Fonts

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Notes for CS 594 - Fall 2004

Terminology

- ► Typeface: collection of size, weight, shape
- ► Font: single instance

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- ► Typeface: collection of size, weight, shape
- ► Font: single instance
- ▶ Not much consistency these days

Millions of words, in thousands of newspapers and magazines, are printed and read daily. All over the world news is necessary to the everyday routine of many millions of people. The public appetite for news is enormous, and the man who never reads a newspaper is news himself.

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PBRS PBRS

House of Representatives Pictures of the week Manual of modern advertising Brunswick Map Printers

JOHNSTON

This broadsheet is set in Johnston type. Edward Johnston (1872-1944) was one of the followers of William Morris (1834-1896) who took a leading part in reviving an interest in good lettering after the decadence of the late-Victorian fashions. In 1916 Johnston was commissioned by Frank Pick (1878-1941) to design a special fount for the exclusive use of London's Underground and its associated companies. The resulting Johnston sans-serif type was the forerunner of many sans-serif founts both in England and abroad, including that of Eric Gill (1882-1940) who was Johnston's friend and pupil in this specialised field of design. Johnston is the standard type used for all official signs and notices throughout the London Transport system, and it is also used, where appropriate, for much of London Transport's general typographical publicity.





BLACKPOOL

PUBLICITY AND SELLING CONGRESS



on Monday, 21st May, 1928

at the Imperial Hydro Hotel

at 2.30 p.m.

ABCDEFGHIJKLMMNN abcdefghijklmnopqrstuvv

ABCDEFGHIJKLMNOPQRSTUVWXY abcdefghijklmnopqrstuvwxyz 1234567

Inks for Quality Printing Italian Architecture Famous Painters of Italy Horse Race at Ascot White space is not a mere residue. It is an active force. It is vital in the detail of text White space is not a mere residue. It is an active force. It is vital in the detail of text

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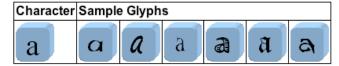
White space is not a mere residue. It is an active force. It is vital in the detail of text

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White space is not a mere residue. It is an active force. It is vital in the detail of text Fonts do not contain characters

Character versus glyph

- ► Abstract character: 'Roman lowercase a'
- Glyphs: rendering



Abstract character

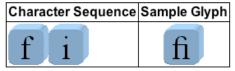
Definition:

abstract character: a unit of information used for the organization, control, or representation of textual data.

 Consequence: no simple one-to-one mapping between character and glyph

Ligatures

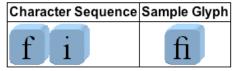
Ligature as 'prettyfying' text: 'fi' instead of 'fi'



One glyph for two characters

Ligatures

Ligature as 'prettyfying' text: 'fi' instead of 'fi'



- One glyph for two characters
- ▶ In Danish, 'æ' is a single character

Split characters

▶ In Tamil:



to be placed around other characters

Split characters

▶ In Tamil:



to be placed around other characters

▶ Now allow for ligatures...

Accents and diacritics

▶ Is an accented letter one character? One glyph?



Scaling vs design

 With lead, scaling is not possible: different design at different sizes

Ten point type is different from magnified five-point type.

 Adobe Multiple Masters & Optical Masters, Apple TrueType GX & Apple Advanced Typography



Type 1 TrueType FreeType OpenType

Font technologies

Type 1 essentials

- Developed by Adobe
- Adopted by Apple: Laserwriter
- Two files: outline and font information (hinting)
- (often three files: separate bitmaps for screen display)
- Hinting is patented
- Limit of 256 (active) characters

TrueType essentials

- Developed by Apple and Microsoft
- Quadratic splines instead of cubic
- Large number of characters (Chinese, Japanese)
- also patented hinting

FreeType

► Open Source

FreeType

- ► Open Source
- ▶ ⇒ can not use hinting

FreeType

- Open Source
- ▶ ⇒ can not use hinting
- ▶ ⇒ automatic hinting

OpenType

- ► Adobe and Microsoft
- ► Single file, cross-platform
- Optical Masters

Fonts in TEX / LATEX



Tfm files

- ► T_FX processor only needs metric information
- tfm: 'TEX font metrics'
- contains spacing information, character metrics, ligature and kerning

Font dimensions

- ▶ \fontdimen1\tenrm=5pt et cetera
- Natural space, stretch / shrink
- Quad (width of 'M'), x-height
- Slant per point



Character metrics

▶ Height, depth, width of each character

Character metrics

- ▶ Height, depth, width of each character
- Italic correction

$$T_EX$$
 has... T_EX has...

Ligatures and kerning

Ligature:

Kerning



LATEX font selection



- ► Load fonts with \usepackage[times]
- can be combination of typefaces: Times, and Helvetica for sans serif



Orthogonal combinations

- ► Families: roman, sans serif, typewriter type
- Font series: medium weight, bold
- Shape: upright, slanted/italic, small caps