IMPORTANCE OF "NO TRANSLATION" OPTION FOR BRAILLE IN SCREEN READING SOFTWARE:

Guidance for Software Developers

Issued by the Braille Authority of North America
January 2025

This document explains why a "no translation" option (sometimes called "braille ASCII" or "computer braille") must be retained as one of a screen reader's braille translation options. The information pertains to the work of developers of screen reader software that supports use of refreshable braille devices for interaction with computers, mobile devices, or kiosks. The guidance here is also intended for those developing software for stand-alone refreshable braille devices.

Background

Explanation of Braille-Specific Terms

ASCII Braille or **Unicode Braille** (also sometimes known as "computer braille"): A one-to-one method for representing braille characters. For example, the ASCII character for the closing bracket **]** yields the dot pattern ⠿. Note that computer braille as discussed here is not the same thing as "Computer Braille Code" (as explained in BANA's Position Paper on CBC and Braille ASCII.

Uncontracted Braille and **Contracted Braille:** in Unified English Braille (the standard in English-speaking countries since 2016), these are the standard forms of braille read by the general user. Both of these forms allow for hundreds of symbols to be shown in six-dot braille through the use of two or more braille characters to represent a print character. Contracted braille uses symbols and abbreviations to represent groups of letters or entire words.

Print-Based Content: Content that must be converted to braille in real time by a screen reader in order for it to be read in contracted or uncontracted refreshable braille.

Braille-Based Content: Content that has already been translated to braille before it has any interaction with a screen reader. This can include braille that is embedded within a print text, or entire documents already translated to braille.

Braille-Ready Format (BRF): An electronic file format in which the braille translation has already been done. Books and other documents in this format are sometimes optimized for braille format, including all of the headings, italics, footnotes, and picture descriptions that are necessary to convey the same content as the print version.

The Screen Reader

Screen reading software converts the letters, numbers, and other symbols displayed on a screen and/or typed into a device into speech output and/or electronic braille. For speech output, the screen reader uses complicated computer logic, in real time, to convert print-based material into speech that is not only clearly understandable but also customizable. The speech can be rendered at different speeds and pitches, with different accents, according to the user's needs and preferences. The screen reader also speaks while a user is typing so that the user has instant feedback.

Similarly, for braille output, it is the screen reading software that performs the complex task of wrangling the vast array of print letters, numbers, symbols, and font attributes into a system of modes and rules. The print, with all its attributes, can then be unambiguously rendered on a connected refreshable braille display, contracted or uncontracted, within the 64 unique braille characters. The translation is done in real time each time a user presses a control to refresh the display to a new line. A person can also input in braille using six keys, (or using a six-finger configuration to type directly onto a touch screen), and the screen reader software reverses the translation process while the user types braille, to display the information in print. (In another important layer of the process, to give the user the ability to read what has been typed, the words are re-translated into braille after the reverse translation, to display in refreshable braille for the person who has typed them). This constant behind-the-scenes real-time translation is essential and is applied every day when braille users utilize screen readers on mainstream computers or mobile devices.

Use of “No Translation” Option

Sometimes, a braille reader may need to read braille characters in a one-to-one relationship with the print characters, without any translation applied at all. For example:

- The most common case is when the braille user needs the ability to read a book or document that has already been translated into braille. The screen reader must not apply any further translation to the already-brailled content, or the result will be double-translated gibberish. Instead, the screen reader should simply pass the characters to the braille device so that they display just as they are in the file. To accomplish this, the screen reader should include an option to turn the translation off, invoking a braille table that simply passes the ASCII or Unicode characters through. ⠅⠶ ⠄⠉ ⠽ ⠗⠂ ⠙ ⠹⠦ ⠅⠄ from an original braille document

comes through perfectly on the braille display as "*Can you read this?*" without the need for translation of any kind.

- The "no translation" option is sometimes needed for input as well. In order to perform a search within an already-translated book or document, a user must be able to type in dot patterns to search for braille-specific characters that do not have print equivalents (for example, page change indicators, bold text indicators, etc.) Similarly, a braille user sometimes needs the ability to be able to take personal notes in braille, using their own made-up shorthand or formatting conventions, without having to be concerned with what will display in the reverse translation if braille rules are not strictly followed.
- When braille dots occur within a print-based document such as a braille codebook or teaching manual on the Web, braille users may need to be able to turn off translation in order to read the braille characters as they are intended. Turning translation off is necessary, for example, when the braille dots were created using ASCII with a simulated braille font applied.
  - Sometimes, languages other than English do not render well in braille when they occur within English contexts. Turning off translation can provide better clarity.
  - If the user is unfamiliar with certain uncommon braille symbols or strings, turning off translation may also clear up any ambiguity.

User Option, Not User Requirement

"No translation" should be available for the user to turn on and off as needed, but *"no translation" should never be a requirement or a default for interacting with print-based content* because it often uses completely different braille symbols for common print characters (see the above-mentioned position paper on CBC for further explanation). Standard contracted or uncontracted braille provides an unambiguous system for entering passwords, search field content, and the like. Since Unified English Braille was designed specifically to allow for unambiguous representation, uncontracted braille is a more appropriate default if a "fall-back" is deemed appropriate for expanding contracted words for clarity or for password entry.

Further Information

If additional questions arise on this topic, contact the Braille Authority of North America at chair@brailleauthority.org.