matter of Type
materia do Tipo
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IDENTIFYING AND ORGANIZING MATRICES FROM THE COLLECTION OF THE POLYTECHNIC OF TOMAR LETTERPRESS PRINT SHOP

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KEYWORDS
Letterpress, Hot Metal Typesetting, Linotype, Monotype, Ludlow

This project comprises the inventory and forms of organization of Linotype, Monotype and Ludlow matrices, the hot metal typesetting processes existing at the IPT Letterpress Print Shop. This work is part of the project Polytechnic of Tomar Letterpress Print Shop – An Industrial Heritage to Safeguard and Enhance, taking place at the Techn&Art research centre, which also includes the study of manual typesetting, among other more or less recent equipment related to Graphic Arts. Results of this research have been shown in previous editions of this ET (Delfino and Matos, 2018 and 2019) and in other forums related to Technologies and Graphic Arts (Delfino et al, 2021, e.g.).

Identifying and organizing the matrices of this asset, as well as obtaining additional information on the composition and mechanical casting equipment, is a task that had yet to be accomplished since the founding of the Polytechnic and of this Letterpress.

CONTEXT

Typesetting and/or mechanical casting type matrices are not always easy to identify and organize. The original boxes from foundries, or other places where they are kept, either do not identify typefaces and their sizes or, when they do, this is made in a coded way. In addition, codes used are specific and quite varied, whether the ones invented by well known brands, or even by other foundries that produced matrices compatible with other systems.
Added to this difficulty is the fact that these equipment and techniques have been obsolete for some decades now, with information about them dispersed, scarce, or held by a few specialists, mostly English-speakers. This context turned out this identification relatively difficult, but undoubtedly attractive.

OBJECTIVES

Therefore this project intends to clear these doubts, show and explain how matrices are coded and how the respective typographic fonts are identified. In addition, ways of organizing these matrices on cabinets, magazines or in alternative places or materials are shown. Internally, this survey will allow organizing,

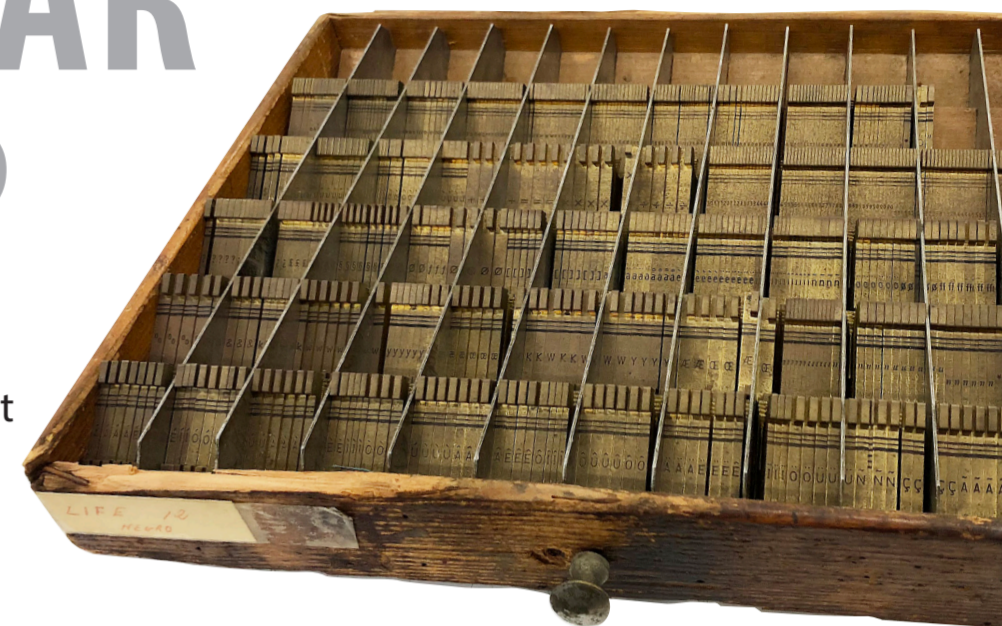preserving and showing this asset in a dignified and didactic way.
The growing interest in these traditional forms of text setting and printing – increasingly considered as an industrial heritage to be preserved – continues to develop, also in Portugal, so this information could be useful to other researchers, creative, historians or holders of similar assets. The eventual loan of matrices to other institutions, for casting types or lines of text, is also possible as a result of this study.

METHODOLOGY

The methodologies used have been literature review and expert inquiry. The first includes specialized books, such as equipment manuals and catalogues, mainly type specimen books. Complementarily, we have found some information on specialized websites in the study of these technologies. Some of the experts contacted are responsible for some of these websites. Contacts have been made by email or through specialized discussion forums.

RESULTS

In the vast majority of cases the results have been conclusive, with all matrices identified, as well as the type setting and casting equipment and an important part of its history. The following three posters show these results for each of the three brands, Linotype, Monotype and Ludlow. Here we find a brief description of each of the systems and the different types of matrices. Each of the encoding forms is explained, as well as the organization of matrices while they are stored or when they are going to be used. Some of the most relevant specimen books for this study are also shown, as well as all faces existing at the Print Shop. Among these, we highlight one for each system that stands out because of their interest within the collection or for their formal or historical characteristics.

Cabinet drawer with Linotype matrices of Life roman and italic, 6 pt body.

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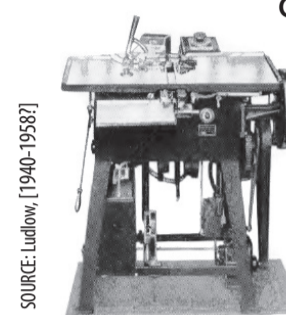Fundação para a Ciência e a Tecnologia

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Monotype matrix box with Baskerville roman and italic, size 6 pt.

Ludlow Matrix cabinet, Angle Top model.

Galley with Linotype matrices of 10 points condensed Univers 57 and 67.

Box with the matrix set of Monotype Spartan Light, Bold and Wide, bodies 6 and 12 pt.

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LUDLOW TYPOGRAPH

Identifying and organizing matrices from the collection of the Polytechnic of Tomar Letterpress Print Shop

SOURCE: Ludlow, [1940-1958?]

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KEYWORDS
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The Ludlow system was mainly used for display setting and casting, having been manufactured exclusively in the USA, from the end of the 1910s. In 1920 the same company acquired the Elrod Slug Casting Company, also starting to produce the equally famous Elrod, rules and white material casters. One of the many peculiarities of this system is that proper cabinets were produced to store its matrices.

Ludlow casting produces lines of text (mono linear), just like Linotype, however, the composition is done manually, using a proprietary composing stick. This type of setting is one of its advantages, since it practically did not require learning to a experienced manual typesetter using movable type. Another distinctive element of Ludlow, in relation to other hot metal typesetting systems, is the perfect production and setting of text in italics, since its matrices have the same inclination of the characters.

We believe that the use of this system in Portugal was relatively large, since for casting headlines this is probably the most practical of all hot metal systems. Even so, Imprensa Nacional Casa da Moeda, acquired this equipment belatedly, having started with an Elrod, already in the second half of the 1950s (INCM, 1956). However, in the early 1970s this national printing house already had a relatively large number of Ludlows (Queiroz, José & Ferreira, 2019).

The IPT Print Shop owns a Ludlow machine, model L, unfortunately without a serial number, therefore it is not possible to know its manufacturing date. However, it is known that it was offered by Polónio Basto & Companhia, a graphic company from Porto, having previously belonged to the Porto daily newspaper O Primeiro de Janeiro (Guilhermino Pires, 2022). The IPT Print Shop matrix cabinet is an Angle Top model. At IPT there are three Elrods, two model K, one of them manufactured in 1965; and one model F, assembled in 1956. This is the only one whose origin is known with certainty, since it has an old INCM inventory label.

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Matrix Anatomy

Face Side
The character is always centered in height, whatever the font size. This allows the simultaneous composition of texts with different sizes in the same line, which is not possible when setting with movable characters.

Typeface Identification
Line or set of parallel lines, above the character reference.

Size Identification
Line below the character reference.

Matrix Lateral
Laterally, the shape of all matrices is the same, varying only in height, and only in cases of very large bodies. This shape allows placement and stability of the matrix on the composing stick.

Reference Marking
Indication of the character in each matrix is necessary for the composer, while choosing the letters and forming the words and lines of text.

MATRIX ANATOMY
The Ludlow system is the simplest among the hot metal setting systems, which is one of its great advantages. As the way of composing and using the matrices is similar to hand setting, the form of the matrices does not have the complexity that we find in the other methods. Thus, the matrices normally have the same dimensions in height and depth, varying only in width, which adapts to the width of different characters. The matrix height varies only for very large bodies.
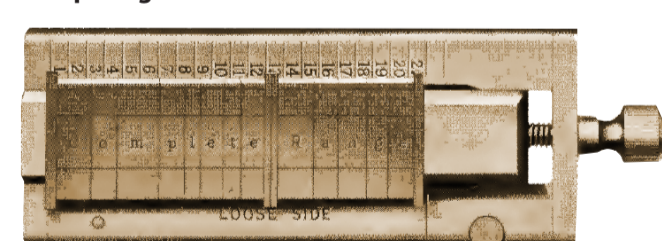
Regular Matrix Case

Caps and Numbers Matrix Case

Composing Stick with Matrices

SOURCE: Ludlow, [1940-1958?]

SOURCE: Ludlow, tipB B

MATRIX ORGANIZATION IN THE CASES AND IN THE COMPOSING STICK
The matrix cabinet is another characteristic element of this composition system. Different types of cabinets were produced, which vary in size and number of cases (drawers) they contain. The most characteristic are those with a sloping top, like the traditional hand setting wooden cabinets for movable types, turning composition tasks easier to fulfill. Basically there are three types of cases: the most common, to keep matrices with upper and lower case letters, typically for 98 characters; those that accommodate only capital letters and numbers; and the ones for white materials, spaces between letters and between words. The order of the matrices is very simple, following an alphabetical and sequential disposition of characters, contrary to the complexity of movable type cases. Ludlow setting is also simpler than manual setting, as the composer organizes the matrices with the reference side facing him, thus perfectly reading the text. The column width is adjustable in the composing stick, of which there are different sizes.

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MATRIX CODING BY MANUFACTURER
The coding form used by Ludlow, although relatively simple in essence, in practical terms raises problems as the correspondence between codes and fonts is not easy to establish. Unlike Linotype and Monotype systems, whose correspondence between codes and typographic fonts is found in specimen books, in Ludlow's case this does not happen. Instead of carrying an alphanumeric reference, matrices are identified with parallel lines that have to be read with a proper ruler, the "Matrix Identification Gauge". This reading results in a number, with one, two or three digits. However, in order to get to know the font, it is still necessary to match this number to a new alphanumeric code, consisting of a number – which identifies the font – and letters – sometimes an acronym of the variant in question, but not ever. It is this last code that is shown in Ludlow specimen books. But to achieve the connection between the numerical code and the alphanumeric code, another key is again needed, the "Matrix Chart and Instruction Sheet". This correspondence table does not exist in any Ludlow specimen book, turning the identification process quite sinuous.
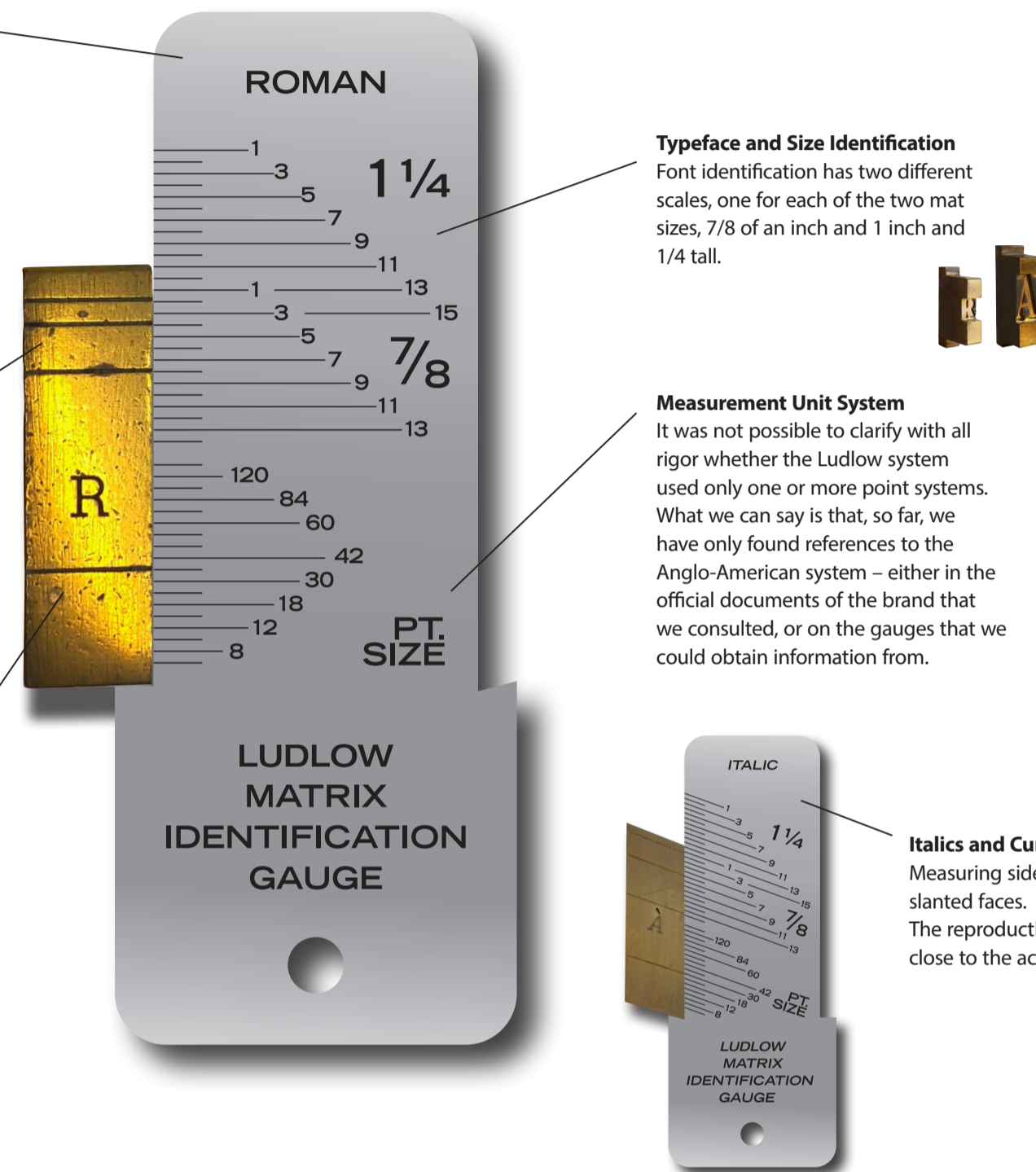
Matrix Identification Gauge
Metallic ruler that makes it possible to identify the typeface and its size. The ruler has two sides, one for non-italic variants and one for italic, if heavily slanted, or cursive typefaces. The side of the ruler has two protrusions, where the matrix (Roman or italic) fits, and we can see the correspondence on the ruler to the lines present on the matrix reference side. According to MacMillan (2009), the equipment has the reference number T-4600.

Identification of the Typeface and its Variant
Above the character reference is one, two or three parallel lines. These have a correspondence on the ruler, pointing to one or more numbers. This number, or sequence of numbers, indicates the face code and its variant. It is only this last code that is found in the Ludlow specimen books, never the correspondence table. In this example, the code is 248.

Size Identification
Below the character reference there is a single line. This indicates the body, which is immediately known with the Ludlow matrix identification gauge. In this example, the size is 36 pt.

Typeface and Size Identification
Font identification has two different scales, one for each of the two mat sizes, 7/8 of an inch and 1 inch and 1/4 tall.

Measurement Unit System
It was not possible to clarify with all rigor whether the Ludlow system used only one or more point systems. What we can say is that, so far, we have only found references to the Anglo-American system – either in the official documents of the brand that we consulted, or on the gauges that we could obtain information from.

Italics and Cursives
Measuring side of slanted faces. The reproduction is close to the actual size.

ROMAN
1 1/4
R
7/8
PT. SIZE
LUDLOW MATRIX IDENTIFICATION GAUGE

ITALIC
1 1/4
7/8
LUDLOW MATRIX IDENTIFICATION GAUGE

SPECIMEN BOOKS OF LUDLOW TYPEFACES
Ludlow's specimen books are relatively sparse, sometimes incomplete, and in some cases very difficult to find. All contain the source codes, but never include the list that allows cross-referencing the information resulting from reading with the ruler with the corresponding types – the Ludlow Matrix Identification Chart. In our case, not having been able to obtain a copy of the list, so far, we had to identify the types visually, comparing the matrices with the specimen books that we were able to obtain. The Ludlow system is actually quite simple overall. However, this biased way of identifying types brought a complexity to the process that is difficult to understand. The pictures show pages from a specimen book probably published between 1940 and 1958.

RADIANT HEAVY
Bold Extra Condensed

Admiral Script **49-BIC**
30 pt
1953, Robert Hunter Middleton

Bodoni Black **3-H**
24, 36, 42 pt
1930, Robert Hunter Middleton
(original by Giambattista Bodoni, late 18th century)

Bodoni Bold **3-B / 3-BT**
18, 24, 36 pt
1930, Robert Hunter Middleton
(original by Giambattista Bodoni, late 18th century)

Bodoni Campanile **3-BEC**
18 pt
1936, Robert Hunter Middleton
(original by Giambattista Bodoni, late 18th century)

CHELTENHAM BOLD EXTRA CONDENSED **2-BEC**
60 pt
[1906] Morris Fuller Benton
(a 1906 original, for American Type Founders, based on originals by Bertram Goodhue and Ingalls Kimbal, 1896)

Franklin Gothic Heavy **6-F**
10, 18, 24, 36 pt
[1904] Morris Fuller Benton
(original by Morris Fuller Benton, American Type Founders)

Radiant Bold Extra Condensed **43-BEC / 43-BC**
18 pt
1938, Robert Hunter Middleton

Radiant Heavy **43-H**
18, 24, 36 pt
1938, Robert Hunter Middleton

Tempo Bold Italic **28-BI / 28-ABI**
24 pt
1938, Robert Hunter Middleton

Tempo Medium **28-M / 28-AM**
36 pt
1938, Robert Hunter Middleton

RADIANT
Of the types in the collection, we highlight Radiant, of which IPT Print Shop only has two of the seven variants that Robert Hunter Middleton designed between 1938 and 1941. Those are faces especially suited for headlines, advertising or signage, and the variants found here are probably the most characterful of all, being at the extremes of thickness and condensation. Radiant's design is unusual in that it mixes the thickness of stems typical of contrasted and serif typefaces with the geometry of linear faces. Not being an innovative design – at least Britannic, by the British foundry Stephenson Blake, designed in 1901, and Peignot, by Adolphe Cassandre, designed in 1937, are its predecessors –, but Middleton gives it its own personality and the so characteristic variants. Hermann Zapf, in 1958, with Optima, and José Mendonza y Almeida, in 1960, with Pascal, resume this line, but in their most classic and measured style.