
WISCONSIN BRAILLE

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THE EVOLUTION OF BRAILLE: CAN THE PAST HELP PLAN THE FUTURE?

[Editor's apology: In the last print issue of WISCONSIN BRAILLE, the last half of Part Two of an article by the Braille Authority of North America (BANA) was inadvertently omitted. It follows, along with a condensation of Part Three. To read the full text of this article, go to www.brailleauthority.org]

Current Challenges

Braille transcribers often use braille translation software that converts the text in an electronic document into characters that can be embossed in braille onto paper or that can be shown on a refreshable braille display. While this software can often do a very good job, there are still situations in which a transcriber must intervene in order to produce accurate and comprehensible braille: charts and tables, descriptions of pictures, spatial arithmetic, acronyms, web addresses, the correct use of dashes and hyphens, to name only a few.

As braille readers gain greater access to refreshable braille displays, the common scenario is that they are using displays to read directly from the screens of computers and

mobile devices, and no transcriber is involved. Using this "on-the-fly" translation without transcriber intervention, the texts are often displayed incorrectly.

Changing print conventions further complicate the job of accurate braille translation. What happens, for example, when a dollar sign occurs in the middle of a name, such as the pop music sensation "Ke\$ha"? Unlike the print dollar sign, the braille symbol is dependent upon its placement for its meaning; in other contexts, dots 2-5-6 has numerous possible meanings. For clarity, should the name Ke\$ha simply be brailled with an s instead of a dollar

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HOW I BECAME A BRAILLE TRANSCRIBER

BY JOHN NORTON

When I arrived at Oshkosh Correctional Institution (OSCI) in March of 2009, I had no idea there was a braille training program here. Less than a month later the education department requested that I take the Test of Adult Basic Education (TABE) in order to determine aptitude level. In May I was called to the Braille Room by Kurt Pamperin, director of OSCI's Braille Program. As it turned out, my TABE scores were high enough to qualify me for entry into this prestigious program. After being given a brief overview, I decided to pursue this despite just a tinge of apprehension. When things occur like this, my instincts tell me to go for it.

Before becoming a certified braille transcriber, I had to successfully complete a rigor-

ous set of twenty lessons. The first six lessons are done manually on a Perkins braille writer. Through much repetition, I became acclimated to the basics of braille with these initial lessons. When using this non-electronic transcribing method, I wasn't permitted to correct any errors once they were committed. So, I could virtually be mistake free the entire exercise and then flub the whole thing up by committing a mind-numbing error on the last line of a page. While colossally deflating, the fruits of these extra labors are beneficial in the long run. These six lessons took a month-and-a-

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BRaille EDUCATION IN INDIA

BY SATYAKI SAIKIA

[Editor's note: Satyaki entered the braille program at the Oshkosh Correctional Institution (OSCI) in 2004 and was certified in literary, Nemeth, and formatting before his release and return to his native India last year. He deeply appreciates the time and effort of all Wisconsin Braille members who visited OSCI during his stay and sends them his greetings and best wishes.]

Amanara Begum is 10 years old. She lives with her mother, a day laborer, and two younger siblings—a sister and a brother—inside a large unused drainage pipe perched precariously between an overflowing sewer and a pair of railroad tracks in *Shantipur* (Abode of Peace), Guwahati. Like her siblings she has never been to school. Unlike her siblings, who earn a few pennies recycling plastic trash discarded in public dumpsters, she begs for a living. Amanara is also blind. Her chances of going to school are nil to non-existent and she already has a head start

on what her family and society tacitly agree must be her most viable career option.

Ratul Baishya is 21 years old. I met him while he was busily interacting with friends on *Facebook*. His fingers flew over the keyboard as he responded to their questions and quips. In between periods of silent concentration interrupted by chuckles and furious bursts of typing, he told me that he was in the final year of a Bachelor's program in History

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THE EVOLUTION OF BRAILLE (CONT.)

sign? That solution does not provide the braille reader the same information that the print reader has. A transcriber's note could explain, but that requires the involvement of a transcriber rather than the name automatically and correctly displaying on a braille device.

The example above of the out-of-place dollar sign is not an isolated instance. If a company uses nonstandard symbols in its name and a blind person misspells the company name on a job application because she did not get accurate information from the braille, what are the chances that person will get the job?

At this moment there is no known solution that would completely eliminate the need for a trained transcriber to intervene in order to verify that the format of an embossed braille document is clear and accurate. However, it would be much

more productive if their work could be focused on difficult materials rather than on ensuring that each and every dot in the text is correct.

Another area of concern is back translation, which is the process by which software converts contracted braille materials into print. This process is especially useful for students and those in workplaces who need to write in braille, but who also need their work to be readable as print. The software and hardware exist to do this, but there are sometimes problems that occur during the process. The more print changes, the greater is the inability of the current braille codes to do that job.

Conclusion

Technology has given braille readers more access to braille from more sources

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THE EVOLUTION OF BRAILLE (CONT.)

than ever before. With this greater access has come the need for some systematic changes in braille that will allow for: (1) room within the code to add new symbols in a systematic way, (2) consistency of symbols so that correct braille will be shown when reading a computer or mobile device screen, (3) the ability for back translation to work more reliably, and (4) the ability to get better "on-the-fly" braille for mathematical/technical material, which is increasingly appearing in everyday contexts.

It is clear that we need a flexible code that can grow with the English language and the changing ways it is represented in print with complete accuracy and with less human intervention than is currently required. BANA is considering solutions that will permit this.

Part 3

The Challenges Ahead

With the proliferation of better and more efficient technology, the relevance of braille as a reading and writing medium is frequently questioned. Some people report that they can read faster using speech recognition technology than with braille—and they probably can. But are those same people continuing to use braille? Have the ways braille readers use braille in their daily lives changed so dramatically that it should have an impact on the development of braille codes?

The answer to both questions is a resounding yes. Braille remains a viable and crucially important medium for communication. Speech output allows for quick skimming of information, but braille gives access to text in a manner that allows the

reader to see the spelling of words, the format of documents, and the symbols used. For these reasons, it's imperative that the codes are kept up to date so braille users can read and write accurately.

Over the years BANA has made small changes to the braille code where absolutely necessary. However, the "small fixes" have, in some cases, increased the complexity and ambiguity of the braille code. To resolve many of the shortcomings of the current braille code, serious efforts at code restructuring have taken place in the past two decades.

Unified English Braille

The first of these efforts was the Unified English Braille (UEB) code project, which was initiated in 1992 by the Braille Authority of North America (BANA). The original intent of the project was to explore the possibility of bringing together three of the official braille codes that are used for various purposes: English Braille, American Edition (literary material), Nemeth Code (mathematics and scientific notation), and Computer Braille Code (computer notation). In 1993, the project was adopted by the full International Council on English Braille (ICEB), and it was expanded in scope to explore the possible unification of the braille codes that are used for those purposes in all seven ICEB member countries: Australia, Canada, New Zealand, Nigeria, South Africa, United Kingdom, and the United States. The braille codes used for English literary purposes are similar, though not identical, in those countries; however, the codes used for technical purposes in the other

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The purpose of WISCONSIN BRAILLE INC. is to advance communication and coordinate the efforts of all persons concerned with the availability, quality, and distribution of brailled materials in the state of Wisconsin thereby encouraging braille literacy.

THE EVOLUTION OF BRAILLE (CONT.)

ICEB countries are very different from those used in the BANA countries.

In the initial stages of UEB development, one of the most pressing issues to be decided was the placement of numbers. In the U.S., numbers in the literary code are written in the upper portion of the cell while in math and science, numbers are written in the lower portion of the cell.

A third way of writing numbers, used widely in Europe, called "dot 6" or "Antoine" numbers, was also considered. This system forms numbers by using the same dots as upper-cell numbers with dot 6 added. In this system, 1 is dots 1-6, 2 is dots 1-2-6, and so on. For a consistent code, one method for writing numbers had to be chosen.

To decide which system of numbers should be used, the committees, both in the U.S. and internationally, looked at the ramifications of using upper numbers, lower numbers, or the dot 6 numbers. Using lower numbers would mean changing all of the punctuation signs or having a special mode for numbers. The number sign would still be needed in most cases because numbers standing alone can easily be misread. Use of Antoine numbers would mean losing ten frequently-used contractions, and many people reported that they were slower to read. Upper numbers had the advantage of being familiar to everyone and not conflicting with punctuation. In an analysis conducted using literature that contained frequent numbers, such as math and economics textbooks, numbers were found to come in contact more frequently with punctuation than with letters. After intense debate, the familiarity of the standard upper number system with its advantage of keeping current punctuation was judged to be more important and suitable, especially for the general reader. Based on this ra-

tionale, the upper number system was selected for all purposes within UEB.

The primary changes in UEB from the current U.S. literary code include: (1) changes in words that are currently written together, (2) nine contractions eliminated, (3) changes in a few punctuation marks, (4) bold, underline, and italics each have their own indicator, (5) numbers are shown in the upper portion of the cell, and (6) some operational symbols have been added.

In 2004, the international community voted that UEB was sufficiently complete to be considered an international standard and for braille authorities of individual countries to vote on its adoption for their respective use. To date, UEB has been adopted in six of the seven ICEB countries, including Canada. The United Kingdom voted in favor of UEB adoption in October 2011.

Nemeth Uniform Braille System

Dr. Abraham Nemeth, the developer of the Nemeth Code for Mathematics and Science Notation, recently completed development of another code that uses lower numbers throughout called the Nemeth Uniform Braille System (NUBS). Like UEB, it is also designed to represent literary, math, and computer information--combining all three codes into one unified system. While this system proposes changes to some parts of all three codes, it makes no changes to current literary braille contractions.

The primary changes from the present literary braille code would be: (1) numbers in all contexts occupy the lower part of the cell, (2) the use of modes — *narrative*, for normal literary material, and *notational*, for numeric and technical material, (3) new symbols for parentheses, brackets,

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THE EVOLUTION OF BRAILLE (CONT.)

quotation marks, (4) some changes in the technique for capitalization and for implementing italics and other types of emphasis.

At a Crossroads

BANA will soon be at a critical juncture. It appears we have several choices as to how to proceed:

1. We can continue to tinker with the current codes, potentially making them less easy to use and more ambiguous;
2. We can adopt UEB, as have all of the other ICEB countries;
3. We can adopt NUBS;
4. We can do nothing at all to change braille, realizing this might cause braille to become obsolete.

BANA is conducting an impact analysis that will look at the costs and benefits of making changes to the current system of codes as well as the costs inherent in *not* changing.

Any major change in braille would necessitate careful planning and implementation. New code books and training sessions for transcribers and teachers would be needed. A phase-in period would be necessary

with diligent attention to the needs of all braille readers—from the very youngest to the lifetime braille reader. The most important consideration of all is to keep braille as practical, usable, and flexible as possible in the future as it has been for the past 150 years.

As BANA examines the past and considers options for the future of braille, we encourage you to share your ideas, concerns, and suggestions with BANA Board members. Please visit www.brailleauthority.org and share your thoughts with us.

[Editor's note: The struggle for an international unified braille code is far from new. For those interested in the research in braille development that was done in years long past, a fascinating document written over sixty year ago entitled Report on the World Braille Situation can be found by Gogging "Uniform Braille Code 1949." This report, made to the General Conference of UNESCO held in Paris in September 1949, says that a committee would meet for six days to "consider the practicability of a world Braille for all Languages."]

HOW I BECAME A BRAILLE TRANSCRIBER (CONT.)

half to successfully complete.

At first, speed is not paramount in this program. It can even be a detriment. It's kind of like the "two steps forward/ three steps back" syndrome. Thinking before doing is the proper mindset. Post-certification is the time to develop speed and efficiency, as certain contractual deadlines must be met.

For lessons 7-20 the transcription process shifts to the computer using "Perky Duck" software. On June 30th, I submitted my first electronic exercise (Lesson 7),

which was a study of whole- and part-word contractions, plus a section on short-form words. I was confident afterwards, so it was rather surprising to learn that there were 10 errors. The next step was to go back and find all the errors. Fortunately, I was able to do that, which enabled me to move on to the next lesson.

In July I was asked to take on some extra duties — something called "clean-up." For the foreseeable future, workdays were to be evenly split between my les-

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HOW I BECAME A BRAILLE TRANSCRIBER (CONT.)

sons and "this new job." Clean-up is basically proofreading print textbooks after they've been scanned electronically. It is my job to locate/correct glitches caused by the scanner and then make sure every page is organized in its proper context. This task can easily be construed as tedious in nature, but it's an important part of the overall process.

The weeks rolled by with lessons coming and going with varying degrees of difficulty. My collective performance on them was Jekyll and Hyde to say the least. Over the final 14 lessons, I reached an unacceptable level of double-digit errors four times, including a whopping 15 miscues on Lesson 8. Conversely, there were three occasions when I limited myself to only one error.

By the time I finished all the lessons in December, I was ready to confront the certification manuscript. I could pick any book I wanted as long as it contained a table of contents. The book I chose was a novel penned by author Mary Higgins Clark called "*My Gal Sunday*." It was basic and to the point. We are not required to braille the entire book, but the manuscript's length is required to be 35 full braille pages.

Once completed the manuscript is sent off to be graded at the National Library Service, Library of Congress, in Washington D.C. Everyone who submits a manuscript starts with a score of 100. Points are then deducted for each error that is found by the grader. Most errors,

Wisconsin Braille Inc.

Board of Directors Meeting

Monday, June 18th

10:00 – 3:00

Vision Forward (formerly Badger Association of the Blind and Visually Impaired)

912 N. Hawley Road

Milwaukee, Wisconsin

All *WisBrl* meetings are open and everyone is welcome.

but not all, are two point deductions. A score of 80 is required for certification.

I'm not afraid to say that, while the manuscript was out east, I was on the proverbial pins and needles. In the interim, the only time I ever talked about it was if someone asked. I'm a bit superstitious, so I thought it was better if I avoided confronting the topic.

Then, seven weeks and six days later, the day of reckoning came. My score came back as a 94!

This whole time, I was dreading having to move back to the "student section" with my tail between my legs. That's all a moot point now, though. The process leading up to certification could easily be called a "grind," but it was all worth it. If I had to do it over again, I wouldn't change a thing. It's a unique trade that your average Joe finds fascinating.

Now it's off to the wonderful world of braille transcribing!

*"Alone we can do so little;
together we can do so much."*

—Helen Keller

BRaille EDUCATION IN INDIA (CONT.)

and was also into audio-mixing and synthesizing. His dream was to start his own music studio. Ratul is also blind. I wouldn't have guessed but for the occasional voice prompts from the JAWS program that was helping him negotiate the popular social networking site.

These are the two extremes in the spectrum of opportunities for a blind or visually impaired child in India. It will be inaccurate to describe a standardized system of education or training that applies to all visually impaired persons in the country. In spite of what the official policies might be, the ground reality is vastly different. In a country that is still struggling to educate its sighted population—average literacy rates range from 64% in the state of Bihar to 94% in Kerala—alternative educational programs for differently-abled students are neither popular nor a significant priority.

According to reports collected by the National Institute for the Visually Handicapped (NIVH), there are about 10 million blind and visually impaired people in India. About a third of this population resides in urban areas and the rest are in villages. The data on education for these groups reveals the disparity and inequity in resource delivery.

Population	Literacy	High school
Urban	55%	12%
Rural	14%	2%

A major hurdle for special education is the lack of awareness among people and legislators about the need for such programs. Government-funded blind schools have existed in many states for decades.

However, they are often starved for resources, understaffed, and poorly managed. Moreover, a couple of blind schools in a state can maybe address the needs of only a few hundred students. The problem is much larger and intractable.

Access to and delivery of braille education and related services are largely dependent on three factors: 1. Location: urban/rural. 2. Awareness of local governance: a sensitive and cognizant system supports non-governmental organizations (NGOs) to organize and deliver many services. 3. Personal wealth: allows access to excellent private schools irrespective of the above two factors.

Government Policy: More than 15 years ago, the Indian parliament passed the Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, in an effort to articulate and ensure certain basic rights for people with various disabilities. The PWD Act was meant to provide equal opportunities in education, training, and employment; equal and easy access to public spaces and social services; disbursement of social security payments; and a forum that would address specific grievances or violations of the articles in the Act.

In the context of the blind and visually impaired, this legislation ensures free education through high school, integration of students into regular schools (mainstreaming), life skills training at an approved institute, vocational training to ensure employment, and a nominal compensation for the unemployed. Unfortunately, the assurances are this comprehensive only in print. There are a few states in western and southern India that

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BRAILLE EDUCATION IN INDIA (CONT.)

have traditionally held education in very high regard where many of the articles of the PWD Act are being implemented in schools, colleges, and other public institutions. There are many other states in the country where people (including the disabled) are not even aware that such an act exists or why it might be necessary.

In my six months of travel after having returned to India, I have encountered two buildings that had braille signs on doors. One was an elevator in a luxurious 5-star deluxe hotel in New Delhi frequented by international travelers, and the other was a restroom in a government office where the official proudly pointed to a 3" by 1" metal plate embossed with the word male and screwed into the wall about a foot above the door jamb. I did not have the heart to inform this person that a blind man of average height would need a ladder to feel and read the sign! Why the women's bathroom did not have a similar plate is a topic for another discussion.

Braille Education: Most of the educated blind people in India have been to a special school for the blind and visually impaired. Almost all major cities have such schools and they are usually residential to accommodate students from areas that do not have similar services. My state of Assam has one private and three public blind schools. The public schools have a total enrollment of 250 students and the private school has about 40. In a state with a population of 31 million, which is rather modest compared to the rest of the country, children like Amanara Begum do not slip through cracks, they free-fall without any support through large, gaping holes.

For those students fortunate enough to enter a school, it's a transformative experience. I visited the blind school in my city to meet with some of the students.

They all live in hostels inside the school premises and go about their daily lives just like anyone else. I was greeted with cheers, excited laughter, and a barrage of questions about my interest in braille. I met students in the music room busy playing *tabla* (Indian drums) and singing to the melodious notes of a *harmonium* (an accordion-like instrument). I visited their computer training center that was established by a grant from the Department of Social Welfare, Government of India. It has 12 new computers with broadband internet access and voice-enabled software for easy use. Their instructor, Bimal Chetri, graduated from NIVH in Dehra Dun and went on to complete an advanced program in computer skills from the National Association for the Blind (NAB), New Delhi. Every student in the school looked radiant and happy, and even the ones who were shy had hope for the future. Hope—that is what education offered; the stuff dreams are made of.

Professional Organizations: As in the U.S., there are a couple of national organizations that coordinate most of the activities related to the planning and delivery of braille education and related services. Among these the branches of NAB in Mumbai and New Delhi are very active and remarkably efficient. Branches of the same organization in many other states are hardly functional. Sense International (India) provides technical and logistical assistance to NAB.

NIVH: Located in Dehra Dun at the foothills of the Himalayas, it is a premier training and research institute managed by the Ministry of Social Justice and Empowerment, Government of India. It is the largest producer and distributor of braille



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BRaille EDUCATION IN INDIA (CONT.)

literature and reading devices in the country and organizes long- and short-term training programs for students and instructors. It and NAB are the two main organizations that offer structured braille programs for sighted people—mostly teachers and counselors. It has also been integrally involved in the development of standardized braille codes for many local Indian languages. This is a major challenge considering India has 22 official languages!

Bharati Braille: Indian languages are based on a writing system that is essentially phonetic in nature in that it is based on the sound produced by the consonants and vowels. In almost all the scripts used for Indian languages, the written shapes correspond to syllables, which may be a vowel, a consonant-vowel combination or a series of consonants and vowels. Hence some scholars had recommended braille as one of the scripts that could be used for writing text in the different Indian languages. At a conference in Beirut in 1951, a panel of international scholars examined the feasibility of a phonetically derived system of six dots to represent the languages of India, Pakistan, and Sri Lanka. *Bharati Braille* was the result—*Bhārata* being the official Sanskrit name for India. This standardized system is now used to transcribe many Indian languages into braille and its convenience is apparent from the fact that all the languages share the same braille representation, though they all have different scripts.

National Braille Archive: An Online National Braille Library was launched in January 2012 as a joint project between NIVH and Xavier's Resource Center for the Visually Challenged in Mumbai. Initially starting with a database of 12,000 books, the library allows all students to download free books and read them using Refreshable Braille Display Systems. This is the first concerted attempt by braille organizations

to share resources at a national level.

Braille Newspaper: Reliance Foundation just launched the first registered Hindi newspaper in braille. *Reliance Dhrishti* will join the Marathi language publication *Sparshdyan* as the two fortnightly newsmagazines catering specifically to the visually impaired population in India.

NGOs: In many instances, these are the true agents of change in the country and the ones that design and implement the most innovative programs in education, training, and community participation. Their efforts and accomplishments would make for another article. Till then you can get some details by sampling these websites:

www.nabelhi.org

www.eyeway.org

www.senseintindia.org

www.mitrajyothi.org

www.rakum.org/rakum_school/

It has been about 3 months since I met Ratul and Amanara. I hear that Ratul has started working in a friend's studio to gather practical experience in the recording industry. Apparently, the friend appreciates his keen ear for pitch and tone. Amanara's home has ceased to exist. The drainage pipe needed to be placed in one of the ubiquitous water-logged drains and she and her family had to move elsewhere; maybe, next to a larger landfill where discarded plastic might be plentiful. I cannot predict how their lives will turn out at the end but it is obvious how different their current trajectories are. In India, these are often the stakes in the struggle for a decent education especially for children with special needs—a life of hope and value or just another poverty statistic.

(In this article, names of people have been changed to protect their identity.)

Membership Application

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Use the following form to join *WisBrl*, or to renew your membership.



Please make checks and money orders payable to
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