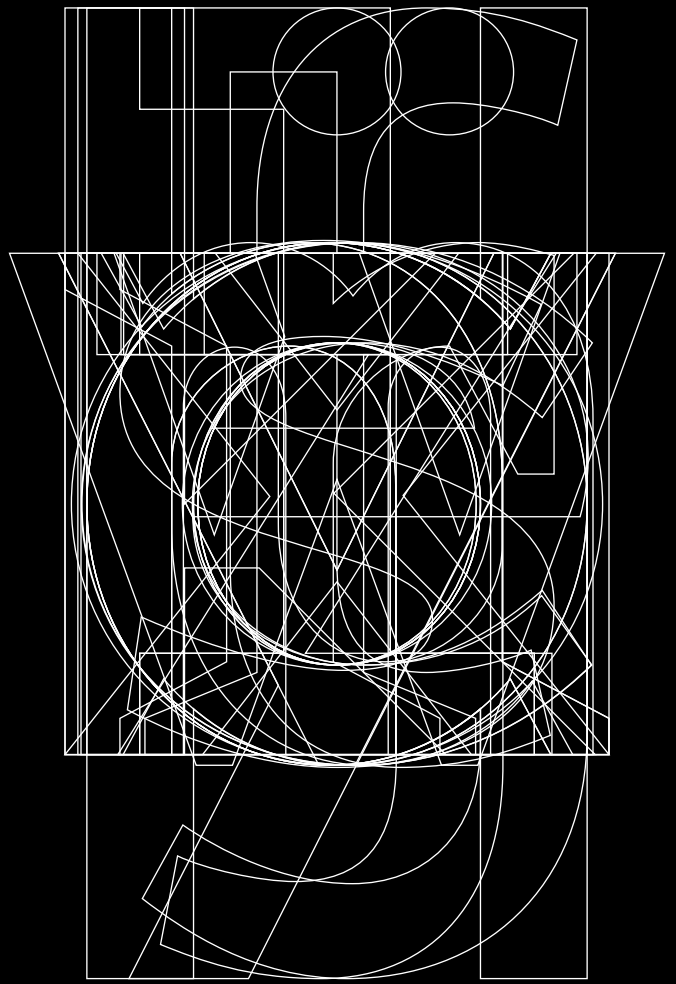
SPACE PROBE:

Investigations Into Monospace

Introducing Base Monospace



SPACE PROBE:

Investigations Into Monospace

Occasionally, we receive inquiries from type users asking us how many kerning pairs our fonts contain. It would seem that the customer wants to be dazzled with numbers. Like cylinders in a car engine or the price earnings ratio of a stock, the higher the number of kerning pairs, the more impressed the customer will be. What they fail to understand is that the art of kerning a typeface is as subjective a discipline as is the drawing of the letters themselves. The fact that a particular typeface has thousands of kerning pairs is relative, since some typefaces require more kerning pairs than others by virtue of their design characteristics. In addition, a poorly spaced typeface will indeed require more kerning pairs to correct its spacing errors than a typeface that was optimally spaced to begin with. Therefore, the need for a large number of kerning pairs could actually be indicative of a poorly produced font. High kerning pair counts are also misleading because the font can be poorly kerned or kerned in a way preferred by the font designer, not the end user. Finally, the user should keep in mind that the kerning pairs provided in a font are most suitable when the font is set with regular tracking; when tracking is changed, particularly when it is tightened, this usually requires modifications to the kerning pairs.

At the opposite extreme of kerned typefaces lie monospaced fonts, many of which manage to be highly legible despite the fact that they contain not a single kerning pair. Monospaced fonts assign each character an identical width, whereas proportional typefaces use varying character widths, which position individual letters on set widths that vary depending on the width of each character.[1] When combined to make words and sentences, the individual letters appear to be evenly spaced and kerning is used to further optimize spacing between difficult combinations. Monospaced typefaces were originally designed to deal with the mechanical restrictions of composing systems such as the typewriter,

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Base Monospace Wide Bold

1. Monospaced Versus Proportional Spacing

monospaced
typeface

In a monospaced typeface, such as Base Monospace, each character fits into the same character width.

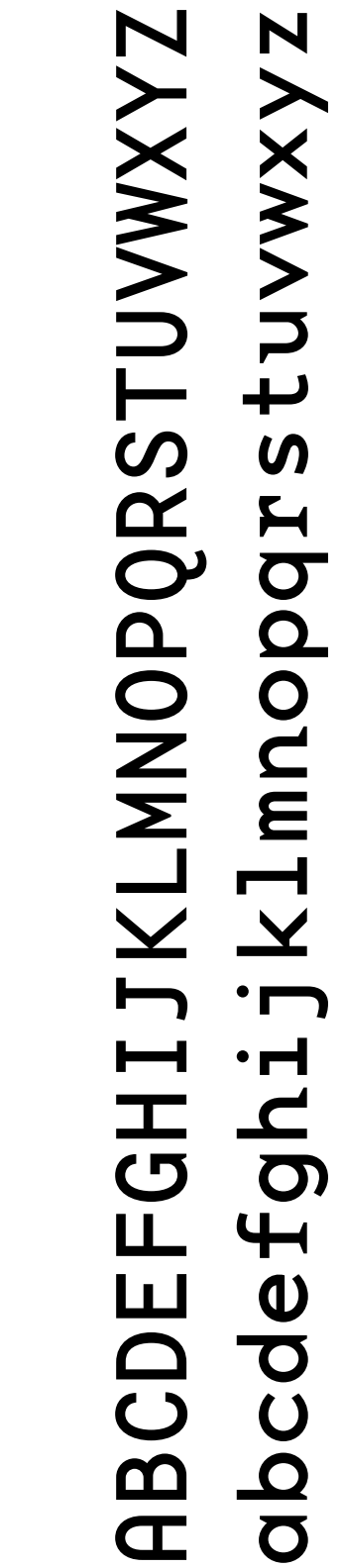
proportional
typeface

In a proportional typeface, such as Filosofia, each character width is different to accommodate the particular width of each character.

which forced each character to have the same single set width. Thus, the narrow “i” is set on the same base as the wide “w,” resulting in a somewhat irregular looking letter spacing. Base Monospace, as its name implies, belongs to this category of typefaces characterized by letter designs that each occupy a single set width, like the infamous typewriter font Courier (designed in 1956 by Howard Kettler), and the many other monospaced fonts that inspired its design.[2]

The difficulty with monospaced fonts is that they do not easily conform to traditional notions of good typography. Traditionally, when setting a text, the object is to maximize spacing and kerning to a point where a text appears an even “color” when viewed at reading distance. However, while this might be desirable visually and esthetically speaking, it does not automatically render the text more legible. In fact, perhaps, even the opposite is true. When you have perfectly rendered type printed on the smoothest of papers and impeccably kerned, a text can easily appear too stark and machine-made looking and might, in effect, overshoot the mark of legibility.

Monospaced typefaces, on the other hand, live safely on the “vernacular” side of legibility. When set in text, they do not generate a silky smooth image on the page. The “i” “l” and “j” usually float in their spaces, while the “m” and “w” are squeezed in, creating a somewhat jarring text image. Still, monospaced typefaces might have a leg up in the legibility department. Since the typewriter was an affordable and easy to use typesetting tool, it rapidly became the standard for academic, business and legal writing, and for formal and informal correspondence. Despite its esthetic handicaps, it was able to establish a look and feel that became accepted as a highly functional means of communication all over the world. If it is true that people read best what they read most, then monospaced type must contain plenty of features worth considering when exploring legibility.[3]



Base Monospace Wide Regular

2. Filling the Mono-Space

The first step in designing Base Monospace was choosing the model character width. To facilitate a harmonious relationship with the screen fonts, the goal was to select a character width that would have a simple ratio to its em-square. The obvious first choice was 100%, or 1:1 the simplest ratio of all, but this idea was discarded since this would have yielded a typeface too wide for practical purposes. Eventually, the 1:2 ratio (50%) was selected as the character width for Base Monospace Narrow, and the 3:5 ratio (60%) was chosen for Base Monospace Wide.

Since every character in a monospaced typeface must fit into the same space, character shapes become stretched and squeezed.

c f i l

Some characters, such as the “c,” “f,” “i,” and “l,” were made wider than usual to fit into the model character width.

d m w

Other characters, such as the “d,” “m,” and “w,” were made narrower than usual to fit into the model character width.

il mw

This stretching and squeezing of characters becomes particularly problematic in the heavier weights; there is usually not enough room to accommodate both the thickness of the stem weight, as well as the complexity of some characters such as the “m” and “w.” The stem weights must therefore be adjusted, and although the stem weights of the “i” and “l” (left) are heavier than the “m” and “w” (right), the overall color density is the same when set in text (below).

Wow, lil
willow mirror
mom morrow.

AAA WWW

One solution to accommodating a bold character is shifting the weight from one part of the letter form to another. These “A” and “W” variations show some of the options. Ultimately, the choice is determined by which is most harmonious within the overall typeface design.

When effective communication is the ultimate goal, it makes sense to consider the tried and true and to sometimes forego imposing preferences that favor esthetics. Base Monospace is designed with this is in mind. Its slightly irregular spacing generates an "informal" look reminiscent of typewriter text, but also of the more intentionally informal look of text often seen in today's more progressive and experimental publications. No doubt many designers will argue against this idea, dismissing Base Monospace simply as a typeface with inferior spacing and therefore difficult to read. After all, we read words, not letters, they'll argue, and "proper" spacing increases the cognition of word shapes. Many words, though, have the same shape, so we cannot ignore the issue of creating individual letter shapes that are easily distinguishable from each other and spacing that emphasizes this. Perhaps the squeezed look of the "w" in Base Monospace makes it look more like a "w," while the open space around the "i" amplifies its "i"-ness.

It is always the challenge of the type designer to create characters that together form a coherently designed alphabet, yet are different enough from each other to distinguish themselves. These are extremely challenging parameters that allow for limitless experimentation. Stanley Morison in his *First Principles of Typography* wrote: "It is always desirable that experiments be made, and it is a pity that such 'laboratory' pieces are so limited in number and in courage. Typography today does not so much need Inspiration or Revival as Investigation."* Base Monospace is one such investigation. To complete the experiment, we count on your reaction.

---

* Stanley Morison, *First Principles of Typography*, New York, The MacMillan Company, 1936.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Base Monospace Wide Thin

3. Alternate Character Forms

A A

In a monospaced typeface, the spacing can be improved if the characters fill out their spaces evenly. For example, the "A" with vertical sides (left) forms more evenly distributed white space in its character cell and will therefore have fewer spacing problems than the "A" with diagonal sides (right):

HHHHH HAHAH
HHHHH HAHAH

rr rr

Similarly, the wider "r" (left) is preferable to the narrower "r" (right), although the aesthetic form of the narrower may be more pleasing outside of the monospaced context.

mmmmm mrmrm mmmmm mrmrm
mmmmm mrmrm mmmmm mrmrm

The wider "r" (top line) creates fewer spacing problems than the narrower "r" (bottom line) when set in text.

W w W w

The spacing characteristics of the various forms have to be balanced with the recognition or legibility of the forms themselves. Therefore, although the "W" and "w" have similar spacing problems to those of the "A," the diagonal-sided "W" (left) was chosen over the straight-sided "W" (right) to improve letter shape recognition, since the straight-sided "w" could easily be confused with an m in text settings:

wow wow mom wow wow mom

S S

Sometimes the selection of one character variation over another is a choice between the importance of its aesthetic form versus its function within the rest of the typeface. Although the open "S" (right) may have been more appropriate from a formal standpoint, the enclosed "S" (left) was chosen; its vertically curved end strokes enclose the space more effectively and therefore more clearly define the interior versus exterior white space. This reduces spacing problems, as well as gives the appearance of a narrower form that fits more comfortably within the fixed character space:

SPACES SHAPES ASHES
SPACES SHAPES ASHES

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789!?#$&()[]{}/\%*=

Base Monospace Wide Light

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789!?#$&()[]{}/\%*=

Base Monospace Narrow Light

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789!?#$&()[]{}/\%*=

Base Monospace Wide Regular

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789!?#$&()[]{}/\%*=

Base Monospace Narrow Regular

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789!?#$&()[]{}/\%*=

Base Monospace Wide Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

0123456789!?#$&()[]{}/\%*=

Base Monospace Narrow Bold

SPACE PROBE:

Investigations Into Monospace

		Base Monospaced **Narrow**					Base Monospaced **Wide**				
The body, or vertical measurement, of a font is known as the "em-square." In a digital font, the em-square has a resolution commonly divided into 1,000 equal units.	**Em-square Units**	1,000					1,000				
Each character in a monospaced font is of the same width. The character width can be expressed as a number of em units.	**Character Width** In Em-square Units	500					600				
The relationship between the character width and the em-square can be expressed as a ratio.	**Ratio** Decimal Equivalent	**1/2** 0.5					**3/5** 0.6				$\frac{\text{(char width)}}{\text{(em-square)}} = \text{ratio}$
		Each character is 50% of its point size; at 10 point, each character is exactly 5 points wide.					Each character is 60% of its point size; at 10 point, each character is exactly 6 points wide.				
The standard point sizes for computer screen display are: 9, 10, 12, 14 & 18	Standard Point Sizes	9	10	12	14	18	9	10	12	14	18
Applying each of these ratios to each point size results in the character widths per size. The "magic numbers" are highlighted; these sizes yield an even number of points, resulting in an exact match between the screen display spacing and that of the printed page.	Character Width (In Points)	4.5	**5**	**6**	**7**	**9**	5.4	**6**	7.2	8.4	10.8	(pt size) x (ratio)
A common purpose of a monospaced font is to accommodate a particular number of characters per inch; this is called the "pitch." (For example, a 10 pitch font will set 10 characters into an inch; a 12 pitch font will set 12.) There are 72 points to the inch, so the characters per inch count is calculated by dividing 72 by the character point width.	**Pitch** Number of Characters Per Inch	**16**	14.4	**12**	10.9	**8**	13.3	**12**	**10**	8.6	6.7	$\frac{72}{\text{(pt size) x (ratio)}}$
Alternatively, characters per pica can be calculated. There are 12 points to the pica, so the characters per pica count is calculated by dividing 12 by the character point width.	Pica Character Count (Number of Characters Per Pica)	2.67	2.40	2.00	1.71	1.33	2.22	2.00	1.67	1.43	1.11	$\frac{12}{\text{(pt size) x (ratio)}}$