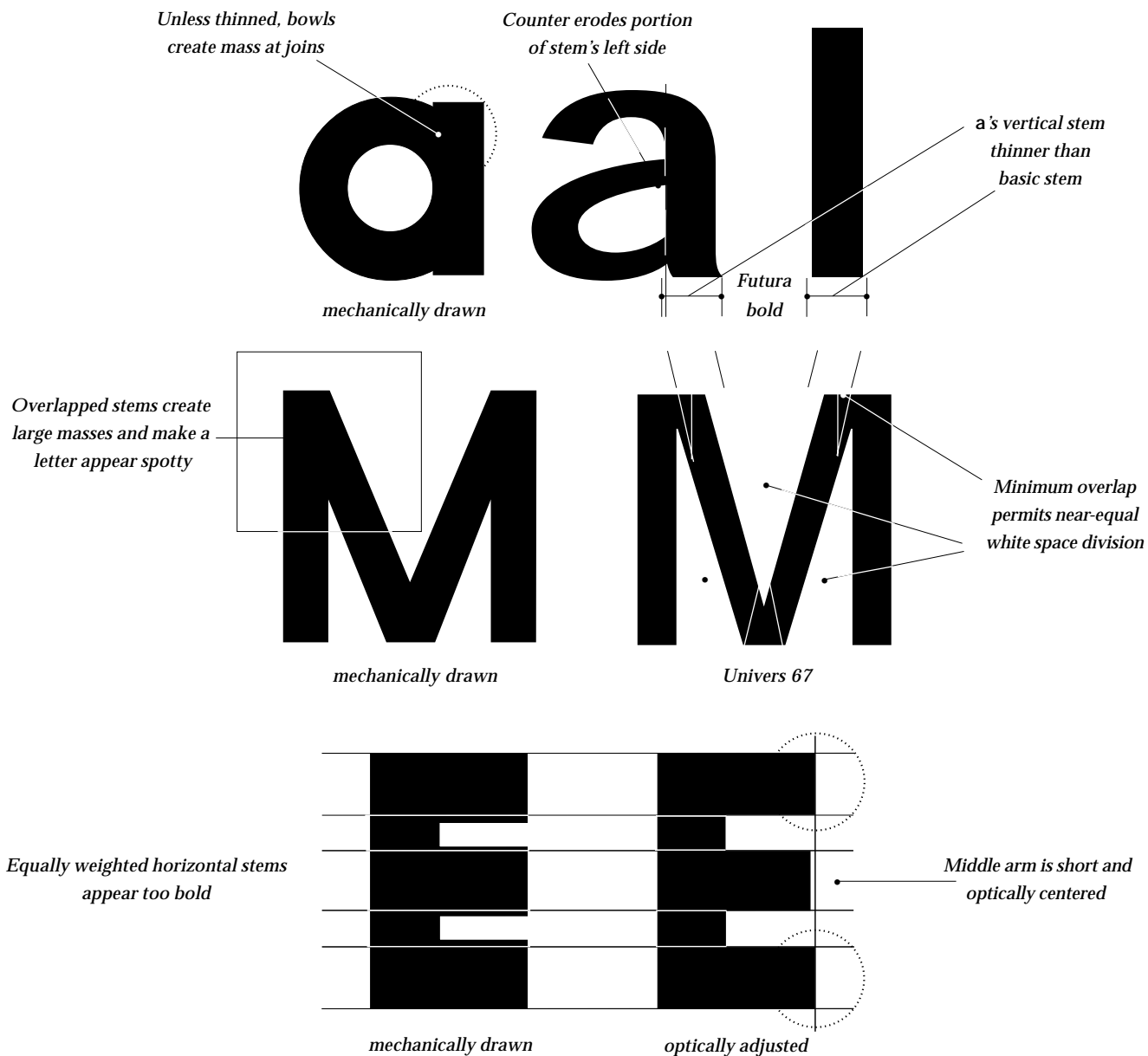


Optical adjustments are vital if a font is to have even color, especially if the font is bold or extra bold. Even color suggests a lack of congested areas. There are three types of joins that require modification: a bowl to a stem (a, b, d, g, p, and q), a diagonal joined to a vertical stem (N),

or diagonal to diagonal (M and W). The first a in the illustration below is constructed mechanically with constant thickness and has a taller bowl to appear the same height as the straight stem. Its constant weight creates a dense area where the curves join the stem. At a large size the top and bottom

clefts of white space are barely defined; if reduced to 8- or 10-point size, all definition will be lost, the junctures will fill, and the character will be even denser. Type designers solve this by thinning the curve's horizontal thickness as it joins a stem, exercising care not to flatten the curve.



■ Bold letters for use at large size may be drawn with less weight adjustment to the horizontals and diagonals than small letters, because optical adjustments that are made to accommodate the demands of 6-point type may sometimes appear exaggerated at larger display sizes. This

is important in the design of bold sans serif letters, which require thinning where a curve joins to a stem or where two diagonals meet, or a diagonal joins a vertical stem. Horizontals and diagonals should be thinned to appear the same weight as the vertical stems.

The Futura **a** shows that adjustment and tapers at the x-height and baseline. Note that the top and bottom bowl curves are thinner than the center of the vertical curve. This adjustment is made to some degree on all horizontal strokes, straight or curved.

The four mechanically drawn **M** stems are equally weighted, and appear bulky. Beside it, Univers 67 **M**'s diagonals are thinned and are not completely overlapped at the baseline. At cap height, the overlap is even less. In many bold sans, the vertical stems taper to the joining

point; the inner diagonals are parallel. These adjustments are vital if the letter is to color equally with the font's simpler shapes.

The two **W**'s top stem widths shown below are equal. Inner diagonals of the top version have been thinned, the outer stems tapered, and the inner points of

white space widened in efforts to make the four converging diagonals color evenly with the simpler shapes of a font. **K**, **R**, **V**, **X**, and **Y** diagonals require thinning also.



**W**  
**W**

*At a small size, the bottom **W**, whose diagonals have not been thinned and tapered, weights up (schematic)*

