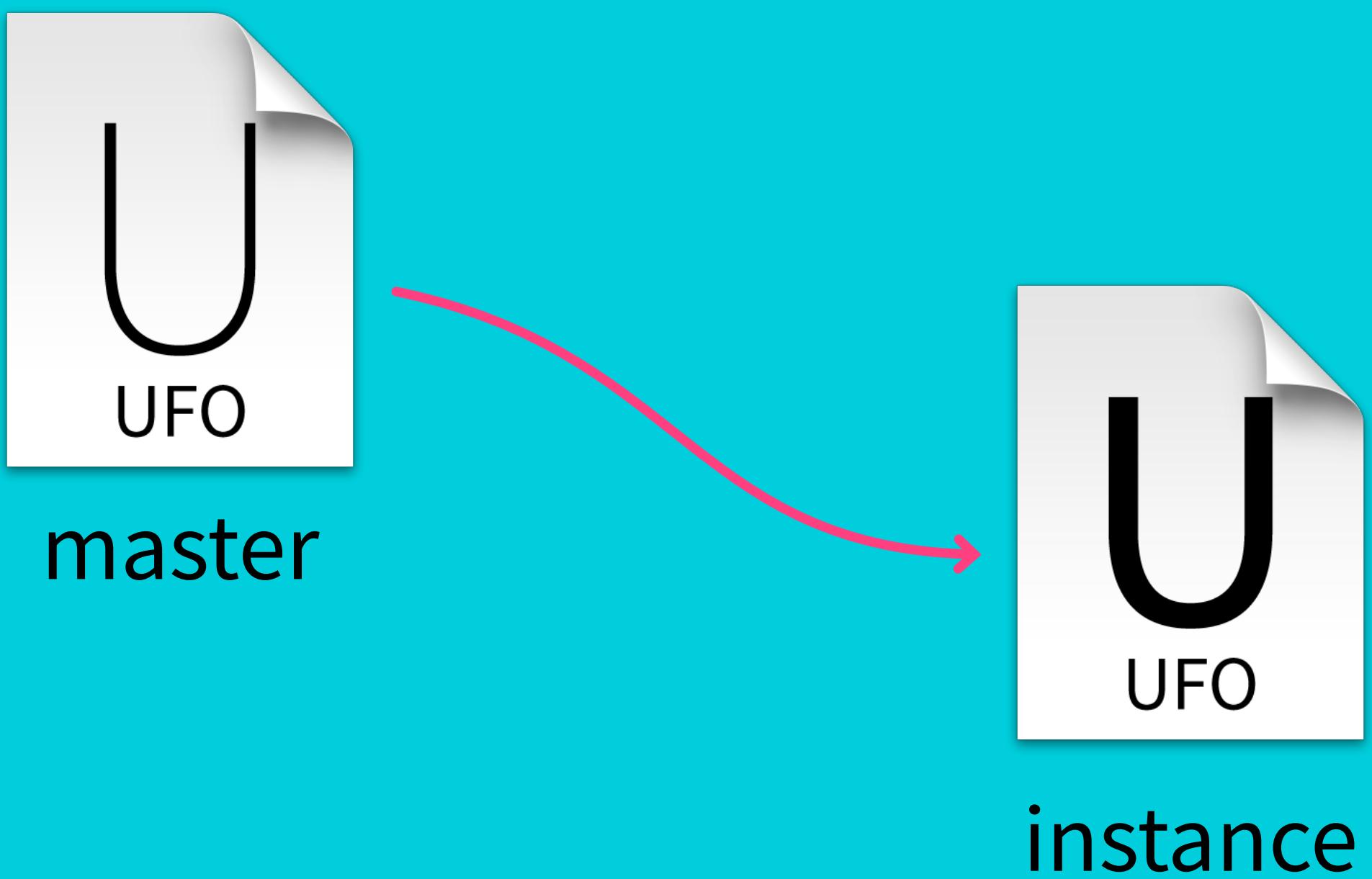


Workshop



Interpolation



Frank Grießhammer
June 6 2016 | T@CW

What is interpolation?

Wikipedia:

In the mathematical field of numerical analysis, interpolation is a method of constructing new data points within the range of a discrete set of known data points.

Typeface Designer:

Interpolation is an invaluable tool, because it allows for creating variations with relatively small overhead.

Using the benefits of interpolation is a good way to make a typeface family much more useful and significant.

What is interpolation?

Erik van Blokland:

If you design a single font, it's an island. If you design more than one, you're designing the relationships, the recipe.

Student:

I'm scared.

Projects like this would simply not be possible.

The full poster (roughly Queen Size)



Interpolated Families

TheSans by Lucas de Groot, LucasFonts (48 styles per slope)

Kepler by Robert Slimbach, Adobe (96 styles per slope)

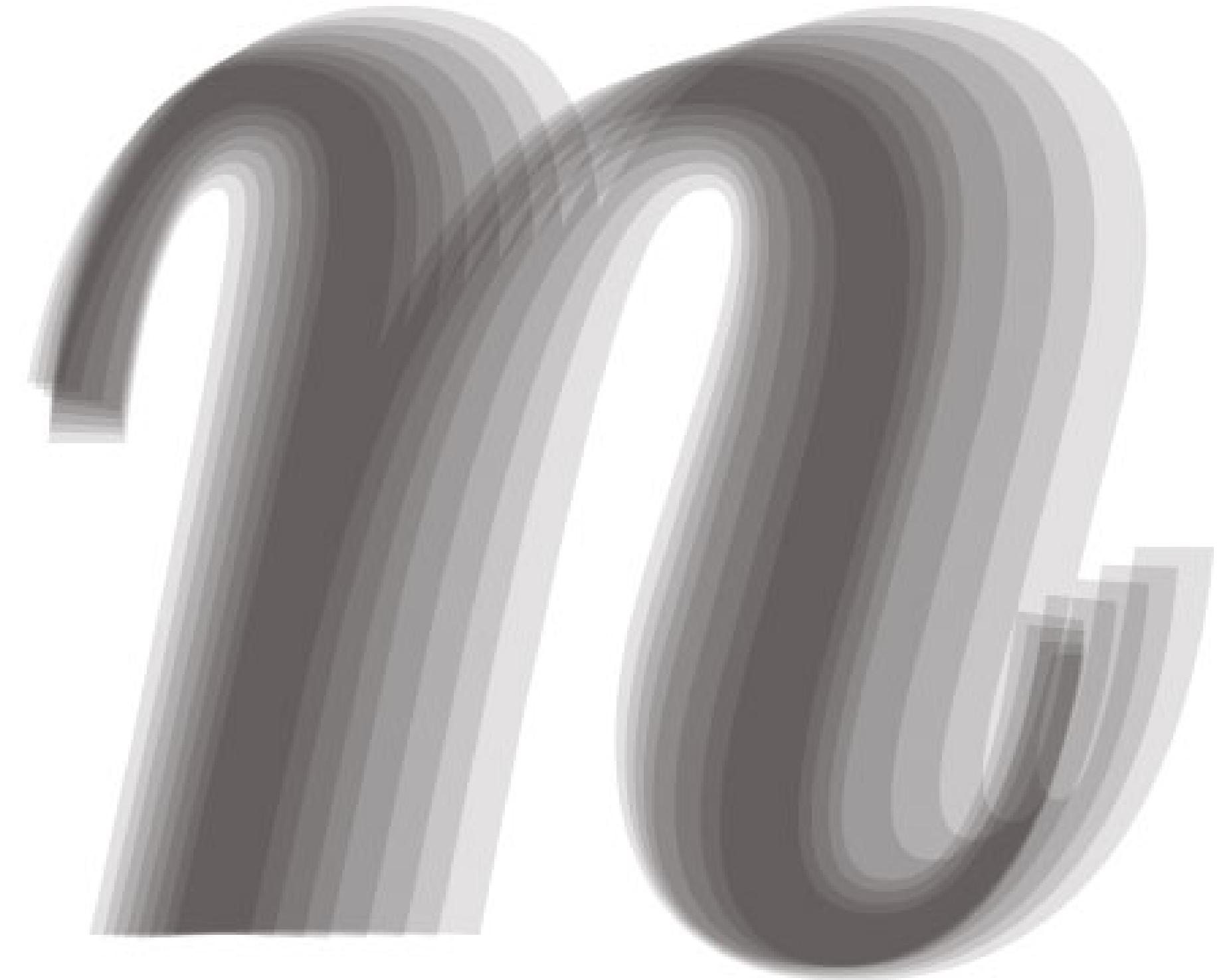
Acumin also by Robert Slimbach, Adobe (90 styles per slope)

What can be interpolated?



Anything that is defined by a number can be interpolated

What is required for good interpolation?



What is required for good interpolation?

Interpolating Pointstructures

D in one or two contours? it depends on the details.



Drawing for interpolation

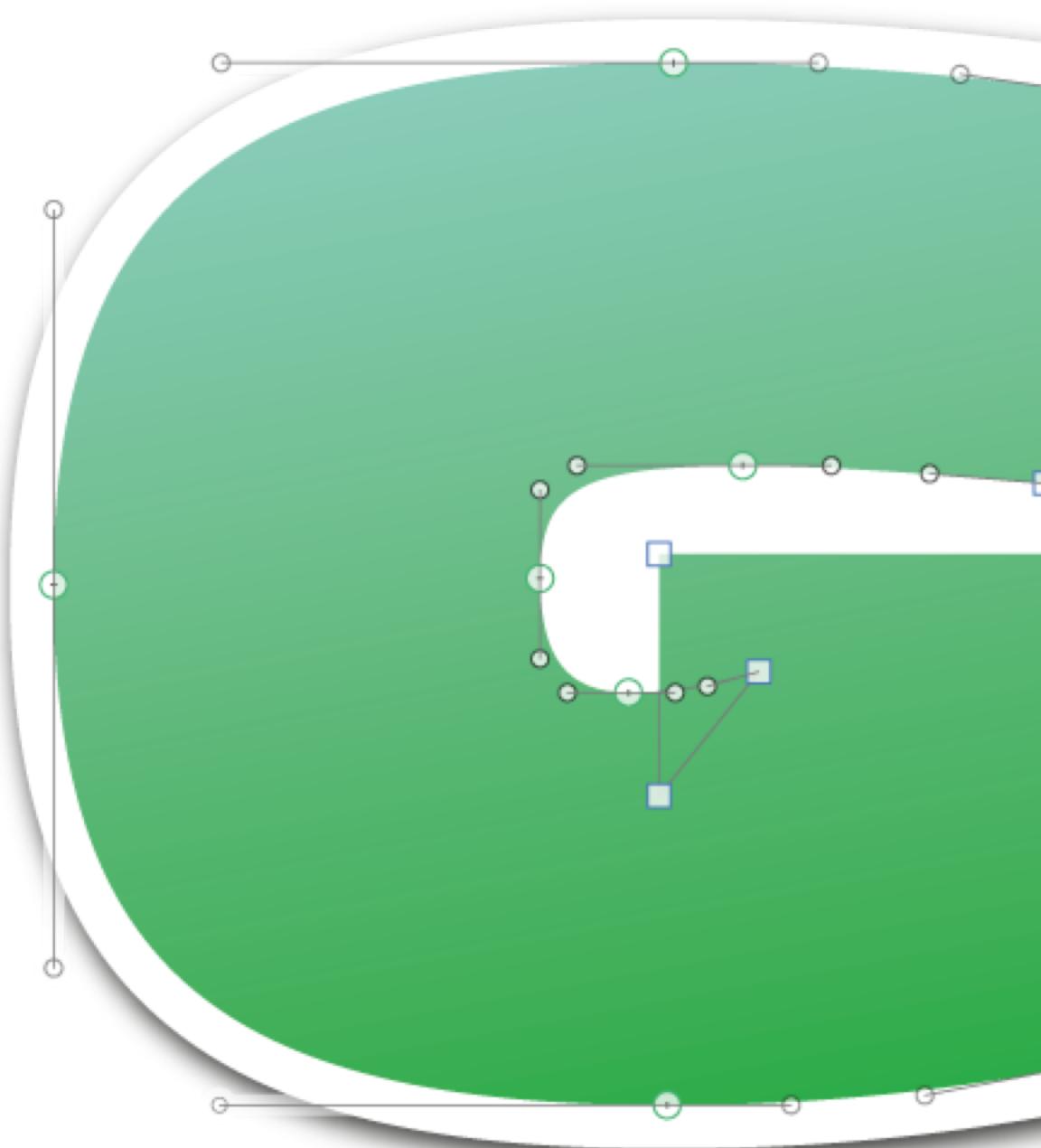
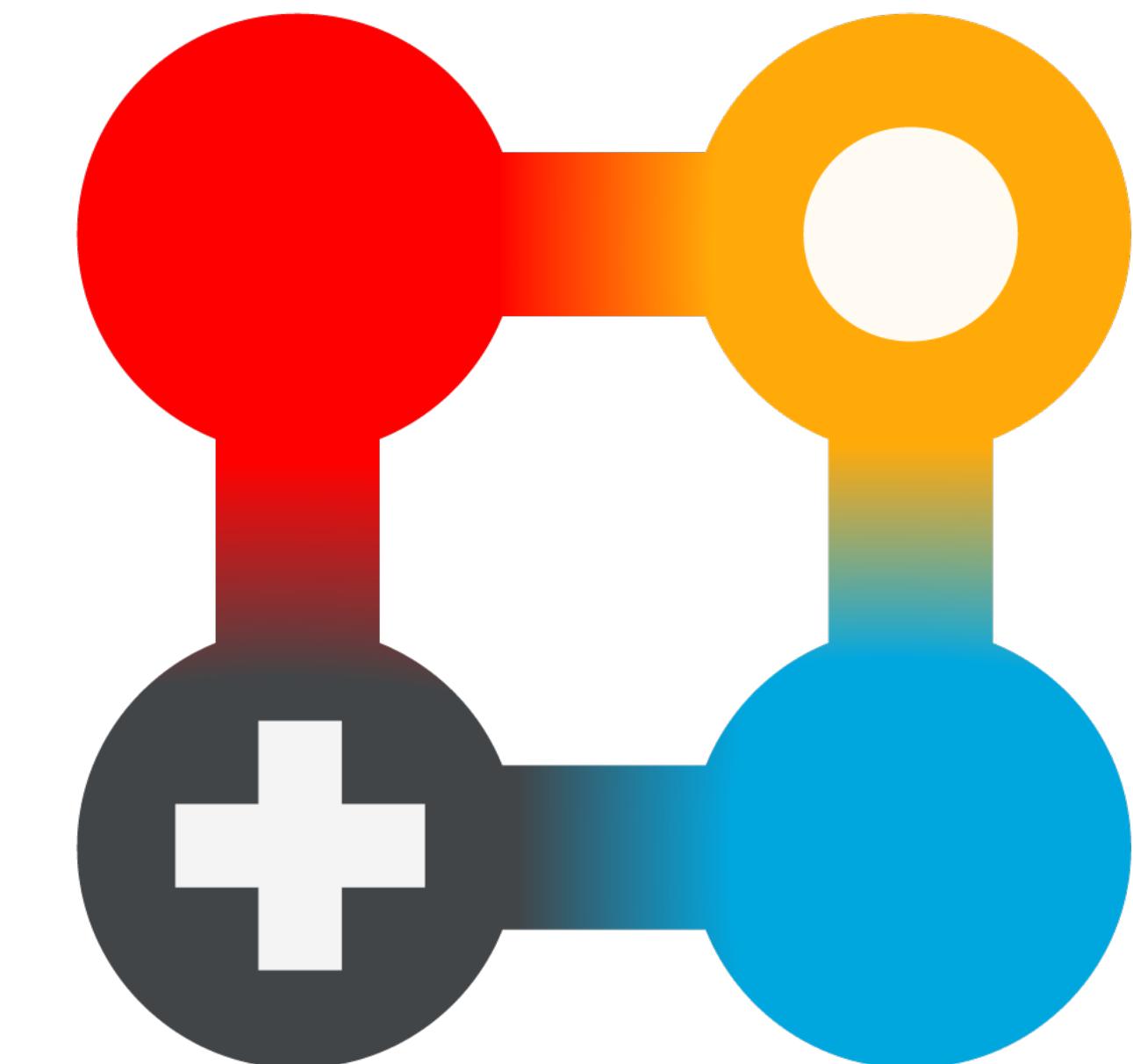
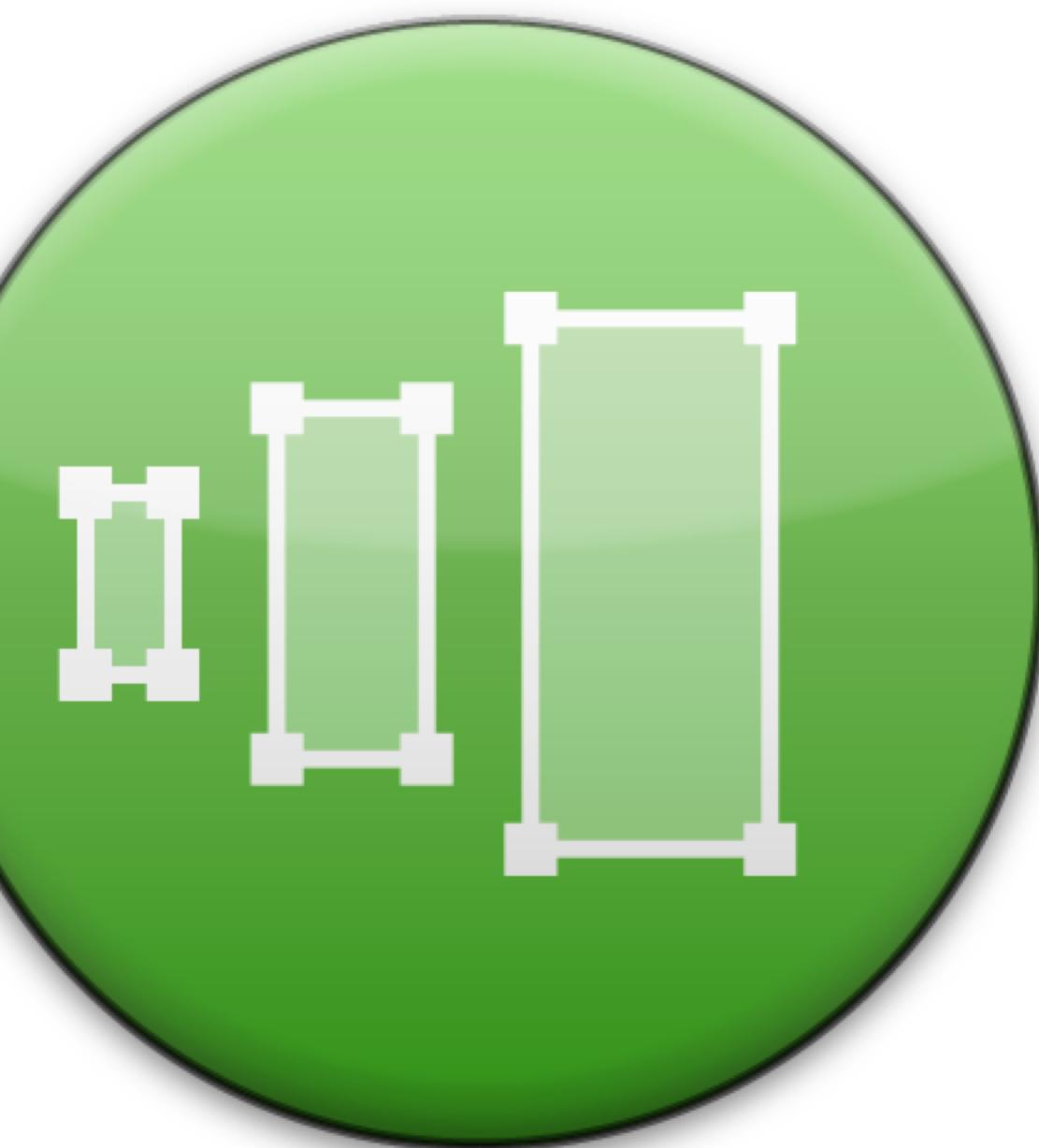
Example point structures for a sans typeface. By no means the **only** way of construction! This should give you an idea of the tricks you can do with contours to make them interpolate and handle better – provided you can remove reliably overlaps afterwards. The actual structures for your design can be different.

General guidelines:

- split strokes into separate entities, either as separate contours, or as 'disjoined' paths.
- sometimes it can be advantageous to combine two paths into one shape, so that the glyph has only one contour.
- sometimes the opposite: split one glyph into separate contours to make each contour represent one stroke.
- sharp corners can be 'disjoined'
- sometimes it helps to plan these things before you draw or digitize them.

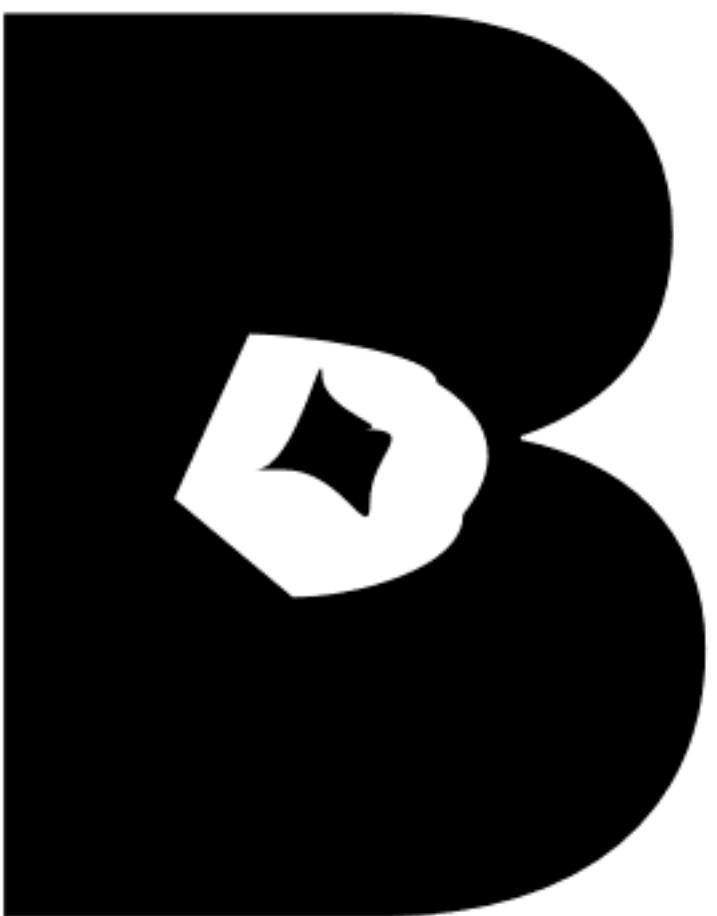
TypeMedia, Erik van Blokland, 2004

Interpolation Tools



Interpolation requirements/caveats

- point structure/logic
- interpolation “kinks”:
BCP angle, relation, length



Interpolation Concepts

For type users:

MultipleMaster (Adobe, first seen in Adobe Type Manager)
QuickDraw GX (Apple, e.g. Skia)

For type designers:

MultipleMaster (zombie implementation in FontLab, Glyphs)
MutatorMath (Superpolator, Robofont, command line)

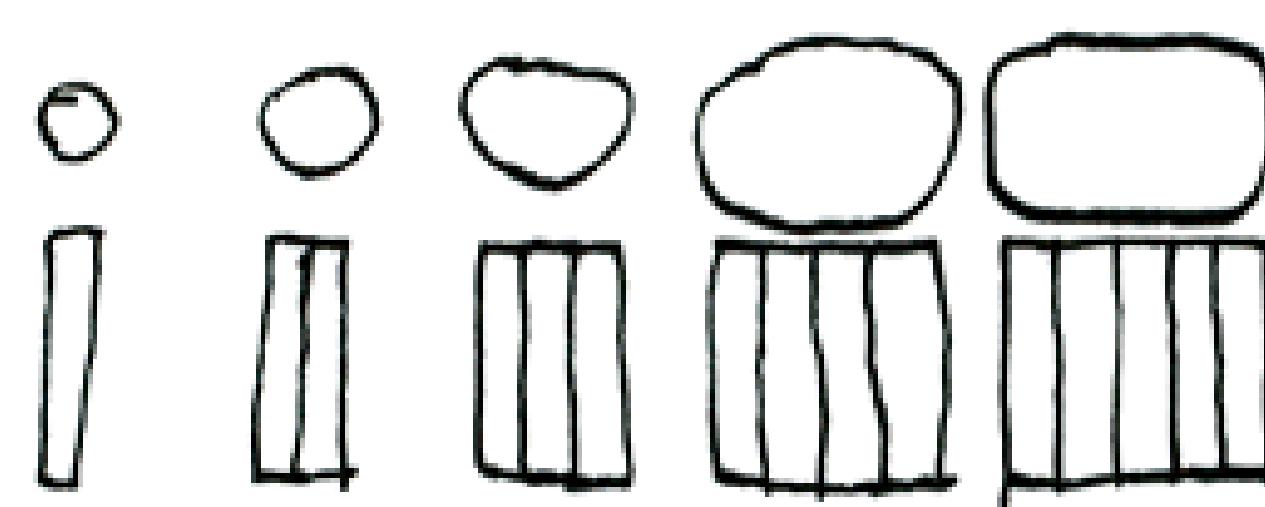
Behind the scenes:

Adobe Sans MM (font replacement in PDFs)

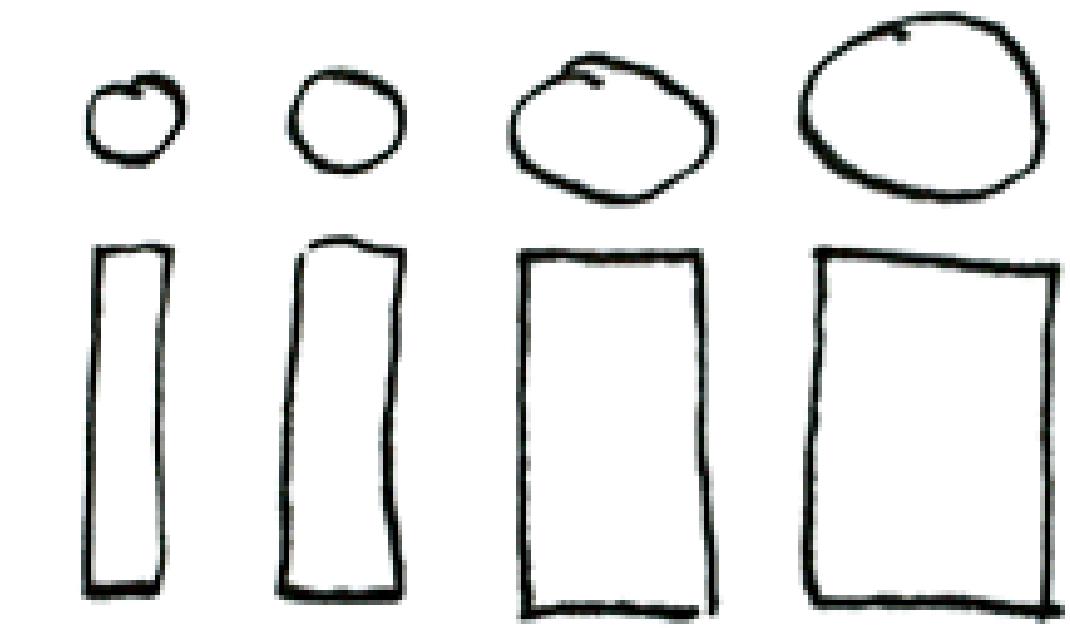
Interpolation Theory by Lucas de Groot

$$n_x = \sqrt[n+1]{a^{n+1-x} z^x}$$

Interpolation Theory by Lucas de Groot



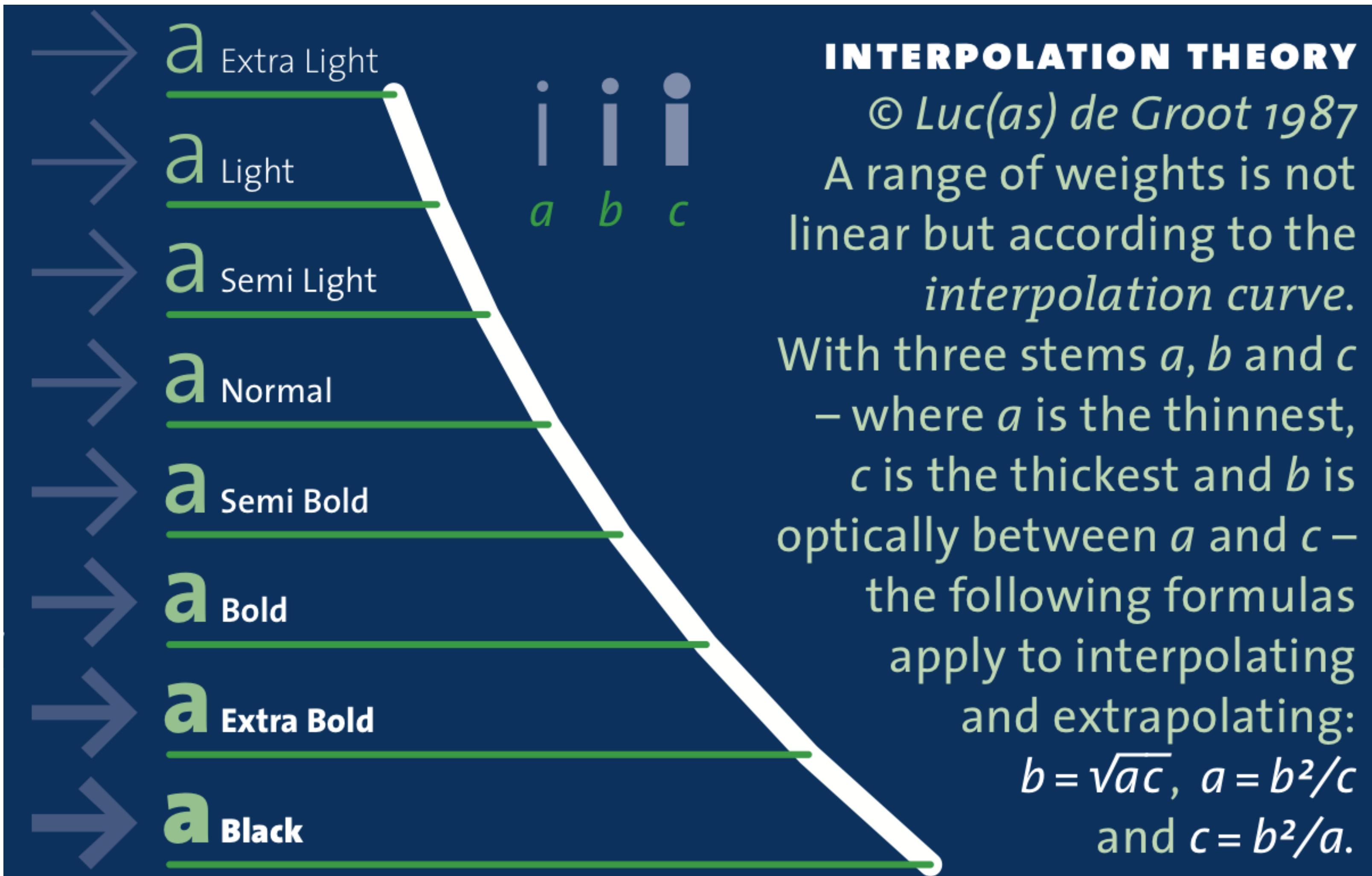
+100% +50% +33% +25%



A B C D

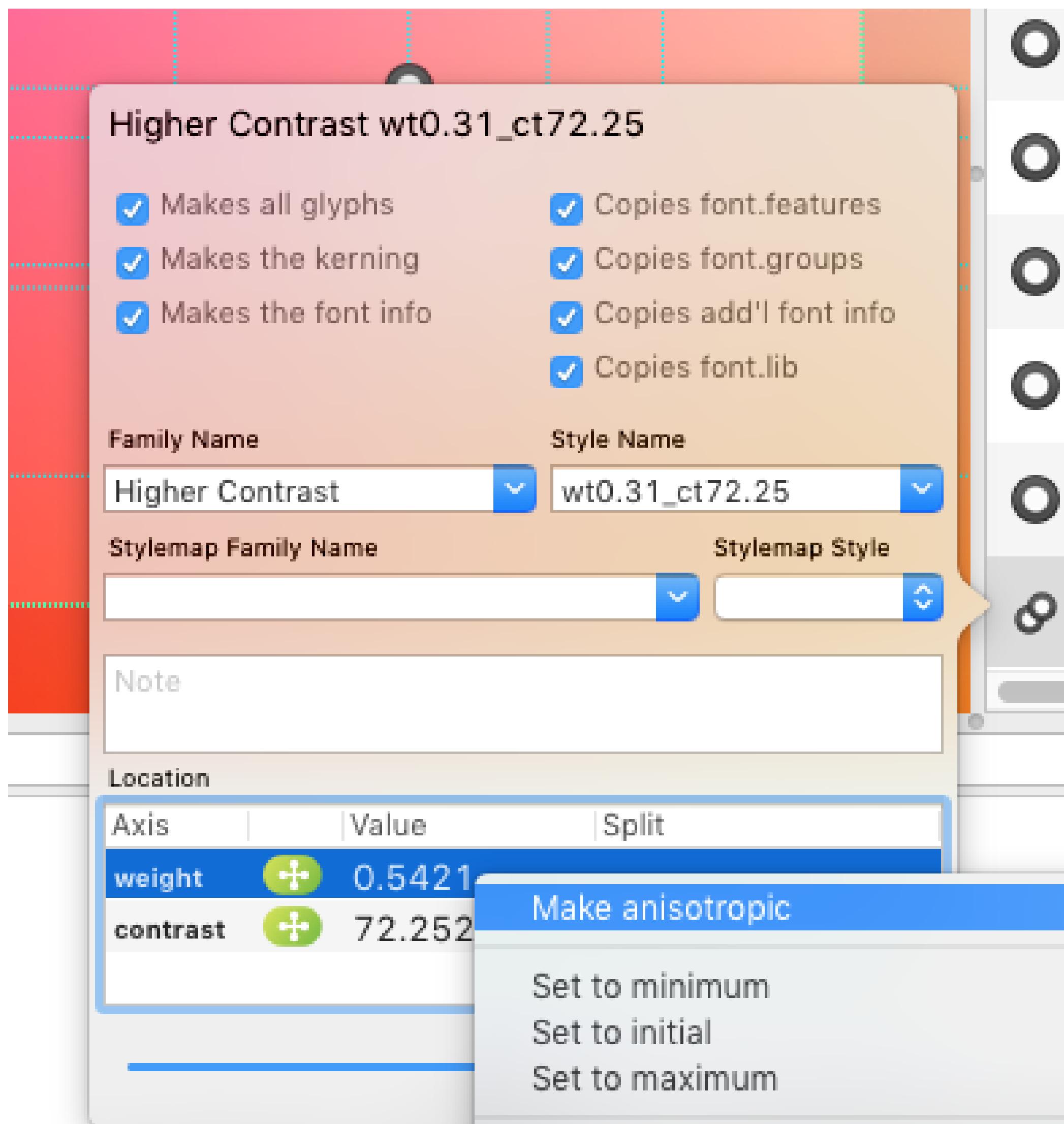
$$A:B = B:C = C:D$$

Interpolation Theory by Lucas de Groot



Anisotropic Interpolation

An interpolation axis is followed, but x- and y- values of the fonts' coordinates are influenced in a different way.



Let's interpolate!

Demo in Superpolator, Robofont, Prepolator
(possibly Glyphs & FontLab)

Q&A