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.

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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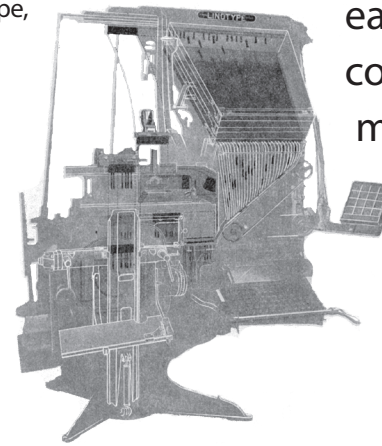
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LINOTYPE

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

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Linotype was probably the most popular mechanical typesetting system of lines of text (mono linear) in the world. The quality of the technology was similar to that of its competitors, but the fact that it was the first to emerge, combined with the form of commercialization, must have been decisive for its expansion. Compared to manual composition, the advantages were unavoidable: mechanization made the composition work much faster; in addition to the great ease of joining lines of text, quickly forming columns. After casting the lines of text, the matrices are distributed by the machine, through a complex but efficient system and without any work for the composer (the image on the side shows in black the sinuous path of the matrices through the machine). These aspects were central to the demand of periodical press, and Graphic Arts in general, for speed and ease of production. The system was also widely used in Portugal, having lasted in Lisbon and Porto newspapers until the 1980s (Matos, 2022). Imprensa Nacional Casa da Moeda (INCM), the national printing house, was also a customer of the system from relatively early on, in 1912 (INCM, 1931). IPT´s Linotype is a Model 78, English-made, probably dating from 1969. The matrices are English and Italian-made. Like many of the materials at IPT Print Shop, the machine and the matrices were donated by INCM. These materials entered the institution in 1989, during the creation of the Polytechnic and its bachelor degree in Technology and Graphic Arts (Guilhermino Pires, 2022).

SOURCE: Linotype, 1940

MATRIX ANATOMY

Linotype matrices are, in a way, the most complex among the various existing hot metal typesetting systems. This complexity is due to the complexity of the mechanism itself: from the time the composer presses the keyboard, selecting the letters that make up the words, to the return of those letters after they have been casted. In this process, the matrices make a long journey: from the magazine (where they are ordered, at the top of the machine), passing through the composer (where they are joined, forming words), to the place where they will be used to cast types and lines of text (in the mold), and back to the magazine to be reused. In this way, in addition to having to be correctly identified when the linotypist composes the text, matrices will have to be transported by various parts of the machine, which hold them in different ways, and returned to their respective channels, in the magazine.

Teeth
Each matrix has fourteen teeth, some of them cut, each character having different cuts from the rest. The system is used for the distribution bar to distinguish each of the mats on their return to the magazine, allowing them to fall into the corresponding channel.

Font Code
Indication of the body, the matrix manufacturer and the face, respectively, through the number in points, a company symbol and a coded number for the typeface.
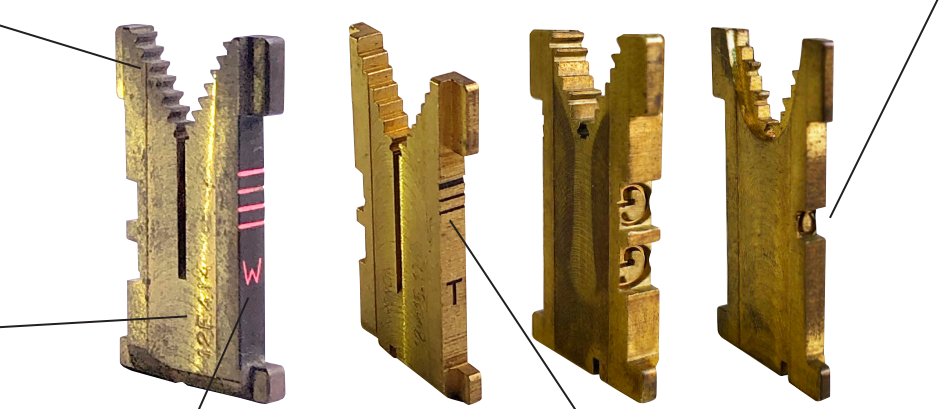
Reference Marking
Indication of the character of the matrix, so the linotypist can read the text during the composition.

Regular and Auxiliary Positions
Character position. Many smaller body size matrices combine variants of the same type (roman, italic, bold, etc.) in the same matrix. Display mats, with sizes from 16 to 60 points, have only one character, being aligned by the auxiliary position. Other one-letter mats, such as the Greek character on the picture, also are in this position.

Face Lines
Lines identifying the font, specially useful when matrices are organized outside a magazine.

MATRIX ORGANIZATION IN THE MAGAZINE

The magazine is the part of the machine where matrices are arranged, ready to be dispensed for composition. The arrangement of matrices here responds to the need for correspondence with the composer's keyboard. Most Linotypes, like the one at IPT Print Shop, have a magazine with 90 channels and a keyboard with the same number of keys and characters. The image above shows the top part of the magazine, where we can see the character layout sequence.

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MATRIX CODING BY MANUFACTURER

In addition to the North American parent company and the British branch, several other American and European companies manufactured matrices compatible with the system invented by Oto Mergenthaler, such as the Intertype, Simoncini, Matrotype, Neotype, Sofratype or D. Stempel foundries. Each one of them identified their matrices with a code, as far as we know, always using the sequence: body of the character in points; followed by a characteristic symbol of the company; and finally a number identifying the typographic font (in the old sense of the English word "font"), that is, the typeface and its variant (roman, bold, italic, etc.). MacMillan (2012a and 2012b) points out that, at least in the case of the American Linotype, during a good part of its life, this last number, even being the same in different matrices, could not identify the same face, but rather a certain combination of two fonts or typefaces in the same matrix. For example: 122 identified both Spartan Black Condensed combined with the Heavy version, and Century Expanded with the Bold version; being the differentiating element, in this case, the body size before the company symbol.
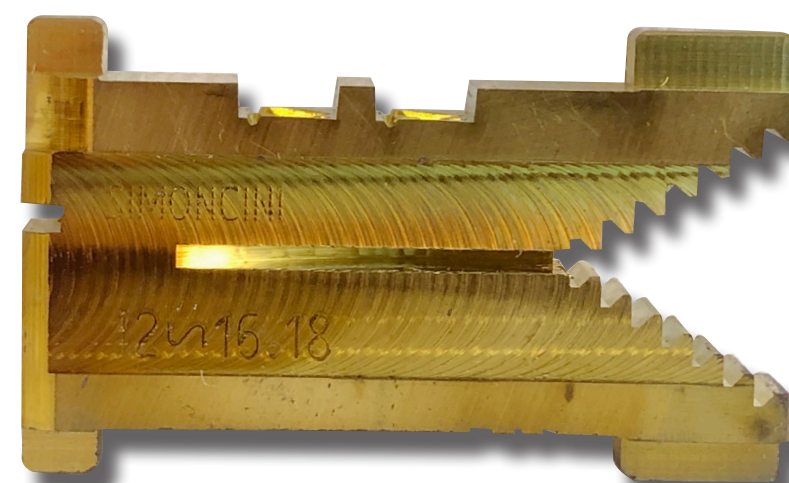
Mergenthaler Linotype USA

The North American company, founder of the system, identified its matrices with the symbol "Δ". IPT Print Shop does not have such matrices, but we include here what may have been the most widespread type of matrix in the world. Mergenthaler also used other symbols to distinguish the manufacturing date (the dots) and some similar characters, in this case the hyphen (Hy). (Macmillan, 2012a)
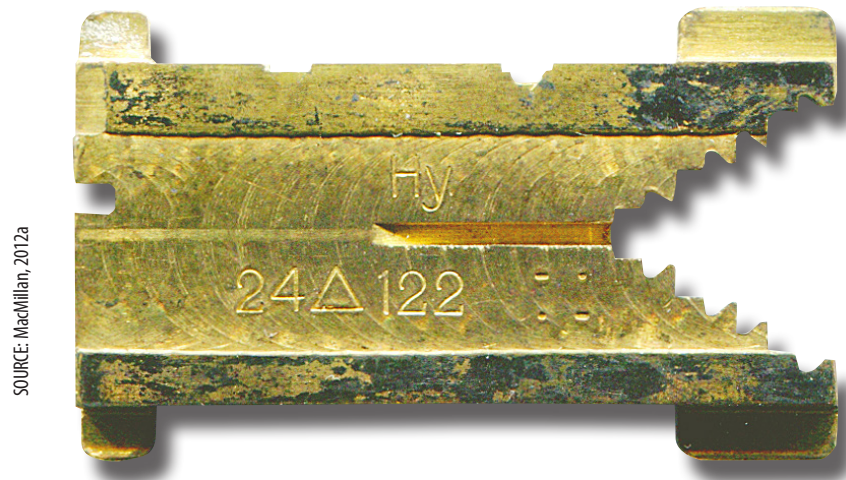
SOURCE: MacMillan, 2012a

Intertype / Linotype & Machinery UK

In the second half of the 20th century, Linotype acquired the also British Intertype, a matrix producer for both systems. We think that IPT matrices were casted in this period, considering Intertype's typical "E", but now in the traditional position and sequence of the Linotype code. Another feature of Intertype mats was the use of color in the reference mark, which also happens in these cases.
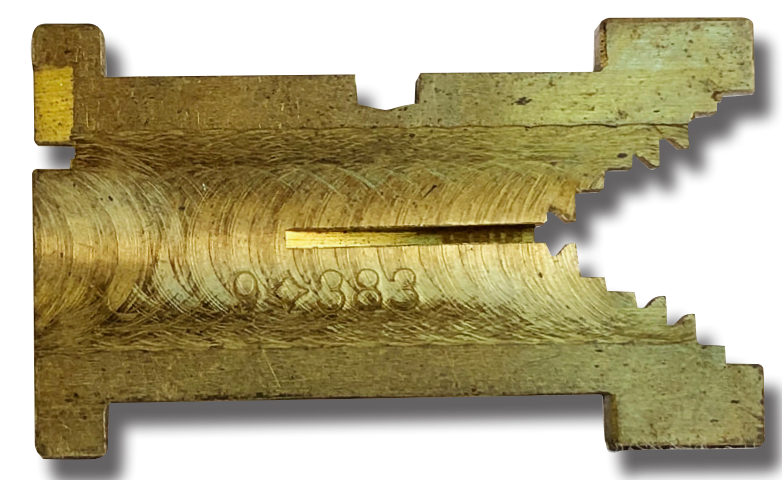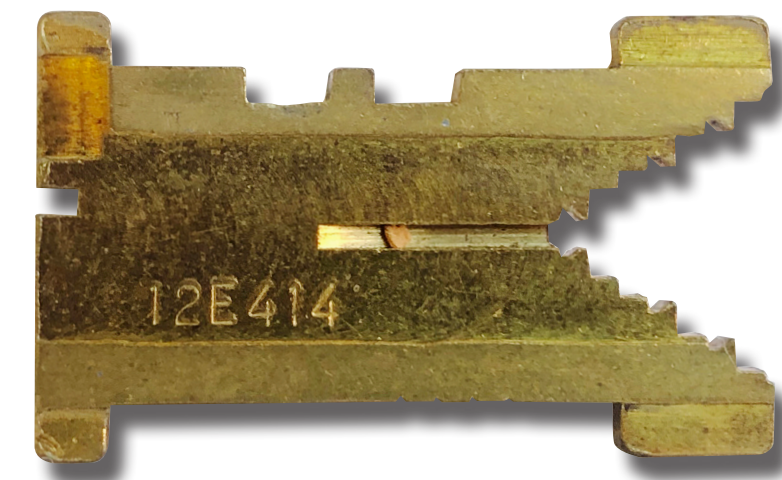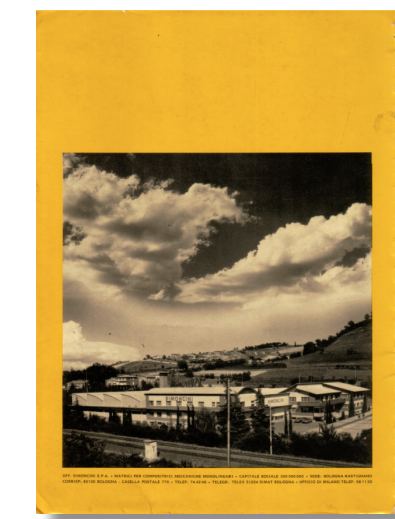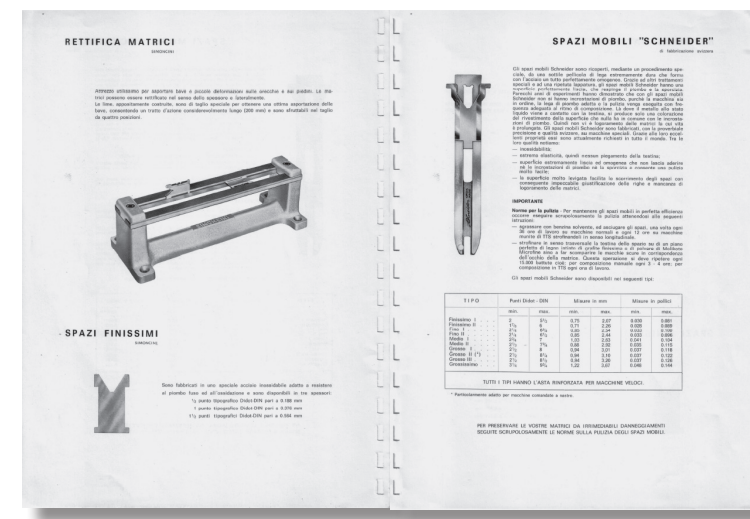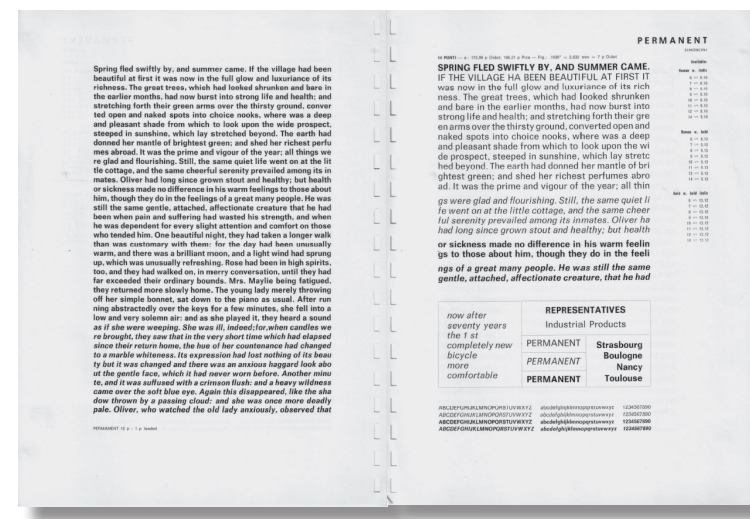
Officine Simoncini Italy

This company identified its mats with a lying down "S". Unlike the other brands, the name of the firm, and the family that created it, also appears in all matrices.

Linotype & Machinery UK

The company's branch in the UK became autonomous from the American branch within a few years of life. As an identification symbol for their matrices they used a symbol close to a "◊", a rotated square with rounded sides.

OFFICINE SIMONCINI

Most of the matrices existing at the IPT Print Shop were made by this Italian company, which operated in Bologna between 1953 and the mid-1970s. It was founded by Vicenzo Simoncini and several of his sons, among whom Francesco Simoncini (1912-1975) stood out. With technical training in engineering, production and lettering design, Francesco collaborated with the German foundry Ludwing & Mayer, from 1958 onwards, with whom he shared the releasing of various typefaces, some designed in partnership with Wilhelm Bilz, such as Garamond and Life.
The images above are from a Simoncini specimen book, probably published in the first half of the 1970s, showing pages of Permanent and other information about the matrices and some accessories used in mechanic composition.

ελληνικό αρ1 393
Greek No. 1 italic
9 pt
1947[?], unknown author
Linotype & Machinery

ελληνικό αρ.3
ελληνικό αφ 4 491
Greek No. 3 roman + Greek No. 4 italic
11 pt
1947[?], unknown author
Linotype & Machinery

Life Roman *Life Italic* 16.17
6, 8, 10, 12 pt
1965, Francesco Simoncini and Wilhelm Bilz
Officine Simoncini (and Ludwig & Mayer)

Life Roman **Life Bold** 16.18
8, 10, 12 pt
1965, Francesco Simoncini and Wilhelm Bilz
Officine Simoncini (and Ludwig & Mayer)

Permanent Roman
Permanent Bold 9.13
8, 10, 12 pt
1962, Karlgeorg Hoefer
Officine Simoncini (and Ludwig & Mayer)

Simoncini Garamond Roman
Simoncini Garamond Italic VX
6, 8, 10, 12, 14 pt
1961, Francesco Simoncini and Wilhelm Bilz
Officine Simoncini (and Ludwig & Mayer)

Univers 57 Condensed 214, 314, 414
Univers 67 Bold Condensed
8, 10, 12 pt
1957, Adrian Frutiger
Linotype & Machinery / Intertype

SIMONCINI GARAMOND

Among the typefaces for Linotype, at IPT Print Shop, we highlight Simoncini Garamond, which has the largest variety of sizes for body copy in the collection.
The design was born with an order from the famous publishing house Einaudi, directed by Giulio Einaudi, and curated by the head of graphic production, Oreste Molina, in the context of a company graphic renovation, an unusual innovation in post-war Italy. According to Cavedoni (2017) this is still the most popular book typeface in Italy.
The project was developed in close collaboration between Simoncini and the German Wilhelm Bilz, between 1956 and 1958. The design paid special attention to some details, such as a certain deformation of the lead letters so that the printing generated the expected forms. The face was first used in 1960 in Joseph Conrad's book La Línea d'Ombra (The Shadow Line), from the Universale Einaudi collection (Rebellato, 2013). The typeface release dates from 1961.

Simoncini Garamond