

# Biblica

## Designing a New Typeface for the Bible

Kurt Weidemann

A new typeface, *Biblica*, was designed especially for a new German edition of the Bible. The type designs and production of earlier German Bibles were examined. A variety of legibility factors were taken into consideration to meet a required economy of space and the new production demands of a digital character generation system.

Today, half a millenium after Gutenberg, we have an over-abundance of typefaces. Some, upon their disappearance, would not be missed at all. Each new alphabet faces an existence among thousands of competing forms, where an A is an A and a Z is a Z.

There is no need to design new alphabets for aesthetic or stylistic considerations. New letterforms can hardly be improvements over existing types. At best they may be similar. We should pay our respects to the Jansons, Sabons, Baskervilles, Didots, Bodonis, and Caslons by refraining from laying hands on them to dress them up or to emulate them. Valid reasons for the design of new alphabets, however, may be found in the changing technologies of typesetting, printing production, and in specific adaptation requirements, such as alterations necessary to fit classical originals into modern character generation systems.

Such a specific design requirement was the assignment received from the German Bible Society for a new edition of the Holy Bible. The occasion was the publication in 1982 of the first Bible translation mutually sponsored by the German Catholic and Protestant Church authorities.

The commission for the design of a new alphabet is a service to the reader community moreso than to the client. It must also be a service to the graphic arts and their technological conditions and opportunities rather than to purely aesthetic form considerations. If there is art involved, it must be the ability of the designer to disregard subjective feelings and to strike intelligent compromises from all of those interdependent factors. Just like Bible typography itself, which has slowly evolved over the centuries, a Bible typeface should make no pretensions to extravagance or eccentricity. Functional problems concerning the design of a Bible typeface therefore should be solved rationally instead of artistically/emotionally.

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Figure 1. The first corrected drawings of the light, italic, and semibold weights of Biblica. These drawings were transferred to the alphabet grid of a photodisplay typesetter. Sample lines were composed and subsequently reduced to text size. After revisions in the drawings an entire trial page was composed. The letterforms and legibility qualities of the basic weight of the type style became the deciding criteria for drawing the entire type family. The trial settings first indicated that ligatures were dispensable.

ä p c f ö g h  
k s ü y x z f l  
1 3 4 0 7 8 6  
& > ? , : - ! | ß

Figure 2. Initial finished drawings of Biblica in a height of 120 millimeters. Letters and numerals with identical form elements were derived from a single letterform.

Figure 3. Final finished drawings of the light version of Biblica capitals. Small capitals are indispensable for quality book typography.

Ä B Q D E  
H K M N  
Ä B Q D  
E H K M N R S  
T U V X Y Z



Figure 4. Small caps, oldstyle figures, and punctuation marks of Biblica Semibold.

A number of research activities preceded the actual design work on Biblica. Sample pages of existing Bible editions were blown up to a width of one meter and their letterforms and printing carefully analyzed. The appearance of different Bible editions varied greatly through choice of typeface, typographic arrangement, printing materials, and printing quality. However, common observations were:

1. The strokes of typefaces are generally too heavy, particularly in conjunction with mediocre printing quality.
2. Strong contrasts between thick and thin strokes result in a choppy typographic appearance and reduce reader recognition of distinctive letter characteristics. Poor printing quality causes certain letter details to print too heavily while others disappear altogether.
3. A lower-case letter with generous x-height should permit the use of a more condensed letter shape without impairing legibility.

From the assignment grew a number of detailed considerations. There was never any doubt, for example, that the typeface required for the new Bible edition should have oldstyle roman characteristics, for these reasons:

1. In phototypesetting, alphabets with bracketed serifs retain their edge definition far better than sans-serif styles.

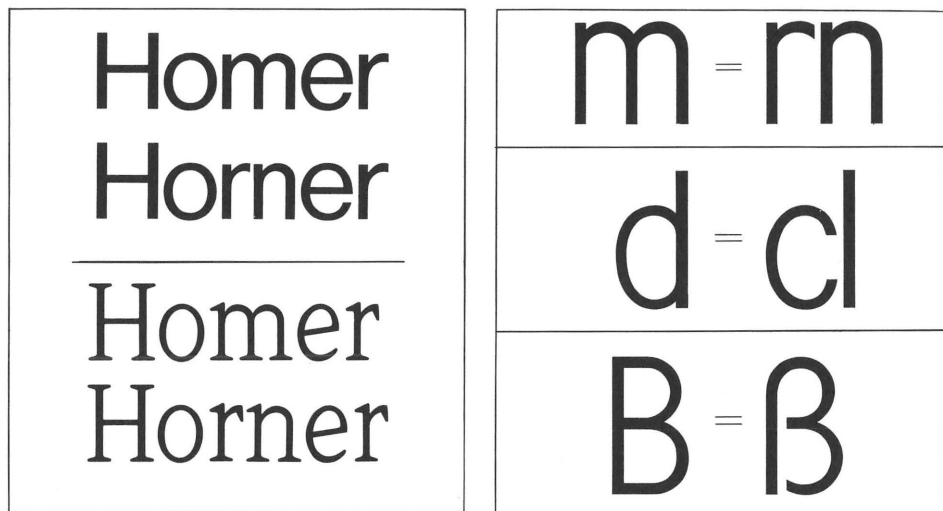


Figure 5. To achieve optimum legibility special attention has to be paid to discernability and form characteristics of individual letters, particularly those that appear with greatest frequency. Lowercase “r” and “n” combinations can more easily be mistaken for an “m” in a sans-serif style than in an oldstyle roman face.

2. The evenness of the strokes of an oldstyle roman letterform assures a more uniform typographic effect and results in reduced show-through as compared to a modern roman typeface with strong contrast between thick and thin strokes.
3. An oldstyle roman face permits a more distinctive shape of individual characters than other serified styles.

Since Bible printing in Germany has converted to roman type from fracture types, of which there are excellent examples, problems of managing the enormous amount of text in the Bible have surfaced again and again. Designers have been hard pressed to find solutions equal to the fracture Bible: its distinctive appearance (especially the capitals), the availability of numerous ligatures, and its relatively condensed letterforms.

The German Bible Society had envisioned to fit about 3600 text characters onto a page of its new Bible edition. The German Bible consists of about 4.5 million characters, which would result in more than 1000 pages for a normal edition. In the early 1960's Hermann Zapf developed the Aldus as a narrower version of his Palatino family. To accommodate the requirements of book publishers for space economy he designed Aldus Condensed which saved between 8 and 10 percent of printing space. If the page is typographically fully utilized, the space savings of Biblica, as compared to normal book types, can amount to as much as 20 percent. This means that the Bible can become 200 pages thinner.

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Figure 6. The expanded font schemes of Biblica Light, Italic, and Semibold. A number of possible ligatures have been added to the light version in order to test additional space savings. Digital character storage in CRT and laser typesetting systems permits such an expansion of the font.

However, the quest for a maximum number of characters per page, in order to save paper and printing costs, was by no means the domineering one. (Although Bibles must be counted among our most inexpensive books, since hardly anywhere is it possible to purchase such an immense number of printed words for so little money.) The designer must, however, consider the handiness of the book and should attempt to eliminate any psychological fear of the reader toward the very length of the Bible text. Every book, indeed, should be designed for optimum lifting and holding by the human hand.

The strokes of Biblica were generally kept light and with a minimum of contrast between stems and hairlines, so that an even, quiet appearance of the page can be obtained, inking during the printing process can be held light and, most importantly, a strong show-through can be avoided.

The mutilation of serifs during exposure, as well as the effects of photographic copying and of printing, can partially be overcome by a sturdier design. The fill-

ing in of corners (e. g., the four inside angles of the “t”), where the horizontal and vertical strokes meet, can be counteracted by a reduction of stroke thickness. Corners that are rounded off during the reproduction and printing steps must be exaggerated. (The deterioration steps of rounded corners can be measured with a microscope, and from such measurements quality comparisons for typographic reproduction can be drawn.) The human eye is capable of discerning differences in stroke width from 5 to 10 microns (5 to 10 thousandths of a millimeter), i. e., 2.5 to 5 microns on either side of the stroke. A densitometer can accurately indicate differences in gray values.

For a two-column arrangement, as required in our Bible design, 40 to 45 characters per line will still guarantee good word spacing and acceptable word breaks. The proportions of the letters, their width and height relationships, differences between counters and inside spaces and interletter spacing, relative x-height, stroke thickness, point size, word spacing, line length, line spacing (leading), and page depth are all closely dependent upon each other in determining readability qualities. The type area has to be framed by an economically feasible amount of white space and should be pleasantly proportioned. Slightly toned, off-white paper and matte inking aid legibility. Typographic variables will influence legibility more deeply than a slightly more or less legible typeface.

In the letterpress printing process of pre-electronic times the punchcutter had to foresee the effect of the impression of the raised type into the paper in his design. In photo- or digital typesetting and offset lithography or rotogravure, instability in the emulsion or exposure and changes in the light sources or the copying steps can irreparably affect the final printing of the type. To gain optimal edge sharpness and to stabilize it through all of those manifold steps is the task of the technicians. Yet type design has to counteract all known and possible sources of difficulties. So-called “aesthetic programs” in computerized phototypesetting are necessary. Yet they increase the cost of composition and should be kept to a minimum through effective type design.

*Biblica* was originally conceived for a specific digital character generation machine, not for half a dozen competing phototypesetting systems with an equal number of design adaptations which more or less deviate from the original design despite a common name for the typeface. Based on the premise that the letter, the word, the line, and the column present themselves to the typographically untrained eye, the initial sketches for the new Bible type were made without technological considerations. They were rendered freehand, so to speak, from the eye of the designer to the eye of the reader. The special requirements and conditions imposed upon the typeface during typesetting and printing production were tested and considered at a later stage (e. g., the sawtooth effect of the raster upon the character edges in digital composition). Controlled conversion into digital form, exposure tests, and visual and densitometric checks, after all, serve

<sup>31</sup>Terach verließ mit seinem Sohn Abram, seinem Enkel Lot und seiner Schwiegertochter Sarai die Stadt Ur, um ins Land Ka-

naan zu ziehen. Sie kamen bis nach Haran und blieben dort. In Haran starb Terach im Alter von 205 Jahren.

### Die Urväter Israels (Kap. 12–35)

#### Gott beruft Abram (Abraham)

**12** Der Herr sagte zu Abram: »Verlaß deine Heimat, deine Sippe und die Familie deines Vaters und zieh in ein Land, das ich dir zeigen werde!<sup>2</sup> Ich will dir viele Nachkommen schenken und dich zum Vater eines mächtigen Volkes machen. So wirst du in aller Welt berühmt; an dir wird sichtbar werden, was es bedeutet, wenn ich jemand segne.<sup>3</sup> Alle, die dir und deinen Nachkommen Gutes wünschen, werde auch ich segnen. Aber wenn einer euch Böses wünscht, dann trifft ihn mein Fluch. Alle Völker der Erde werden Glück und Segen erlangen, wenn sie dir und deinen Nachkommen wohlgesonnen sind.«

<sup>4/5</sup>Abram folgte dem Befehl des Herrn. Er war fünfundsiebzig Jahre alt, als er seine Heimatstadt Haran verließ. Seine Frau Sarai und Lot, der Sohn seines Bruders, begleiteten ihn. Sie nahmen ihren ganzen Besitz mit, auch die Sklaven, die sie in Haran erworben hatten, und zogen in das Land Kanaan, in dem damals noch die Kanaaniter wohnten.<sup>6</sup> Sie durchquerten das Land bis zu dem heiligen Baum bei Sichem.

<sup>7</sup>Dort erschien Gott Abram und sagte zu ihm: »Diese Land will ich deinen Nachkommen geben!« Abram baute dem Herrn einen Altar an der Stelle, wo er ihm erschienen war.<sup>8</sup> Von dort aus zog Abram in das Bergland östlich von Bet-El. Seine Zelte standen zwischen Bet-El im Westen und Ai im Osten. Auch dort baute er einen Altar und betete zum Herrn.<sup>9</sup> Dann zog er von Lagerplatz zu Lagerplatz immer weiter nach Süden.

#### Abrams Bewahrung in Ägypten

(vgl. 20,1-18; 26,6-11)

<sup>10</sup>Damals brach im Land Kanaan eine schwere Hungersnot aus. Darum zog Abram noch weiter, um in Ägypten Zuflucht zu su-

chen.<sup>11</sup> Als er an die ägyptische Grenze kam, sagte er zu seiner Frau Sarai: »Ich mache mir Sorgen, weil du so schön bist.<sup>12/13</sup> Wenn die Araber dich sehen, werden sie sagen: »Das ist seine Frau«, und sie werden mich totschiessen, um dich zu bekommen. Sag deshalb, du seiest meine Schwester, dann werden sie mich am Leben lassen und deinetwegen noch besonders gut behandeln.«

<sup>14</sup>In Ägypten traf ein, was Abram vorausgesehen hatte. Überall fiel Sarai durch ihre Schönheit auf.<sup>15</sup> Die Hofleute erzählten dem Pharao von ihr, und er ließ sie in seinen Palast holen.<sup>16</sup> Ihr zuliebe war er freundlich zu Abram und schenkte ihm Schafe und Ziegen, Rinder, Esel und Kamele, Sklaven und Sklavinnen.

<sup>17</sup>Der Herr aber bestrafte den Pharao und seine Familie mit einer schweren Krankheit, weil er sich die Frau Abrams genommen hatte.<sup>18</sup> Da ließ der Pharao Abram rufen und sagte zu ihm: »Warum hast du mir das angetan? Du hättest mir doch sagen können, daß sie deine Frau ist! Aber du hast sie für deine Schwester ausgegeben, nur deshalb habe ich sie mir zur Frau genommen. Nun, sie gehört dir; nimm sie und geh!« Der Pharao befahl einer Abteilung Soldaten, Abram mit seiner Frau und seinem ganzen Besitz über die Grenze zu bringen.

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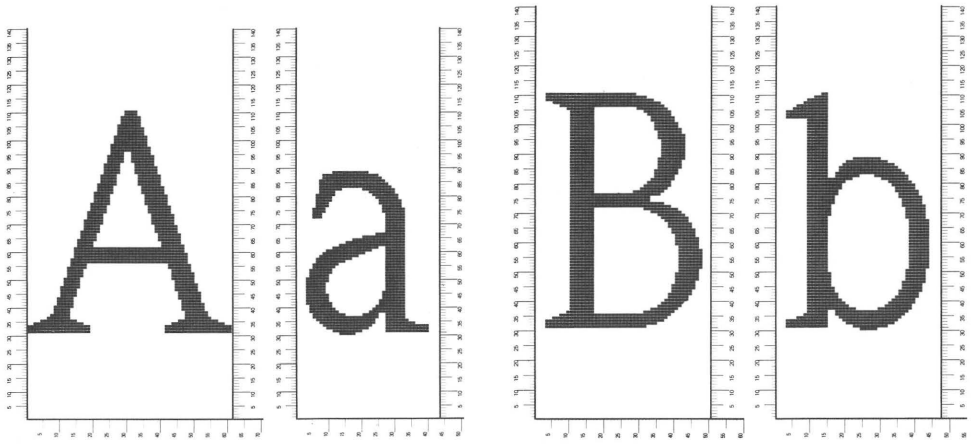
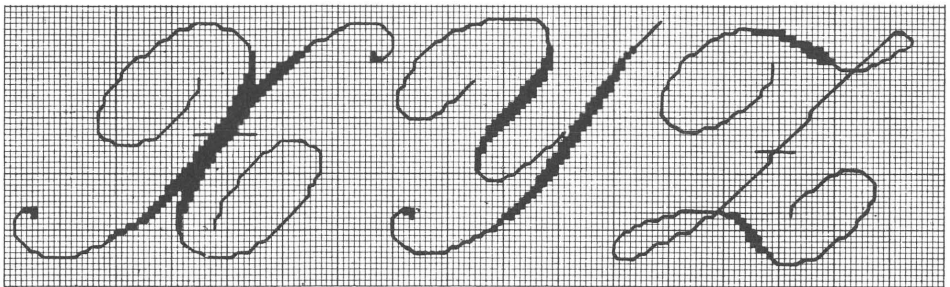
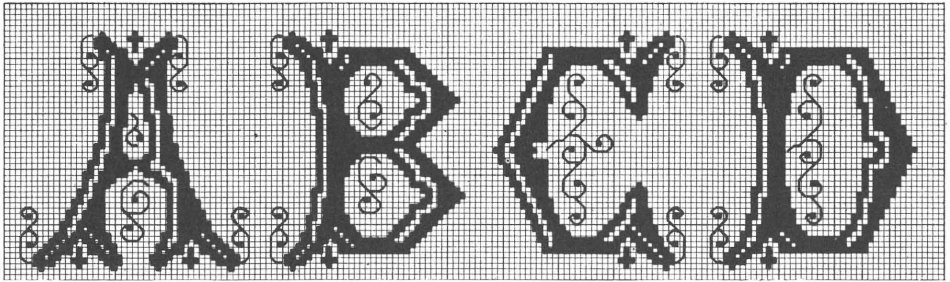


Figure 8. Digitization pattern on the basis of the master drawings. A steeper arrangement of the serifs permits rastering in uniform starsteps.

Figure 9. The principle of digitization, a binary (on-off) decision, had already been used in needlepoint patterns of the nineteenth century. These examples come from a textbook for cross-stitching published in Alsace-Lorraine around the turn of the century. Just like the binary coding necessary in digital character generation, this sample indicates the fields that have to be filled and those that must remain empty. The script face shows the problems arising when diagonal strokes are translated into a sawtooth effect.



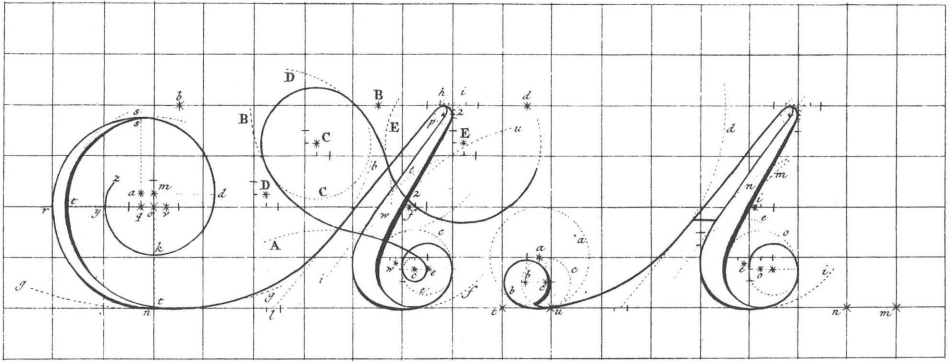


Figure 10. The Dutch writing master, Jan Pas, published a *Mathematical and Scientific Treatise on Writing* (1733) in Amsterdam. The painstaking mathematical reconstruction of circles and ellipses has difficulty in emulating the free-hand flourishes of the pen. Attempts to define type design through measurable, constructible geometric norms have been undertaken from Durer's *Of the Just Shaping of Letters* to the present. But only the breathtaking speed of microprocessors seems to free the design and variability of letterforms from most limitations.

only one purpose: to assure the optimal correspondence between eye and printing type through a faithful reproduction of the letterforms.

Since *Biblica* was conceived only as a text type, no letterform compromises in favor of their appearance as a display face had to be struck. During the metal typesetting era it was customary to produce large and small sizes from separate drawings. Nowadays a single size is normally reduced or enlarged. This, almost invariably, takes place at the expense of form quality in either the larger or smaller size ranges.

The use of italics for emphasis leads to a slightly reduced reading speed. For *Biblica* the italic is not appreciably narrower than the roman version. Italics do not frequently appear in the Bible. But the utilization of semibold display is an old Bible typography tradition. For that weight, a definite stroke thickness increase, compared to the normal text weight, is essential. It serves to structure and optically enliven the page. In addition to lining figures, the new typeface includes oldstyle numerals. Numerals appear in the Bible in sizes smaller than the text, and through their ascenders and descenders oldstyle figures are more legible than lining ones.

*Biblica* has only one ideal set width. It is based on the character width, the stroke weight, and the inside spaces of a type style. It may be technically easy and fashionable to letterspace and kern supertight, but white space reductions often interfere with ease of legibility. A problem is the set width of critical letter combinations. In metal typesetting days one could equalize letterspacing of handset



type with tissue paper and thin copper spaces. The compositor exercised constant spacing control with his eyes and his hands. Nevertheless, he was unable to kern small point sizes. Unpleasant combinations as LA, butting round forms like OC, and parallel verticals like NN are less obtrusive in a more condensed face like *Biblica* than in alphabets which are based on more geometric shapes like squares and circles.

The limitations imposed upon font size by the number of boxes in a foundry typeset, the channels of a magazine, the positions of a matrix case of a metal typesetting machine, or the font master of second-generation phototypesetting equipment have been abolished in digital machines where additional characters can easily be stored. Since the alphabet itself cannot be expanded, the added characters can be ligatures which may contribute to a quicker comprehension of word shapes. In that respect we are returning to the beginnings of type founding. To obtain good word shapes and even line justification, there existed in some instances more than 50 ligatures from the time of Gutenberg (who had 290 characters in his typeset) to the seventeenth-century Dutch typefounders. Gleaned from the scribes, ligatures played an important role during the first century of metal type casting. In order not to impair the even gray value of a line and the uniform appearance of a page, scribes utilized a variety of contractions and omissions. After all, it was impossible for them, when they arrived at the end of a line, to achieve justification by reducing or increasing word spaces, as a compositor was able to do.

The Bible is a book with a three-thousand-year history, during the course of which human mentality and language have undergone continual changes. Its legibility therefore is of utmost importance. One can only deviate from the established forms of our system of symbols, the alphabet, in unnoticeable steps, so that the final consumer – the reader – does not become conscious of them. These deviations must not impair his interest in the contents and his reading flow. When the opportunities of an enlarged x-height and a condensation of the letterforms have been carried beyond a safe point, ease of reading and recognizability of character forms decreases rather than increases. To reach that limit without transcending it is the art of the contemporary type designer.

*Biblica* was designed by Kurt Weidemann. The master drawings were executed by Kurt Strecker, a long-time associate in Kurt Weidemann's studio. The digitization was supervised by Wolfgang Bauer of Bauer & Bökeler Filmsatz GmbH, Denkendorf. The director of the German Bible Society, Gernot Winter, was in charge of the assignment, assisted by his production manager, Hans Peter Sussmann.

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