Electronic usage of BLISS symbols

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ABSTRACT

The desire for communication is every human being's own. It lives in people's mind whose own body deprives themselves of the possibility of relations between people. In the last few decades it was realized that not only the number of people who were kept alive is important, but also their quality of life. One of the base of the prosperities is the ability to adapting themselves to the community.

Two different software was made for partially disabled people, using these programs they are able to tell what one has got to say in the easiest and quickest way to their teachers or others, where the point can be a simple conversation, or writing a letter or just a composition. Both application use Blissymbolics, an alternative graphic symbol system that individuals with severe speech and physical impairments find much easier to learn and use than traditional print. First, a Bliss symbols sentence builder serves as a tool for boarders to compose and print Bliss symbol sentences. Second, at the age of the Internet an e-mail reader and writer software was designed especially for Hungarian BLISS users, while the format of the e-mail is compatible with the applications used in international practice.

1. INTRODUCTION

1.1 People with disabilities

Being different it's not too easy: the common experiences, actions, emotions are the things which attach the person to the group. The person who is left out from the common experience will be dragged into the edge of the society. One's isolation produces destructive effect on it's sentimental, social and mental life. The communication is not only the key for the entrance into the society, it is also the connecting power of the community. From the beginning, whose communication possibilities are limited compete with huge disadvantage in the war of prosperity. Our main task was making software for partially disabled people who can communicate hardly with others. The point can be a simple conversation or writing a letter or just a composition. As an alternate language, we use the BLISS symbols.

1.2 Bliss symbols

The creator of the Bliss language is Charles Kasiel Bliss. He was born in 1897 in the Austro-Hungary, Czernovitz and died in 1985 in Sydney. The Chinese pictograph symbols made a big impression on him. Bliss worked on a universal logic language. He ended his book *Semantography* in 1949 and felt to accomplish the dream of Leibniz, the creation of a mathematic clean universal language, independent of age, sex , intelligence and native language. His work was not accredited until 1971 when a workgroup in Toronto discovered it. Since then , an international Institute has built on the Bliss symbols.

At this time, the full dictionary has above 2000 symbols. All the symbols are based on basic graphical elements (Fig. 1) and on the combination of three different sizes. There are three shapes which appear only in one size. The basis of the symbols is the symbol square i.e. the basis of size comparison for the symbols inside one symbol set.

In the Bliss language there are about a hundred basic symbols which cannot be split into independent smaller units. The complex symbols stand for two or more basic symbols.
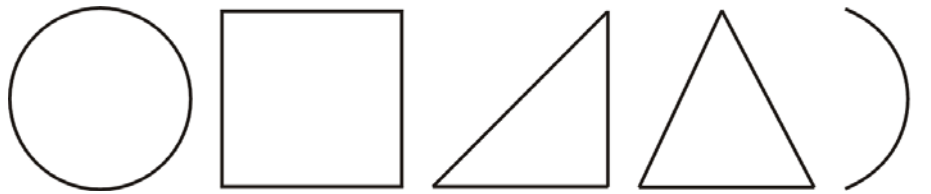

Figure 1. *Basic Bliss elements*.

2. BLISS SYMBOLS SENTENCE BUILDER

2.1 Look and use of the Bliss symbols sentence builder

The task of the Bliss symbols sentence builder is to serve as a tool for boarders to compose and print Bliss symbol sentences. The interface had to be designed for simple and easy use. The control had to be as simple as possible with the help of labeled buttons and their arrangement. Input can be done by the aid of buttons.

The Bliss symbol sentence with empty squares is at the bottom. Chosen symbols appear in this squares from the left to the right. Above the sentence there are function keys that implement paging, category switch and erase. For certain functions, a teachers authority is indispensable. Such a function is printing for example.

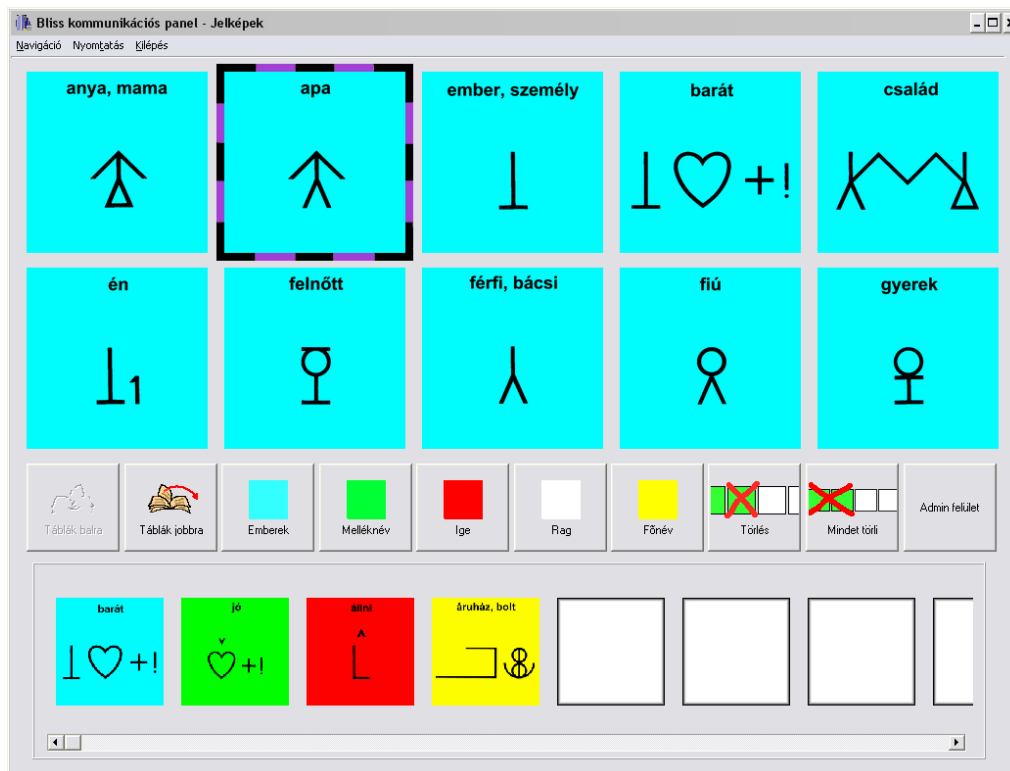The Bliss symbols of the current category, divided into ten part sets, are above the function keys.

Figure 2. *Bliss symbols sentence builder interface*.

Different categories are marked with conventional different background colors. The categories are marked in the menu also with this colors. Above the symbols is a menu with functions meant for the advanced users or teachers. The navigation can be set here for the sentence builder. One can navigate among the function buttons by three ways. One way is to navigate with the cursor keys and the *enter* and *space* buttons. For the most advanced user, there is a way to navigate with the mouse. For the less advanced user, the third navigation method is implemented, the automatic movement. This means, the colored frame which marks the

actual active control is moved by certain time on a certain order among the buttons automatically. If the active control is preferred, the user has to press a switch. This can be any button of the keyboard bur also a special input device, for example an external switch of the special keyboard of Intellikeys.

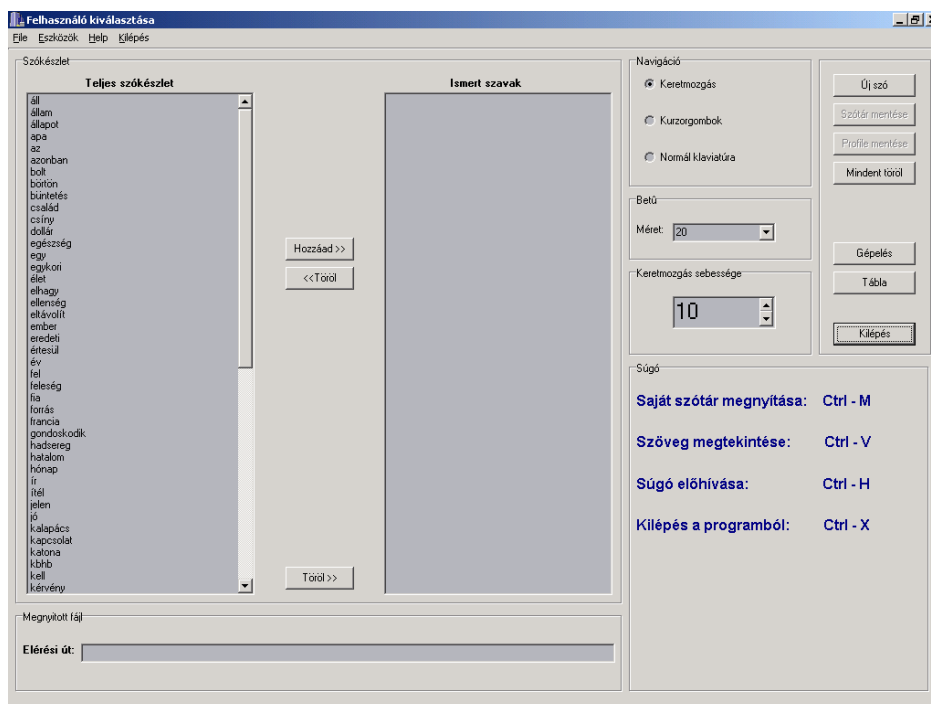**Figure 3.** *Intellikeys keyboard and external switch.*

**Figure 4.** *Picture from the Administrator interface*

3. ADMINISTRATOR AND SENTENCE EDITOR INTERFACE

There is a main dictionary , part of the program, which could contain all the words that people can use. Before somebody first start using the software the teacher has to make the users own reduced vocabulary selecting the known words from the list box of the main dictionary. Certainly there is the possibility to add or remove words from both the main and the individual word stocks.

In case of the degree of the disorder the teacher can choose from three types of navigation: "moving frame", control by cursors, or control by keyboard.

It is necessary to set the speed of the motion to the actual user, and to set the size of the letter using in the word processor due to the users disturbance of vision.

After all the settings were made, the teacher can switch to the editor interface and let the disabled to work.
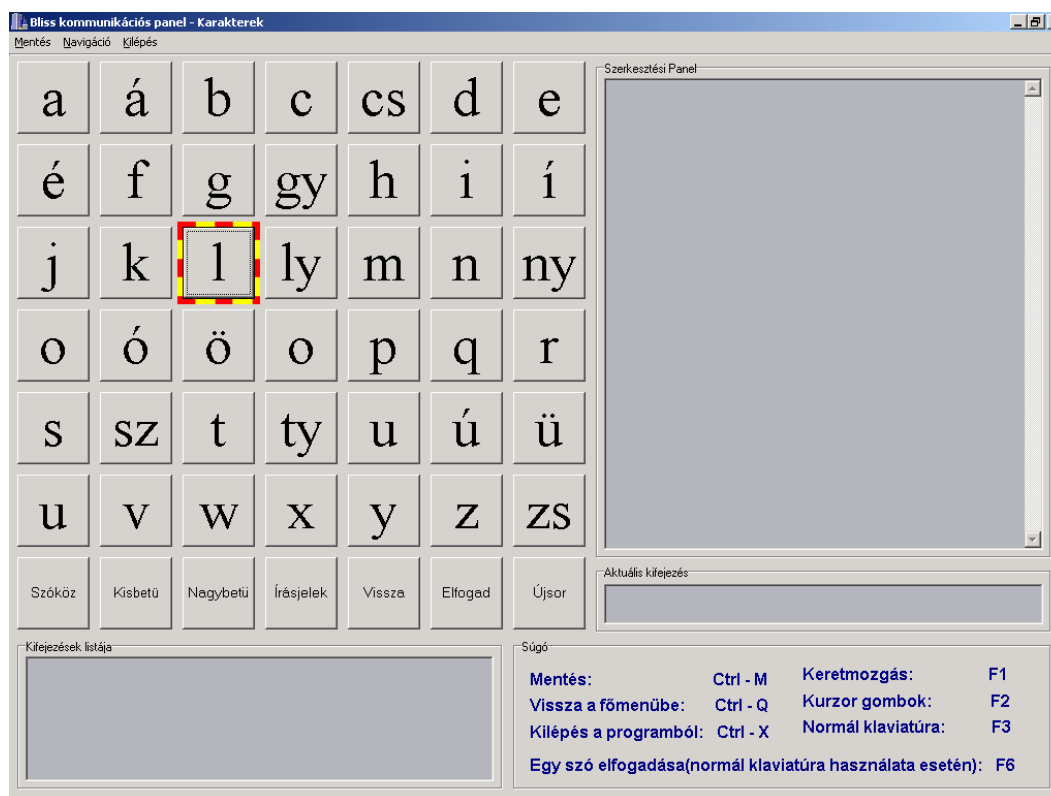
Figure 5. *Picture from the Sentence Editor interface*

There are three well-separated parts of this screen. The letters of the Hungarian alphabet is located on the left side of the screen, each represented by a single button. Over the alphabet, other functions are needed for word processing, so seven function buttons: space, small letter, capital, punctuation marks, delete, accept, new line were added. Next to the 7x7 button matrix stands the text editor panel, which contains the typed document, and under the matrix the "matched expression" list is located.

Depending on the navigation type, the user can edit text in three different ways.

The type "moving frame" means, that a frame moves around the alphabet and the function buttons button by button and pressing only one key on the keyboard, e.g. Enter, the actual button took the represented action. Typing the first letter of a word the program starts matching it with the individual dictionary and list the found words into the "matched expression" list box. Typing more and more letters the number of the matched words decrease until only one remains and usually this is the word that the disabled wanted to use. Than he/she waits until the frame reaches the "accept" button and pressing the Enter key the whole word with the remaining letters will be inserted to the editor panel.

With this search function it is reached that disabled persons can type a whole word and whole sentences by pressing only one button, e.g.: Enter only a few times.

Depending on the degree of disorder, other two navigation types can be chosen. Control with cursors means that the moving frame is deactivated and the user moves it by the cursors, because he/she is able to use more buttons, not just only one. If somebody can use almost the whole keyboard, the control by keyboard navigation type can be chosen. It means that the focus stands on the text editor panel and the disabled uses the keyboards keys typing a text while the search function is still working and with a function key F6, he/she can accept a matching word, insert it into the text editor.

After the document is ready, the teacher can save it to Rich Text Format to archive the students work, so it can be possible to follow the development of each person. Certainly it is possible to open a previously saved document by the program in the administrator interface choosing the open command.

All the functions, like saving the text, changing the navigation, back to the admin interface, etc. can be activated by hot-keys, helping the teachers job.

4. BLISS E-MAIL FOR HUNGARIAN USERS

4.1 Blissymbol communication over the Internet

Various kinds of internet based supports for those who wish the use Blissymbolics were developed in the past. The development of BlissInternet (Blissymbolics Communication International, 1996) has lead to collaborative work with other developers, and a group of compatible software raised:

- BlissWrite - BlissInternet (Canada)
- WinBliss - SymbolMail (by Foreningen, Furuboda, Sweden)
- Bliss for Windows - Document Maker (by Handicom, the Netherlands)

These programs are currently under Beta test with field trials involving adult Bliss users in Sweden, the Netherlands, and Canada. The key of the effectiveness of these software is that the program does not send the picture of the symbols in the e-mail, only a code number which is defined by International Standards Organization (ISO). The advantage of the ISO coding approach is that much less data has to be sent. That's why the size of the letters is very economical, around few kilobytes. Fast communication came true via dial-up networking, furthermore the storage of the messages does not require big capacity. The hardware requirements are very poor as well, today operation systems require much more. The disadvantage is that you do need to have a program that can access or produce the Blissymbols from the ISO codes on each end.

There is one other email program that uses Blissymbols called Mind Express. It was created in Belgium but is not compatible with the others. The reason is that it converts the Blissymbols onto bitmaps and sends the bitmaps. All of the other programs expect the ISO code and can't read the bitmapped version although regular e-mail programs of course can.

The aim was to design an Internet standard based e-mail reader and writer software especially for Hungarian Bliss symbol users to be able to communicate with Bliss symbols users all around the world via e-mail. The ISO coding approach enables the communication between Bliss users of different countries, so the decision was made to make it possible for Hungarian Bliss users to join the above virtual community.

4.2 Bliss users in Hungary

In Hungary 0.4-0.6% of the population, 50-60.000 people have severe speech and physical impairments. In 1984 (for the first time in Central-Eastern Europe) a development program has started for children and young people with severe speech disorders and physical disabilities. In January 1987, Hungarian Bliss Center was founded, and Blissymbols were applied in the framework of complex rehabilitation services.

*4.3 The development of the e-mail application*

The Hungarian e-mail software follows the guidance of BlissInternet, which was the first application that widely allowed independence for Bliss users in the communication process, because Bliss messages could be sent via Internet to other users without the need of assistance. But, the disadvantage is that no domestic vendor was appointed, and finally just an English version is available.

The first step was the translation of the database provided by BCI (Blissymbolics Communication International). This database supported only standard English characters, was not compatible with Hungarian special national characters with accents (á, é, í, ó, ö, ő, ú, ü, ű). The standard ASCII (American Standard Code for Information Interchange) character coding had been replaced by extended ASCII (8-bit) coding. This change allows the use of the special characters of other languages as well, such as French.

At its core, the software is designed to serve three basic functions:

- First, it is a very economical way for non-speaking individuals to create their own messages in Bliss for any written communications task.
- Second, when combined with the services of an internet service provider, it provides a straightforward way for Bliss users to interact with others around the world who "speak" Bliss, regardless of their native tongue. It has a simple command for sending Bliss messages via email and the internet to anyone in the world who has an email address.
- Finally, it provides a flexible method for people who are working with Bliss users such as teachers, parents and clinicians who my not be fully conversant with the Blissymbolic language to create and interpret messages in Bliss. Thus the program is useful both for the person who has profound physical

disabilities and who cannot speak as well as for the various significant others who are working with that person.
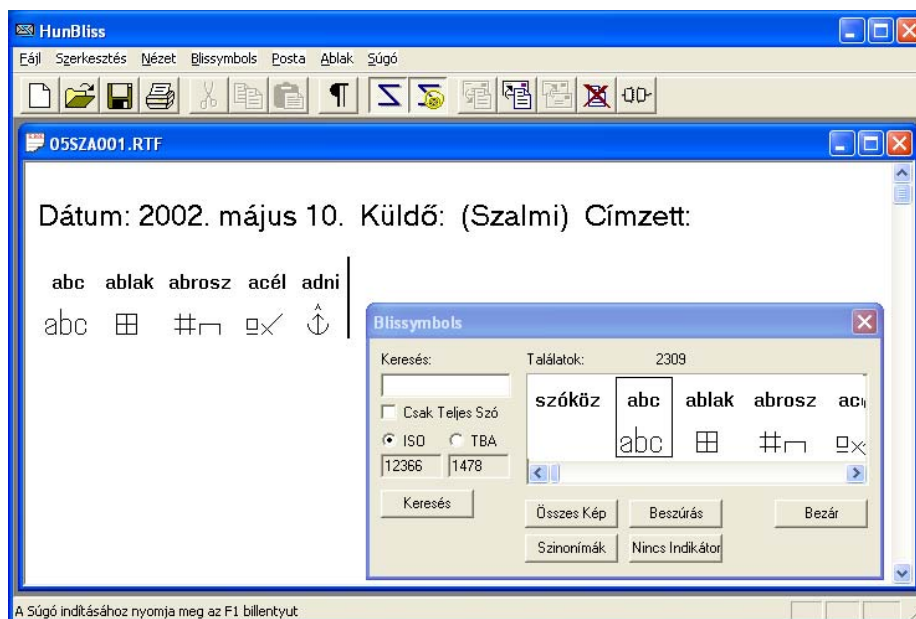
Figure 6. *Picture from the e-mail application*

The input to the simple editor is text. Each entered word is matched against a lexicon database. If a match is found the corresponding symbol is displayed in the editor, otherwise the text is displayed. Symbols can be selected from a list, and can be retrieved by typing the ISO or the TBA code as well.

Third-party, keyboard scanning protocols and alternative access software can be also used for this application such as WiViK keyboard, SAW (Switch Access for Windows), Clicker3-4 (from Crick Software). These programs allow us the possibility to build hierarchical on-screen symbol chart systems, with which the user can select their symbols. On the other hand, external input devices can be also used such as definable membrane keyboards.

The disadvantage is that you do need to have a program that can access or produce the Blissymbols from the ISO codes on each end.

4.4 Increase the usability – Grouping Blissymbols

The database contains 2304 symbols. It is very difficult to handle large number of symbols, that's why symbols are grouped into different categories. The software supports grammatical categories, word-classes (noun, verb, adjective) and the symbols are categorized by the meaning as well (Family, Animals…).

4.5 Future improvements

The application of MS SAPI compatible speech synthesis or link wave files to have auditory support.

To develop a software that manages Bliss symbols and database of many different language, and do translation by the ISO codes.

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