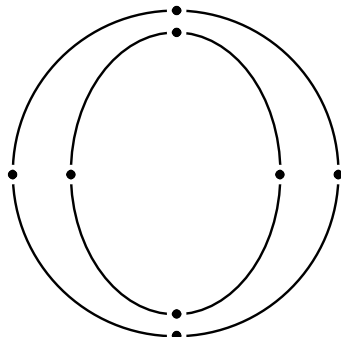
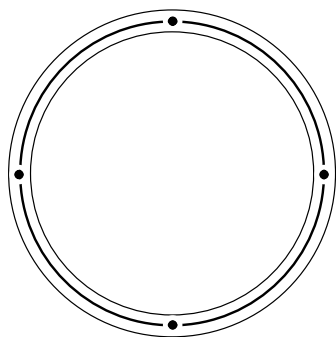
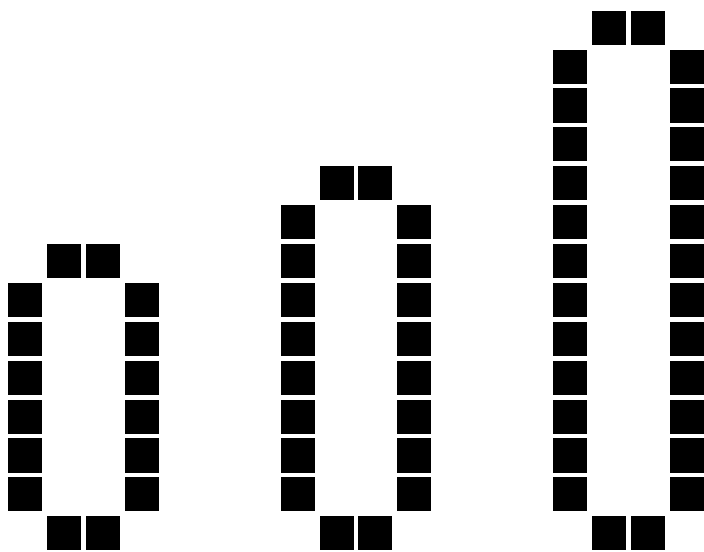


# DIGITAL FONTS

---



.....

## EMIGRE MAGAZINE FONTS

Described here is the ever continuing evolution of typefaces designed by Zuzana Licko for Emigre Magazine. These range from the coarse resolution bitmaps to high resolution PostScript defined fonts. The rationale behind them is derived from that of the grid and the digital characteristics are incorporated as design elements. Designing our own fonts with the Macintosh has given us endless possibilities that would be impossible to execute or finance with traditional production methods. We believe that as personal computer publishing gains momentum, it should not continue to result in the degradation of graphic standards. Improving the selection of available fonts can elevate the quality of published material and consequently visually educate the users. This is a crucial step in the advancement of the medium as it becomes utilized in everyday office and business practices and comprises an increasing percentage of the visual material we are exposed to.

## TECHNOLOGICAL BACKGROUND

As developers strive towards faster performance and higher resolution, the fact remains that no matter how high the resolution and how inexpensive it becomes to readily utilize it, respectively lower resolution devices will always be the most affordable, portable and efficient in performance. Thus the need for type and graphic standards that address the digital type generation process at coarse resolutions will remain in demand. This demand is particularly pressing since the lowest resolution components often function as the critical link between man and machine.

## CONVERTING ANALOG TO DIGITAL

Much of the current digital font creation effort is being concentrated in the mechanical digitization of existing photo or lead character designs. When digitizing existing analog fonts, the jagged lines of the resulting bitmap fonts construct hideous emulations of the original. Through such imitations we fail to utilize the capabilities of the digital process. Certainly the most successful photo typesetting fonts were not those that were directly copied from hot metal type! As well as respecting the nuances of our traditional typefaces and their evolution in conjunction with reading habits, the forms of computer fonts must result as an integral part of the digital process, not in spite of it.

.....

## DIGITAL IMAGE QUALITY

Traditional type design involves the hand tooling of materials, wood, metal or ink on paper, into a physical object, the letter form. These are then mechanically or photographically reproduced, thereby deteriorating the image quality with each step. A digital character, however does not exist in a physical master form. Instead, the digital printer generates each printout as an original and thus yields an image that surpasses the standard photo methods in quality and consistency.

Low and medium resolutions have a stigma of being crude and incapable of rendering pleasing typefaces. Ironically the original letterpress prints from which many of today's popular high resolution fonts are drawn, are actually closer in quality to medium resolution laser printouts than those of high resolution typesetters. Due to their relatively crude processes, laser and letterpress prints impart a similar randomness to the letterforms. Had letterpress typefaces been adapted directly to laser technology, without the super clean high resolution revivals, we might accept coarse resolution typefaces more readily today.

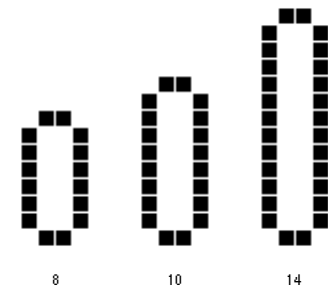
## PUBLICATION AND THE VISUAL WORD

The form of the written word has progressed from handwritten manuscripts to letterpress books to photo typeset publications and is today progressively less physical, as it is transmitted over phone lines and accessed through computer terminals. Originally, it was the intent of these advancements to promote literacy and knowledge for all of mankind by increasing the speed and volume of publishing while decreasing its cost. Relative to these achievements, our society is far less literate than might be expected. As the role of the visual word has changed it must be addressed accordingly with new typographic solutions.

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  
 0 1 2 3 4 5 6 7 8 9

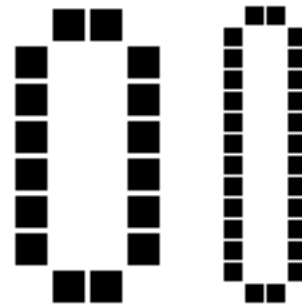
EMPEROR 8 uses the minimum number of pixels required to define a complete alphabet while maintaining the characteristics of its family.

Emperor 8  
 Emperor 10  
 Emperor 14



EMPEROR 8, 10, and 14

The EMPEROR family consists of a series of fonts that maintain the same one pixel stroke to two pixels counter proportion, while varying the vertical cap height pixels. (The number after each EMPEROR font refers to its capital height measured in pixel units). Each variation is thus a permutation of this stretching and condensing effect. The particular combination of these height and width resolutions determines its “look,” be it condensed, extended, etc.



The coarser the grid of the output device the more limited the possibility of pixel placement, and the variety of representable font characteristics is limited accordingly. The EMPEROR family is therefore a series of fonts with various resolutions, as a higher resolution is required for rendering EMPEROR 14 (right) than EMPEROR 8 (left) at the same cap height measure. Therefore, the resolution of the printer determines the optimal size for each EMPEROR family member.

A B C D E G H I J K L 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

0 1 2 3 4 5 6 7 8 9

A B C D E G H I J K L 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

0 1 2 3 4 5 6 7 8 9

n n n n modula

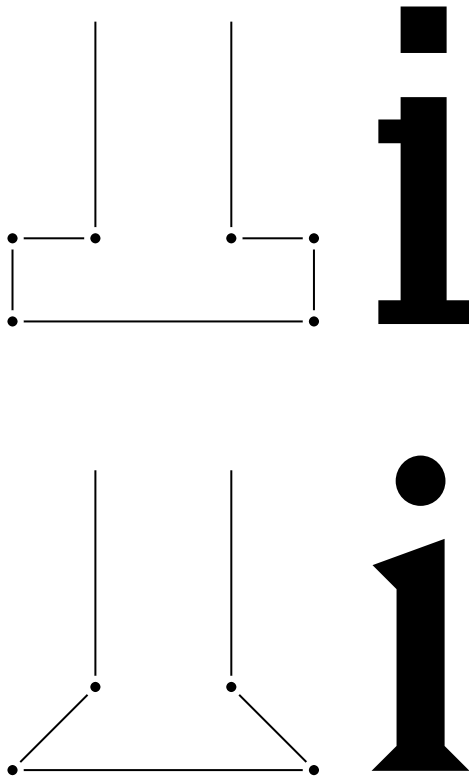
As a shortcut to increasing the resolution of bitmap typefaces from screen to printer, some programs offer a "smooth" routine that polishes stairsteps pixels into smooth diagonal and circular segments. The smooth printing option provided by the Macintosh was the inspiration for the MODULA family.

ABCDEGHIJ  
 KLMNOPQRS  
 TUVWXYZ  
 abcdefghij  
 klmnopqrst  
 uvwxyz  
 0123456789

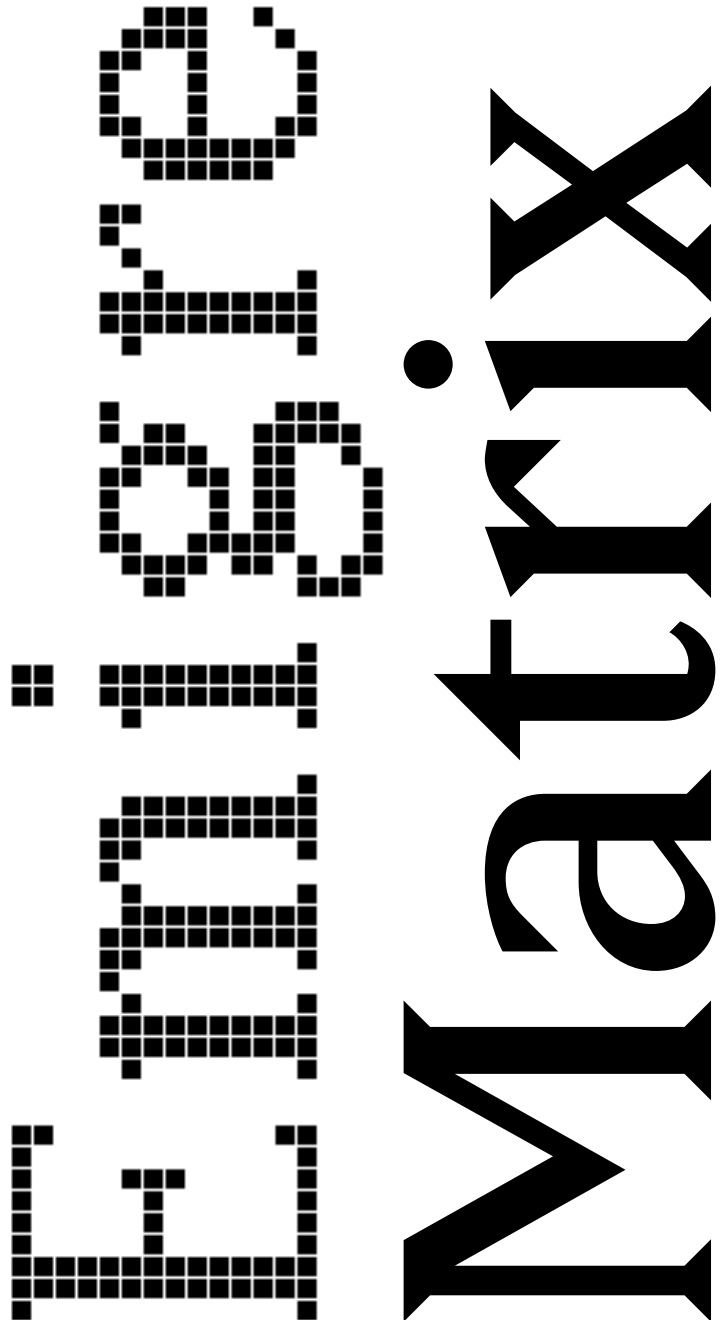
EMIGRE 14 was designed as a versatile text font for the coarse printing methods of the dot matrix printer, originally the only printer available for the Macintosh. This durable bitmap font is optimized for legibility at virtually any point size.

ABCDEGHIJ  
 KLMNOPQRS  
 TUVWXYZ  
 abcdefghij  
 klmnopqrst  
 uvwxyz  
 0123456789

The MATRIX font is derived from EMIGRE 14. It retains the modularity of EMIGRE, thereby keeping it in harmony with the digital grid. MATRIX thus consumes relatively little memory space to store in the printer and generates printouts very quickly.



MATRIX was designed to be an economical font and thus the points required to define it were limited to the essentials. As a result several changes were made in the font characteristics in its derivation from EMIGRE. One example is the treatment of serifs shown above. EMIGRE's serifs are square, the exact size and shape of one pixel, while the serifs of MATRIX were reduced to triangular wedges, thus eliminating one of the points that would otherwise be required to render a square serif. The 45 degree angle of the serif wedge was employed as this is the smoothest-looking diagonal that a digital printer is capable of generating.



HORIZONTAL STRETCH

200% **Matrix**

150% **Matrix**

100% **Matrix**

75% **Matrix**

50% **Matrix**

Algorithmic fonts, such as the condensed and extended ones shown here, can easily be derived from digital fonts. These are generated with a program that simply stretches the original MATRIX font and therefore require much less space to store than if each permutation existed as a separate font.

VERTICAL STRETCH

50% **Matrix** *Matrix*

75% **Matrix** *Matrix*

100% **Matrix** *Matrix*

150% **Matrix** *Matrix*

200% **Matrix** *Matrix*

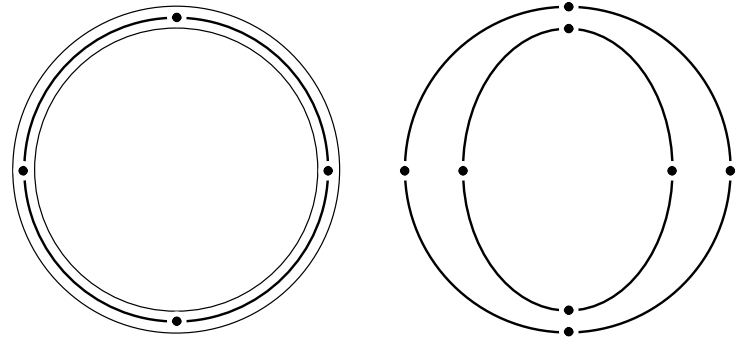
MATRIX responds well to being condensed, extended and italicized because its forms are closely related to the grid on which these effects are based.

<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>	<b>M</b>
<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>
<b>T</b>	<b>T</b>	<b>T</b>	<b>T</b>	<b>T</b>	<b>T</b>	<b>T</b>	<b>T</b>
<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>
<b>I</b>	<b>I</b>	<b>I</b>	<b>I</b>	<b>I</b>	<b>I</b>	<b>I</b>	<b>I</b>
<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>B</b>	<b>E</b>	<b>B</b>	<b>W</b>	<b>R</b>	<b>N</b>	<b>L</b>	<b>E</b>
<b>L</b>	<b>X</b>	<b>O</b>	<b>I</b>	<b>E</b>	<b>A</b>	<b>I</b>	<b>X</b>
<b>A</b>	<b>T</b>	<b>L</b>	<b>D</b>	<b>G</b>	<b>R</b>	<b>G</b>	<b>T</b>
<b>C</b>	<b>R</b>	<b>D</b>	<b>E</b>	<b>U</b>	<b>R</b>	<b>H</b>	<b>R</b>
<b>K</b>	<b>A</b>			<b>L</b>	<b>O</b>	<b>T</b>	<b>A</b>
	<b>W</b>			<b>A</b>	<b>W</b>		<b>N</b>
	<b>I</b>			<b>R</b>			<b>A</b>
	<b>D</b>						<b>R</b>
	<b>E</b>						<b>R</b>
							<b>O</b>
							<b>W</b>

Displayed as a density progression are the four weights of the MATRIX family: Black, Bold, Regular and Book. Alternately inserted are extended and condensed versions of the Regular face.

q Δ b b c d d  
 e f g g h i j k  
 L M N o p p  
 o q r r s s t u  
 v w x y y z

Variex letterforms have been reduced to the basic powerful gestures of primitive writing hands. Elements from capitals and lower case are combined into a single alphabet. Relying on a single set of characters eliminates the redundancy of upper and lower case symbols. Several alternative characters are provided for headline applications where optimal letter combinations are crucial. Each character is defined by center lines of uniform weight from which the three weights are also derived.



Single line stroke characters (left) require fewer data points and therefore take up less memory space than double outline shapes (right). Two separate outlines are usually needed to describe the delicate tapering shapes of traditional letter forms.



Varying the weight of a stroke typeface changes the thickness around the centerline and thus alters the alignment of some characters. Variex incorporates these variations of alignment in its design.