

Braille, a tactile writing system

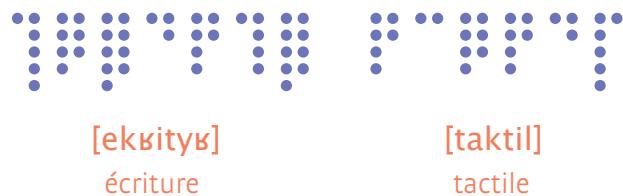
Jonathan Fabreguettes

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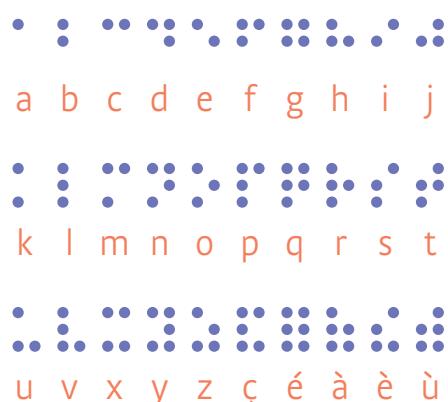
Part 1: A Brief History of Invisible Writing

We begin our story in the late eighteenth century: Valentin Haüy is a man of letters, a scholar attending a show at a fair featuring blind people. Struck by the scene he witnesses, he decides to develop a teaching method for the blind, and to create a school: the Institution des Enfants Aveugles (Institute for Blind Children). A few years later in the early nineteenth century: Nicolas Marie Charles Barbier de la Serre, a French artillery captain, is interested in finding a way to read and write in the dark. He develops what is called “night writing”: a tactile system based on a grid of 12 dots which transcribes sounds.



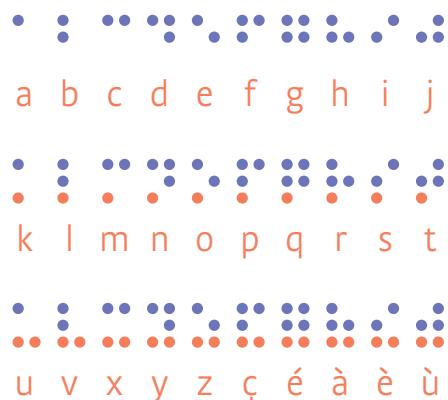
In 1821, Barbier de la Serre presents his invention to the school founded by Valentin Haüy, which has since become the Institution Royale des Jeunes Aveugles (Royal Institute for Blind Youth). Among the blind students there is a twelve-year-old named Louis Braille, who becomes very excited about this invention. Louis Braille starts to work and for several years he seeks to improve Barbier de la Serre's system.

The first book in braille – *Procédé pour écrire les Paroles, la Musique et le Plain-chant au moyen de points, à l'usage des Aveugles et disposés pour eux* (*Method for Writing Words, Music and Plainchant with dots, for the Blind and Arranged for Them*) – is published in 1829, but the braille does not yet correspond completely to the braille that we know today. In 1837, the system is revised: it is designed on a grid of 6 dots, and matched with glyphs instead of sounds.



Why are the changes made by Louis Braille so important? The decrease in the cell's height to 6 dots allows one to read a glyph in its entirety with the tip of the finger, all at once, without having to scan the height of the symbol. The correspondence to glyphs provides a writing system equivalent to the one of sighted people, with all its grammatical subtleties, and it opens the way to mathematics.

If we take a closer look at the braille system, we can see how it is constructed: the second line is the same as the first line with one additional dot at the bottom left; the third line is the same as the first line with two additional dots at the bottom.



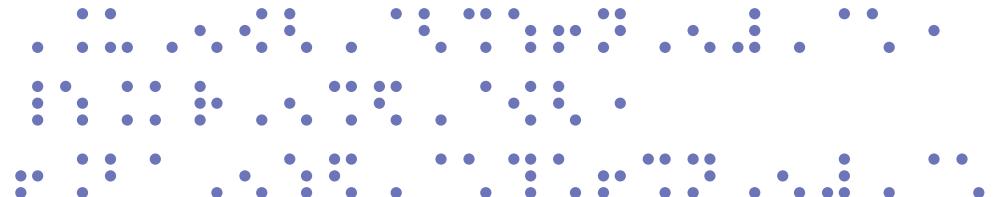
In the nineteenth and twentieth centuries, the world is gradually adopting braille. David Abraham, Edward J. Waterhouse and Gabriel Farrell work in the United States on the design of a braille typewriter – the “Perkins” typewriter – which is still in use today. In 2013, *World Braille Usage*, a study by UNESCO in collaboration with three other organizations, identifies 133 languages using braille.



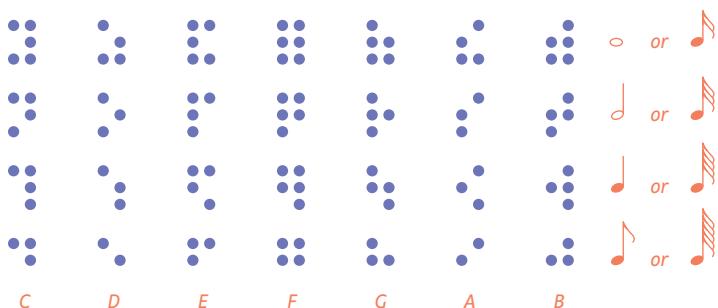
From the beginning, braille is not limited to purely literary texts and allows the transcription of mathematics and music, two subjects that Louis Braille taught. One constraint of braille is the linearization of information distributed in space, for example in chemical equations with superscript mass numbers and subscript atomic numbers.

$$\begin{array}{ccccccc} \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} \\ \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} \\ \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} \\ \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} \\ \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} \\ \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} & \text{•} \end{array}$$

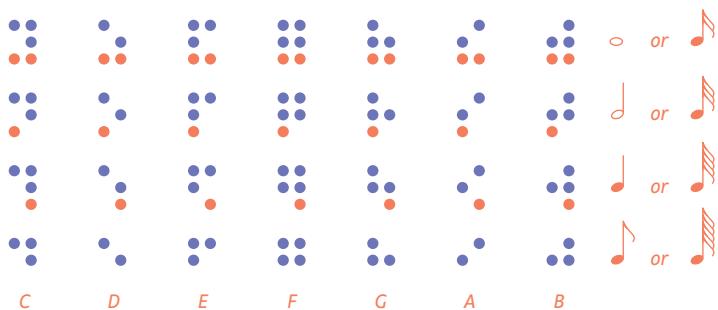
$1683 + 8736 = 10\,419$ using French braille codes.



Musical notation



As for the letters, we can see how musical notation is constructed from one line to another:

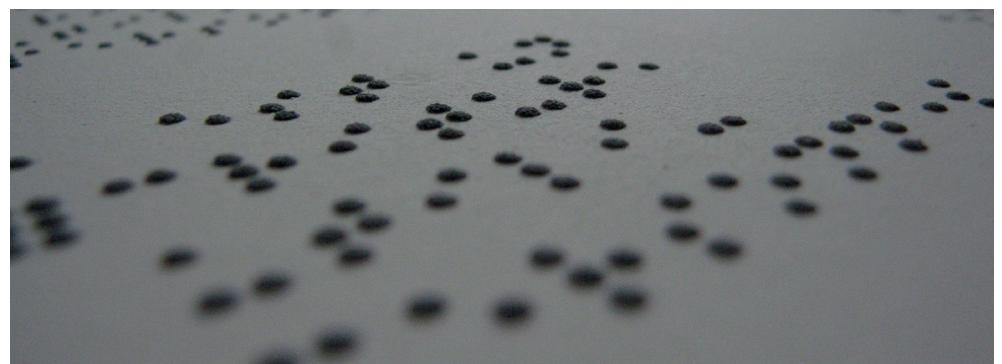


Braille exists today in three basic forms: embossed braille on paper (the dots are raised but not printed), resin or heat sensitive/thermographic braille (the dots are in black or color and raised) and braille on digital tablets and 3D-printing (plastic pins or raised dots).

In 2005 the publication *Études et Résultats*, N° 416, estimated the number of blind and severely visually impaired people in France at about 207,000, the number of visually impaired people knowing braille at 18,000, and the number of visually impaired people actively reading and writing braille at about 9,000.



Embossed braille on paper.



Heat sensitive/thermographic braille.



Plastic braille.

Part 2: A Digital Braille Typeface Project

I work with braille every day and I wanted to create a very complete typeface which allows typographic finesse by providing slightly different weights. That makes it possible to choose the weight according to the reader's preference (some readers may prefer larger or smaller dots, more tightly or widely spaced dots) and the printing technique, in order to arrive at the best solution within a specific context.



Extra-Light 6



Extra-Light 8

Extra-Light 8 Dots



Light 6



Light 8

Light 6 Dots



Light 8



Regular 6



Regular 8

Regular 6 Dots



Regular 6 Dots

Regular 8

The Confettis Braille typeface contains 12 fonts, in 4 variants and 3 weights. The 4 variants are: Braille 6, Braille 8, Braille 6 Dots and Braille 8 Dots. The “dots” versions are used by sighted people (people who have vision) for reading braille easily. The versions with 8 dots are used in specific contexts.

CONFETTIS CONFETTIS CONFETTIS
CONFETTIS CONFETTIS CONFETTIS CONFETTIS
CONFETTIS CONFETTIS CONFETTIS CONFETTIS

This text is difficult to read for sighted people.

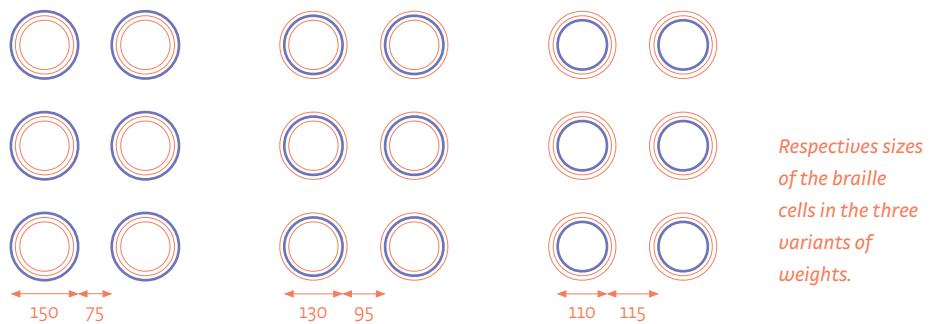
CONFETTIS CONFETTIS CONFETTIS
CONFETTIS CONFETTIS CONFETTIS CONFETTIS
CONFETTIS CONFETTIS CONFETTIS CONFETTIS

This text is easier to read for sighted people.

The typeface contains the 256 possible combinations in Unicode, in the 6 and 8 dot versions, which means it can be set in all languages using braille. However, as braille varies for each language, priority was given to French braille setting on the AZERTY keyboard with matching Latin-to-braille glyphs available for rapid text setting.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
À Á Ç È É Ê Ì Ô Æ Ù Ü Û à á ç è é ê ì ô æ ù ü û
., : ; ? ! () { } [] « » ‘ ’ , “ ” „ „ ‘ ’ _ - -
— ¢ ¤ ¥ \$ € / + - × ÷ = < > % %o | ~ ^ ° * # @ © ª º & ® ™

It's likely that 6-dot braille has no equivalent in the history of writing: a system based on a single graphic symbol that allows for writing and reading over a hundred languages. But its simplicity should not lead us to forget that typographical variations of a braille character are not only possible, but also useful.



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*Thanks to Mark Jamra for his editorial assistance with this text.
braille typeface: © Jonathan Fabreguettes.*

TypeCulture.com

Digital braille references:

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Download links:

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<http://www.inja.fr/Exploitation/BDEA/doc/AGENDA/53/travaux-de-la-commission-evolution-du-braille-francais>

Arrêté du 17 août 2006, publié au Bulletin Officiel du Ministère de la Santé et des Solidarités n° 2006/9 du 15 octobre 2006

Links:

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Download links:

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Download link:

<http://www.perkins.org/international/world-braille-usage>

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