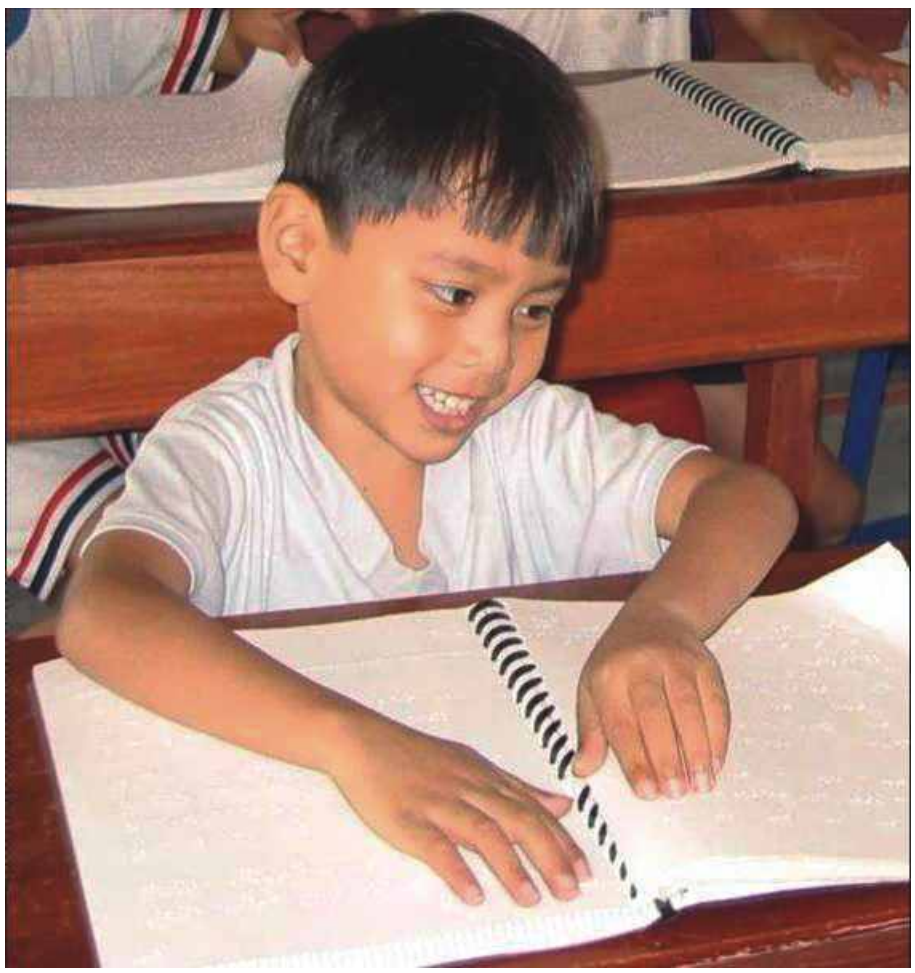
The Educator

VOLUME XXI, ISSUE 2 January 2009

THE BRAILLE CODE: PAST - PRESENT - FUTURE



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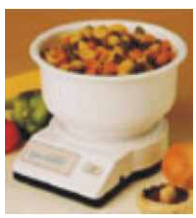

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THE VENUE OF THE 13TH WORLD CONFERENCE OF ICEVI

We are pleased to announce that the 13th world conference of ICEVI will be held in **Jomtien, Thailand** from **9 to 13 August 2010**. The Education For All movement originated at a meeting of Ministers of Education convened by UNESCO, UNICEF and The World Bank in Jomtien in 1990. It is quite symbolic that ICEVI will hold its 13th World Conference at the same location some 20 years later to draw the attention of the world to the educational needs of all children with visual impairment.

The Thai Host Committee, consisting of organisations of the Thai Blind Union and voluntary organizations, is headed by **Pecharat Techavachara, President, Foundation for the Employment Promotion of the Blind in Thailand**. The conference will be held at the **Hotel Ambassador City, Jomtien,** which has excellent facilities at a beautiful seaside location. Do mark your calendar to join your colleagues from around the world and be prepared for an excellent conference and a relaxed time.

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Guest Editor : **Cay Holbrook**

Message from the President

Washington, Maine
January 1, 2009

Dear Colleagues:

Today, as we ring in a new year we also begin a year of celebration to mark the bicentennial of the birth of Louis Braille. In a few days the first of many celebrations will begin in Paris with many others, large and small, to follow. I shall leave it to our Editor, Harry Svensson and the Guest Editor, for the 2009 issues of The Educator, Dr.Cay Holbrook, to say a bit more about our plans.

Some of you who know me well are familiar with a very personal tradition I established for myself many years ago. It all revolves around a conversation I have with myself every New Year's Eve as I look in the bathroom mirror to shave before heading out for whatever New Year's festivities may be in my plans.

During this little chat with "the man in the mirror" I examine what to me is a very simple but fundamental question: "Can I point to significant number of visually impaired persons that are better off on this last day of the year than they were on the first day of this year as a result of my work?"

This year "my friend in the mirror" and I had a rather long conversation. I will not bore you with the details of that discussion other than to say it really did help me to reflect, to focus and to set some ambitious targets for the new year that begins today.

That little chat also leads me to share with you, our loyal members and supporters, on this first day of the new year my hope that you have set ambitious goals for yourself and the children and youth that you serve. Alone we can do very little, but together we can change, in a very positive way, the situation of the children we serve throughout the world.

As we enter what will surely be a challenging year ahead, my new year's wish for you is that you will have:

Enough success to keep you eager,
Enough failure to keep you humble,
Enough joy to share with others,
Enough trials to keep you strong,
Enough hope to keep you happy,
Enough faith to banish depression,
Enough friends to give you comfort and
Enough determination to make each day better.

As always,

Larry Campbell
President

Message from the Editor

Dear Reader,

It is a new year – 2009. This is a year we start with very mixed feelings. All of us have heard about the problems the world economy is facing, yet we don't know how this will affect ICEVI and the education of children and young people with visual impairment around the world.

Although the economy is the black cloud in the sky, there is a ray of sunshine. Responsible for this is a person none of us has met – but we all know him very well. His name is Louis Braille.

You may wonder why I think that a person born in 1809 can offer us a ray of sunshine 200 years later? The answer is that Louis Braille is still with us. His invention – how to combine six dots to represent letters – is today more important than ever as we live in a global community in which written communication has become an essential part of our everyday lives.

In 2009 his innovation will put a focus not only on the education of children and young people with visual impairment, but also on the conditions for all people who are visually impaired. There will be stamps issued in a great number of countries. Some countries will even issue special coins in remembrance of Louis Braille. I hope this will make people aware of the existence of people with visual impairment and their needs to get access to print. The access to braille has already been recognized by the United Nations in the Declaration of the Rights of Persons with Disabilities.

ICEVI will honor Louis Braille in 2009 by having braille as the theme in two upcoming issues of *The Educator*. In this issue, published in January, we will focus on the code invented by him. In this issue you will find articles dealing with the code in three time dimensions: Past – Present – Future.

The articles are collected by our guest editor Dr Cay Holbrook, University of British Columbia, Canada. She is recognized world-wide as an expert in the field of literacy, she has written a great number of articles on this theme, and she has also been the editor of some of the most important books dealing with the education of children and young people with visual impairment. Dr Holbrook is also a member of the ICEVI Publications Committee.

Dr Holbrook will also be the guest editor of the July issue of *The Educator*. In that issue we will deal with the use of the braille code. If you know a potential author, or is willing to submit an own article, please contact me before March 30, 2009.

I'm writing this column in late December. Two weeks ago I was watching TV. Only a few kilometers from where I live in Stockholm, Sweden, the Nobel Prizes were presented not only to scientists who have made remarkable discoveries, but also to an author – this year the Nobel laureate in literature was given to Jean-Marie Gustave Le Clézio from France.

I have not only one, but two dreams; in my lifetime I hope that the Swedish Academy will change the rules to make it possible to award the Nobel Prize to a person posthumously, and that there will be a broadening of the prize in literature to also include work promoting literacy.

If this happens I have a candidate – Louis Braille.

Harry Svensson
Editor

Message from the Guest Editor

Happy Birthday, Louis Braille! ICEVI is joining with people from around the world to celebrate the birth of Louis Braille who was born on January 4, 1809. It is my honor and my pleasure to serve as guest editor for the two issues of The Educator scheduled to be published in 2009. In recognition of the birth and life of Louis Braille, both issues of The Educator this year will be dedicated to the importance, use and future of braille throughout the world.

We have a theme for the year of 2009…BRAILLE. First, here in the January issue, we feel it is appropriate and fitting that we focus on the braille code. Information and issues about the braille code will be addressed in terms of the past, present and future. Our articles for this issue were all written by people who love braille and are committed to ensuring access to information through braille.

The first section of this issue is dedicated to "the past". Frances Mary D'Andrea provides a context for the work of Louis Braille by pulling together information that we know about the wide variety of ways that were used in the past to support reading for people who were blind. Judith Dixon extends this discussion by *writing about writing* and the ways that braille has been and is produced through the years. Finally, Pedro Zurita provides a very special addition to our discussion of braille in the past by sharing with us an "open letter" he wrote to Louis Braille.

The second section of this issue is dedicated to braille in "the present". In this section we focus on braille today. The braille code has stood the test of time, in part, because of its flexibility and applicability to different and ever-changing cultural and academic demands. To address this very important aspect of the braille code we hear from Bill McCann whose knowledge and passion for braille music shines through in his article. In addition, Betty Nobel reflects on the proposed unification of braille, especially English braille.

Finally, the third section of this issue is dedicated to "the future". We are fortunate to be able to look into the future through the perspective of our authors who share important information on access and production which most people would agree is critical to the future use of braille. Nicole Gaines and Julia Myers explain a model for braille production and access that has received a great deal of interest from others with similar issues around the world. Lars Christensen, also addresses access and describes the award-winning "RoboBraille" which is a braille translation system designed to revolutionize access to braille.

As I mentioned before, the theme for the 2009 issues of The Educator is BRAILLE. With this first issue we have highlighted and celebrated the braille code. But, really this is just the beginning. Our celebration of braille would not be complete if we stopped here. The next 2009 issue will be dedicated to the *use* of braille; the creative, innovative, ordinary and extraordinary ways that braille is being used.

Cay Holbrook
Guest Editor

I join people all over the world in celebration of the life and work of Louis Braille. The little boy who was born in Coupvray on January 4, 1809 changed the world and inspires us through his work to do our part in making this world a better place for us all.

From Carvings to Computers: A history of Tactile Codes for people who are blind

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"*Tell me a story*." Throughout most of history, humans were an oral species, not a literate one. Even once writing systems were developed, there was no expectation that most people would learn to read and write. In fact, some philosophers, such as Socrates and Plato, argued that books would only cause people to become more forgetful since they would no longer have to rely on their memories to recall important information.

Later, book - and literacy itself - were only for the wealthy, or those who were in holy orders. Only rich people could afford to send their children to school or pay tutors and instructors to come to their homes to teach their children. In some societies, only the boys became literate, as reading was considered "unseemly" for girls. Books themselves were difficult to get, as they were written by hand, slowly and expensively. Many books were religious in nature, such as illuminated Bibles, highly decorated books created by monks who hand-wrote and illustrated each page.

All this changed in 1455. Gutenberg developed movable type and the printing press made mass production of books a reality. Books became relatively inexpensive to produce, and gradually became more plentiful. By some estimates, according to Davies, between the years 1500 and 1600 the number of different editions of books printed was 150,000-200,000. By the 1700s, while universal literacy was still a dream, many more people had access to books and had learned to read and write.

That is, people had access to books in *print*. For people who were blind, however, the situation was much the same as it had been for centuries. It would be many years until a similar "Gutenberg Moment" occurred so that affordable books were available for blind people.

While there were no uniform methods of teaching blind children to read, several Italian Jesuit priests

in the 1500s pointed out that blind people could learn to read by touch. One, Padre Lana-Terzi, even described a "secret code" that could be fashioned for blind users to send messages carved into wood or by using twine or string. Some wealthy European families in the 1600s were using print letters carved in wood or wax to teach their children who were blind how to read. It wasn't until 1749, however, that Diderot, the French philosopher, wrote his treatise *Lettre sur les aveugles*, maintaining that people who are blind should learn to read print letters by touch. There are other documented stories of accomplished and literate blind people in the 1700s, but all were taught to read individually by feeling print letters, some carved into wood, some pricked with a pin into paper, some cut out of pasteboard.

In the late 1700s, Valentin Haüy met a young blind man, Lesueur, who became his first pupil and the inspiration to develop a system of embossed print and a writing frame that could be used by blind people to write to sighted people. In 1786, Haüy wrote *An Essay on the Education of the Blind*, dedicated to King Louis XVI of France. The king was so impressed with Haüy's methods, he bestowed his patronage to allow Haüy to start the first school for the blind, *L'Institut National des Jeunes Aveugles*, in Paris. The school was so successful that it was swiftly followed by schools for the blind being established throughout Europe, with schools being founded in England in 1791, Scotland in 1793, Austria-Hungary in 1804, Germany in 1806, Russia in 1807, Sweden in 1808, Switzerland in 1809, Spain in 1820. The United States followed suit in 1831, and Canada in 1861.

For the most part, these early schools taught their students to read embossed print although the limitations of that method were widely acknowledged. Embossed print was bulky, hard to read, difficult to create, and did not allow for a system of writing that the blind students themselves could read tactually. As a result, the early 1800s was a time of great innovation in the education of children who were blind. There was a fever of invention in the quest for improved methods for reading and writing for children and adults who were blind. Interestingly, most of these methods were still based on print letters. Some educators felt that using a system that didn't involve tactile print wouldn't be practical and would set blind people apart from society - even more than they already were. In 1831, James Gall invented an angular Roman type of embossed print to publish a volume of the Gospel of St. John, in Edinburgh. The first book to be embossed in the United States was published in 1833 at the Pennsylvania Institution for the Instruction of the Blind, using a line type; it was followed quickly in 1834 by the first book published in Boston Line Type, an embossed print that became widely used in the United States.

However, some educators advocated for the use of a simpler solution for literacy. The Society of Arts for Scotland held a contest in 1836 to encourage people to propose various tactile alphabets for the blind people to use, and while some were based on print, others were based on simple shapes, lines, or dots. (However, the award was given to Dr. Fry-Alston, whose tactile alphabet was based on print.) In 1838 Lucas type was invented in England, a stenographic shorthand system, but it was never used extensively. Moon code was developed by William Moon in 1847. This simplified system of tactile shapes, some loosely based on print letters, is still used today, primarily in England.

Meanwhile, in France, Charles Barbier, a captain in the French military, visited the school for the blind in Paris in 1823 to demonstrate his system of "night writing" developed for French soldiers to read and send messages in the dark. Barbier's code was a phonetic system based on 12 dots, which

required users to memorize a chart indicating which sound was represented. Famously, one student who saw that presentation believed Barbier's system could be improved to be more useful by blind students: Louis Braille. Braille cut the number of dots in the cell to 6 (to more easily fit under the fingertips) and, rather than a phonetic code, chose to create an alphabet so that correct spelling could be maintained. Louis Braille published his first version of the tactile system that bears his name in 1829. He published a revised version in 1834, and then again in 1837, which included numbers and music code symbols. Tragically, Braille died of tuberculosis in 1852 at the age of 43 years. The tactile system he developed was used at the school where he taught, *L'Institut National des Jeunes Aveugles,* but was not officially recognized in France until 1854.

However, the utility and brilliance of Braille's system began to catch on in Europe. Schools in Germany, Austria, Holland, Switzerland, and Denmark began to use braille in addition to other tactile codes. The Asylum for the Blind in Switzerland was the first school outside of France to adopt Braille's code as its sole reading and writing system. Dr. Thomas Rhodes Armitage (founder of what became the Royal National Institute for the Blind in London) popularized the braille system in England in 1870. The Vienna Congress of Teachers of the Blind, held in 1873, brought together educators from around the world to discuss whether to modify the original braille code based on letter frequency. However, they reasoned, this would require a different alphabet for each language, which would further complicate the learning of languages for braille readers. In 1878, most European countries had decided to use the tactile alphabet as originally designed by Louis Braille. By 1883, twenty-seven schools and institutions for the blind in the United Kingdom were using the braille system, and by 1902, a system of 200 braille contractions was being used.

The first braille book was published in the United States in 1866 at the Missouri School for the Blind. Dr. Simon Pollack, superintendent of the school, had visited Europe in 1860 and was impressed with the braille system and determined to bring it to the United States. However, other codes were popular at other institutions for the blind. William Bell Wait, superintendent of the New York Institution for the Education of the Blind, developed New York Point in 1868. Wait had tried to get schools to drop embossed print in favor of braille, but without success. He developed a tactile code that he felt was an improvement on braille, since it was based on letter frequency and saved space. His system became so popular that the newly established American Association of Instructors of the Blind (AAIB) adopted New York Point in 1871 as the official system for tactile reading. J.W. Smith invented American Modified Braille in 1878, also based on letter frequency but using a 3x2 dot cell. AAIB was reluctant to adopt it, since they had just settled on New York Point, but eventually nineteen schools for the blind adopted American Braille. The multiplicity of tactile codes in the United States and efforts to decide on one uniform tactile reading and writing system was later termed "The War of the Dots." Finally, in 1918, Revised Braille Grade 1-1/2 was adopted. This system used the same braille alphabet used in Europe, but had far fewer contractions than had been adopted in the United Kingdom.

However, efforts continued to devise a system that would unify at least English-speaking countries. Research conducted in the United States in the 1920s on readability, space saving, and writing ease of both U.S. Grade 1-1/2 and the British Braille system (Grade 2) found the British system superior. Finally, in 1932, the Treaty of London brought British and American braille into greater agreement (although a few code differences remained). The treaty established English Braille, American Edition (EBAE) as the standard code for the United States.

The newly established National Library Service for the Blind and Physically Handicapped (part of the Library of Congress) immediately started using this revised code for its national library system. The code included many more contractions than Revised Braille had, and was first used primarily for adults and high school students. By the 1950s, however, most books in the United States were produced in this code, even for young students.

Braille unification efforts were not confined to English-speaking countries, however. In 1949, Sir Clutha Mackenzie wrote a report for UNESCO summarizing efforts to collect information about braille around the world. The braille code, frequently spread by missionaries and volunteers who often developed codes for local languages, had proliferated with the result that a plethora of codes were used in many countries. For example, by the 1940s, Mackenzie reported, there were 11 different systems being used in India, six to eight Chinese braille codes (it was unclear exactly how many), and six or seven Arabic codes. The benefit of having a more uniform system was clearly outlined in the UNESCO report, with the needs of braille readers being of paramount importance. The report is also remarkable for its reinforcement of the idea that decisions about braille systems should be made primarily by braille readers themselves, in consultation with linguists and educators. Sir Mackenzie, himself blinded in combat during World War I, went on to oversee the development of the document *World Braille Usage*, first published by UNESCO in 1951, and later updated and reprinted in 1990 as a joint venture of UNESCO and the National Library Service for the Blind and Visually Handicapped (NLS) in the United States.

Since the braille code is designed to represent language, and since languages change over time, it is necessary for braille codes to change as well. For example, the Computer Braille Code was developed and adopted by the Braille Authority of North America (BANA) in 1987 due to the need for an explicit and exact system for representing computer notation. In 1992, because of concern that new codes and symbols threatened to make braille too complex, an international research project was undertaken between BANA and the International Council on English Braille (ICEB) to explore the development of a code that would include literary, math, and technical information and be acceptable to all English speaking countries. The *Unified English Braille Code Project* included braille readers, teachers, and transcribers in seven countries. At the general assembly of the ICEB in 2004, the Unified English Braille (UEB) code was recognized as sufficiently complete for recognition as an international standard, and as such could be adopted by individual countries' braille authorities. By 2006, UEB was adopted in Australia, New Zealand, South Africa, and Nigeria. Other countries, such as Canada, continue to investigate the possibility of adopting the code as well.

January 4, 2009, is the 200th anniversary of the birth of the man who made the prospect of universal literacy possible for people who are blind or visually impaired around the world: Louis Braille. The deceptive simplicity of a tactile code that fits under the fingertips to be read with ease has led the way to advances scarcely dreamed of in Braille's time: the ability to create multiple copies of books easily and quickly with computerized embossers, and the expectation that *everyone* will read and write. Braille's invention continues to change the lives of people every day. Happy Birthday, Louis!

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A great many resources are available for those who are interested in the history of reading in general, and the history of reading and writing in braille in particular. The following references were invaluable for the compilation of this short history of tactile codes.

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Taking Literacy in Hand: The Evolution and use of Manual Braille Writing Devices

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Braille is a relative newcomer as a literacy tool for blind people. Prior to the invention of Louis Braille's tactile system, there had been numerous systems developed to enable blind persons to read (Lorimer, 2000). There are documented examples of alphabets for the blind being produced with wood, tin, wax, and even string. The alphabet created with string is one of the earliest examples of a system that allowed a blind person to write (Clark, 1950). It was thought to have originated in South America and was actually used by blind persons in several countries. But apart from that, even these early tactile systems based on nontraditional materials, were reading systems only.

In the early nineteenth century, there were numerous efforts to develop tactile alphabets that were embossed on paper by one means or another. Gall in Scotland, Fry in England, and Howe in the United States all used variations of the Roman alphabet to create a tactile reading system (Clark, 1950). These were clumsy systems, difficult to produce and difficult to discern. But, most importantly, there was still no way for any of these tactile reading systems to be written by an individual.

While a student, Louis Braille was shown a system of "night writing" developed for the military by Charles Barbier. It was based on phonetic principles and consisted of twelve dots arranged in two vertical columns. It could be written by means of a slate and stylus devised by Barbier. The code had no punctuation and no numbers. Louis Braille and his classmates found that a major problem with Barbier's system was that the characters were too large to fit comfortably under a fingertip. Louis Braille set about to improve on Barbier's code and, in 1829, published a short essay describing his system.

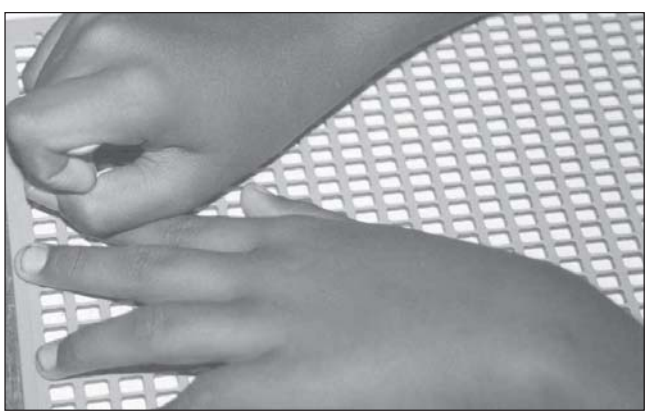
One of the most notable features of Louis Braille's code is its utility. He had 15 possible choices for the arrangement of the upper four dots. He eliminated those that might be confusing to the sense of touch. He removed all but one of the patterns with a single dot, removed all patterns with dots only on the right side of the cell and removed patterns that had no dots in the top line. With the introduction of braille, blind people, for the first time, had a code that allowed accurate spelling, could be extended to subjects such as mathematics and music, and, most importantly, could be quickly and easily written by hand.

Writing by hand represents not only the opportunity to express oneself, as immeasurably valuable as that is, but even more, it is the opportunity to express oneself in a manner that allows for review. The physical act of "taking pen in hand" and committing one's thoughts to paper has been extolled by philosophers through the ages. So, too, the same case exists for the stylus or mechanical braille writing device.

There are three major types of devices used for writing braille by hand: slate and stylus, braille writer, and braille notetaker.

The Slate and Stylus

Louis Braille devised his own slate for writing his code. His slate consisted of two parts; the top part was an one line metal guide with the familiar cell openings, and the bottom part was a thick piece of wood with three horizontal grooves instead of the now familiar pits. His slate did not have a hinge. Each end of the top portion was bent down at 90 degrees to hold it in place over the bottom part.



Braille slates were the primary writing tool for blind people throughout the nineteenth and early twentieth centuries. Slates and styluses continue to be widely used for writing braille by blind persons in developing countries. In North America, their popularity has waned somewhat in recent years due to the advent of more sophisticated braille writing devices. However, for many, slates do still have their appeal. They are inexpensive, portable, quiet to use and require little, if any, repair. There are many braille writing tasks for which a braille slate is particularly well suited - i.e., making labels, jotting quick notes, making shopping lists, brailling playing cards, taking down phone numbers, and other similar tasks.

Writing on a braille slate is done by placing paper between the top and bottom parts of the slate and inserting the point of the stylus through the openings in the top part, pressing the paper into the depressions below. They can be made of metal or plastic, with or without a board made of metal, wood, or plastic. Common styles include four and

six line pocket size slates, larger slates that are moved down a wooden or plastic clipboard, and specialty slates for embossing labeling tape, index cards, and the like.

Styluses also come in many shapes and sizes to accommodate the many sizes of hands. The stylus consists of a small handle made of wood or plastic with a sharp metal point.

Many slates are interpoint, allowing the user to braille on both sides of the paper. There are also slates for producing tactile codes other than braille and extensions of the braille code comprised of eight dots.

In the United States, only two sizes of braille are commonly in use, standard and jumbo. However, the size of the braille cell in slates from other countries varies considerably. The Japanese slates typically produce braille that is somewhat smaller than the American standard, while many of the German slates produce braille that is slightly larger than the U.S. standard.

Over the years, a number of devices have been developed to overcome the perceived limitations of the slate and stylus. These innovations have included the creation of a mechanism to allow the user to read what is being written without removing the paper from the slate. Examples include the Brown Slate (the back of the slate has an inner section that can be opened while the outer frame holds the paper in place) and the E-Z Read slates (with the pins in the top so the back can be opened leaving the pins to hold the paper).

To allow the user to write from left to right, several upward-writing slates have been developed over the years. Instead of pits or furrows in the back of the slate, these slates have upward pointing dots on the back and are designed to write braille from left to right with a hollow pointed stylus to form characters facing upward.

One of the most efficient of these was developed to assist students in solving math problems. Called the Hoff Aid, it was developed by Paul Hoff, a mathematics teacher at the Minnesota School for the Blind. It was designed to facilitate moving easily around a page. It was a one line upward writing slate that had a single movable braille cell (Tobe, 2000b). It was patented in 1946 and manufactured by the American Printing House for the Blind for some years.

Efforts to develop a slate to permit the user to write from left to write continue. The Royal National Institute for the Blind in London is currently developing a new upward-writing slate based on completely new principles.

Since Louis Braille's day, more than four hundred unique styles of slates have been created throughout the world. Most have had very limited distribution but there are more than fifty models still widely distributed today.

A recent innovation in braille writing is the Jot a Dot from Quantum Technology in Australia. It is a hybrid device - a cross between a slate and a braille writer. It is quite small and weighs less than a pound so it can be easily carried. It has six keys for braille entry. The characters can be read as they are written by turning the Jot a Dot over. It has both line and cell indicators to give feedback on which cell and line is being written.

Braille Writers

Frank Hall, the Superintendent of the Illinois School for the Blind in Jacksonville, Illinois invented the first successful machine for writing braille in 1892 (Marie and Eugene Callahan Museum of the American Printing House for the Blind, 2004). The original Hall Braille Writer worked very much like a typewriter. The braille writers that followed the original Hall were generally variations on his machine. More than two dozen braille writing

machines have been or are in use throughout the world.

A major design change took place with the introduction of the Perkins Brailler. It was designed by David Abraham of the Howe Press and first became available in 1951. The Perkins Brailler is extremely rugged and is entirely enclosed in aluminum plates with only very slight projections. It has a fixed carriage with a movable embossing head. It was designed to require very little force on the keys so that children could easily use it. It has a paper locking device so that paper does not fall out of the brailler when a page has been completed. Since its introduction, over 300,000 units have been sold throughout the world.

In the autumn of 2008, a next generation Perkins Brailler was announced. More than fifty years since the design of the original unit, the new Perkins Brailler is lighter in weight, smaller in size, and requires less effort to use. It also has some new features that will be welcome to users including an erase key, a flat reading platform at the back, and margin release controls in the front.

Like typewriters, braille writers come in manual and electric versions. With a manual braille writer, dots are embossed on the paper mechanically as a direct result of the user's pressure on the keys, while with an electric model the keys require only light pressure to send an electrical signal that causes the machine to emboss a dot. Some people prefer the lighter touch allowed by an electric braille writer, while others prefer the solid feeling of a mechanical key and find that it is too easy to press the wrong key on an electric device.

Specialty models of braille writers are available that include large cell braille writers, designed to produce jumbo braille for individuals who have trouble distinguishing the dots of ordinary braille; one handed braille writers, with keys arranged to make one handed operation possible; and models with longer keys for use by individuals with limited dexterity. It is also possible to buy extension keys to convert a standard model.

Some electric braille writers have editing functions and the capacity to store electronic versions of documents that have been written on them. An example of such a device is the Mountbatten Brailler from Quantum Technology in Australia. The Mountbatten Brailler also functions as a braille notetaker and braille printer. This device has proved particularly valuable in school settings with its numerous braille and audio features and activities geared to children. By connecting a standard computer keyboard, text can be entered and output in contracted braille and by connecting a printer, contracted braille can be translated and output in print.

Braille Notetakers

In recent years, advances in technology have, for some, brought about a dramatic change in the way people can read and write braille. Devices for writing braille by hand have evolved into electronic braille notetakers. These are sophisticated, complex, expensive pieces of equipment that, for the most part, are intended for personal use.

Braille notetakers are portable battery powered devices. Most have six or eight keys for braille entry

but not all have a braille display for output. One of the first devices for reading electronic braille was the VersaBraille. The original version had a 20-cell refreshable braille display and used cassette tapes as a storage and distribution medium; it was later upgraded to use floppy disks (Allan, 2000).

Through the years, notetakers have evolved from devices with simple editing capabilities to full fledged personal data assistants such. These devices include a calendar, an address book, a database manager, a web browser, and numerous other features. They can manage both uncontracted and contracted braille with forward and backward braille translation. A major advantage of these braille notetakers is their ability to produce finished dot-perfect braille due to the editing features these devices possess.

The Future of Braille and its Writing

Many people today believe that one day braille will be obsolete - that braille will be replaced by audio or may be even some other modern technology that we haven't heard of yet. It is difficult to imagine that day, but unless the new method allows an individual to write as well as read, it will set blind people back several centuries.

Braille is not only a reading system but also an inexpensive, rapid and efficient writing system. At the present time, an ability to read and write braille is certainly the only pathway to true literacy for blind individuals. And we all must continue to ensure that our writing tools are the ones that can best meet our braille-writing needs.

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Open Letter to Louis Braille

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Dear Louis,

Any number of people think that I've lost a screw somewhere, with this rather peculiar habit I've acquired lately of writing to celebrities that have passed on into another dimension.

And so it is... Last November, I sent a letter to Valentin Haüy from Paris, in which I let him in on the triumphs and difficulties that blind people are having the world over to find jobs. By the way, I thought you'd like to know that it was published in March in a French magazine that bears your name. I'm going to see if there's a way I can get you a copy, via Internet, because I'm sure you have access to the "net", that you haven't been told, as I have, that I'll have to wait another month for the connection.

Louis, some things sadden me and others simply annoy me. There were, and still are, people who don't understand how valuable your system is and are always on the lookout for something to replace it. How stupid!! I have to confess that the first time I set my fingers to a page written in your code (I must have been about 10 at the time), I was truly dismayed, thinking to myself that I'd never be able to decipher that chaotic scramble of dots; but a few months after I'd been in one of those so-called special schools, I cleared that psychological hurdle and had begun to read by touch rather effortlessly.

It is probably true that, while perhaps not always explicitly, people are ranked according to their sensorial capacity, and since - according to those who think like that - people who can see more or less normally are "better" than those who see very little, and those that see little are "better" than those who cannot see at all. Whenever an adult or child has some remaining vision, no matter how little, they are advised to learn to read print; often neither they nor their families are even informed of the existence of Braille. I must point out in all fairness, though, Louis, that in the olden days, when I was in school, children who could see quite a lot were obliged to read your code with their fingers, which had its drawbacks, since that, of course, did not appeal to them at all. They preferred playing football to studying.

When, in the early seventies, a new device that they called the Optacon appeared on the scene - really, Louis, it was revolutionary back then - I read time and again that that would be the end of Braille. Why so much antagonism, Louis? Is there something inherently obscene about reading with your fingers? I know only too well that you, after hours and hours of long discussion with Charles Barbier, decided that combinations of six dots were the best for tactile perception. When you presented your idea to the sighted teachers in your Institute, though, they didn't like it. They thought that, using it, all that the blind would be able to aspire to would be to enrol in the secret service. Your code - according to them - would become an undesirable barrier to communication, separating those who could see from those who could not. And I also realise that you put all your effort into persuading them that reading could be much faster with your method and that information, as a result, could be accessed much more fully.

But, unfortunately, you had to leave this world without the satisfaction of seeing the intrinsic value of your system understood.

Allow me, Louis, to share an almost painful and very frustrating experience with you. In the process of moving my belongings from my parents' home, someone used my school books as fuel for a fire; books dictated by my schoolmaster, father or other school monitors, or that I had simply copied from material that I would find in the most unsuspecting places. I had stolen countless hours during my early teens from the time that I should normally have devoted to leisure or collective meals, to put together my own childhood library with my stylus and slate. And do you know, Louis, what the answer was when I asked why they had done that? ... "Because they were taking up too much space."

And something similar happened when, after European summer holidays, I returned to my university dormitory: all my Braille books had disappeared. When I sought out the author of that evil deed, her only defence was: "But they were so big and bulky, and so ugly..."

And, speaking of aesthetics, ask my friends (just in passing) at the FBU in Montevideo if a Braille book can or cannot be pretty.

I solemnly declare, Louis, that your system is completely innocent of the attempts on common sense delivered by more than one person who advised me not to read Braille on the bus, train or plane, because it attracted too much attention and was bad for my image.

And, Louis, I'd like you to be able to perceive the rage I felt deep inside when, in 1990 in Mongolia, I discovered a blind mathematician who had gained high scientific renown in his country, a

man who had lost his sight at the age of 30 and who had found certain doors open to him as a university professor... How indignant I grew, Louis, listening to him explain how he spent hours and hours with a tape recorder memorising reflections, conclusions, mathematical formulae... They'd told him, Louis, early on, that Braille would never do him any good. And even now, just last Friday in Lebanon, a high Government official was making a show, personally and by phone, of the blind people who, thanks to his sensitivity, had found jobs in government offices. What a shame, though, Louis, that the only person with whom I had a chance to talk directly in that whole batch of good intentions, replied when I asked that no, he had not learned Braille!

But enough is enough, Louis, of all this annoying chatter about the injustice done to your wonderful system which - I'm prepared to admit - was probably more often than not the fruit of pure and simple ignorance or sometimes perhaps, the best of intentions.

Fortunately, from the standpoint of here and now, that ingenious, liberating tool that you bequeathed to us also has its bright side and many are those that appreciate it, understand it (and even love it) and among them, Louis, all those who have the patience to listen to this letter that I am sending you from Montevideo. Your system - we've given it your last name - Braille, is being taught more and more in recent months in the United States, because, quite in spite of the obstinate stand taken by some, others fought tenaciously to have learning Braille recognised as a human right and included as such in the laws of several states.

Braille is produced today at a lower cost and in much bigger quantities than could have even been imagined not very long ago. And this is so, Louis, because many people, blind and sighted, believed that it was worth while to use their imagination and intelligence to seek formulas to apply information and electronic technology to Braille production. Truly, Louis, technology is not making your extraordinarily simple code redundant, but rather is enhancing its potential. For me and others, it is no longer utopian to consult extensive dictionaries and encyclopedias through it, using CD-ROMs and other electronic access media. Nor is the feasibility of building my own personal library, which actually would be my Braille library, a concern any more, since the storage space problem can now be avoided thanks to electronic storage systems.

And now, Louis, please be indulgent with me and lend me your attention for just a while longer, so I can tell you about a few things that have happened to me that reflect on attitudes that are diametrically opposed to the ones I mentioned in the first part of this letter.

In 1971, for instance, much to his credit, my semantics professor in a summer course in Cambridge, England, when he found out that I was going to be in his class, ingeniously prepared relief diagrams for his seminar that he himself had drawn with a ballpoint pen. Even the letters were there, Louis, in your code, based on an alphabet that someone had mysteriously asked me for without my knowing why.

Or that young lady in Tokyo, last December, who, while I was trying to sort out the practical problems involved in boarding the plane that was to take me back to Spain, came up to me saying with unmistakable glee, "Sir, here are the papers you left behind on the plane last week." And to think, Louis, that my intention was for them to have ended up in the dust bin, because I no longer needed them! Thanks to modern technology, Louis, I can do that often now.

Then there was the woman in charge of a home delivery food service who, just a few weeks ago, wanted to know whether I managed to distinguish between the considerable number of dishes that went into the diet lunch I'd just ordered. "Not very well" I answered. And I'll spare you, Louis, the gory details of the trouble I got myself into when my smelling identification abilities failed me as I tried to recognise what was in each container. But how comforting to see her reaction! "Let me see what I can do" she said. The next time the containers were all marked with labels: she'd devised a convention whereby a circle was dessert, a cross mark the main dish and a straight line the appetizer. Unfortunately, she went so far as to put the names of each dish in her version of relief writing on the containers. And, anxious to know whether her attempts at integration had been successful, she called me back to see the results. Such a positive attitude encouraged me to suggest to send her adhesive labels for writing Braille with a stylus and small slate, with the letters of your alphabet on the overleaf. Now I can distinguish the salad dressing from the meat sauce with no problem! What satisfaction, Louis, to have managed to convert her original beneficent attitude, as per Valentin Haüy, to a much more emancipatory one of the kind that your system encourages.

I am sure you believe me, Louis, when I say that I do not by any means want to be exceptional or privileged; that I ardently hope that all those children and adults whom I still encounter in Asia, Africa and Latin America, who devote so much precious time to copying books by hand that others could easily produce for them, will soon have access to the basic tools and material that exist today. I do not doubt, Louis, that you will support me as I raise that request to a man called David Blyth, who they say represents blind people all over the world and a very eloquent and intelligent young woman, Norma Toucedo whom, as I've been told, has been entrusted with promoting the enhancement of literacy opportunities so that one and the other will do all they possibly can to keep my fervent desire from vanishing like a fleeting dream.

And you know what, Louis? For some time now, I couldn't care less what they think about my image. I exhibit your invention everywhere. I read material the way you invented it standing, lying down, sitting, in any position. And there's always a little slate like the one I gave the lady at the food service in my pocket. Because your code, Louis, has afforded many, many blind people - myself among them, naturally - dignity, freedom, and many hours of incomparable spiritual enjoyment.

I solemnly promise to be faithful to you, although I know that, in the end, if by whatever ways or means, someone some day finds something that proves to be better than the system you proposed to the world in 1825, you, I and everyone will be overjoyed.

Very cordially yours,

Pedro Zurita

Note from the Editors

Pedro Zurita, the former Secretary General of the World Blind Union, wrote this letter in 1986 during a visit to Montevideo, Uruguay. Since then the letter has been translated into a number of languages and spread all over the world. Written 13 years ago the letter still has a most important message and should be read by all of us involved in the education of people with visual impairment.

The original letter was translated from Spanish into English by Margaret Clark.

Braille: The Man and His Code for Music

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The song is ended,
But the melody lingers on.
You and the song are gone,
But the melody lingers on.

These words of Irving Berlin were written about bringing an old love to mind. But we can apply them aptly to the important work of a genuine hero of the blind, Le Professeur Louis Braille. As we approach the bicentenary of his birth, it is a fitting time to pay homage to his memory and to his enduring legacy.

It is my privilege and my aim in this article to acquaint the reader with an aspect of Braille's work that too often has been overlooked. I try to give a relatively nontechnical description of his system for music notation and propose that it is still relevant in our time.

The Man Himself

Once a comedian was trying to tell a joke but he kept interrupting himself by laughing. Someone in his audience asked him why he kept laughing and he explained that it was because he knew how this story was going to end. To properly appreciate the work of our benefactor or, for that matter, of any great figure in human history, we must engage our imaginations and transport ourselves back to a time when the story was not yet over. Nobody yet knew the ending or even whether that ending would be a happy one.

No doubt, some readers of these pages can relate quite personally to the youth of only 10 years whose loving father, in 1819, brought him from his happy home in the countryside to the strange surroundings of the school for the blind in the big city of Paris. How many blind people up to our own day have had to live away from home during their developing years to gain an education? At the world's first school for the blind, Braille found not

only a portal to the world of learning and ideas but also hours of study and labor in the various enterprises of the school such as slipper making. After his life-changing meeting with Captain Barbier, who shared the technique of "night writing" with the teenager, Braille forfeited many hours of sleep to study and design his significant adaptation of Barbier's system.

At the age of 20, Braille published his system. But universal acceptance and recognition of his work had to wait for many years after his death. He worked diligently during his short life to teach other blind people not only music but also mathematics, geography, French and history. He took on many other duties aside from teaching such as serving as foreman for the school's slipper-making operation. He played the organ professionally for masses and other liturgical functions. He encouraged and supported members of his extended family and his many friends. Yet he suffered real adversity. Not everyone believed in his work. There was a time when a new director of the school even burned all the books produced in Braille's code! Add to all of this the fact that Braille contracted tuberculosis in his mid-twenties, the disease which ultimately took him from this world at the age of 43. Still, he kept on working, teaching and caring until the day he died.

But why even discuss these things? Precisely because we are the beneficiaries of the hope that Louis Braille never abandoned. Each time we read a braille book sitting outdoors on a sunny day, learn to play a piece of music from a braille score, or braille ourselves a grocery list; each time we read or write for school, work, or leisure, we are collecting the dividends of a life invested fully in the conviction that an idea, an inspired, innovative idea, has the power to overcome adversity, prejudice, indifference and even injustice. Let us never forget his example especially during those times when these obstacles appear in our own paths. May his example strengthen our own resolve to prevail over adversity, improve our own circumstances, and leave a legacy to those who follow us.

Braille's System for Music

Until I founded a company 16 years ago to develop a braille music translator software, I was among the majority of people who did not know that Louis Braille invented braille music notation. Even though I had been reading and writing braille music for many years I somehow had the impression that the application of his system to music came after his death. To the contrary, he considered music notation from the very beginning. In 1829, he published his system under the title: *Procédé pour écrire les paroles, la musique et le plainchant au moyen de points a l'usage des aveugles et disposés pour eux*. So music and singing were in the mix right from the start.

Braille played the piano, the cello and the organ very well. He yearned to read music just as sighted musicians did. He tried using tactile representations of printed staff notation but rejected it as ill-suited to the needs of blind musicians. Such scores were bulky and expensive to create just as similar tactile editions of literary texts were. He determined that what was needed was a system that maximized the ability of the human finger to collect information. Instead of mimicking the method of input based on the human eye, he substituted a method optimized for the sense of touch.

Again, since we know very well how the story ends, we simply accept that the braille cell contains six dots. But why? In fact, Louis Braille experimented with using cells of 12 or more dots. But he knew intuitively that a cell of six dots guaranteed that each dot was on an outside edge. Modern technology has brought us the marvel of paperless braille displays which have the option of showing an eight-dot cell. But anyone who has ever been

confused by an 8-dot character that does not use dots 1 and 4 but includes a dot 7 or 8 knows why the six-dot cell avoids ambiguity.

But wait! The six-dot cell yields only 64 unique combinations. How can Braille's system express equally well text, arithmetic and musical information with such a small number of characters? The answer communicates the elegance of his creative mind. He redefines each of these characters to carry a different meaning depending on the type of information to be written. For example, dots 1-3-4-5 represent the letter n in text, a variable value in mathematics or a half note to be played on the musical pitch C or DO. Braille and others since his time have developed rules of context that help readers know when which type of information is being shown in a document. The ability to change comprehension of the type of braille code being read is called code-switching. Experienced braille readers do it unconsciously and without confusion.

Braille's system is quite well defined and permits the accurate transcription of minute details of a score of western music written in conventional staff notation. That is, the braille score shows not only the notes to be played and their rhythm (how long they should be played) but such details as the text for titles, lyrics, etc., when to play more loudly or softly, when to speed up or slow down, when to play passages smoothly or by leaving a bit of silence between notes (staccato). In short, Braille insisted that the blind musician have access to the same information conveyed to sighted musicians; every detail of the piece which the composer thought important to write down.

A part in braille music notation reads from left to right along a single line unlike print notation. Braille assigned the top 4 dots of the cell (1, 2, 4 and 5) to represent the 7 degrees of the western scale by 7 unique combinations. He uses the bottom dots (3 and 6) to indicate the rhythmic value of a note. Therefore, under the tip of a single finger, one can know the pitch to be played and how long to play it. A series of 7 octave signs tell us in which register the note should sound. For example, Middle C or DO is indicated by the fourth octave sign (dot 5) which immediately precedes the cell showing the note. The first note of a passage must be written with an octave sign but subsequent notes may or may not need one depending on their musical distance from that first note. Braille established a set order for other signs that must precede or follow a note. By following this logical presentation of information, a transcriber can clearly communicate the slightest nuance of musical performance.

But can't blind people just listen to sighted musicians playing a piece of music from the score and thus learn to perform it? There is a global tradition of passing on music aurally and I myself have learned many a tune by listening. But if a blind musician learns a piece by mimicking the interpretation of the music notation read by a sighted player, he separates himself from seeing that specific information the composer wished to pass on in order to help musicians to faithfully realize the music to be performed. In other words, the blind musician can only follow and not lead. We know that the symbols on the page, whether print or braille, are not the music but a means of helping us to recreate the music heard in the mind's ear of the composer. As the only blind member of our high school band, I would sometimes learn to copy perfectly the mistakes of the sighted trumpet player beside me until I received my braille scores and could play certain passages correctly with confidence. As blind people, we must often follow. Having the information available to sighted peers empowers us to lead if we wish. Success breeds success and points us in a positive direction.

Mrs. Bettye Krolick, the lady I lovingly refer to as the Fairy Godmother of braille music, once told me of how she got started in transcribing music into braille. It was 1970. She had studied hard and learned to transcribe her first assignment, some clarinet music for a local elementary school student named Jeff. Soon after, at an early morning band rehearsal, she observed the student, braille score on his music stand, playing one of the parts before practice began. A couple of the sighted students looked on, and one said to the other in admiration: "He plays from memory!"

On hearing this remark, Jeff sat up straight and tall in his chair and played on with greater confidence than ever. This simple but eloquent gesture by a blind fourth-grader motivated Mrs. Krolick to dedicate a substantial portion of her life's time and energy to transcribing, standardizing and promoting the use of music braille all over the world. She quickly realized that memorization comes naturally to people who are blind and that she could provide in braille the unfiltered information the composer meant to convey to the player.

Just as we can more fully appreciate the grandeur and magnitude of a great mountain the further it recedes in the distance, as time passes we can look over our shoulders and see our hero's stature grow as he towers over literary history in the company of innovators like Gutenberg, Edison and Helen Keller. In fact, Miss Keller traveled to Paris in 1952 to commemorate the centennial of the death of Braille. At that time, his remains were moved to the Pantheon of Heroes of the French people amid many special events and tributes. I myself am blessed and honored to be invited to speak about Braille's system for music at our own generation's tribute which will take place on the occasion of the bicentennial of Braille's birth in Paris in early January, 2009.

Related Websites

Bicentenary of Louis Braille's birth: http://www.avh.asso.fr/bicentenaire/louis_braille/louis_braille.php?langue=eng&

Dancing Dots: www.dancingdots.com

Music Education Network for the Visually Impaired: www.menvi.org

National Resource Center for Blind Musicians: www.blindmusicstudent.org

About the Author

Bill McCann is the founder and president of Dancing Dots Braille Music Technology. He has authored numerous articles about his own work to automate production of braille scores with his company's first product, the GOODFEEL Braille Music Translator software. GOODFEEL is now in use throughout the United States and in 40 other countries. With Richard Taesch, he is the co-author of "Who's Afraid of Braille Music?"

A Uniform Braille Code for English

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In January of 1991, Dr. Tim Cranmer and Dr. Abraham Nemeth sent a memo to The Braille Authority of North America board of directors in which they outlined some reasons why a uniform braille code for English should be created. Their concern at that time was that the use of braille was losing prominence in the lives of blind people because of the emergence of technology, the difficulty of learning several codes and the lack of comparability between the braille and print text. Another factor, they pointed out, was that a great deal of learning needed to take place by transcribers of braille, particularly if they are transcribing technical codes, as often three or more codes may be used in one text. It is probably timely, therefore, to review subsequent developments, and to re-examine the reasons that prompted the development of Unified English Braille (UEB).

The International Council on English Braille (ICEB) was formed in 1991, and became the organization to oversee the development of Unified English Braille in 1993 (Bogart, Cranmer & Sullivan, 2000). Member countries of ICEB are: Australia, Canada, New Zealand, Nigeria, South Africa, the United Kingdom and the United States. Work on the development of UEB has continued up to the present time, according to the following principles restated below:

- Music braille would not be part of UEB;
- The literary code would form the basis of UEB, and would be minimally changed so that people could continue to read books produced in other English braille codes;
- Mathematical, computer and scientific notation would be included in the UEB;
- Differences in current literary codes would be resolved. This would mean that decisions would occur around such issues as sequencing,

(e.g., writing the words "and" and "the" unspaced), syllable bridging, and which shortform words to allow;

- Symbols would have the same, unambiguous meaning regardless of their context. This would eliminate such situations as the dollar sign having several different representations as it does now as dots 256 in literary Braille, dots 4, 234 in Nemeth Braille, and dots 1246 in computer Braille (Sullivan 1997). This goal is particularly important because it simplifies automated conversion of print text to braille and vice versa; and
- Unified English Braille would be equally usable by all braille readers, regardless of their reading level. As in print, new symbols would be introduced as needed.

As you may surmise, the challenge of unifying English braille has been daunting. It has taken considerable creativity, and compromise to develop UEB keeping the above principles in mind. At present, a formal rulebook is being written. Lessons for learning UEB can be obtained free of charge from the Australian Braille Authority website http://www.e-bility.com/roundtable/aba/publications.php in PDF and MS Word formats. UEB was adopted by the ICEB in 2004 as a code for international use. Each member country is encouraged to make its own decision about adoption of UEB. In short, UEB will be substantially completed in its development by the end of March 2009, although, as now, changes may be suggested as time passes and people use UEB for leisure reading, or study of mathematics, science or computing.

So now there is a code that all English-speaking countries could use, but if braille is being replaced by technology and no longer needed, has all of this effort been for naught? I believe that the answer to that question is a resounding no. Has technology supplanted braille, or print for that matter? While there is no doubt that the use of technology has increased considerably in the last decade, paper books are still being produced, and we use technology to do that. Handwritten or braille notes are still very evident in the lives of people who continue to rely on written information. But pocket sized braille displays and PDAs with braille displays are becoming more popular as they are more environmentally friendly than paper-produced braille and less bulky to carry and use. Tactile discrimination skills are important for reading maps, discovering spatial concepts, and facilitating the study of mathematics. While these tasks can be done without a unified code, having a computer-friendly code that follows print symbols that can be easily translated or back-translated with little intervention may be advantageous. However, what some people might see as a disadvantage is that in the UEB code, more space is used. This is only an issue if you are producing paper braille, but may not be as important if electronic braille is the medium. If technology facilitates the production and use of braille, the logical conclusion would be that any code that is used should be developed with refreshable braille and computer automation in mind.

While many braille users are comfortable with braille codes that have been in use for several years, future generations of braille readers all over the world might have more braille under their fingers if one unified code were the standard rather than several codes for different purposes. This might be especially true for braille readers in developing countries where English is used. Many of these countries now receive books from Australia, the UK, North America, or elsewhere, and braille readers have to be aware of several different codes and variations to read the materials they receive.

From a social justice perspective, the development of braille literacy skills is as important for people who are blind as is the development of print literacy skills for people with vision. The proliferation of many braille codes is not a bad thing, as they are used for the purposes for which they were created; but imagine a world where a transcriber had to learn only one code that encompassed literary and technical material. UEB has been in use in Australia for three years now, and transcribers report that they can complete their work with less intervention. This is primarily because computer translation works better due to the unambiguous nature of the code.

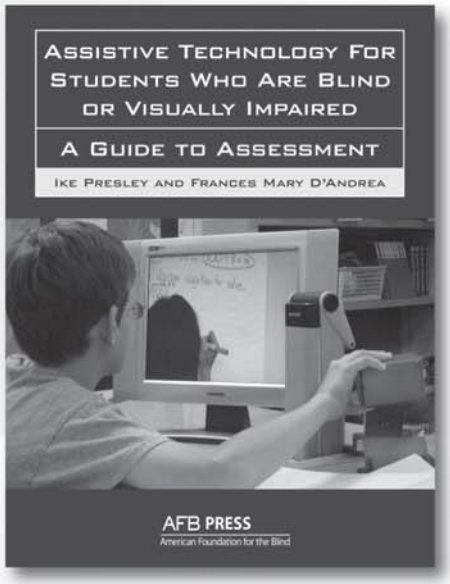
The third and final reason for a uniform code is as controversial as the others I have mentioned. Braille purists don't think braille should follow print. Thus, typeform indicators and two cell symbols are not popular. The impact, if any, of these changes to the readability of braille is not yet known, it is true, but no code is perfect.

I cannot help but wonder if Louis Braille were alive today, how would he view the idea of a unified braille code. His vision, creativity and determination have provided a literacy system that works, though he didn't live to see the far-reaching consequences of the development of braille. Unifying braille codes is the next step in the evolution of braille. Whether this process succeeds in bringing braille literacy to more people who need it or not, this shows that braille is alive and dynamic. While the many stakeholders in the braille world may not agree about the benefits of unifying braille codes, or the manner in which this is accomplished, everyone wants to make more braille available to more people who need it. If Unified English Braille proves to be easy to learn, easy to produce, compatible with technology and closer in comparability to print, it will be acknowledged, by some, as a positive development in the history of braille.

Assistive Technology for Students Who Are Blind or Visually Impaired

A GUIDE TO ASSESSMENT

By Ike Presley and Frances Mary D'Andrea



Assistive technology is essential in today's world to enable people who are blind or visually impaired to participate fully in school, work, and life. But how can you keep track of all the devices and software and each one's function? And what assistive technology tools are right for your students? If you've asked yourself these questions or others like them, this comprehensive handbook is the resource you need. You'll find a wealth of technical information translated into clear, user-friendly terms in *Assistive Technology for Students Who Are Blind or Visually Impaired: A Guide to Assessment,* including:

- An overview of the full range of assistive technology that students can use to manage information in print or electronic formats—whether they use vision, touch or hearing to access information
- How to select appropriate tools and strategies
- A structured process for conducting a technology assessment
- A detailed assessment form that can be used to determine students' technology needs and solutions to address them
- Advice on writing up program recommendations based on assessment results

You'll also find:

- Tips and insights on working with technology effectively
- A summary of laws and regulations relating to assistive technology
- A resource section of assistive technology producers
- Readings about technology instruction
- Reproducible, blank assessment forms

Essential for teachers of students with visual impairments, members of the IEP team, administrators, technology professionals, and anyone who needs to keep up with the ever-changing world of technology.

Projected publication date: Winter 2009

www.afb.org/store

AFB PRESS
American Foundation for the Blind

Moving into the Future in Braille Production: The National Instructional Materials Access Center

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Background and Rationale

The need for improving access to textbooks and other core print instructional materials for elementary and secondary school students who are blind, visually impaired or print disabled has been a long-standing concern for educators, parents, administrators, and others. As technology has evolved, we are moving closer to the day in which these students can expect to receive their instructional materials in an appropriate format, at the same time as their non-disabled peers. The establishment of the National Instructional Materials Access Center (NIMAC) has been a key step toward making this vision a reality.

While the NIMAC is an independent project funded by the U.S. Department of Education, its establishment was the result of years of work, collaboration and support from many different stakeholder and interest groups. As early as 1998, the American Foundation for the Blind established the Solutions Forum to address the critical issues of long timelines and high costs of braille production. These efforts resulted in the drafting of the Instructional Materials Accessibility Act (IMAA) in 2002, which proposed a standard file format for the production of accessible instructional materials, and a national repository for housing those files. In 2003, the U.S. Department of Education furthered this cause by funding the work of a technical panel to develop a voluntary National File Format (NFF). This panel's work led to the development of the standard known as the National Instructional Materials Accessibility Standard, or NIMAS.

In 2004, the reauthorization of the Individuals with Disabilities Education Act (IDEA) called for the Secretary of Education to establish the National Instructional Materials Access Center (NIMAC) at the American Printing House for the Blind, Inc., a non-profit organization located in Louisville, Kentucky, which has a 150-year history

of providing instructional materials for visually impaired students. This same legislation also required states to adopt the NIMAS standard as the file format for producing accessible materials. In establishing NIMAC, the law defined which materials are to be converted into NIMAS and may be deposited with NIMAC and it defined the students who may be served. The NIMAC is a repository of NIMAS files of textbooks and core print instructional materials produced for elementary and secondary school students. Elementary and secondary school students may qualify for services if they are blind, visually impaired or print disabled and also may qualify under IDEA. The full legal definitions may be found in IDEA 2004. (See: http://nimas.cast.org/about/idea2004)

NIMAS is a source file format, with the most important components of the file set being an XML file of the textual content of the book, and a folder containing all the images in the print book, as separate image files. These file sets are not intended to be handed directly to students for use in the classroom. However, quick and easy access to a source file can greatly expedite the production of the braille, audio, digital book, or other accessible format.

As such, the NIMAC supports accessible media production by giving braille, large print, audio or other accessible media producers a "running start" when they receive a request to produce an accessible textbook. We do this through two means: first, by providing a central, national repository and, second, by housing files in a single format: NIMAS. Instead of making an individual request directly to one of hundreds of different publishers each time a file is needed, accessible media producers now have a central source for files. In addition, both technology developers and individual producers can focus their efforts on working with a single file format, rather than having to accommodate a variety of file formats in their production processes.

Since publishers submit source files in a single, standard file format, this also eases the compliance burden for them. It should help eliminate the duplication of effort that had resulted from publishers providing the same textbook in different digital file formats in response to multiple requests. In addition, whereas in the past publishers might have produced the file only after receiving the request - and often in accordance with a confusing patchwork of state braille laws - the NIMAC provides a mechanism for publishers to provide files to the repository even before the files are requested for a specific need.

Working with States

According to federal law, states and outlying areas (e.g., Guam, Palau, the Marshall Islands, etc.) are required to adopt the NIMAS file format; however, each state and outlying area has the option of whether or not to coordinate with the NIMAC. We are happy to report that we now have 56 states and outlying areas that are coordinating with us, and there are only two states that have not yet coordinated.

When states coordinate with the NIMAC, they designate a state-level person to serve as the NIMAC State Coordinator. The NIMAC State Coordinator is responsible for determining which individuals will serve as Authorized Users for that state. In addition, when states coordinate, they agree that they will require publishers to submit files to the NIMAC in NIMAS format by including language in their adoption contracts or purchase agreements. This is an important element of how NIMAC works: the only mechanism for requiring file submission from publishers is at the point of print book purchase, after the effective date of the legislation, which was July 19, 2006. Because the NIMAC is not "retroactive," whereas schools often

use the same books for five to seven years or more, the NIMAC's impact will be somewhat gradual, as the repository builds over the coming years, eventually housing all core print materials being used in schools.

As a web-based repository (http://www.nimac.us), the NIMAC has only one way of delivering files: through direct download. Authorized Users from the states receive user ID and password information that allows them to download files to their own machines so that they can immediately begin work on the accessible format. As a service and convenience to Authorized Users, the NIMAC also provides a special type of user account for Accessible Media Producers (AMPs). These are voluntary accounts that producers of braille, large print, audio, or other formats may set up with the NIMAC. These accounts eliminate the need for an Authorized User to burn a file to DVD and ship it to the accessible media producer, if the Authorized User is not the person who will convert the file. While Authorized Users have access to search and download repository files, AMPs are only able to download files that have been "assigned" to them by an Authorized User.

Working with Publishers

Because NIMAS is not a file format that is an automatic by-product of print book production, learning to produce NIMAS - and learning to work with the NIMAC - has been a new adventure for publishers. Fortunately for publishers, the NIMAS Technical Assistance Center at the Center for Applied Special Technology (CAST) provides a variety of resources to aid in learning to produce NIMAS. (For more information, visit http://nimas.cast.org). At the same time, NIMAC works closely with publishers on a daily basis to provide guidance, instruction, support, and feedback.

The response from publishers has been greater than we ever expected, with over 70 publishers currently working with us, and over 12,000 file sets submitted in just our first 20 months of operation. While files must be submitted when required by new purchase agreements, some publishers have decided to try to "get an edge" by anticipating these requests and voluntarily submitting files as new materials are published.

Accepting files into the NIMAC involves two steps: file validation (done by our system vendor, OverDrive, Inc.) and quality control checking (done by NIMAC staff). Although the NIMAC is located at APH, our files actually "live" at OverDrive's headquarters in Cleveland, Ohio, and this is also where batch file submissions are received and processed for loading into the system. Once NIMAC staff have reviewed and accepted the file sets, the publisher receives a "digital certificate," or confirmation email containing a unique certification number. If needed, the publisher can use that number to show that the file has been accepted into the repository and is available.

NIMAC Statistics

As of October, 2008, the NIMAC has accepted over 11,000 files into the repository and has received an additional 1,700 which are either awaiting vendor corrections before they can be certified, or are in the review process. Of the certified file sets, roughly 1,000 are workbooks and other consumables, 2,100 are textbooks, 7,350 are supplementary readers, and 950 are other instructional materials. The NIMAC is currently working with 71 publishers.

Over 100 accounts for Authorized Users have been established and more than 95 accounts for Accessible Media Producers. There have been over 600 unique downloads by Authorized Users, and roughly 330 by AMPs.

Challenges

A primary challenge to NIMAC as we prepare to enter our third year of operations is that of capacity building. As mentioned above, the response from publishers in submitting files has been phenomenal. It has vastly exceeded the expectations set during the planning phase of the project, which were based on estimates provided by representatives from the publishing industry. In fewer than two years, the NIMAC has received the number of file sets expected for the entire five years of the project grant. This enthusiastic response from the publishing community is extremely positive, but the unexpectedly large file volume has presented an operational challenge. Both the NIMAC, and the system vendor, OverDrive, Inc., have looked for and found ways to make processes more efficient and to manage effectively this much greater number of files.

An additional challenge is that we have had to reject a large number of files due to incorrect or incomplete metadata (descriptive bibliographic information). As a result, these files have needed corrections by the vendors followed by resubmission and a second review by NIMAC. This is a shared challenge between NIMAC and publishers, and we are working together to find solutions. In addition, we are implementing system enhancements that will make it easier for publishers and vendors both to "get it right the first time" and to correct errors quickly.

The size of the NIMAS file sets also has arisen as a significant issue. Because the specification calls for all images of the print book to be provided as separate image files in the file set, many NIMAS files are several gigabytes (GB) in size. The NIMAC has received several files in the six GB range and we have been alerted by publishers to expect files to exceed ten GB. File sets of this size have led to a much greater need for storage than anticipated - the NIMAC has over one terabyte (TB) of storage and may have up to two TB by the end of this year. A greater concern for NIMAC, however, is the difficulty that files of this size pose for both publishers and NIMAC users in terms of uploading, downloading, working with, and storing the files. The NIMAC has tried to explore possible avenues for reducing file sizes, but there are no easy answers.

While the NIMAC has confronted its own challenges, NIMAS has also presented challenges to accessible media producers and to states as they have incorporated NIMAS into their systems for providing materials to blind, visually impaired and print disabled students. For those who are producing accessible formats, the processes and tools for production of some accessible formats, such as braille and large print, have required reworking and development in order to utilize NIMAS source files effectively. Working successfully with NIMAS files not only involves training for the individuals who work with the files, but sometimes changes to the tools used to produce the specialized formats. The American Foundation for the Blind has worked closely with braille software producers as they have modified their products to accommodate NIMAS, and has been the key organization providing training to braille transcribers. Information about upcoming training workshops and webinars can be found at the AFB web site: http://www.afb.org.

At the level of implementation for states, NIMAS/NIMAC did not fit seamlessly into existing structures for many, if not most states. Establishing mechanisms within states to work with NIMAS has required creativity and "thinking outside the box" as NIMAS has involved the need to provide services to a pool of students who previously may have been served by different and separate agencies within a state. At the same time, NIMAC is not a solution that is available to all students, or even all students with disabilities. The requirement

for states to serve the needs of those students who do not meet eligibility for NIMAS has created additional challenges.

Building on the Past, Looking to the Future

Despite the challenges and learning curve that a major initiative such as NIMAC inevitably entails, we are excited and optimistic about the future. We look forward to a continued increase in file submissions and anticipate adding many thousands more files to the repository in the coming year. As we gear up for these deliveries, we also continue to look for ways to improve our work processes and services. As a part of this effort, our system vendor, OverDrive, Inc., will soon be releasing a new and improved version of our system software, "NIMAC 2.0." This new release will improve system performance and incorporate several new features and enhancements. In conjunction with these developments, outreach, support and training for our users will remain a high priority.

In addition, NIMAC is working to make it easier for accessible media producers to discover if a book is already available in the required specialized format. APH has long sought to reduce duplication of effort among accessible media producers by providing information through the Louis Database of Accessible Materials, which lists accessible materials available from over 170 organizations. (Find Louis at: http://www.aph.org/louis). Louis is currently being moved to a new database system that offers the potential to expand its searching to other databases, including the NIMAC. Soon, Louis and NIMA will offer a unified search. APH's intent is to invite other repositories of accessible materials to participate in a unified search, improving the likelihood that students with disabilities will be able to locate the instructional materials they need, in the format they need, as soon as they become available.

The NIMAC has an important role in facilitating the timely delivery of accessible instructional materials to blind, visually impaired and print disabled students. At the same time, we recognize the many steps involved in the process of getting accessible materials to the students who need them. Today, some 10 years since the American Foundation for the Blind, Inc. formally began this effort through formation of the Solutions Forum, we are closer to that goal but with much work yet to be done. This goal can only be achieved with the continuing dedication, effort, and support of a wide range of organizations and dedicated individuals. We are indebted to all those who have made the vision of a single file format for accessibility and a single national repository for those files a reality.

NIMAS/NIMAC Timeline

1998 : AFB establishes a Solutions Forum to address the critical issues of long timelines and high costs for braille production.

2002 : The Instructional Materials Accessibility Act is drafted, proposing a standard file format and national repository to house source files for K-12 instructional materials.

2002 : National File Format Panel was created to develop a set of technical specifications to facilitate the efficient delivery of accessible, alternate format versions of print textbooks to PreK–12 students with disabilities.

2004 : IDEA reauthorization establishes the National Instructional Materials Accessibility Standard and mandates creation of National Instructional Materials Access Center.

2006 : NIMAC begins operations on December 3, 2006.

2008 : By October 2008, 11,000 file sets are available for download from NIMAC.

RoboBraille – Braille Unlimited

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RoboBraille is an email-based service capable of translating documents in various popular formats to and from contracted Braille, to visual Braille and to audio files. Available free of charge to all non-commercial users and with no registration requirements, the RoboBraille service attempts to solve a universal problem as it makes textual information accessible to people who would otherwise find it inaccessible due to visual impairments or reading difficulties.

Originally a Danish invention, the service is now fully supported in Cyprus, Ireland, Italy, Portugal and the United Kingdom with financial support from the European Commission. The RoboBraille development team is currently engaged in several projects aimed at improving the service by adding functionality, increasing the number of supported languages and supporting the service with media production capabilities and electronic libraries.

Introduction

For many people, Braille is difficult to learn, cumbersome and costly to produce, and hard to obtain. This is the case even in developed countries. The challenges of learning, producing and obtaining Braille are not diminished by the fact that Braille comes in a vast number of varieties. Not only does Braille differ from country to country and from language to language, but also, Braille varies according to domain (e.g., literary Braille, scientific Braille, Braille music, Braille poetry and pharmaceutical Braille), medium of rendition (six-dot Braille for paper, eight-dot Braille for computers), and contraction levels. Added to this comes the issue of Braille character sets. Although ISO codes and a Unicode for Braille [1] exist, few Braille devices adhere to these. Rather, different devices such as Braille note takers and Braille embossers appear to implement different Braille character sets according to the countries in which these have been deployed and the vendors

responsible for the deployments. This is, in principle, the challenge which the people behind the RoboBraille service set out to address in 2004.

In Denmark and other developed countries, software to translate to and from contracted Braille in multiple languages has been available since the mid 1980s [2]. Although the systems are fairly easy to use, fast, accurate, well-promoted by the support system and, in some cases, available free of charge as downloads from websites, they are not being widely used amongst teachers, Braille readers and others with a need to produce contracted Braille. Traditionally, translating documents into contracted Braille has been a time consuming process that requires a wide range of skills:

In addition to mastering the Braille translation software, translators must have a high level of proficiency in handling various document types, document conversion technologies, Braille devices and Braille character sets. And since Braille translation is a niche with limited resources, software is constantly being updated with software patches. For professional Braille translators, these issues may not pose a problem. However, for the occasional translator, e.g., a primary-school teacher with an integrated blind pupil or a blind Braille reader, they do.

RoboBraille was introduced by Synscenter Refsnæs as an alternative to the decentralised, user-centric Braille translation systems used widely to produce Braille at varying levels of contraction. Based on experience from developing automated Braille translation solutions over the past 20 years, RoboBraille is a centralised, e-mail based translation service that automates the translation process, including any pre- or post-processing steps required to convert between document types, formats and character sets. Since the RoboBraille interaction model exploits e-mail, the solution is platform-independent, and the only skill needed to use the service is the ability to send and receive an e-mail with a document attachment. The RoboBraille architecture is based on standard internet technologies and can be managed centrally. Consequently, the solution is robust, highly scalable, always up to date and can be operated by a minimum of efforts. Since its inception in 2004, RoboBraille has responded to more than 500,000 user requests, currently serving between 500 and 1,000 requests from end-users per day.

The general business idea of RoboBraille has been, on the one hand, to provide a free, high-quality public translation service to print impaired people, while on the other hand charging institutional and/or commercial users a reasonable amount for using the service. In order to be sustainable, the RoboBraille service must have a critical mass of users. As it is unlikely that a critical mass of users can be found in any single country and amongst members of the primary target audience (the visually impaired), the RoboBraille is offered to the global user community; similarly, the service is promoted to a wide range of user groups: visually impaired, dyslexic, poor readers, illiterates and even the general public. As a consequence, RoboBraille not only produces Braille. Right from its inception, synthetic speech has been an important capability.

Working with RoboBraille

Users interact with RoboBraille by means of e-mail. A range of email accounts are used to control the various translation and conversion capabilities of RoboBraille. Users submit documents (e.g., text files, Word documents, Rich Text Format documents, HTML pages, XML documents) as email attachments. The translated results are returned to the user via e-mail, typically within a matter of minutes.

The user interacts with the RoboBraille service by sending e-mails to specific e-mail accounts. Prior to translation, Word and RTF files are converted into text. Depending on the size of the file, the traffic and server workload, a result is typically returned to the user within a matter of minutes of his submitting a request for translation. RoboBraille assumes that the source document is written in the standard Windows character set for Western Europe (ISO 8859-1/Latin 1/Windows codepage 1252). Furthermore, the system supports automatic conversion of older ASCII documents with the file-type .asc to Windows text files. Once translated, the document is returned in OctoBraille 1252, a Braille adaptation of the standard Windows character set used in Western Europe and developed by Synscenter Refsnæs. Since few braille devices share the same character set, RoboBraille can convert the translated document into a range of different formats to accommodate braille note takers and embossers.

Likewise, the user may request a document be translated into synthetic speech. The process is similar to that of braille translation, although some of the steps are different. First, RoboBraille translates an attached document into a WAVE file. WAVE files are rather large and unsuitable for transmission via the Internet. Therefore, the WAVE file is subsequently encoded and compressed into an MP3 file. The resulting audio file is copied with a unique name to the web server using FTP, and a link to the file is returned to the user. Table 1 lists some of the most popular RoboBraille email accounts.

In addition to the mail accounts listed above, RoboBraille supports a number of accounts to partition files into smaller fragments and to convert documents from different formats.

Table 1: Popular RoboBraille e-mail accounts

Mail account	Functionality
sixdot@robobraille.org	Translates the attached document into Grade 2 Braille according to the British English six-dot Braille code
fulltext6@robobraille.org	Translates the attached document into Grade 1 Braille according to the British English six-dot Braille code
sekspunkt@robobraille.org	Translates the attached document into Major Contraction Braille (Grade 2) according to the Danish six-dot Braille code
ottepunkt@robobraille.org	Translates the attached document into Major Contraction Braille (Grade 1) according to the Danish eight-dot Braille code
lille6@robobraille.org	Translates the attached document into Minor Contraction Braille according to the Danish six-dot Braille code
lille8@robobraille.org	Translates the attached document into Minor Contraction Braille according to the Danish eight-dot Braille code
fuldskrift6@robobraille.org	Translates the attached document into Grade 1 Braille according to the Danish six-dot Braille code
fuldskrift8@robobraille.org	Translates the attached document into Grade 1 Braille according to the Danish eight-dot Braille code
brailleseipunti@robobraille.org	Translates the attached document into Grade 1 Braille according to the Italian six-dot Braille code

potbraille@robobraille.org	Translates the attached document into Grade 1 Braille according to the Greek six-dot Braille code
textoparabraille@robobraille.org	Translates the attached document into Grade 1 Braille according to the Portuguese six-dot Braille code
britspeech@robobraille.org	Translates the attached document into an MP3 file with synthetic speech using a British English Text-to-Speech engine
tale@robobraille.org	Translates the attached document into an MP3 file with synthetic speech using a Danish Text-to-Speech engine
tydeligtale@robobraille.org	Translates the attached document into an MP3 file with synthetic speech using a Danish Text-to-Speech engine set to clear pronunciation
audio@robobraille.org	Translates the attached document into synthetic speech using an Italian Text-to-Speech engine
parlefrancais@robobraille.org	Translates the attached document into synthetic speech using a French Text-to-Speech engine
textoparavoz@robobraille.org	Translates the attached document into synthetic speech using a Portuguese Text-to-Speech engine
potspeech@robobraille.org	Translates the attached document into synthetic speech using a Greek Text-to-Speech engine
aistis2@robobraille.org	Translates the attached document into synthetic speech using a Lithuanian Text-to-Speech engine

RoboBraille – The Next Steps

From a technical, support and marketing point of view, RoboBraille is currently running as a fully supported service in Cyprus, Denmark, Ireland, Italy, Portugal and the United Kingdom. Furthermore, the RoboBraille team is well-prepared to enter other European countries such as Greece (the existing Cypriot solution can be applied), Lithuania (advanced contacts have been made and a speech synthesiser already donated and integrated) and France (advanced contacts have been made, a speech synthesiser has been donated and integrated, and assistance with the French Braille adaptation has been secured).

Likewise, the RoboBraille team is prepared to offer the service to speakers of English (e.g., Australia, the US, Canada, New Zealand) and Portuguese (e.g., Brazil, Mozambique, Angola). Finally, with assistance from the World Health Organisation and the International Telecommunications Union, the RoboBraille team has made contact with a number of interested parties throughout the Arab world, adding the illiterate to the target audience.

In the spring of 2008, the RoboBraille service was granted a multi-year subsidy in an amendment to the Danish State Budget allocated to support social services. These funds are being used to finance the ongoing operation of the service, to allow for dissemination, and to improve the services currently offered by RoboBraille. In terms of functional improvements, these will include the following:

- Adding formatting capabilities to the RoboBraille service, enabling the service to adequately format Braille output prior to

rendition on Braille embossers. These capabilities are currently being implemented in collaboration with the National Danish Library for the Blind as part of the AutoBraille project.

- Adding support for new document formats including docx (new Microsoft Word format), ODF and OpenXML. RoboBraille currently supports Microsoft Word, RTF, HTML, XML and text documents.
- Adding full support for multi-byte Unicode documents, paving the way for support for multi-byte languages such as Russian, Chinese and Hindi.
- Complementing the current e-mail-based interaction model with an interface based on web services, thus enabling institutional users (e.g., public sector institutions, banks, pension companies, utilities) to exploit RoboBraille themselves in order to provide documents in alternative formats for the benefit of print-impaired citizens.
- Adding Braille and speech support for a range of popular foreign languages including Unified English Braille, German, French, Spanish and Russian, thus enabling print-impaired Danish foreign-language students (and foreign-language students from elsewhere) to access Braille and speech material in these languages.

The RoboBraille service has, furthermore, received one-off financial support from the Danish Ministry of Education in order to develop the service to better support the dyslexic and people with poor reading skills. In addition to dissemination, these funds are being used for the following functional improvements:

- Adding support for the creation of structured talking books in the standardised DAISY format.
- Adding support for complex document formats such as Adobe PDF.
- Adding support for scanned images in formats such as GIF and TIFF

In addition to these activities, Synscenter Refsnæs has received a private grant that will enable it to add support for Arabic speech to RoboBraille and is in negotiations with a private foundation in order to secure funding to support several Eastern European languages. Likewise, the RoboBraille team is in dialogue with several agencies and other major Braille producers worldwide regarding support for additional languages.

Obvious additions to the RoboBraille service include the creation of media production facilities and electronic libraries. The RoboBraille team is currently exploring how one or more media production facilities may be established, possibly doubling as educational and vocational training facilities for people with a visual impairment. Similarly, the RoboBraille team is exploring how the RoboBraille service may be complemented by one or more electronic libraries to make electronic material available for people with a visual impairment or a reading disability. The first media production facilities and electronic libraries are expected to be created in 2009.

Conclusions

RoboBraille was developed in an attempt to make Braille easily available to anyone with a need. In order to create a critical mass of users, it was decided to venture beyond the borders of Denmark and produce a multilingual service capable of producing textual information in alternative formats not only for the blind, but also for those who are partially sighted, dyslexic, or have poor reading skills.

Although alternatives exist (centralised media production facilities, personal translation solutions, screen readers, scanning and reading software), it is evident that such alternatives are less popular amongst the users, be it for reasons of cost or lack of skills. Rather than positioning the RoboBraille service against such solutions, user statistics and results of user pilots suggest that the concept of a free, centralised e-mail-based service offered by RoboBraille is preferred by many users.

In addition to the end users, several government agencies and private funds alike appear to recognise the potential of the RoboBraille service as a facilitator for social inclusion. As such, the RoboBraille service will continue to evolve in order to obtain its objective: to create an unlimited supply of material in Braille and other accessible formats to anyone, anywhere, with a need.

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Notes from the editors:

The team behind the RoboBraille was in December 2008 awarded the e-Accessibility Award by the European Commission.

For more information about RoboBraille, see http://www.robobraille.org

A report of the eTEN Robobraille Market Validation Project is available from the author.

EFA-VI Global Campaign
Profile of the present focus countries

While celebrating the 200th birth centenary of Louis Braille, ICEVI is happy to inform its constituency that more and more children with visual impairment are accessing education now. The ICEVI, acting in partnership with the World Blind Union, launched a Global Campaign on Education for All Children with Visual Impairment (EFA-VI) in 2006, and the results of this global initiative are becoming tangible now.

At the beginning of the quadrennium 2006-2010, ICEVI proposed a target of 14 focus countries for the implementation of the campaign in the first phase. It was also suggested to include the focus countries in a phased manner during the quadrennium. ICEVI is happy to report that 9 countries have already become focus countries and the target is achievable. The profiles and activities of the existing focus countries are enumerated below:

EAST ASIA REGION

VIETNAM (From 2007/2008 onwards)

Education of children with disabilities is one of the priority areas of the Government of Vietnam. Legislation addressing education, law taking care of and protecting mother and children, universalization of primary education, ordinances regarding disabled people, etc., is already in place. The Ministry of Education and Training (MOET) has prepared a plan of action on "Education Strategy for Disabled Children 2015," outlining strategies to maximize educational opportunities for children with disabilities. According to the statistics available, there are 1 million children with disabilities in Vietnam of whom 137,300 are children with visual impairment. The EFA-VI Global Campaign is viewed as a strategy within the Government's strategy paper to ensure educational opportunities for these children with visual impairment. A National Technical Task Force (NTTF), under the Chairpersonship of the Vice-Minister of Education, has been formed to facilitate activities leading to equal access to education of children with visual impairment. The NTTF has prepared a national plan for implementing the EFA-VI Global campaign, which defines various components of service delivery strategies for inclusive education, human resource development needs, provision of support services for children with visual impairment

and the mechanism to monitor the quality of services. The target of this NTTF is to enroll at least 100,000 children with visual impairment under the umbrella of education by 2010 and to include 100% by the end of 2015.

LATIN AMERICA REGION

PARAGUAY (From 2008 onwards)

Paraguay lies in south-central South America. The population is 5,163,198 (as per the statistics of 2002), and 43% live below the poverty line. Paraguay has perhaps the most racially homogenous population in South America. About 95% of its inhabitants are *mestizos* (people of mixed Spanish and Native American ancestry). The urban population is 57%, and 43% of the people live in rural areas. According to the National Census of Population and Housing (2002), 1% of the total population suffers from disability. Nearly 6,000 children with visual impairment require educational services in Paraguay, and a National Task Force has been formed under the aegis of the Global Campaign. The main objective of the national plan projected by the National Task Force is to contribute to the quality of life of persons with visual impairment through facilitation of access to education. More than 50% of the children with visual impairment (about 3,200) who are currently out of the school system will be enrolled during the rest of the quadrennium. With Paraguay being a small country in the region with sound policies pertaining to education of children with disabilities, the objectives set forth for the campaign are achievable, and the success of the campaign activities is documented regularly.

THE DOMINICAN REPUBLIC

(From 2008 onwards)

The Dominican Republic is a Central American country located in the Greater Antilles, and it includes some smaller nearby islands, too. The total area is 48,730 sq km. The capital and largest city in the country is Santo Domingo, and it is divided into 32 provinces. Spanish is the official language of the country. The population of the Dominican Republic is 8,562,541, mostly of mixed Spanish and African descent. According to statistics, 65% of the population live in urban areas, and, as per the 2002 National Census, 5% of the population has some type of disability; visually impaired children requiring services number about 2500. The General Education Law 66-97 declares that the government should "*Offer students with disabilities appropriate education oriented to the full development of their personalities and job training to incorporate them into the world of work and production*." The specific mission of the national plan developed by the National Task Force is to increase access to educational services for all children with visual impairment between the ages of 0 and 18 to improve their quality of life. Main strategies that constitute the campaign are awareness creation, detection, early intervention, integration and inclusion, and provision of technical and learning materials. The expected outcome by the end of the quadrennium is that about 1750 children with visual impairment will be enrolled in the general education system.

ECUADOR (From 2009 onwards)

Ecuador is a western South American country bordering the Pacific Ocean at the equator, between Colombia and Peru. The total area is 283,560 sq km. The population of the country is 13,927,650 (as per the 2008 statistics) in which 32.1% are between the ages of 0-14 years, 62.7% are between 15-64 years and 5.2% are above 65 years. As per the 2006 statistics, 38.3% of them live below the poverty line. The literacy rate of the country is 91% in which males make up 92.3% and females 89.7%. The main objective of the EFA-VI campaign is to create awareness of education of children with disabilities in general and education of children with visual impairment in particular, thereby raising the lietracy rate to be at least on par with that of sighted children. Various strategies like awareness and mass-media, detection, clinical and ophthalmologic assessment, low vision services, access to education, work with families, child protection policies and teacher preparation at universities constitute the main focus of the campaign during the quadrennium.

HONDURAS (From 2009 onwards)

Honduras is a Central American country bordering the Caribbean Sea, between Guatemala and Nicaragua and bordering the Gulf of Fonseca (North Pacific Ocean), between El Salvador and Nicaragua. The total area is 112,090 sq km. The population of the country is 7,639,327 (as per the 2008 statistics) in which 38.7% are between the ages of 0-14 years, 57.8% are between 15-64 years and 3.5% are above 65 years. The EFA-VI campaign is attempting to raise the literacy of children with visual impairment to be on par with that of sighted children in the country, which is above 80%. The main activity of the campaign is to create awareness of education of children with disabilities in general and education of children with visual impairment in particular. Early intervention on behalf of children with visual impairment and capacity building of teachers and parents will find a special place in the campaign. Emphasis will also be given to education of children with low vision and those with multiple disabilities.

PERU (From 2009 onwards)

Peru is a western South American country bordering the South Pacific Ocean, between Chile and Ecuador. The total area is 1,285,220 sq km. The population of the country is 29,180,900 (as per the 2008 statistics). The main objective of the EFA-VI campaign under the guidance of the National Task Force will be to increase access to all children with visual impairment, with an initial target of approximately 70% of the unreached children. Creating a demand for education with the assistance of parents and voluntary organisations will find a special place in the campaign. The experiences of the existing services for persons with visual impairment in the country will be reviewed by the National Task Force thoroughly in designing the activities for the Global Campaign in Peru. Materials production to support education of these children and appropriate capacity development will also be special features of the EFA-VI campaign.

NICARAGUA (From 2009 onwards)

Nicaragua is a Central American country bordering both the Caribbean Sea and the North Pacific Ocean, between Costa Rica and Honduras. The total area of Nicaragua is 129,494 sq km. The 2008 statistics reveals that Nicaragua has a population of 5,785,846, in which 34.6% (male 1,019,281/ female 981,903) are between 0 – 14 years, 62.1% (male 1,792,398/ female 1,803,133) are between 15 – 64 years and 3.3% (male 82,840/ female 106,291) are above 65 years. As per the 2003 statistics, the literacy rate of Nicaragua is 67.5%. Blindness data in the country is not complete. The EFA-VI Global Campaign has proposed to cover at least 70% population of children with visual impairment before 2012.

PACIFIC REGION

FIJI (From 2009 onwards)

Fiji consists of 330 islands which cover approximately 1.3 million square kilometres of the South Pacific Ocean, between longitudes 170° and 178° west of Greenwich and latitudes 15° and 22° south. The area of Fiji is 18,333 sq km. The two major islands of Fiji are Viti Levu (10,429 square kms) and Vanua Levu (5,556 square kms). The population of Fiji in 2007 was 835,230. This includes 36,190 children aged 4-5 years (pre-school age), 135,724 children aged 6-13 years (primary school age), and 78,196 children aged 14-18 years (secondary school age) (Ministry of Education, Science and Technology, 2008). The 1996 Fiji Census identified approximately 12,000 people with disabilities (Ministry of Education, 2001). As per the 2003 statistics, the literacy rate of Fiji is 93.7%. The Government of Fiji has initiated several programmes for the education of children with disabilities in general and for children with visual impairment in particular. A National Task Force (NTF) has been formed to bring the unreached visually impaired children within the general fold of educational access. Main strategies that will constitute the campaign are awareness creation, detection, early intervention, integration and inclusion and providing technical and learning materials.

WEST ASIA REGION

NEPAL (From 2008 onwards)

Nepal is a South Asian country landlocked between China and India. The population of the country as per the 2007 statistics is 28,901,790. The literacy rate according to 2001 census is 48.6%. There is no reliable data on blindness in Nepal. The first Sample Survey (1980) on disabled persons in Nepal carried out by the IYDP Committee (1981) revealed 3.003% of the total population having some kind of disability. Nepal Blindness Survey -1981 estimated 0.84% of the population as blind and 1.85% as low vision. The data given by the B P Eye Foundation, Kathmandu, on Status of Blindness in Nepal in 2006 has reflected some estimates as follows:

i. The number of blind persons of all age groups: 210,000.

ii. Persons with low vision: more than 200,000.

iii. School age children having significant uncorrected refractive errors: 330,000

iv. Blind school-age children : 30,200.

The Government of Nepal is taking a keen interest in education of children with disabilities in general and education of children with visual impairment in particular. This is elucidated by the policies of the government right from the creation of the Special Education Council till the formation of the National Action Plan for Education for All. The main objective of the implementation plan proposed by the EFA-VI National Task Force is to increase the enrollment of children with visual impairment and to facilitate quality education for them. The activities to achieve the objective include creation of awareness, organising non-formal education, providing teaching and learning materials, inservice training, seminars, etc. The documentation of data for evaluating the project will be carried out by the ongoing mechanism. The expected outcome by the end of the quadrennium is that about 2000 to 2500 additional children with visual impairment will be enrolled in schools.

PAKISTAN (From 2009 onwards)

The government of Pakistan has taken several initiatives for the education of children with disabilities. Government statistics show that there are about 0.250 million visually impaired persons in the country, of which 0.080 million are of school age. The National Policy for Persons with Disabilities 2002 shows a positive approach regarding the education of children with disabilities, and it is quite proactive with regard to the development of educational services for children with visual impairment. The National Task Force (NTF) of the Global Campaign strongly believes that the campaign is an excellent opportunity to augment services for children with visual impairment in Pakistan. The NTF consists of representatives of concerned Ministries/Departments of the federal government and provincial governments, educators at special education departments at university level, NGOs, international agencies and experienced visually impaired persons. The mission of the national plan is to increase access to education for all children with visual impairment by 2015. As per the national plan, inclusive education will be the main approach for the implementation of the EFA-VI Campaign. The main strategies which will be implemented as a part of the EFA-VI Campaign are early intervention services, promotion of inclusive education, provision of learning materials and assistive devices, human resource development, etc. An Education Management Information System (EMIS) cell will be set up for documentation of data of the EFA-VI Campaign.

"Never bend your head. Always hold it high. Look the world straight in the eye."

- Helen Keller

EFA-VI Preparatory Work

AFRICA REGION

The Regional Committee of the Africa region has suggested that **Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Rwanda and Uganda** be treated as focus countries for the implementation of the EFA-VI Global Campaign during phase I. ICEVI is happy that Mr. Bernard Mogesa has been appointed as the first Regional Coordinator for the promotion of the EFA-VI campaign in the Africa region, and he will conduct a situational analysis to implement the campaign activities in a phased manner. More news on the EFA-VI Global Campaign in the Africa region will be posted on the website of ICEVI and also published in the next issue of *The Educator*.

EAST ASIA REGION

Cambodia is expected to be the next focus country from the East Asia region, besides Vietnam. A meeting with government officials and voluntary organisations is likely to take place in early 2009, and the campaign is expected to start in the country from 2009-2010 onwards.

ICEVI has taken initiative to conduct a **situational analysis of the factors contributing to inclusion in China.** This national level study, which is coordinated by Xiaguang Peng, Deputy Regional Chairperson of ICEVI East Asia Region, will pave the way for strategies to be adopted in China for the implementation of the EFA-VI Global campaign.

LATIN AMERICA REGION

Initial discussions have already commenced in **Bolivia** and **Guatemala,** and national plans will be developed for these countries in the near future. The countries are expected to implement the EFA-VI Global Campaign from 2010 onwards.

PACIFIC REGION

Papua New Guinea is expected to become the second focus country in the Pacific region.

WEST ASIA REGION

The Regional Committee of the West Asia region opined that there was no need to consider India as ICEVI's focus country for EFA-VI as inclusive education in the country had already been launched and was going well with the support of the government. However, a number of workshops on the EFA-VI Global Campaign were organised in various parts of the country with the support from CBM, the South Asia Regional Office and Sightsavers. Preparatory work for the launch of the campaign is underway in Bangladesh, Tajikistan, and Sri Lanka.

ICEVI Executive Committee Meeting
Strategic Update

ICEVI conducted its meeting of the Executive Committee in Bangkok in November 2008. Following is a strategic update of the meeting.

1. For every focus country of EFA-VI, ICEVI will sign a Memorandum of Understanding either with the government or a lead NGO with the government official from the Ministry of Education heading the National Task Force (NTF).

2. Strengthening sub-regional and national level committees is more practical than having a regional committee as EFA-VI at present is focused on country level activities.

3. In continuation of the recommendation of the EXCO meeting held in Hanoi, Vietnam in April 2008, that ICEVI should formally explore with WBU, IAPB and, possibly DbI the development of what has been referred to as a Vision Alliance, Christian Garms (President, IAPB), Larry Campbell (President, ICEVI), and Maryanne Diamond (President, World Blind Union) met on 26 November 2008 in Bangkok to further discuss the nature of such an alliance. The three Presidents unanimously resolved that such an alliance would enrich both the EFA-VI and Vision 2020 Global Campaigns. They also suggested that the highest priority in nurturing such an alliance is to build networks between the organisations at the regional and national levels.

4. ICEVI stressed the importance of braille in the education of children with visual impairment and observed that the introduction of technology should not obscure the learning of braille. A sub-committee was formed to prepare a position paper on this issue in collaboration with the

WBU. This position paper will be completed by the end of the first quarter of 2009.

5. The Hong Kong Society for the Blind is willing to serve as a Resource Centre for Assistive Devices, and in this connection the following works need to be done.

   - *Regional Chairs will send a list of basic devices that are necessary for the primary and secondary education of children with visual impairment to the ICEVI Secretariat.*
   - *The Hong Kong Society for the Blind will be approached by the Secretariat with this list to contact manufacturers and also ascertain the quality and cost of such devices. ICEVI will also send a list of manufacturers of assistive devices from its database.*
   - *Information on the availability of low-cost, high-quality assistive devices shall be posted on the website of ICEVI and also sent out along with ICEVI publications such as The Educator and the E-News.*

6. The Research Committee of ICEVI would assist Xiaguang Peng, Deputy Regional Chairperson of ICEVI East Asia in initiating a situational analysis on the current status of inclusive education in China that would provide directions to ICEVI on the strategies to be adopted for implementing EFA-VI Campaign in such a vast country.

7. The Research Committee shall be offering assistance to the regional chairs and the National Task Forces in developing appropriate tools for documenting the performance of children with visual impairment as a result of the Global Campaign. In addition to such documentation, the Research Committee shall initiate research after some time to study the impact of the Global Campaign in the focus countries.

8. The higher education projects supported by the Nippon Foundation and being implemented in Indonesia, the Philippines and Vietnam are proceeding well. The year 2009 will be used for consolidating the programme in these countries, and the Nippon Foundation shall be approached for further assistance for extension, should there be a need.

9. The 13th World Conference of ICEVI be held in Jomtien, Thailand, from 9 to13 August 2010.

10. ICEVI extends congratulations to the CBM family worldwide for their committed services in the area of disability over the

Recognition to CBM for 100 years of glorious services

past 100 years. CBM has been supporting ICEVI activities since its inception, and ICEVI wishes the organisation grand success in all its endeavours.

11. ICEVI recognised the longstanding services of Susan Spungin (representing American Foundation for the Blind) and Peter Ackland (representing Sightsavers) as members of the Executive Committee of ICEVI. Susan retired from services at the AFB on December 31, 2008, and Peter recently left Sightsavers to join IAPB. Both made significant contributions to the deliberations of the EXCO.

Thank you Susan for your significant contributions to ICEVI !

A SUMMIT OF MINDS

It is for the first time that the Presidents of the three umbrella organisations dealing with blindness, namely, the International Agency for the Prevention of Blindness (IAPB), International Council for Education of People with Visual Impairment (ICEVI), and the World Blind Union (WBU), attended a meeting of ICEVI. Christian Garms, President, IAPB, Larry Campbell, President, ICEVI and Maryanne Diamond, President, WBU attended the ICEVI Executive Committee meeting held in Bangkok in November 2008 and also prepared a strategic plan for forging a Vision Alliance between the three organisations. These umbrella organisations put together a formidable force to work with governmental and other organisations in ensuring empowerment of persons with visual impairment.

Meeting with INGDOs to plan EFA-VI Global Campaign in Latin America

A unique meeting was organised at the initiative of ICEVI on 23-24 October 2008, in Madrid, Spain, to bring leading international organisations who are interested in the Latin America region to bring synergy to the EFA-VI Global Campaign. Representatives from ICEVI, CBM, ONCE/FOAL, ONCE, Perkins School for the Blind, and the Unión Latinoamericana de Ciegos (ULAC) attended the meeting and discussed at length the strategies to be adopted in the Latin America region to expand educational services for persons with visual impairment. The meeting was hosted by ONCE. Following were the key decisions taken at the meeting.

1. In preparation of the national plans for the implementation of the EFA-VI in Latin America, there is a need to get a commitment from the local governments.

2. In order to review the progress of the EFA-VI activities in the region, a working group consisting of the following was formed under the chairmanship of Lucia Piccione.

Lucia Piccione	..	ICEVI and Chair of the working group
Rocio López Masis	..	CBM
Representative	..	ULAC
Fernando Iglesias	..	ONCE / FOAL
Graciela Ferioli	..	Perkins School for the Blind

   The Terms of Reference for the working group are as follows:
   - Improving communication and collaboration between organisations at the international, regional and local levels. This will be done through an annual meeting.
   - Reviewing action plans of countries and suggesting modifications that may be required. This will be done through e-mail.
   - Doing a forward planning of countries to be included in the EFA-VI campaign.
   - Preparation of consolidated plans for the region on the basis of country plans.

3. There was a general consensus that, while the region is not yet fully ready with the requisite mechanisms to seek European Commission (EC) funding, the work should be geared towards the EC funding opportunities in the near future. A sub-group will continue to prepare possible EC funding for 2009 by clarifying partner organisations and lead agencies.

4. As the EFA-VI Global Campaign is implemented by the ICEVI acting in partnership with the World Blind Union (WBU), it was proposed to have Memoranda of Understanding along the lines of the ICEVI-WBU MoU at the regional and national levels, which could provide special impetus to the campaign in the region.

Meeting of the Programme Committee of the 13th World Conference of ICEVI

MoU for hosting the 13th World Conference signed by Larry Campbell, President, ICEVI and Pecharat Techavachara, Chairman, Thai Host Committee

The Programme Committee of the 13th World Conference is chaired by Dr. Jill Keeffe, First Vice-President of ICEVI. Other members of the committee include Dr. Lucia Piccione, Regional Chairperson, Latin America region, Dr. Kathy Huebner, Regional Chairperson, North America and Caribbean region, Dr. Elly Macha, Executive Director, African Union of the Blind, Dr. Benja Chonlatanon, Representative of the Host Committee and Dr. M.N.G. Mani, Secretary General, ICEVI. The Committee met in Bangkok on 25th November 2008 and outlined the logistics of the conference. **"Education For All Children with Visual Impairment"** will be the broad theme of the conference and the topics of the plenary and concurrent sessions will be related to this theme. The tentative topics for Focus Day presentations are as follows:

1. Early Intervention
2. Low Vision: Access to Resources
3. Human Resource Development
4. Promoting Braille Literacy
5. MDVI Services – Assessing Community Needs
6. Parents and Young People – Inclusion and Advocacy
7. Research in Special Education
8. Promoting Sports, Leisure and Recreation
9. Technology
10. Innovative Teaching Methods

More information on the Conference and the Call for Papers will be posted on ICEVI's website www.icevi.org soon.

Update from the World Blind Union

As mentioned in previous articles in The Educator, the WBU held its 7th General Assembly in Geneva, Switzerland, in August of 2008. The event, which brought together delegates from some 120 member countries, and which was attended by over 500 persons, was preceded by the 4th Women's Forum. We had an excellent array of presentations from United Nation's agencies based in Geneva as well as from our members and partners. Many of the Assembly reports and presentations, together with the resolutions from the Assembly are now on the WBU website.

The General Assembly also saw the election of the new officers for the next quadrennial term. We are delighted to inform you of the following leadership team who will guide the WBU over the next work period.

President
Mrs. Maryanne Diamond (Australia)

1st Vice President
Mr. Arnt Holte (Norway)

2nd Vice President
Ms. Frances Candiru (Uganda)

Secretary General
Mr. Enrique Perez (Spain)

Treasurer
Mr. A. K. Mittal (India) and

Past President
Dr. William Rowland (South Africa)

This new team, together with the 6 Regional Presidents of the WBU met in London in early December 2008 to elaborate the WBU Strategic Plan for the next term. We have identified four key strategic initiatives that will shape our work: advocacy, capacity building, resource repository and organizational strength. These four strategic initiatives will be operationalized through the elaboration of strategic objectives and action plans to ensure progress. More information about this will be included in our next update to you and our plan will also be available on the WBU website once it is complete.

We reported in the last update about the launch of the Right to Read Campaign on World Book Day in Amsterdam in April. A good deal of work has continued over the past number of months as we work with many partners around the world to develop a global collection of books that would be available to blind and visually impaired persons around the world. Major work was done over the summer in elaborating a draft treaty on copyright and exceptions that would see the sharing of accessible format books across borders. This draft treaty is intended for WIPO (the World Intellectual Property Organization) with whom the WBU has observer status as it does with many agencies of the United Nations. A good deal of lobbying took place over the fall in preparation for a special WIPO committee meeting held in November in Geneva to deal with this and similar issues. While there is a good deal of support for our draft treaty, there is also some substantial resistance from some powerful countries and so more work will be undertaken over the next several months in preparation for the next committee meeting to be held in May 2009. If this treaty passes, and we believe that chances are reasonable with continuous effort on our part, then major barriers to the sharing

of accessible books between countries will have been removed. This would be particularly beneficial to developing countries. Stay tuned for more on this.

Since our last update in The Educator, the UN Convention on the Rights of Persons with Disabilities (CRPD) came into force. As part of the monitoring mechanism to monitor the CRPD, countries which had ratified the CRPD by early November had the opportunity to nominate a representative to a new 12 member UN Monitoring Committee. We are very pleased to let you know that five blind persons, including three blind women, were chosen to serve on this committee. They were nominated by their countries of Australia, Bangladesh, Chile, China and Spain.

The last piece of information in this update is to let you know that at the WBU General Assembly in Geneva, we launched two new publications. "Changing What it means to be Blind: Reflections on the First 25 years of the World Blind Union" is a compilation of chapters contributed by each of WBU's past presidents, as well as long serving Secretary General Pedro Zurita, and edited by the late Sir John Wall. This publication was supported by RNIB. Also, ONCE produced a book entitled "A Universal Voice" which has chapters reflecting the 200th anniversary of the birth of Louis Braille, information about the CRPD, and information about the WBU. Further information about these publications and how to obtain them is included on the WBU website at: www.worldblindunion.org

For further information about any of these items, please contact:

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Remembering Sir John Wall

RNIB STATEMENT

December 2, 2008

RNIB is deeply saddened by the death of its former Chairman **Sir John Wall CBE**.

Sir John joined the Executive Council of the Royal National Institute for the Blind (RNIB) in 1962 and became Chairman of its Publications and Equipment Committee in 1967. He became Vice-Chairman of the Executive Council in 1975 and was Chairman from 1990 to 2000.

Sir John lost his sight at the age of eight years. He was educated at Worcester College for the Blind and at Balliol College, Oxford. He then qualified as a solicitor. In 1991, he was appointed Deputy High Court Master, assigned to Chancery Division - the first blind solicitor to be appointed to such a post.

As well as his work for RNIB, Sir John worked tirelessly for several other organisations in the fields of disability and sight loss. He was Secretary General of the European Blind Union (EBU) from 1992 and President from 1996-2003. He was also Chairman of the UK Disability Forum for Europe, a council of representatives of all national organisations of disabled people.

He was also Chair of the Society of Blind Lawyers of England, the Middlesex Association for the Blind and the British Wireless for the Blind Fund amongst others. He was also member of the Executive Council of St. Dunstan's Organization for Men and Women blinded in War Service.

His hobbies included playing the piano and chess. In the late 1980's, he led the English Blind Chess Team to win the gold medal in the World Blind Correspondence Chess Olympiad.

In June 1994, Sir John was created Commander of the Most Excellent Order of the British Empire (CBE), and in 2000 was made a Knight Batchelor by HM The Queen in recognition of services to blind and partially sighted people. He is survived by four sons and many grandchildren.

***Lord Colin Low**, Chairman, RNIB said:*

"Sir John will surely occupy one of the most honoured places in the long line of distinguished leaders of RNIB. He was always endlessly supportive of other blind people and organisations and would go to the ends of the earth if anyone needed any help.

Sir John's contribution to RNIB and the field of blindness generally was enormous and he will be sorely missed. He threw himself with awe-inspiring energy into everything he touched, and was working right up to the end on innumerable fronts with undiminished vigour."

ICEVI

International council for Education of People with Visual Impairment

WML

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