard commands (for blind) provided by the software. After performing a task the user has been asked a series of questions regarding the usability of the software. Moreover some user provided also additional specific comments. Both blind and non-blind people have found the software easy to use. Some of the non-blind people that took the test are teachers and they had enthusiastic comments about the software. Some believe that the software can be useful also to non-blind students. The blind people that took the test also found the program easy to use, although in some cases they reported specific difficulties, as, for example, the presence of echoes that in some cases made difficult the “reading” of the score.

5. CONCLUSIONS AND FUTURE WORK

Musica Parlata is a software developed to help blind people to study music. It *sings* the names of the notes. It is very effective for monophonic instruments or for two-voice scores. The main and innovative feature of the tool is that it “reads” the score by singing the name of the note (or the chord) to be played so that the students gets both the name and the correct pitch of the note and at the same time has the hands free so that it is possible to immediately play the notes. Although the idea was born a long time ago, the previous versions of the software suffered from several drawbacks which made it not very usable. The current version of the software is a first major step towards an effective tool. Future work includes support of MIDI files so that it will not be necessary to produce ad-hoc music files. A usability test involving a wider audience would be helpful especially for understanding where the software needs to be improved.

6. REFERENCES

- [1] D. Crombie, S. Dijkstra, E. Schut, N. Lindsay. Spoken Music: Enhancing Access to Music for the Print Disabled. In *Proceedings of the 8th International Conference on Computers Helping People with Special Needs (ICCHP)*, Springer LNCS 2398, pp. 201–213, 2002.
- [2] Csound. <http://www.csounds.com/>
- [3] The Music Braille Code. <http://www.brailleauthority.org/music/music.html>
- [4] Musimathics Laboratory, University of Salerno, Italy. <http://music.dia.unisa.it/>