Printing World

THE NEWS WEEKLY FOR ALL IN PRINT

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THIS WEEK

NEXT WEEK

Training examined – A special report considers the scenario for the '80s with and without the ITB; how do commercial organisations fit in?; and Leslie Owens argues the case for the proposed one-year pre-entry course.

Rear admiral takes BPIF helm in October

The first director-general of the re-organised BPIF will be John Oliver Roberts CB, 57, a rear admiral who retired in 1978 after 34 years in the Royal Navy. He begins his new job on October 1.

He was the first and unanimous choice, from 80 candidates, of the five-man selection panel. He was put forward for the job by the personnel consultancy Spencer Stuart.

'We are delighted. We are sure we have the right man' commented federation president Bill Snell. 'John Roberts' qualifications, together with his experience of management and of representation at senior government level, makes him well experienced to head the federation staff.'

Mr Roberts becomes the third senior ex-RN man to head a federation in the industry. The other two are John Adams of the British Paper and Board Industry Federation and Robert MacKenzie of the National Association of Paper Merchants. 'We must have a Trafalgar Day reunion' joked Mr Adams.

Since leaving the Royal Navy Mr Roberts has been with Aeronautical and General Instruments, Croydon, where he is director of the defence equipment division.

Mr Roberts was a Dartmouth Naval College cadet at the age of 13, served during the war, and joined the Fleet Air Arm as a pilot in 1944.

He held all the senior jobs in the Fleet Air Arm, including responsibility for the appointments and career planning of its officers, was director of the naval air warfare division and flag officer naval air command.

For 18 months from 1971 he was commanding officer of HMS Ark Royal. 'I was lucky enough to spend it all in sea time' said Mr Roberts. 'We were involved in Nato exercises in the North Atlantic up to the Arctic Circle and in the Med.'

John Roberts: well experienced.

Mr Roberts was made a Companion of the Bath in 1976.

Asked about his industrial experience, he said: 'My last job in the Navy, in charge of the Fleet Air Arm, included responsibility for four civil support establishments, which had a total of 9,000 employees.'

His present company makes defence systems, including photographic and optical equipment.

His job has involved international selling. 'I have seen more of the world in three years with this job than in 34 years with the Navy,' he said.

He acknowledges that the BPIF job is a challenge. 'Industry is not very steady these days. Although I have only been in it three years I have views on how things could be improved, particularly on overseas developments and exports.'

'It may be a naive thing for me to say without knowing the printing industry, but I have a strong conviction that this is one of the ways in which we should be moving more strongly.

The BPIF selection panel was: president Bill Snell, chairman of Edwin Snell; John Cornish, chairman of Mardon International; Michael Amies, a director of Kalamazoo; Peter Parr, the Review Body representative, of Field Sons & Co; and Tony Williams, federation vice-president and managing director of Williams Lea Group.

Baker's double

Mike Leggatt, Baker Perkins director (left), is presented with the Queen's Award for export achievement by Sir Peter Proby, Lord Lieutenant of Cambridgeshire. It was a doubly triumphant day for Baker Perkins – Mr Leggatt announced a £2.5m order from Canada. **Full story page 4.**

The bounds of possibility

THE DIGITAL REVOLUTION II

In the first part of this series Ronald McIntosh looked at digitised type from the user's point of view. Now the need to keep our wits in this heady atmosphere of graphic freedom is stressed by Professor Brian Gaines, a director of GW Information Transfer Systems and former technical director of the Monotype Corporation.

We now have digital typography. What is it? Why has it been developed? What can we do with it?

Digital typography is simple. To specify the printed material a page is split uniformly both horizontally and vertically. This creates a matrix of minute picture elements – called *pixels* in computer jargon. Each pixel is either black or white.

Any printed page may be specified in this way with complete accuracy using fine enough resolution. It is digital because the page is represented by a definite number of discrete elements each of which can take one of only two volumes. Call white the number 0 and black the number 1 and the picture on the page is just digitised data suitable for generation, storage and processing in a computer.

Digital typography may well seem yet another way in which computers are being encouraged to infiltrate all our activities! However, there is a much deeper reason for it.

Underlying all the arts of communication there is an interplay between the artist and the technician. For the artist the medium is always part of the message. He chooses a particular medium, not despite its restrictions but very often because of them. He delights in working through the medium in such a way that its restrictions can clearly be seen to enhance his intentions rather than detract from them. If technically the medium is flexible, with very few restrictions, then the artist will impose them himself, creating his own deliberately limited vocabulary, and essentially a new medium.

For the technician, however, in designing the medium the basic goal is one of complete flexibility. The medium should be capable of carrying any message whatsoever, faithfully and unobtrusively. It should be completely within the artist's control and any restrictions he cares to place on it should be his choice alone. Within practical constraints, such as cost, our objective for the design of any communication medium is unrestricted flexibility subject to easy and natural control.

In typography the interplay over the centuries between medium and message, between artist and technician, is a fascinating one. The brush in the hands of a skilled calligrapher is a highly flexible tool. The main restriction of the medium in early times was that only one copy of a communication could be produced. The invention of the printing process overcame this restriction, but itself imposed new restrictions on the flexibility of the medium.

With the invention of movable type these restrictions became even more severe, but conversely the degree of control over certain aspects of the medium was greatly enhanced. In particular it became possible to achieve uniformity of presentation of characters within a face and to use this ultimately to obtain guaranteed legibility of the medium in one of its most important applications, the communication of the written word.

Successive developments in printing technology have increased the flexibility of the medium. By the use of mixtures of technology such as blockmaking and typesetting we may combine the flexibility of the brush with the exact representation of the photograph and the uniform legibility of type.

Digital typography gives us the ultimate technical achievement of total flexibility in a single technology. A modern digital phototypesetter, such as the Monotype Lasercomp, is simply a laser beam under the control of a computer.

The beam may be precisely controlled in position, width and intensity. It is possible to place a spot of light anywhere on a piece of photographic material up to 100 picas wide and as long as one wishes. The diameter of the spot is precisely controlled to be one-thousandth of an inch and it can be placed with a precision of location which is a fraction of one-thousandth of an inch.

Such sizes and tolerances are below the resolution of the eye and any conventional printing processes, so the computer controlling the laser is virtually able to paint on the output material a black and white picture with any level of detail required.

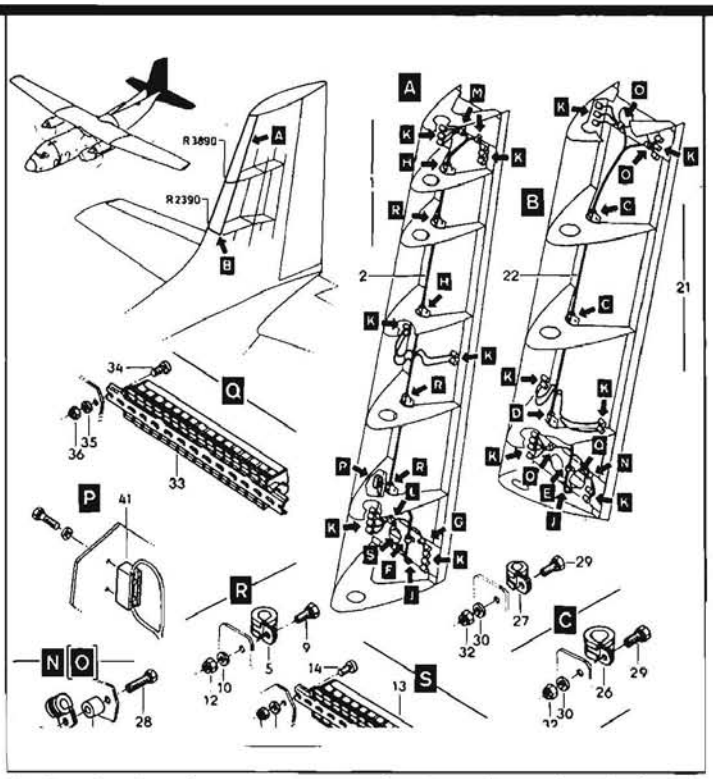
With the new technology anything is possible. We can hold in the computer store representations of all typefaces we require and emulate precisely the processes of previous generations of typesetting equipment. An advantage of the new technology is that the mechanical limitations of a number of characters we can have available have disappeared. The electronic stores used on computers may hold many hundreds of thousands of characters on line and instantly available in the typesetter.

This has enabled the new generation of digital typesetters to be used for some languages which were virtually impossible with previous generations of

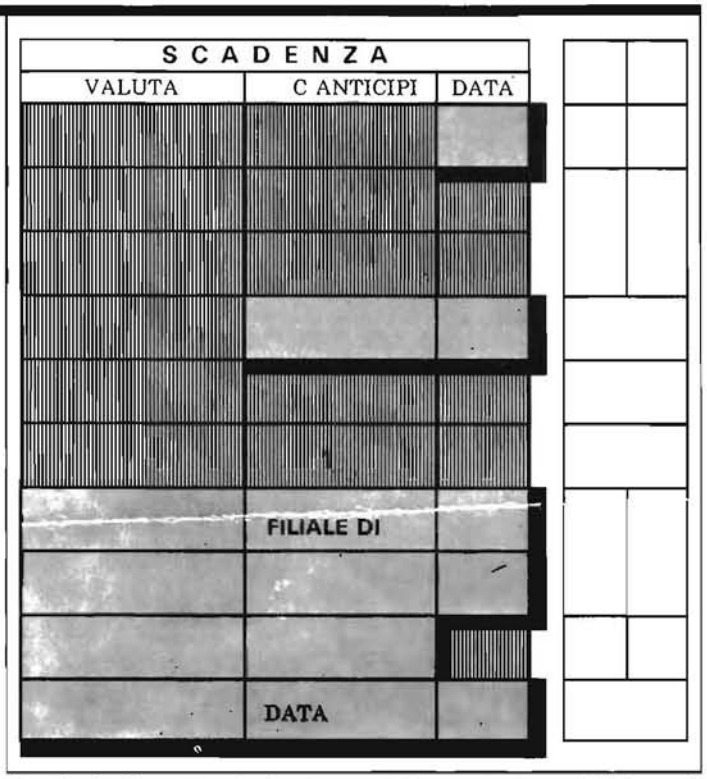
Monophoto Lasercomp System 3000 at Morrison & Gibb, Edinburgh.

'Digital typography gives us the ultimate technical achievement of total flexibility in a single technology'

'The digital typographer has scope for experiment and innovation that we have only just begun to exploit'



Engineer's drawing output on the Lasercomp installation at Messerschmidt in Germany, where it is used to produce manuals.



Detail of a form showing background tints and rules available on the Lasercomp for forms production.

machines. Chinese with its requirement for some 7,000 to 15,000 characters in each face is a very good example.

The same illustration also shows the flexibility of the new digital techniques: the headline characters at the top emulate blocks used in Chinese newspapers that themselves simulate the brush stroke of classical Chinese calligraphy. When a typesetter sets Chinese, it is equally capable of producing an output indistinguishable from a hot metal face as one indistinguishable from hand brush strokes.

Clearly the same applies to European faces – the digital typographer has scope for experiment and innovation that we have only recently begun to exploit.

The capability to produce any pattern of output whatsoever means that the terms digital typesetting and digital typography are in many ways misleading. The limitations of typefaces have gone forever. Any form of graphic output is readily produced. Halftone output can also be produced by a conventional screening process, although the screens are now affected by calculations within the computer controlling the laser rather than by any optical process.

It would be easy to end on a note of triumph and claim that with digital typography, with typesetters working through computers controlling laser beams, the technician has finally achieved his ultimate objective. We have given the artist a tool to create whatever pattern of black and white he requires, all precisely under his control, and emulating any past process with complete fidelity – mixing together distinct processes, and creating new ones.

However, the battle is far from over. The victory achieved in precision and flexibility of control of the output medium is a major one but, as so often happens, opens up as many new problems as those it has solved.

In order to see what these problems are it is useful to look at the broader scene. Computers can be used to do anything but it is *we* who have to programme them, and we need to know precisely what we want to achieve and also how to achieve it.

For example, it was clear when computers became first available that a record-keeping system based on a computer had far greater flexibility and potential capabilities than ones based on human filing clerks. We could store more material, index it more freely, retrieve it more rapidly and so on and so on. However, in practice such systems have not lived up to their early promise. We can lose information in the computer just as readily as we lose written material. We can make errors that are worse in their effect just because they are not subject to human control.

It is now the classic story of computer-based systems that the flexibility they give is often an embarrassment rather than an advantage, and that the utilisation of a potentially greater capability is a major new problem that often requires much effort to solve.

In digital typography we have had to go through this phase of development. The computer-controlled laser has had to be brought under the control of programmes appropriate to the typesetting industry before it is put in the hands of the user.

'With digital typography we have immense power, but it comes with an immense problem of control'

The computer in Lasercomp deals with some 300,000,000 picture dots on a single newspaper broadsheet page, each of which may be black or white. Clearly nobody is going to specify directly which dots are black and which are white in putting out a picture. One needs a variety of complex programmes to interpret from the language natural to the typographer to that natural to the technology.

Such programmes have to combine the data structures that correspond to different typefaces with those that correspond to positioning characters on pages. They have to have made explicit within them information about the way in which text is structured, such as possible hyphenation points in words, the possible spatial relations between individual letters, and so on. All of this for conventional text alone. The complexity increases as we consider text at an angle possibly overlapping other text. It increases yet again when we add the possibility of geometric figures, lines, curves, areas, and so on, and with the possibility of texture, textual gradients, and so on.

Thus with digital typography we have immense power but, as usual, with it comes an immense problem of control.

The *restrictions* on a medium may well be necessary to its utility. We restrict someone using the medium to laying out text in a conventional fashion with a limited range of founts, and we thus make it easier for him to control that medium. As we take away restriction we have to do so carefully for a purpose and ensure that we do not make the problem of communication through the medium unnatural and difficult.

The new digital typography offers us very important new opportunities and challenges us to exploit them fully during the coming decade.

Next week: *A review of Henry Holloway's Pira report The Electronic Merging of Text and Tone, an in-depth study of the development of digitisation techniques for graphics.*