Freda Sack is a type designer, businesswoman, Board Director for the International Society of Typographic Designers (ISTD), lecturer, mentor, University governor—to name just some of her current roles. Her alphabets will be familiar to both designers and non-designers alike, with thousands having encountered her designs on the dry transfer sheets of Letraset, and many more familiar with her work through the role it has played in having given typographical shape to the commercial landscapes of the United Kingdom and beyond. Her curve cutting skills are the stuff of industry legend, and she has done much by way of nurturing awareness of the value of such skills amongst a subsequent generation of designers through collaboration, training or straightforward enthusiasm, not least Jason Smith (FontSmith) and Henrik Kubel (A2-Type). She has also done much to promote design through the organization of lectures and exhibitions, becoming a catalyst for the celebrated Wim Crouwel show at the Design Museum in London (2011). She has also been a keen protoganist in the promotion of educational events and programs abroad, participating in the first design conference held in Karachi, Pakistan and for many years working with the ISTD in South Africa. Yet her achievements are thinly documented and her own lectures are the exception, not the rule. So it was a pleasure to be able to invite Freda to reflect on her career, which has so ably spanned technologies and change, and bring her perspective to the ongoing discussion of what it is to design a typeface.

Freda Sack

Certainty through craft: a career in type design, from cutting to computing

BY CATHERINE DIXON

CATHERINE DIXON: You trained at Maidstone College of Art (1969–72) in graphic design and typography. When did you first start to realize that you were more interested in the forming of typefaces, than simply in their use? And how were you able to turn that interest into a career opportunity? I am imagining that the role of type designer would not have been so obvious a one to pursue in the early 1970s, and perhaps even less so being a female student.

FREDA SACK: I didn't really choose a career in typography or in type design. I just fell into it. I was eighteen, one year into the sixth form, and interested in literature and art. Calligraphy was one of the strands that fascinated me—well, all sorts of lettering shapes—but I didn't have a clue about typefaces. Perhaps there was a subconscious 'type' infiltration through being a voracious reader! My education had been somewhat haphazard, having attended many different schools due to the family relocating many times with my father's work. Faced with another move we all decided it would be difficult for me to go to yet another school. Someone suggested Maidstone College of Art in Kent and I applied to the School of Printing, which accepted just twelve students in a year, and they took me! It came as quite a revelation that there were such things as fonts/typefaces, or even different kinds. That was the real beginning. I enjoyed the practical approach of working with metal type, bookbinding, photography, etching, lithography, etc. It was a very craft-based course. I also found the history of printing interesting and inspiring. The incunabula period was fascinating, with my first real influence being the beauty of the typefaces of Francesco Griffo and their relationship to the printed texts of Aldus Manutius.

Letraset was a local company and somehow I managed to get an interview with Mike Daines, manager of the type studio based at the factory in Ashford, Kent. The print trade was then still operating as a closed shop, employing only union members. Working in the photographic studio (1972–73) ruining my eyesight retouching for several months earned me entry to the union, after which I was finally able to graduate into the type studio (1973–75 trainee type designer/stencil cutter; 1975–78 type designer/stencil cutter).

I have never considered working with type as being particularly unusual for a female. In fact, I was asked about this in an interview last year, and that surprised me; to be honest, it annoys me. I've always just got on and done my job. I enjoy it and I'm good at it. The School of Printing was quite male oriented, being full of print apprentices working towards their City & Guilds qualifications, but we had to do that as well. Of the twelve of us in my year there were five females, so although they probably thought we were unusual, once the novelty wore off and they saw we were just as seriously 'getting on with it,' there was no issue.

DIXON: Letraset has often been seen as gimmicky, as being something of a joker in the field of typeface manufacture. Yet, its design processes were incredibly rigorous technically, offering what you and others have acknowledged as a singularly robust training in the management of typeforms, not least through the particular skill of stencil cutting. What did that involve?

SACK: At one time use of Letraset was the industry standard for creating artwork with an amazing array of typefaces for professional use. Though people would also actually rub down the spacing bars and leave them under the lettering, maybe hence not too serious a reputation. Essentially though, everything about the process of creating typefaces was very serious, and many well-known designers —Derek Birdsall, Aaron Burns,

Fig. 1, opposite: Freda Sack. Photograph by Robert Taylor.

Fig. 2 Freda (standing) and the staff of the Letraset Type Studio at a meeting with Type Manager Colin Brignall (right), 1970s. Photograph courtesy of Colin Brignall.

Alan Dempsey, Roger Excoffon, Armin Hofmann, Fred Lambert, Herb Lubalin, and Marcello Minale, to name just a few—were associated with Letraset, particularly when they launched the Letragraphica range in 1969.

It was in the Ashford studio that I really started to learn about typefaces. We drew and created artwork for all the classics of type design, working from often poor-quality photographic enlargements of hot metal type proofs. As novices, we all had to practice our skills on Garamond and Helvetica. Other typefaces included Caslon, Plantin, Palatino, Garamond Italic, Commercial Script, Jenson; a range of '20s/'30s Stephenson Blake faces, 1970s ITC faces such as American Typewriter, Lubalin Graph, and Souvenir; and Deberny & Peignot faces. And then, of course, there were the over-the-top and crazy faces as well—it was the '70s! There are simply too many of these to list, but I did work on a number of the winning designs from the international typeface design competition Letraset then held. Without exception, these designs required a great deal of work to bring them up to minimum character set and the required artwork quality. Some were extremely decorative, and needed to be cut at larger sizes to cope with the detail. Initial capitals like Magnificat (Friedrich Peter, 1975) and later Masquerade (Martin Wait, 1977) (fig. 3) sometimes took two days to complete just one character!

Having determined and measured all the different aspects and features of a given typeface, we would then make a 'jig' (fig. 6) and draw the outlines. The jig was a kind of master pattern as a background grid that would incorporate all the essential proportions and stresses as shapes and measurements for drawing up the caps, lower case, and numerals, including: cap, x-, descender and ascender heights; overhangs; stem, horizontal, and curve weights; if a serifed form, then the serif shape, weight, and length, and, where appropriate, the bracket join and baseline scallop; and if an italic, then the ambient angle, and angle differentials for the ascenders and descenders. These were first created as an accurate fine-line drawing on good quality tracing paper, and certain elements were cut to become templates for the repeated shapes. These provided a guide to follow in the creation of a reproduction master for each character. The Rubylith artwork for each master was cut freehand as a stencil, a process originating in silkscreen techniques.

This work was meticulous, with accuracy being essential, though to see the unwieldy looking knives we used to cut the Rubylith artwork you might be forgiven for doubting the potential of this process. Working initially under the expert tutelage of mentor Bob Newman equipped me with the necessary manual skills. The first thing we had to do was make our own knife (fig. 4), which was essentially a long piece of wood with a piece of metal type as a counter balance at one end, and a single-edge razor blade taped to the side at an angle to enable the point to be manipulated freehand. Depending on whether you held the knife near to the blade end or at the far end of the handle would give a range of curves, from very tight to long, shallow sweeps—the knife being held relatively still, while the Rubylith itself was pivoted around by your other hand. It sounds crazy, but it worked. In fact, it was so accurate that to make a perfect shape I could trim off a sliver of Rubylith just the thickness of a hair, and that actually made a difference to a shape.

When starting in the studio we had to practice cutting circles freehand, and then to begin with we drew just the missing characters from otherwise fairly complete alphabets. Eventually we would graduate to 'artworking' entire typefaces—and then, much later, to designing new ones. We generally worked at six to eight inches cap height (see fig. 5), although with more intricate designs we would work at a larger scale.

I later initiated a trial of cutting at four inches to try to see if it was possible to speed up the process and still retain the quality— which reduced by two weeks the usual six-week timescale to draw and cut one typeface, headline character set, one weight/style. We also had to hand space the characters before the artwork was made into the sets of photographic negatives and then positives needed to print the final transfer alphabet sheets. The space bars weren't just for decoration; they provided a pretty good spacing system.

DIXON: In addition to the manual skills, any training in letterforms involves the training of the eyes. And your training must have been thorough. The sharpness of your eyes when assessing type has been recognized and made good use of through your participation in many design juries over the years. To quote your colleague David Quay, "Freda has the remarkable ability to look at any letter or alphabet and say immediately what is badly drawn or too heavy, too wide or narrow within half a gnat's whisker! An uncanny skill I have never seen in another type designer."

SACK: Analysis was key when artworking, and later designing, typefaces at Letraset. At the time I could probably have identified any typeface you put in front of me. I think this created an innate understanding of the proportions and structure of type. Analysis of the individual visual elements of a typeface and learning how they work together is an exercise in breaking down letterforms as structures, which, in turn, enables you to build back up—creating characters to fit in with an existing style, or to create new structures that become different styles/typefaces.

For me then, it's not just about having a sharpness of eye. That would only mean I might be able to see something was wrong, but wouldn't necessarily know how to make it right. What is important is to have the understanding of the structure and proportions of the letterforms, and the ability to know when a curve or a shape is 'wrong,' and what is needed to correct it. This, I believe, is a direct result of an innate relationship with letterforms gained from analysis and then the physical process of creating them (hand/eye/brain). The 'right' shapes become learned in the process. I think that's why I tend to still hold a pencil when art directing, or even just talking about type—the tactile memory is important.

"Initial capitals like Masquerade sometimes took two days to complete just one character!"

Fig. 3 Freda's handcut rubylith master for the initial capital **D** for Letraset Masquerade (Martin Wait, 1977).

Fig. 4, right: Freda's tools: cutting knife (below) and a smaller, lighter knife (above) used to remove or 'weed out' the unwanted rubylith film from the stencil masters.

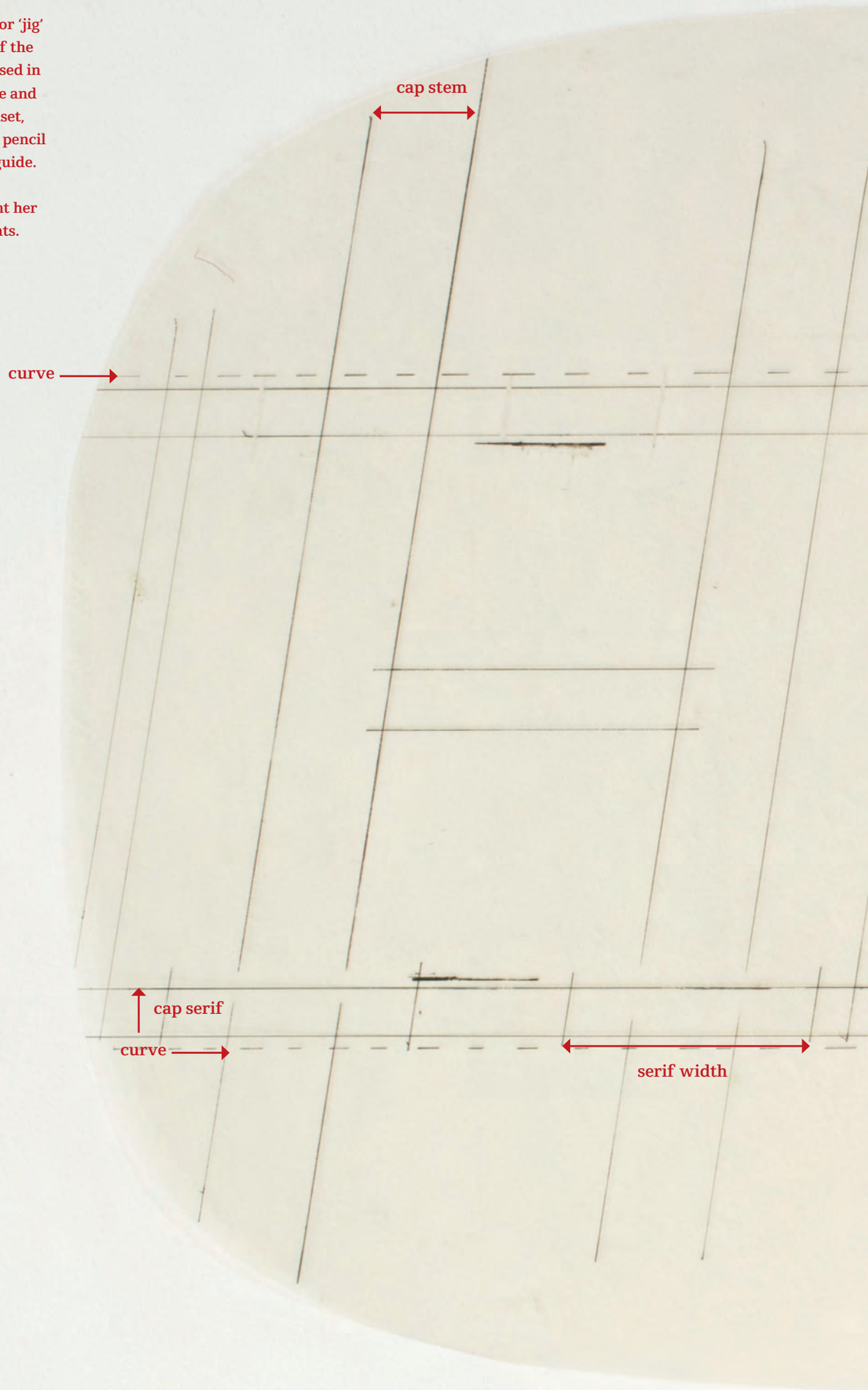
"It was so accurate that to make a perfect shape I could trim off a sliver of Rubylith just the thickness of a hair. . ."

DURING THE 1960s Letraset pioneered a method of stencil cutting as a means of achieving new levels of accuracy in the creation of the photographic reproduction masters needed for each character in a typeface. "Rubylith masking film, manufactured by the Ulano Corporation of New York, was the material chosen to create the stencil masters. Rubylith denotes the color, which is translucent red, and ideal for placing over drawings or artwork and trace-cutting, but essentially to use as a 'line' photographic negative or positive—the red reproduces as black, creating a reverse image. The material is composed of a gossamer-thin layer of red film attached by a light adhesive to a clear polyester base. Once the red surface film is cut, it can be peeled away with the adhesive remaining on the waste material, leaving a perfectly clear base and an edge definition second to none."

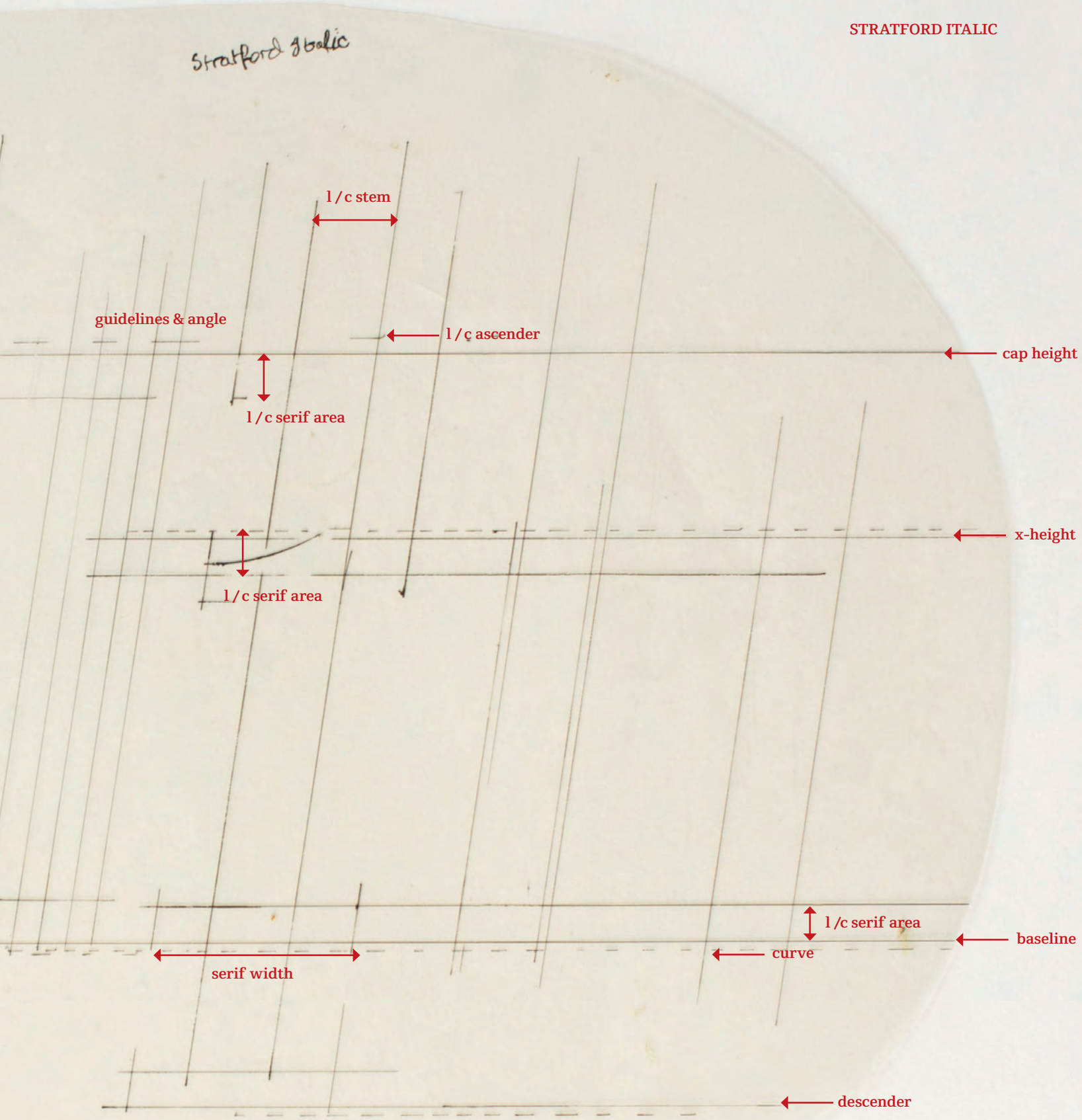
—From Dave Farey et al., *Letraset & Stencil Cutting* (New York and London: International Typeface Corporation and St. Bride Printing Library, 1996), pp. 5–6.

Fig. 5, opposite: Freda's rubylith stencil for Americana (Dick Isbell, American Type Founders, 1965) and an enlarged character from the metal typeface. When apprentice Letraset stencil-cutters gained proficiency they would cut stencils directly from very crude enlargements supplied as visual reference, with no intermediary drawing stage.

Fig. 6 An example of the working guide or 'jig' Freda would typically use, showing all of the different proportional lines and angles used in the drawing of the characters (uppercase and lowercase) for a given typeface. At Letraset, Freda was trained to use blue grids with pencil drawings of salient parts as the master guide. This Rotring pen on acetate jig, here for Stratford Italic, was an innovation taught her by Adrian Williams while she was at Fonts.



l / c = lowercase


Stratford Italic
l / c stem
guidelines & angle
l / c ascender
cap height
l / c serif area
x-height
l / c serif area
l / c serif area
baseline
curve
serif width
descender

DIXON: The ability to draw, and to draw well, was clearly very important for a type designer then. As Colin Brignall, then Type Director at Letraset and responsible for art direction and font design/selection for the Letraset range, recalls from his early visits to the Ashford studio:

> It was immediately apparent that Freda was a talented stencil cutter who had a great sense of curve and who could accurately interpret character shape/style from the roughest of originals. If my memory serves me well, the first typeface I had some influence with Freda was Victorian (1976). Letraset needed a face that represented the Victorian period and Freda redrew this from an old woodcut typeface, warts and all. Her drawings, using a 9H pencil onto a heavy grade tracing paper, were a work of art. She had not only captured the essence of the style but had really knocked it into shape in terms of color, style, balance, and accuracy. Such was the success of Victorian that it was decided to create an inline version with a drop shadow. A design task that required precision, especially to make sure the inline was a constant width. Freda's patience, attention to detail, and her accuracy were much in evidence in the final art. Producing the missing incidental characters extended her skills into design."

Is drawing still key for you?

SACK: Yes—so much so that I can't think without a pencil in my hand. I still have a full-size drawing board—it was a prerequisite when we moved the studio two years ago that the board would be able to fit in the alcove behind my 'conventional' desk.

I do believe that you learn something from drawing that you can't learn any other way. It also makes you see *true* shape—that is, to see shapes in their most accurate, uncompromising, and flowing forms rather than accepting a shape created on screen, which, dictated by the inadequacies of resolution or the way a shape is recreated through pixels or mathematical formulae, can never be as aesthetically accurate as a hand-drawn curve.

DIXON: The original transfer mechanism of Letraset limited the scope of the typeface library, with text faces not a priority for obvious reasons. Yet, as the Design Studio became the Letraset Digital Studio, the possibilities for expanding the Letraset range grew. And so you had to embrace the new digital technologies, bringing, I imagine, a whole new way of working and also a set of new demands in the origination of text faces. Those must have been exciting times to be working in, but also quite challenging?

SACK: Actually, I started to work more with text typefaces while still immersed very much in type design for 'old technology,' and not, at first, at Letraset at all. After six years or so of apprenticeship in the Ashford studio perfecting my hand and eye skills, I saw a job advert for a type designer in London [1978]. Nobody advertised then for type designers. Somehow I had the courage to apply, and found myself working with Adrian Williams at FONTS/Hardy Williams Design in London, at first creating two-inch film fonts for photosetting; we later worked for many of the big type foundries, including Stempel, Berthold, and Linotype. Each foundry used different systems for

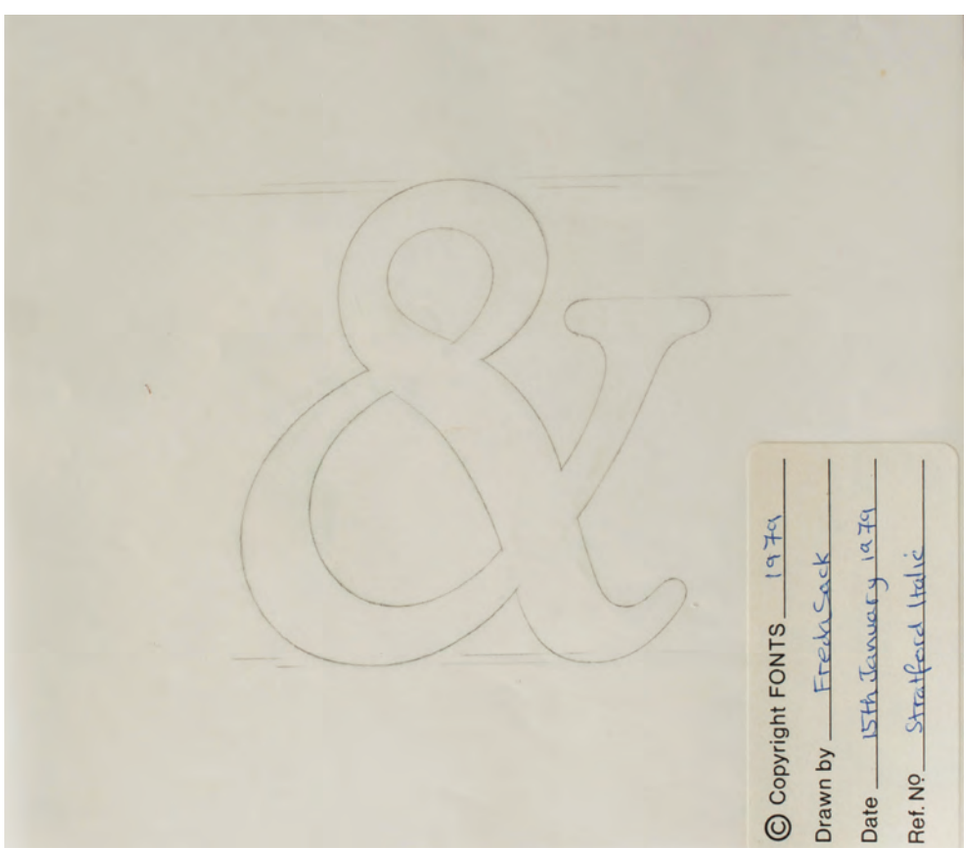


Fig. 7, left: Final pencil outline for Stratford Italic ampersand drawn by Freda while at Fonts. 15 January 1979; Fig. 8, below: The typeface Stratford in use in an advertising campaign for the English Tourist Board, c.1980. The tight setting of the headline copy is characteristic of the 1970s and early 1980s.

creating typefaces that required different ways of artworking and spacing, and the greater emphasis there on text faces meant I was working on character sets that were far more extensive—as was the artwork, especially for Stempel, which took the form of large (approximately A3 in size) pieces of Rubylith called friskets, from which the letters themselves had to be cut out to provide a negative image. In other words, the background stayed and the letters were peeled out. This necessitated a new way of cutting, standing up most of the time so that the whole sheet could be swung round. The cutting line was also from the inside of the letter, so the curves were created differently. Not only that, but the characters were often cut in reverse. It was interesting, though, to learn about these sometimes vastly different manufacture processes. We were also commissioned to do artwork, and sometimes create branding typefaces, for example, for the [British] Post Office and Renault.

It was at this time that I also first had the opportunity to meet more people in the type industry, as we often had to visit the German and Swiss foundries we were working for. We also went to ATypI, which was then the industry annual conference, and often lavishly sponsored by a type manufacturer. My first ATypI was Munich in 1978, where I met Hermann Zapf, Max Miedinger, Mike Parker, Herb Lubalin, Matthew Carter, and Günter Gerhard Lange, amongst others. These were my type heroes! Zapf just because I liked the feel of his typeface designs; Lange for his approach and meticulousness. I was also lucky enough to work with him eventually on a couple of projects. I was lucky, too, to freelance for Matthew Carter working, among other things, on his Galliard typeface for Mergenthaler.

After a couple of years (1980) I was head-hunted (again by Mike Daines) back to Letraset, though this time to the TSI London studio.[1] I knew the company and by then had gained additional experience with text fonts, and with my wider industry manufacturing experience I was perhaps seen as well suited for working with the beginnings of the use of digital technology at Letraset.

For this I trained on the IKARUS system with Veronika Elsner of URW [Unternehmensberatung Rubow Weber]. IKARUS was never a 'type design' system, rather a digital tool to mechanically render artwork for reproduction (see figs. 9–11). Initially the system made use of a flatbed plotter to cut the Rubylith artwork, rather than using our hand cutting skills—although we still had to peel out the background film by hand to leave the letterform master. We would design and draw the typefaces as usual, using the IKARUS software via a hand cursor and command files to 'translate' the design into a digital carrier. This significantly reduced the time needed for the development of a typeface, with it being easier and quicker to create duplicate composite characters and, through the possibilities for interpolating and extrapolating, families of weights. Eventually the process became entirely digital (though still following hand-drawn designs), with the Rubylith stencil-cutting stage rendered obsolete.

The computer running the IKARUS software was the size of a small office. We worked on high resolution 'green screens' (Tektronix, I think), to begin with mostly alphanumerical editing from printouts of columns of figures (fig. 9). In the process of using the IKARUS system we had managed to incorporate some modifications to the digital process that were more in tune with our visual approach. I had personally gone to Hamburg to work with the developers there at URW to make the alphanumeric system, as far as possible, more visually intuitive and user-friendly for type designers. This system was later developed into the more familiar on-screen manipulation of curves, though still only by changing x- and y-coordinate values. It was indeed a painstaking process, though precision in the inputting process and in the markup of characters was key if the resultant character shapes were to accurately represent the original drawn designs.

I think my first truly digital typeface was Proteus, (figs. 12 and 13) which launched in 1983. Letraset fulfilled a dual role in developing existing typefaces and designing exclusive ones. I suppose that by designing new typefaces they could maximize the potential market in the digital arena, by making the fonts available to other film-setting systems such as Berthold, Compugraphic, Mergenthaler, and Stempel. Many type manufacturers produced both the typesetting machines and the fonts for them. Having an exclusive range of fonts could make a big market difference to them and their machine customers. Of the 1983 standard range improvement for Letraset, thirteen of the nineteen typefaces were new and exclusive to Letraset.

There was still a demand for headline typefaces of course, and Proteus was required to fulfill both roles—enough character to speak as a headline, but also neutral enough to work in text. The range of weights reflected this, with the bolder weights clearly aimed at headline. Developing for both text and headline use posed certain design constraints, such as maximum legibility at small sizes, where counter shape, x-height, and serif shape are all important. Initial work was done by hand drawing, and overall I wanted to achieve a soft squarish shape and a large x-height to get the most from the counters with deep cut-ins that would be good for small sizes, and allow space for heavier thin strokes with the bolder weights; to create well-defined, almost rectangular word shapes; and yes, I did also hand-cut some test words. It was quicker than the machine for this stage. The shape was softer in the lighter weights, and squarer in the bolder weights.

After test words were deemed satisfactory, two weights of Proteus were drawn, a regular and a bold, which were input as the basis for a family of interpolated weights. With IKARUS we were able to check small size suitability at an early stage. With a flexible range of weights, the lighter weights had a classical roman pedigree, and the bold weights tended more to the Egyptian slab serif look.

The name Proteus was appropriate. Initially I just liked the sound and form of it, but when I looked it up it turned out that it was the name of a character in

Fig. 9 Veronika Elsner of URW instructing Freda in the use of the Tektronix equipment used to display and edit digitized characters during a ten-day digital training course at TSI in London (April 1979).

The IKARUS System

"The IKARUS system is a concept to automate the production of typefaces for photo setting machines and CRT machines. It converts analog data such as signs, symbols, and figures into digital data, so that exact reproduction of the original is guaranteed. This digital data represents the base for all functions and capabilities of the IKARUS system.

"The IKARUS software package is installed on a PDP 11/34 computer from DEC [Digital Equipment Corporation] and uses an Aristogrid (digitizer) as data input system and an Aristomat (automated drafting machine) as data output station. This system's configuration makes IKARUS an extremely powerful tool for type design. The output data can also be formatted to drive other machines such as CRT [cathode ray tube] typesetting machines like Digiset, Linotron (for automatic scanning) and milling machines etc."

—From a trade show leaflet for URW, September 1975.

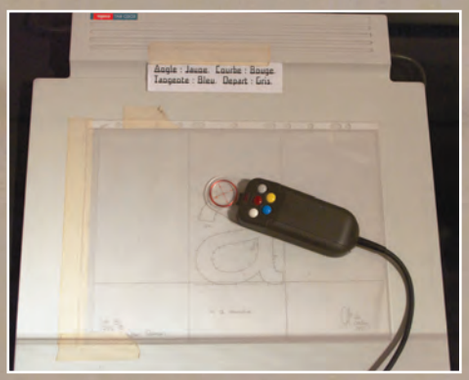
"The change from lead typesetting to photosetting meant that all existing typefaces had to be converted to the new system—generally by skilled hand work techniques [such as stencil cutting], or by scanning and B&W retouching [as for the Hell CRT Digiset machine]. Walter Brendel of Dusseldorf was concerned with this process, and brought the idea of font production using a drafting machine to a computer consultant group[,] URW in Hamburg. Brendel had seen such drafting machines at Aristo in Hamburg automatically cut graphic materials and thought them ideal for quick, precise reproduction of typeface artwork. Peter Karow of URW then invented a format to manually convert letterforms to digital data with a digitizer and store this data to a computer. His format allowed the computer to calculate a smooth line through points digitized around a form and transfer this information to a numerically controlled flatbed plotter, reproducing the original forms [as artwork]. He called this program IKARUS. [Said to be named after the mythological figure: 'Initially due to bugs, IKARUS as a program often 'fell to earth' as Greek mythology taught us long ago.' Peter Karow, Digital Formats for Typefaces *(Hamburg: URW Verlag, 1987).] With assistance from Brendel & Pabst and Aristo companies, the IKARUS program took shape and by 1975 it could effectively carry out the drafting tasks. The IKARUS program was presented for the first time by URW at ATYPI Warsaw in 1975.*

"The IKARUS program is based on the same principle as used in yacht design. Where once the shape of a ship's hull was determined by carefully locating pairs of nails between which a long strip of wood was bent, the IKARUS program substitutes the 'nails' with identified coordinate points and bends a smooth contour around these coordinates with a mathematical spline function. This process has proven that what is the correct shape for ship hulls is equally correct for the shape of letterforms. Subsequent calculations are relatively straightforward; digital data can be determined by the intersection of this continuous mathematical contour and the specific grid dimensions of a setting machine—this is called soft scanning.

"Once the typeface data is input by digitizing, or soft scanning—a modified version of a typeface is produced in IKARUS by the application of certain mathematical procedures to the coordinates of the contours. The following effects can be obtained: enlarging, reducing, optically slanting, expanding, condensing, contouring, rounding corners, antiqueing, shadowing, interpolation, and hybrids [say between a sans serif and a roman style]. It was also possible to 'distort' letterforms to work as if in 3D on waves, or around circles and globes for example. Letterspacing and kerning could also be achieved."

—From the July 1983 URW brochure

Fig. 10, opposite: IKARUS Plotter. Photograph courtesy of the Musée de l'Imprimerie (Lyon).



"The 'marked up' letter was then 'digitized' into the VAX by using a 'puck' that had a small window marked with a crosshair."

—Carol Twombly

IKARUS M

Reference Card

View

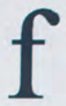
«Show Char ⌘B»

«Show Axis ⌘E»

«Show Grid ⌘G»

«Show Values ⌘W»

«Fill ⌘D»

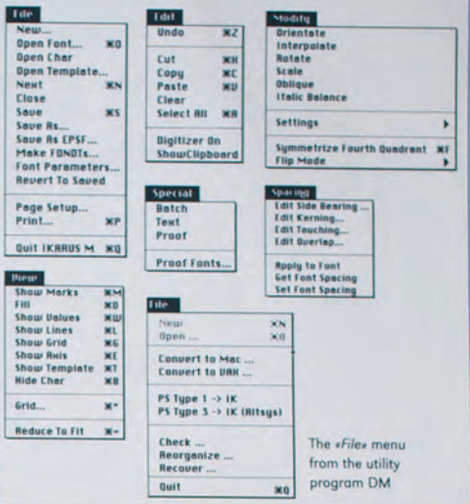


«Show Marks ⌘M»

«Show Lines ⌘L»

«Show Template ⌘T»

Menus



The «File» menu from the utility program DM

Pasting Contour Parts from the Clipboard

1. «Paste»	Contour is moved 20 screendots to the right	⌘ V
2. «Paste» with shift key pressed	Coordinates are kept	⌘ ⇧ V
3. «Paste» with option key pressed	Contour from the clipboard is inserted behind the last selected point	no shortcut
4. «Paste» with option and shift key pressed	Coordinates are kept, contour from the clipboard is connected with last selected point	no shortcut

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URW

IKARUS M Hotline:
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Telefax 040/60 60 52 52

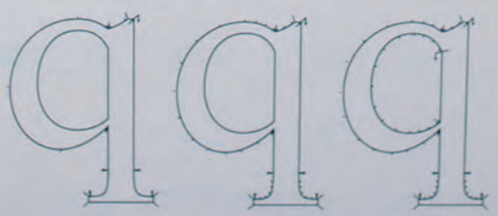
Digitizing

Digitizing Fonts

«New...»
↓
«Font Parameters...» establishes guide lines
↓
«Digitizer On»
↓
Open character place «Open Char» («Next ⌘N»)
↓
Digitize
↓
«Save ⌘S» «Save As EPSF...»
↓
Process IKARUS M data

Marking the Artwork

1. Start point and corner points
2. Tangent points
3. Extreme points

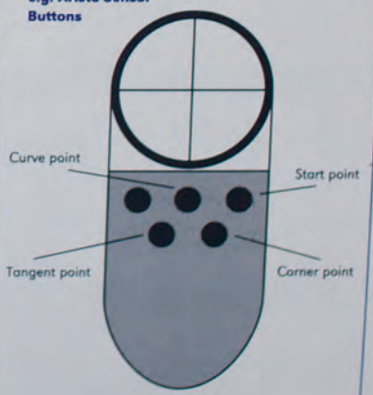


4. Aid points
5. Additional curve points
6. Next contour

Digitizing Characters

Option
Set to Align in Dialog «Grid... ⌘*»:
IK points are set on the grid

e.g. Aristo-Sensor Buttons



Alternative

«Open Template...»
digitize on screen with IK point tools

Windows

Edit Window

Target	Object	Action	Alternative
Selecting	Point Contour Character	Cursor on point, ↖ Cursor on contour, ↖ ⌘ A	◡ (Selection rectangle)
Expanding selection	Points/Contours	⇧ Selection	

Font Window

Target	Action	Alternative
Selecting	Cursor on character, ↖	
Expanding selection	Cursor on character, ⇧ ↖ ⌘ A (selects all characters)	⇧ ◡ ⇧ ⌘ ◡ (Selection rectangle) ⇧ ⌘ A (selects all existing

Fig. 11, Opposite: IKARUS-M manual (1989). Detail from a fold-out instructional page explaining the digitization of fonts. (the 'puck' is at the lower right.) Below: IKARUS-M manual (1989) with floppy disk.

Working with IKARUS

"I used IKARUS software running on a big VAX computer (Virtual Address eXtension) which took up most of a small bedroom. It was one of the first machines into which one could 'digitize' a letterform from a pencil drawing by clicking a mouse button on specifically marked points along its outline . . .

"First we drew quite precise outlines of the letterforms with about a three-inch lowercase x-height, and then we taped the drawing to a drafting board or light table [or a registered grid, rather like a Wacom tablet] . . . Using a draftsman's T-square [or not], we marked [a start point and] all the 'tangent' points— that is, the points at which curved outlines are farthest left, right, up, and down. Then we marked a few points on each curve between these 'extremes' (the best position for these points was learned through experience), and then any corner points and straight-line segments on each outline.

"Prior to this tedious digitizing of the letters into the vax machine, we needed to make sure they were pretty close to 'good' . . . The 'marked up' letter was then 'digitized' into the VAX by using a special mouse [colloquially called a puck] that had a small window marked with a crosshair. We'd position the window/crosshair (fig. 10) on top of each consecutive point and 'click' a button on the mouse. The first bits of information we'd digitize were the left and right character width marks (to indicate the space the letter would sit within—a digital translation of the metal body that hot type letters sit on). Then we had to digitize each point in sequential order around the whole outline, and if the letter had a counter form, we digitized the outer outline first and the inner outline second. [The cursor also enabled you to code what kind of point you were inputting, i.e. start point, curve point, and tangent point, where the straight changes to a curve.] Once the letter was digitized into the computer, it could be seen rendered large on a screen and the outline could then be adjusted at specific points. In order to adjust a point's position, it had to be selected and new x and y coordinates typed in for it. The display would then show the regenerated outline with that one point moved, and we'd assess the correction. Often many iterations of this tedious tweaking were needed on each outline. Needless to say the indirect method of drawing and correction with a mouse and cursor was pretty infuriating for someone comfortable with pencil and paper."

—From an interview with Carol Twombly by Nancy Stock-Allen, 2010.

Fig. 12, opposite, top: Freda's work in progress notes on the character development of Proteus. Letraset Proteus, produced using IKARUS, was the first digital Letraset typeface.

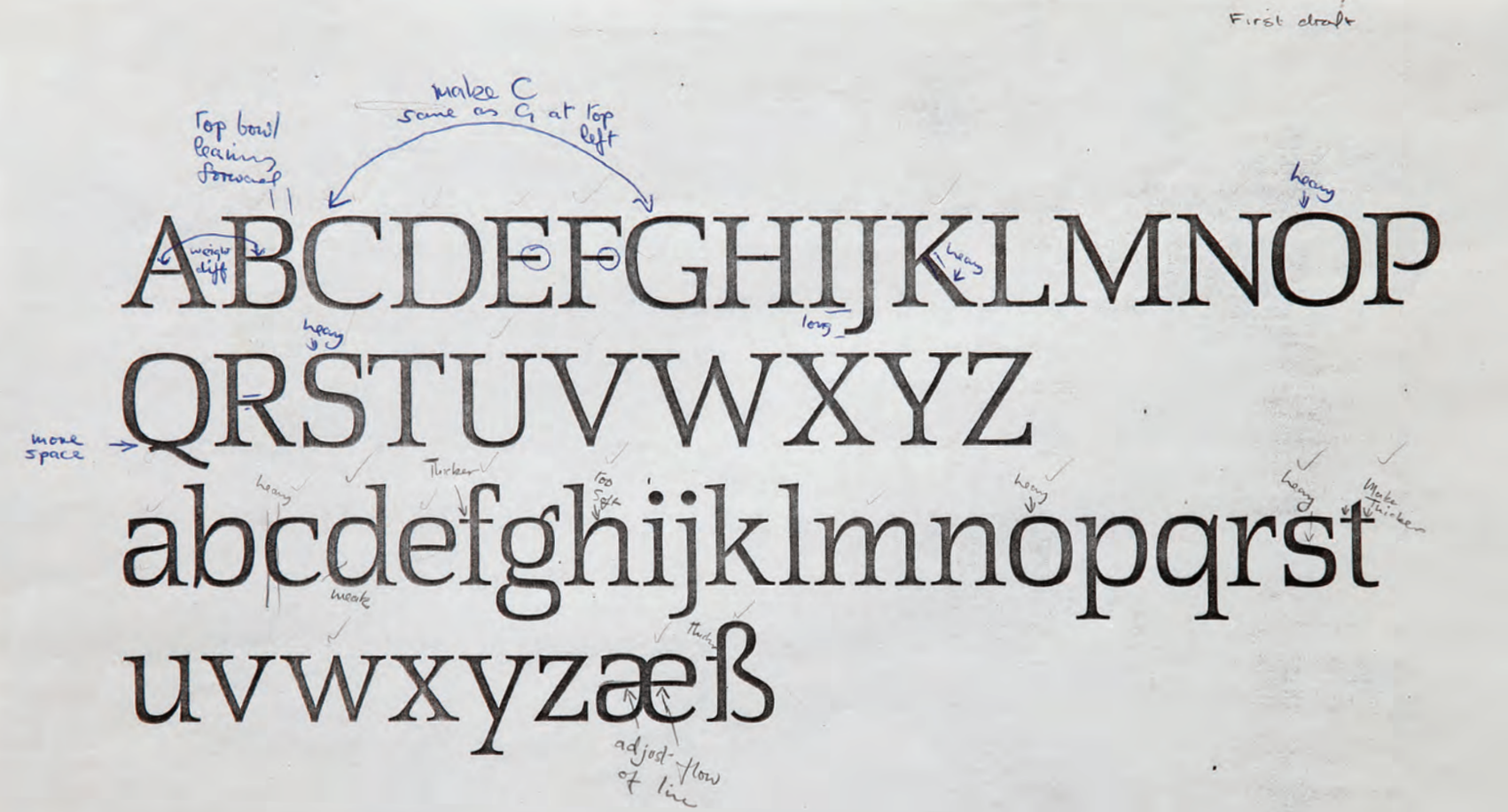
Fig. 13, bottom: Proteus specimen sheet.

Greek mythology who had the ability to change shape—the keeper of Neptune's seals on the island of Pharos off the Egyptian coast. It occurred to me that this changeability was exactly what was happening with the gradual creation of this typeface and the Greco/Egyptian connection wasn't lost on me with the form of the design. Serendipity . . .

DIXON: You left the Letraset group to set up by yourself in 1983. From your time working with type designer Adrian Williams, I guess you had some earlier experience of working with custom type design, though setting up alone seems to be the moment when you really started to make your own mark in the corporate design world. And not just in the UK either. Erik Spiekermann commissioned you to supply Ulano Rubylith artwork for the newly formed Meta Design in Berlin. Here is what he has said about working with you:

> Freda had done quite a bit of work for me while I worked for Wolff Olins, so that I trusted her and she knew what I needed. There also wasn't anybody in Germany using that technique which was very unique, invented and perfected by the people in the Letraset studio. At Berthold, who I also worked for, they drew pen and ink, then transferred those drawings to white photographic film and then proceeded to scrape that film along railway [French] curves. That created a very clean edge as well, but got different curves. The method of cutting with a razor blade attached to a bit of wood, as practiced at Letraset, made the curves more fluent and generous, whereas the Berthold curves tended to be more controlled, dare I say Teutonic. If you wanted precision, you went the Berthold way. If you wanted a slight interpretation, you had someone from London cut Ulano.

First draft



PROTEUS LIGHT

The Proteus family is the latest in a distinguished line of typefaces from Letraset's own type design studio, intended to be equally applicable both for heading or text setting. The family is entirely new and has its roots in the Egyptian slab-serif style – though with the serif structure here much refined and developed, especially in the lighter weights.

abcdefghijklmnopqrstuvwxyz æø ßÆØ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 &?!£$%(.,;:)»«//–—°*

PROTEUS MEDIUM

The pronounced line both of upper and lower-case x-height lends a very even colour to headline setting, so Proteus offers the chance of visually 'containing' your display setting to well-defined, almost rectangular word-shapes. This is a particular advantage where headings, say of a magazine or newspaper spread, must have strong horizontal relationships to other parts of the layout.

abcdefghijklmnopqrstuvwxyz æø ßÆØ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 &?!£$%(.,;:)»«//–—°*

PROTEUS BOLD

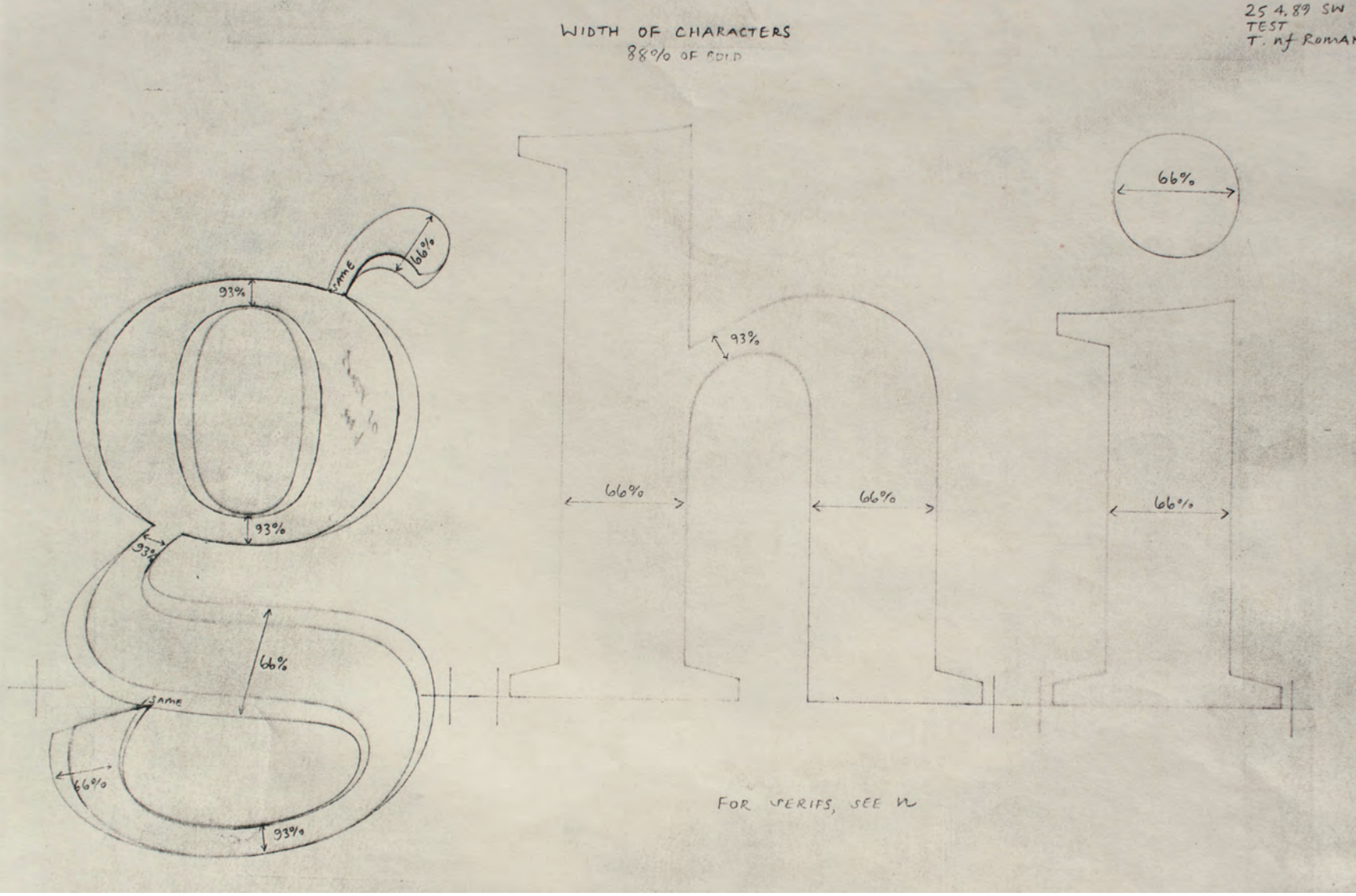
Proteus himself, after whom Freda Sack has named her design, lived, in Greek mythology, on the isle of Pharos off the coast of Egypt and was the keeper of the god Neptune's pack of seals. He could see into the future and could change into many forms. Freda's typeface is offered in four forms, from light to extra bold – though whether they will help you see into the future is of course another matter!

abcdefghijklmnopqrstuvwxyz æø ßÆØ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 &?!£$%(.,;:)»«//–—°*

PROTEUS EXTRA BOLD

Computer aided design now forms an integral part of the process of creating many new Letraset typefaces, and in producing the four weights of Proteus the

abcdefghijklmnopqrstuvwxyz æø ßÆØ



SACK: I can't recall when I first met Erik. He was a consultant for TSI, though he also worked for a company called Film Composition at one point, near the Letraset London studio. I think my meticulous artwork appealed to his sense of precision, but he was equally fun to work for. Railway curves were sets of French curves used by a number of type manufacturers, and they had a whole range of sizes with tight to long curves to call upon. I always thought it a rather disjointed and time consuming way of working, and despite Erik's comments I think less precise, as the mechanical curves dictated the end result, not the visual judgment. He is right, though, that hand cutting allowed you the ability to interpret as you went, but usually this helped if you didn't have a particularly good reference to work from, so one could, if skilled enough, literally join up the dots as you cut.

The challenge of work in those early days was the deadlines. Agencies in particular (consultancies less so) needed a very quick turnaround, often as little as three days. I developed my own way of dealing with this, producing very small drawings and cuts, but still accurate. I produced all sorts of quirky typefaces for a number of highly skilled/talented typographers/art directors, e.g. Len Cheeseman of advertising agency Collett Dickenson Pearce (CDP); an elaborate shaded shadow font for a McDougalls flour campaign; a 'cut glass' style for Waterford Crystal, and many more. I continued to work on typefaces for Cheeseman when he relocated to New Zealand, including one for the New Zealand Post Office.

DIXON: You also had the opportunity to collaborate with type designer Shelley Winter and the type designer and writer Walter Tracy, who for many years had been in charge of typeface development for Linotype, England, and who was by then a consultant for Letraset on non-Latin typefaces. How was he to work with?

SACK: I think Shelley and I met at ATYPI. We had a similar, dedicated attitude to the work. She had very focused ideas about what we needed to achieve and the process of the work, and I respected that. I also enjoyed the experience of working for newspaper design. The new headline typeface for the *Daily Telegraph* was the largest project I worked on with her, and the typeface design was very much Shelley's vision and concept, with her art directing me. The result was Telegraph Newface Roman (1990), which followed the bold weight (1989) produced by Shelley working with Walter (fig. 14). She obviously knew Walter much better than I

did, not least because of the Linotype link. He was of course very knowledgeable and a true gentleman, it was a privilege to even be acquainted with him.

In addition to working on non-Latins with Walter for the Letraset range, I had often worked on such typefaces while at FONTS, working especially on the development of Greek and Cyrillic alphabets for Linotype. I also produced some Greek frisket artwork for Matthew Carter. The design of non-Latin typefaces all comes down to analysis of the correct classical sources, the writing systems, and the culture. This needs to be combined with an understanding of what you can and can't do with non-Latin letterforms. They are often not as flexible as our Latin forms, which you can stretch, distort, elaborate upon—and still they are recognizable.

DIXON: Many people will perhaps be most familiar with your work as a result of your collaboration with David Quay and the exclusive font library you started together as The Foundry in 1990. What were your ambitions for this new library when you began? And how were you producing typefaces? It was still early days for the Macintosh—was designing fonts on a Mac even a possibility in London then?

SACK: David and I met through Letraset (when I rejoined in London, although we had briefly crossed paths when I worked at FONTS). He had been asked by Colin Brignall to submit some of the letterforms he had created for book jackets to be developed into typefaces. David wasn't a typeface designer; he was a designer, and an extremely good lettering artist, which is different. Making a few letters work together as a word, or logotype, however elaborate, is not the same as making an entire set of letterforms work together in whatever combination. It was often my job in the Letraset studio to take his drawings and finesse and artwork them into whole typefaces—for example, Quay Roman (1985; based on Goudy's Forum Titling of 1911), Santa Fe (1983), Titus (1984), and Vegas (1984). I think the process fascinated him.

When I left Letraset to work freelance I did a lot of work for David, and then we began to work together when he was asked to create a typeface (Helicon, 1989) for Berthold (fig. 15). We spent much time on the telephone discussing minor letterform changes, and decided it would make more sense to work together in the same studio, which was in the Archer Street workshops, Soho—a hotbed of creativity. The Why Not boys had the studio above and below ours, and Johnny Barnbrook also moved in. There were also some good photographers and architects, not to mention the bed-shows, strippers, and 'working girls' that made up most of the rest of the street's residents.

It was a very exciting time, those early days of the Mac in design. David bought his first Mac, a squarish grey box, to do a small identity job but we were always tapping the Why Nots for tips. The advent of the Mac brought the possibility of setting up our own type foundry. No longer did we have to submit designs to other type manufacturers for them to release; both David and I had typefaces in the Letraset and ITC libraries, as well as with Linotype and Berthold. We never came to terms with their requirements for unsuitable extra bold weights and inappropriate italics—and although we were often paid for the drawings, the subsequent royalty systems earned us very little income. A version of the mainframe IKARUS system had been developed specifically for use on the Mac, which couldn't have been more different from the unfriendly original software that had required a list of command files to operate and which crashed frequently. Instead IKARUS M (1989) was a revelation, as well as being an affordable technology, and it enabled us to become an independent foundry with absolute control over the typefaces we chose to create, and their family of weights.[2]

We still drew a lot—it was natural for us. We had drawing boards side by side and we would work on the same drawings

Fig. 14, opposite: Freda's analytical notes regarding planned character widths for Telegraph Newface Roman following the pattern set by the earlier bold weight of the typeface.

Fig. 15 Proof of early version of Helicon Light, Helicon Light Italic, Helicon Bold and Helicon Bold Italic by David Quay (c. 1988). Note the cut lines for both italics indicating adjustment of letterspacing.

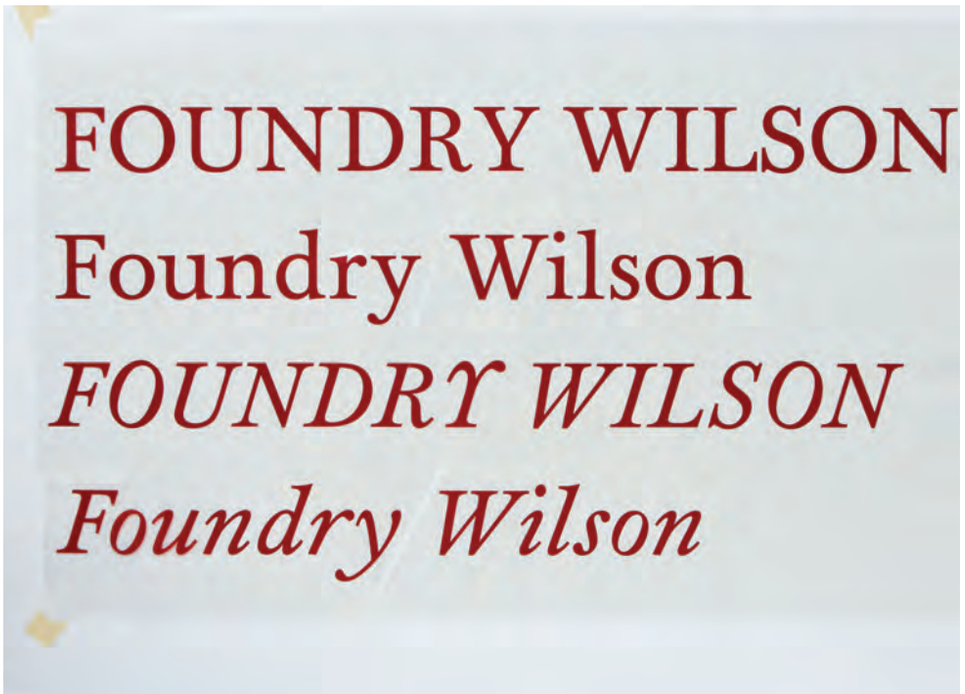


Fig. 16 Rubylith artwork for Foundry Wilson and Foundry Wilson Italic. This particular example was cut on a plotter after the original drawings were digitized. Wilson was a 'hybrid' typeface, mostly drawn and cut by hand and then digitized, but 'the new technology' was used to test weights, spacing and word sets.

Fig. 17, opposite: Developmental pencil drawings, test outlines and rubylith characters for Foundry Wilson.

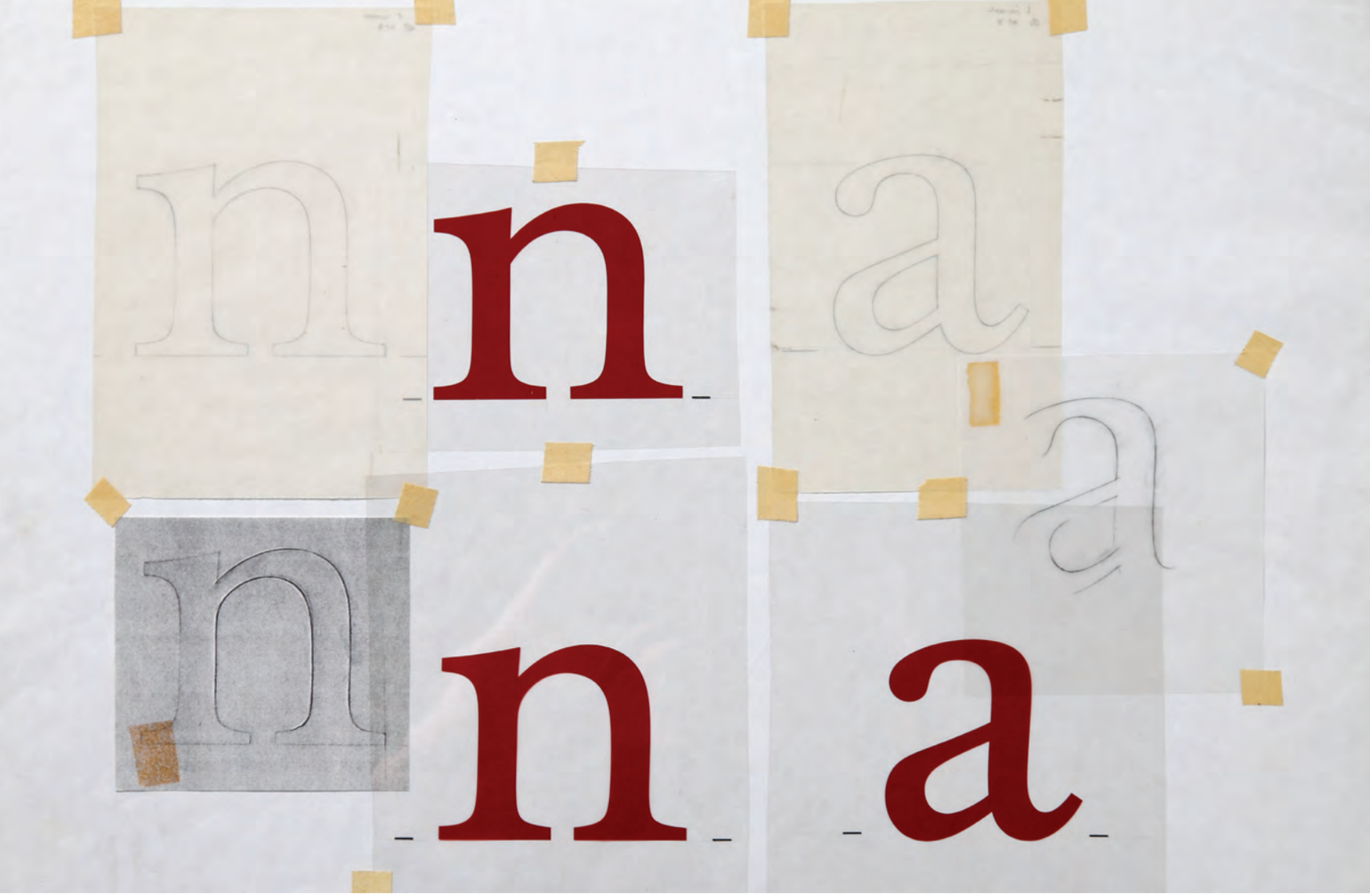
passing them back and forth between us. We both still start with sketches—we don't draw on screen. We had, and still have, only a very small range, because we take a long time to develop our typefaces, and alongside of that we also do corporate typefaces and logotype work. Even some of our earlier corporate typefaces were extensively hand drawn. The last Foundry typeface to be hand drawn was Foundry Wilson (figs. 16 and 17).

David and I worked together as partners for approximately ten years, though by the late 1990s David had become more involved in teaching, especially abroad. So, while we own The Foundry typeface library between us, to which we both add more typefaces, we are no longer business partners in the strictest sense. David lives in Amsterdam, running his own design company working mainly in typography, while I live and work in London with my company Foundry Types Ltd., developing and managing The Foundry library, and continuing to work on assorted typeface commissions.

DIXON: Your clear sense of history has had a role to play in your design output throughout your career, from your love of Griffo at college and your earliest commercial projects such as Victorian, through to later Letraset revivals—I'm thinking here of your work on projects such as the revival of Oldřich Menhart's Figural type—and the development of typefaces such as Foundry Wilson and then, perhaps most strikingly, in the Architype series (see fig. 18). Could you talk us through the strategies at work with these different 'revival' projects, and perhaps where you see the value of history in relation to the business of designing type in the twenty-first century?

SACK: Figural was a commission from Letraset. Although I drew the original weight and its italic, and possibly a bold weight, either just before I left Letraset or as a freelance project for them shortly after, it was subsequently developed from my originals into an entire text family by Michael Gills in the Letraset studio [see the feature section of *Codex* 2]. Foundry Wilson started off as a commission from ITC, which they subsequently decided they didn't want to release, but which was absolutely fine by us. We had enjoyed the research on the revival and the drawing and development of the four-weight family, and the printers' flowers. It is one of my favorite typefaces, and its recent reworking and development as an OpenType format font has proved its pedigree. We are not great supporters of reviving typefaces, particularly if they have been available for use before—there are ethical issues involved, and generally we work purely on original concepts. The Architype Collections for the most part were revivals of letterforms, rather than actual typefaces, as they either didn't exist as typefaces at all (only as a few letterforms made for a poster, for example) or they were not available for general use, and/or didn't exist as fonts.

The Architype Collections came about simply because it was suggested that we might do some headline typefaces—we didn't really want to go down that route, as we had had our fill of this for Letraset. However, we were persuaded that it was a good idea after deciding upon a theme that we both had a passion for—the Bauhaus in particular, but art movements from the '20s to the '40s more generally. It was also a bit of a debunk, as at the time there were quite a few typefaces around that 'derived' from people like Theo van Doesburg but nobody credited their sources. The original faces were seen to have been very groundbreaking, so we thought we would revive a few and credit the sources, thereby making it a kind of educational exercise at the same time. We had created rather lovely little white type specimen leaflets for Foundry Sans, Foundry Old Style, and Foundry Wilson, and with the Architypes we designed a poster that folded, with



type specimen and contextual history provided all in one.

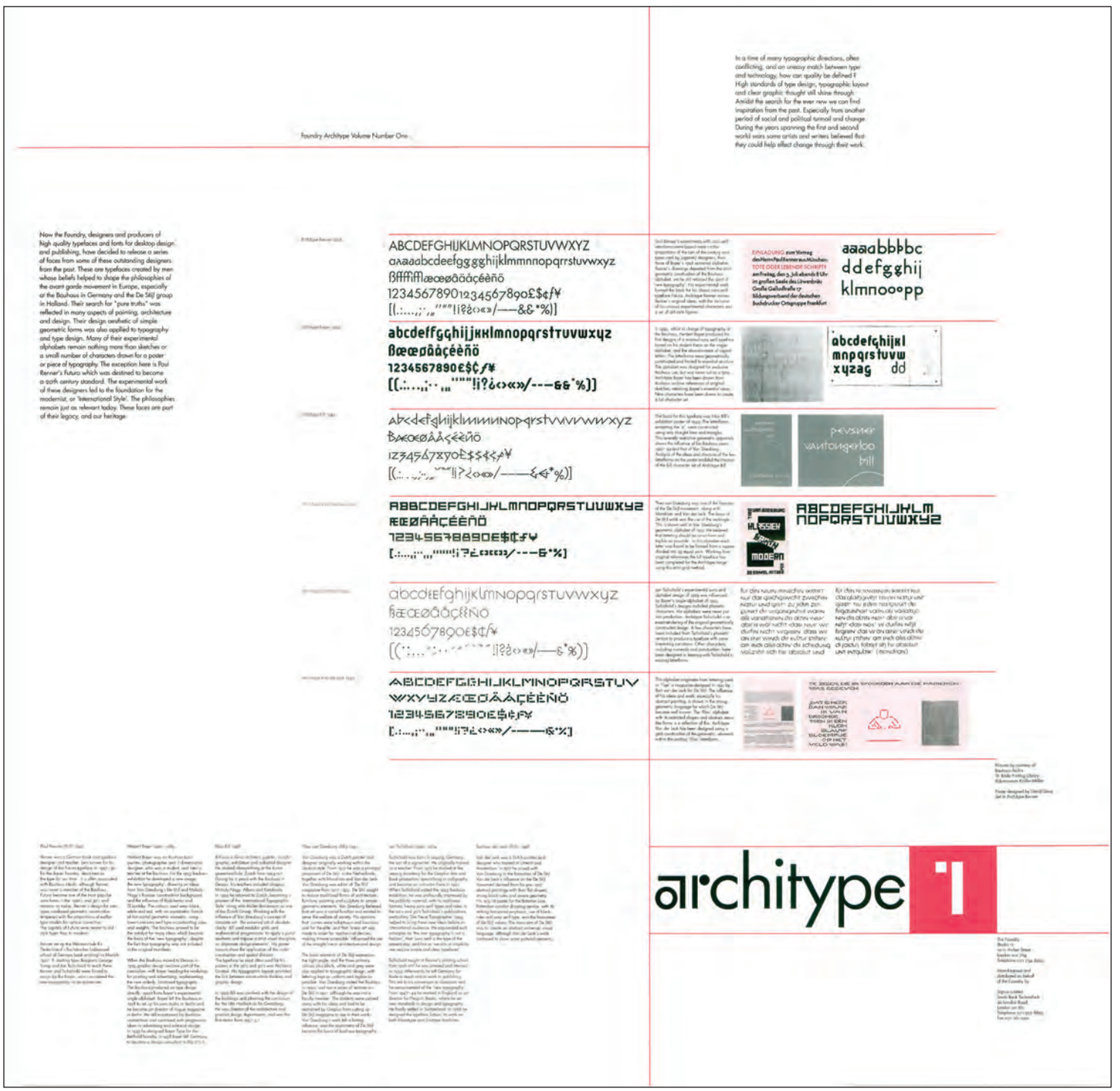
We later had the great privilege of working with Wim Crouwel on a number of his experimental alphabets, notably what became Foundry Gridnik, a new alphabet. He was flattered to have them re-created, and keen to have them as digital fonts so that he could use them himself on his newly acquired Mac. Note—we worked with him, and to his strict instructions, on how the typefaces should appear, and of course we credit him, and he receives royalties from us. This is a point that we think is extremely important to make. It irks us greatly that there are a few people out there who have produced unauthorized 'clones,' especially of Gridnik, which we regard as blatant plagiarism, and they earn money from the work of Crouwel, and he gets none of it. Not only is it wrong, it is totally disrespectful to Crouwel himself.

DIXON: Alongside the development of The Foundry type library, you were also busy with custom typeface design for what had grown into a serious suite of international corporate clients. Yet the corporate design world can be cruel with subsequent rebranding, rendering work all but invisible to a contemporary audience. If you could pick out just a couple of projects from the past you feel would be exemplary for a younger design audience now, what would they be and why?

SACK: Design of the typeface for the Yellow Pages business directory (1998) was a challenging and interesting project. We were commissioned by designer Michael Johnson of Johnson Banks—he's great to work with, has a keen eye, and a wonderful appreciation of the power of a typeface. I often find that when you have strict parameters it makes you more creative. I certainly enjoy designing for very specific purposes. For that project we had to create a typeface that was readable, legible at very small sizes, and took up less space on the page to save paper. It was one of the few projects where we have been able to work to a schedule that included enough time and budget to have the necessary testing stages. Early on we tested beta fonts on the intended paper, printed at high speed to see how they survived. Then they printed a whole directory just for Northern Ireland that was circulated for real, though it fulfilled a trial function as well. We won a D&AD Silver award for our work. At the time, I think, it was only the second typeface to win such an award.

We seemed to get a run of transport projects. Working with consultancy Citigate Lloyd Northover we developed the typeface Brunel (1998) (fig. 19). It was commissioned for use in mainline UK railway stations, and was a favorite

Fig. 18 Printed flyer for the first of the Architype typeface series (1997) from The Foundry.



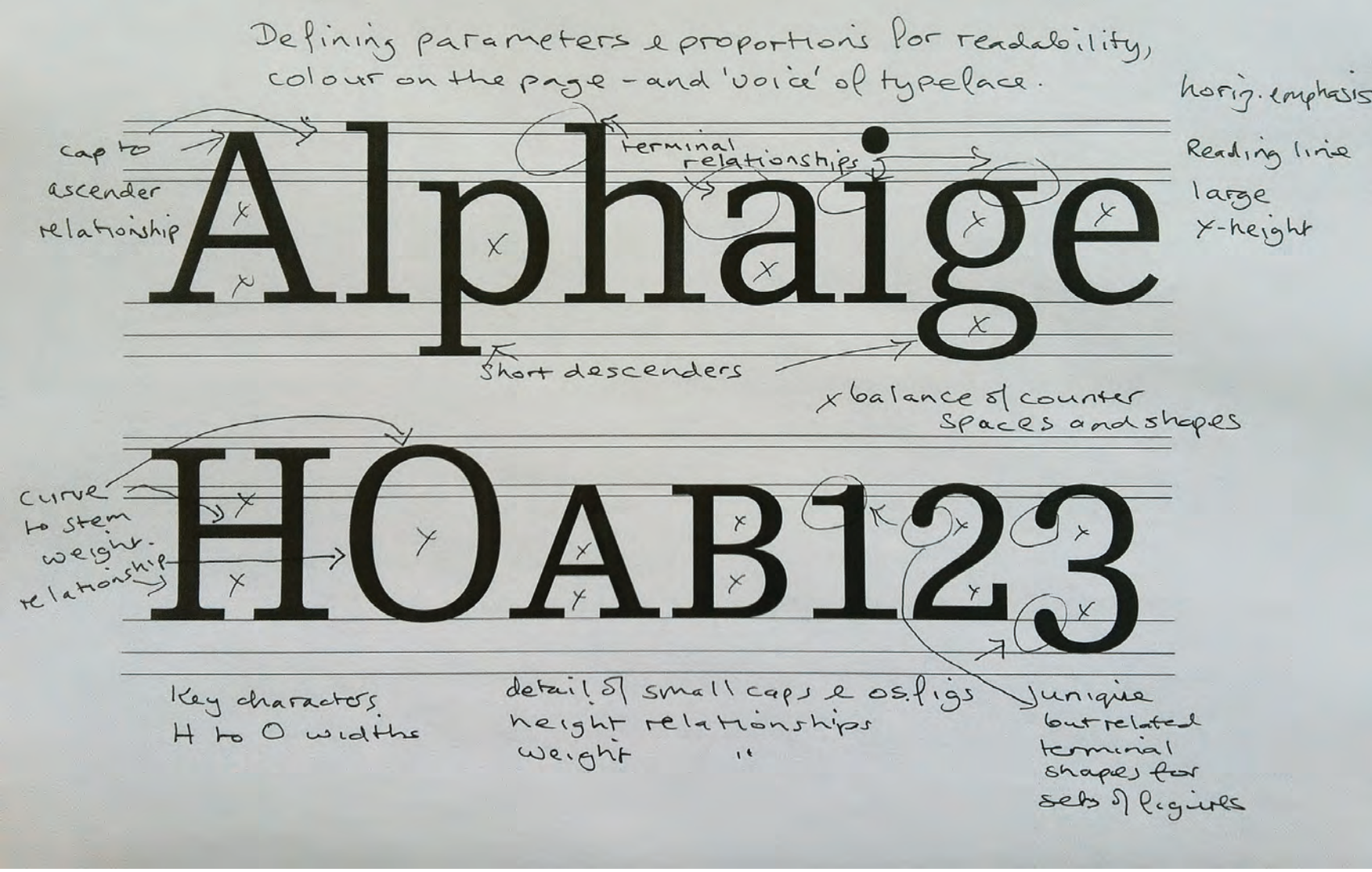


Fig. 19, above: Freda's developmental notes for foundry Origin: "Defining parameters & proportions for readability, colour on the page–and 'voice' of typeface."

Fig. 20 Foundry Origin Book

ABCDEFGHIJKLMN
OPQRSTUVWXYZ
1234567890
abcdefghijklmonpqrst
uvwxyz&*%#@
1234567890
{[(.,;:!?/-)]}ffiffiflffl

project for me, again because of the strict parameters. For that project, though, we were, on the whole, designing for much larger use on signage, including some of the first plasma screens. It was a great brief. The typeface had to look English—although of course it is used all over the UK—and had to have authority. In addition to its basic information/directional functions, the type was also required to bring some visual consistency to station environments, countering the confusion of the prevalence of visual identities adopted by the various new train operating companies then being formed, and the visual noise of station concourse shopping.

Lisbon Metro (1995) was a fresh design needed for a similar context, though a different culture. This time the focus was a brand new metro line, with the typeface needing to encapsulate a modern energy, and be suitable for signage. The concept came from the metro 'M' emblem designed by Wolff Olins, combined with the curvy linear qualities of Portuguese mosaics. It was an interesting project owing to the prevalence of vowels in the Portuguese language, and the different accents, which gave a very different typographic color on the page.

DIXON: Given the scope of your career, there has been a lot to talk about in terms of the past. Yet, the past doesn't seem to be somewhere you especially dwell. You once said, "As a designer and as a teacher I've learnt that the only thing you can be sure about is change."

SACK: How one deals with change makes the difference as to whether you enjoy life or not, embracing change and making that a positive experience. I've always been someone who is up for a challenge, and the ever-changing technology of type design requires not only creative ideas and skills, but also technical knowledge and ability.

I also think it is requisite to be a good typographer in order to be a good type designer, and equally important to have a love of language. After all, that's what it's all about.

With thanks to Colin Brignall, David Quay, Alice Savoie, Erik Spiekermann, Jason Smith and Henrik Kubel.

Fig. 21 Test of vitreous enamel panel with the new Brunel typeface (1998) designed for use on signs for all United Kingdom mainline railroad stations.

A Short List of Freda Sack's Colleagues

Jonathan Barnbrook (b. 1966)
Graphic designer and type designer; owner of Virus Fonts. Bastard (1990), Exocet (1990), Mason (1991), Priori Sans, Priori Serif (2004).

Derek Birdsall (b. 1934)
Graphic designer and book designer; 1959 cofounded BDMW, 1967 established Omnific, author of *Notes on Book Design* (New Haven and London: Yale University Press, 2004).

Colin Brignall (b. 1942)
Type designer; 1963–1979 Letraset type design studio, 1980–1995 type director at Letraset. Aachen (1969), Revue (1969), ITC Italia (1977), Romic (1979).

Aaron Burns (1922–1991)
Typographer and type educator; 1960 cofounded the International Center for the Typographic Arts and chairman of Typography USA, 1970 cofounded the International Typeface Corporation, author of *Typography* (New York: Reinhold, 1960).

Matthew Carter (b. 1937)
Type designer; 1965–1980 Mergenthaler Linotype designer, 1981 cofounded Bitstream, 1991 cofounded Carter & Cone Type Inc. Snell Roundhand (1965), Shelley Script (1972), Bell Centennial (1978), ITC Galliard (1978), Bitstream Charter (1987), Mantinia (1993), Big Caslon (1994), Georgia (1996), Verdana (1996), Miller (1997).

Len Cheeseman (b. 1949)
Type director.

Wim Crouwel (b. 1928)
Graphic designer; 1963 cofounded Total Design, design consultant to the Stedelijk Museum, director of the Museum Boymans Van Beuningen. New Alphabet (1967), Fodor (1969).

Mike Daines (b. 1947)
Type designer, editor, and publisher; 1966/1967 Letraset stencil cutter, 1971 Letraset studio manager, 1990 cofounded The Foundry, 1979 cofounder and editor of *Baseline* magazine. Hawthorn (1968), University Roman (1979).

Alan Dempsey (b. 1935)
Graphic designer and lettering artist. Dempsey and Pinball (late 1960s), ITC Tremor (1998).

Veronika Elsner (b. 1952)
Type designer; 1985 cofounded EF Designstudios, 1986 Elsner + Flake. EF Euro family.

Roger Excoffon (1910–1983)
Type designer and graphic designer; 1947 design director Fonderie Olive. Banco (1951), Mistral (1953), Choc (1955), Antique Olive (1962).

Armin Hofmann (b. 1920)
Graphic designer and design educator; 1946–1986 Allgemeine Gewerbeschule Basel, 1972–1996 director of the Yale Summer Program in Graphic Design, author of *Graphic Design Manual* (Sulgen, Switzerland: Niggli Verlag, 1965).

Michael Johnson (b. 1964)
Graphic designer; 1992 cofounded Johnson Banks.

Henrik Kubel (b. 1972)
Graphic designer and type designer; partner A2/SW/HK design studio and A2-Type typefoundry. Klampenborg (1998), New Rail Alphabet (with Margaret Calvert, 2009), Zadie (2010), Impacto (2010), Antwerp (2011).

Fred Lambert (N.D.)
Type designer and design educator; typography teacher, London College of Printing. Compacta (1963).

Günter Gerhard Lange (1921–2008)
Type designer; 1950–1959 freelance type designer, 1960–1990 artistic director H. Berthold AG, 2000–2008 consultant Berthold Types. Arena (1951), Solemnis (1954), Champion (1957), Concorde (1969), Imago (1978), Whittingham (2001).

Herb Lubalin (1918–1981)
Graphic designer and type designer; 1970 cofounded International Typeface Corporation, 1971–1981 art director and editor of *U&lc*. ITC Avant-Garde Gothic (1970) with Tom Carnase and ITC Lubalin Graph (with Tony Di Spigna and Joe Sundwall, 1974).

Max Miedinger (1910–1980)
Type designer. Pro Arte (1954), Neue Haas Grotesk (1957).

Marcello Minale (1938–2000)
Graphic designer; 1964 cofounded Minale Tattersfield.

Bob Newman (N.D.)
Type designer; 1970s Letraset Type Studio. Data 70 (1970), Frankfurter (with Alan Meeks and Nick Belshaw, 1970).

Mike Parker (b. 1929)
Typographer; 1963–1981 Mergenthaler Linotype typographic director, 1981 cofounded Bitstream, currently typographic consultant for Font Bureau.

Friedrich Peter (b. 1933)
Type designer. Vivaldi (1966), Magnificat (1975).

David Quay (b. 1948)
Lettering artist, graphic designer, and type designer; 1990 cofounded The Foundry. ITC Quay (1985), Bordeaux (1988), Helicon (1989), ITC Quay Sans (1990), Foundry Old Style (1990), Foundry Wilson (1993), Foundry Architype series (1994–1997), Foundry Gridnik (1998), Foundry Journal (1998).

Jason Smith (b. 1971)
Type designer; 1999 established Fontsmith. FS Ingrid (2000), FS Rome (2000), FS Albert (2002), FS Pele (2007), FS Me (2008), FS Jack (2009), FS Elliott (2012).

Walter Tracy (1914–1995)
Type designer; 1948–1978 typographic director Linotype & Machinery, Ltd. Jubilee (1954), Linotype Modern (1969), Times Europa (1972), Telegraph (with Shelley Winter, 1989–1990).

Martin Wait (1942–2012)
Lettering artist and type designer. Balmoral (1978), Rapier (1989), LCD (1991), Riva (1994).

Why Not Associates
Graphic design firm founded 1987 by David Ellis, Andy Altman, and Howard Greenhalgh; known for its experimental typography.

Adrian Williams (b. 1950)
Type designer; 1985 established Club Types. Worcester Round (1974), Raleigh (1977), Seagull (1978), Stratford (with Freda Sack, 1978), Congress (1980), Congress Sans (1992).

Shelley Winter (b. 1959)
Type consultant and type designer. Codesigner of Telegraph Newface (with Walter Tracy 1989–1990).

Hermann Zapf (b. 1918)
Calligrapher, book designer, and type designer. Gilgengart (1939), Michelangelo (1950), Palatino (1950), Sistina (1951), Melior (1952), Aldus (1954), Optima (1958), Hunt Roman (1963), Marconi (1976), ITC Zapf Book (1976), Zapf Renaissance (1986), Zapfino (1998).

1. TSI (Typographic Systems International) was a member of the Letraset Group of companies formed in 1979. It closed in 1985 when Letraset acquired ITC.
2. Sack: "Initially David and I worked with Mike Daines, my ex-boss from Letraset, who was then running a company called Signus, which was also operating mainframe systems. This provided us with a starting technical set-up and allowed us to concentrate on the creative side of our business. After three years or so as partners in Signus, we were able to take over the company, by which time we were able to work directly ourselves with IKARUS and, later, Fontographer."