The production of instructional material using desktop publishing resources available at the Department of Library and Information Studies

The Production of Instructional Material using Desktop Publishing Resources available at the Department of Library and Information Studies

by

William J Arrowsmith BA

A Master's Dissertation, submitted in partial fulfilment of the requirements for the award of the Master of Arts degree of the Loughborough University of Technology

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Supervisor: Mr G Sargent, BSc
Department of Library and Information Studies

CONTENTS

DEDICATION

For Robin

ACKNOWLEDGEMENTS

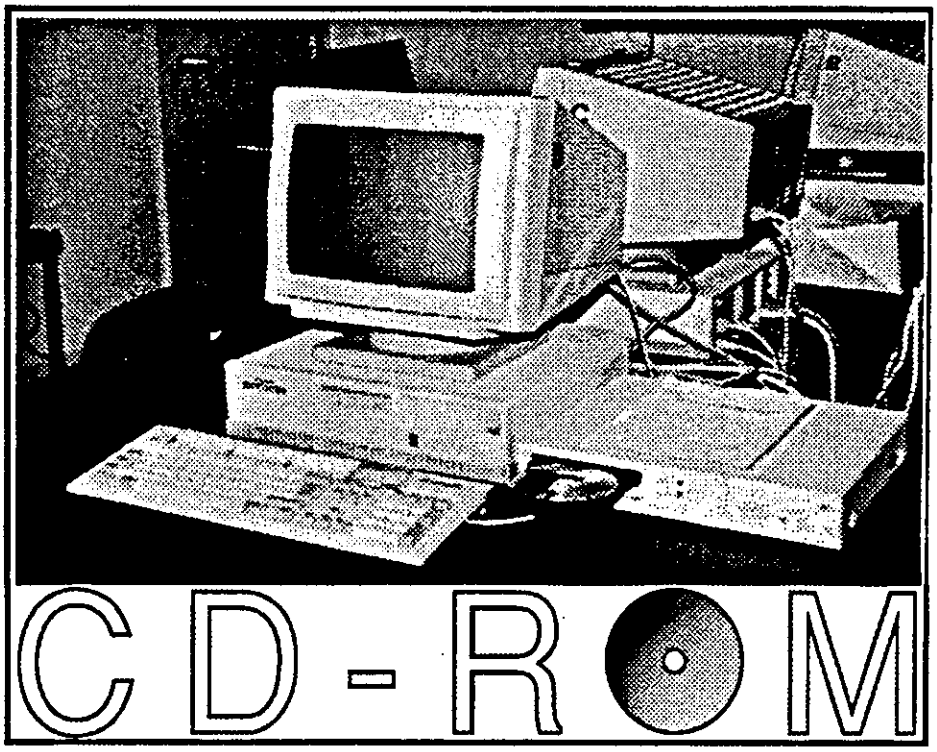
I gratefully acknowledge the help and guidance given by my supervisor, Mr Goff Sargent (BSc) during my work on this dissertation. His patience and willingness to show me all the hardware and software were especially appreciated.

I would also like to thank the various members of staff and fellow students who assisted me in evaluating the instruction booklet. Special thanks are due to Dr A Irving who so kindly made available, and put me on the track of, literature in the field of instructional design and educational criteria.

Finally, I would like to thank my friend Charles Baker, without whose unstinting encouragement I simply could not have finished the project.

ABSTRACT

This dissertation is an investigation into the effectiveness of using DTP in the production of instructional text. It incorporates a practical exercise, ie the production of a booklet for searching a CD-ROM database, and attempts to evaluate the effectiveness of the product for teaching purposes. Data were collected through a questionnaire survey of two potential user groups. The dissertation concludes that DTP is a valuable and exciting tool for the production of instructional material which can be mastered by a non-specialist within a relatively short time-frame.



beginner's guide to SilverPlatter

Title page of booklet

introduction

Welcome to the exciting world of CD-ROM!

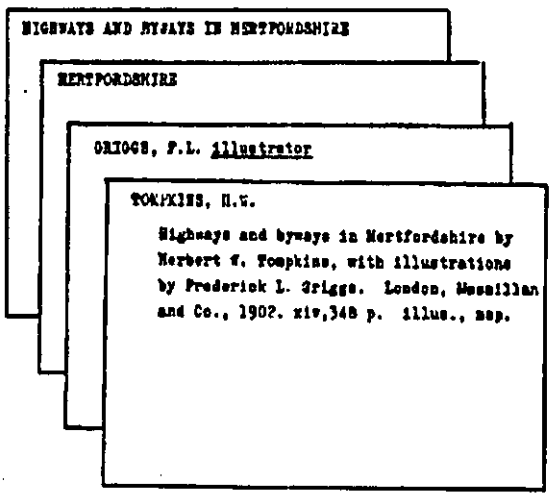
This beginner's guide has been written to help get you started with your CD-ROM search in DLIS. It will tell you all you need to know to conduct a successful search of the databases issued by SilverPlatter on **compact disc** using a microcomputer and CD-ROM player. Finally, you will see how to print out those records that may help you in your work.

If you are familiar with the organisation of a database, go to "Starting Up" on p. 2.

Instructions are given for the Library and Information Science Abstracts (LISA) database: the principles are the same, however, for all CD-ROM databases.

down to basics

A database is a collection of information stored in a form that can be read by computer. It can be compared to a **card index** where each card is the equivalent of a *record* and each line on the card is the equivalent of a *field*. Unlike the card index, however, information on compact disc can be retrieved much more efficiently and easily by the searcher.

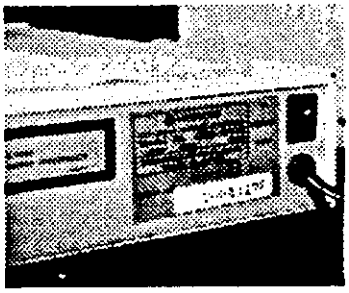


1

starting up

1. **Turn on the microcomputer.**
   The on/off switch is located on the rear of the monitor, at the left-hand side.

   When the software has loaded, the CD-ROM Startup menu (blue screen) will be shown.



2. **Follow the instructions on the screen.**

   Switch the CD-ROM player on at the rear right-hand side of the unit.

   When loading the compact disc containing LISA, make sure the printed side is uppermost. Please **do not** push the drawer closed, use the open/close button instead.

   Choose S for SilverPlatter from the highlighted letters on screen, and enter this on the keyboard.

Remember: HELP is available at any time by pressing the F1 key located on the keyboard to the left (or top) of the typing-in keys.

3. **The LISA database Title screen is displayed.**

   You are now ready to start your search!

Note: LISA does not distinguish between upper-case letters (CAPITALS) and lower-case (small) letters. Therefore the use of the shift and shift-lock keys are *not* necessary.

2

searching

There are two different kinds of search strategy:

1. controlled vocabulary search AND
2. free-text search.

This section gives instructions for both kinds of searching. You will find that often, a combination of controlled vocabulary searching and free-text is the best way to retrieve the greatest number of relevant citations.

1. Using the Index

A *controlled vocabulary search* is made using the Index, a standardized list of subject terms included by the database producer in the *descriptor* field.

If you are unsure about the spelling of a word, or even about the subject area you are searching for, you can go to the Index to peruse the list of subjects present.

Let's try a controlled vocabulary search.

1. **Press F5** at FIND: (Title screen) to bring up the Index command.
2. **Type** the subject word/root you want to look up in the Index. Let's suppose you need information on library associations.
3. **Type** *library associations*. Press ENTER.
4. **Press** ENTER to select the term for inclusion in your search.
   Press F for FIND. *

* When the database has been searched, the screen shows:

No.:	Records	Request
#1	177	LIBRARY-ASSOCIATION

where #1 = search number (set).

3

5. **Press F4** to peruse records for relevancy. To scroll through more than one record use the PageUp/PageDown keys.
6. **To print** relevant records: Turn on the printer adjacent to the computer. The on/off switch is situated at the front left-hand side. Press F6.

2. Using natural language

A *free-text search* utilizes the words that the author has used in the title and abstract of the articles. Its advantages include concepts not present in the Index. When searching free-text, you can use your own words (natural language) to retrieve records.

Let's do a free-text search.

1. **Select** the word that best describes the subject area. Suppose you need information on AACR2.
2. **Type** *aacr2* at the FIND command (bottom of the Title screen).

You will notice that a large number of records is retrieved. Later on, you will see how to narrow down a search by limiting it to specific fields.

Screen shows:

No:	Records	Request
#2	356	AACR2

3. **Peruse** records and **print** relevant ones following instructions 5 - 6 above (Controlled Vocabulary search).

Linking concepts

You can also link together different concepts (terms) using special words called operators. In LISA, these are:

AND	(records containing both terms);
OR	(records with either/both terms);

4

NEAR (two terms in the same sentence);
WITH (two terms in the same field);
NOT (excludes records containing a particular search term).

In the above search using the Index, we had only *one* concept: library association. Imagine, though, you want to find records on *membership* of library associations. There are two concepts here: **library-association** (in #1) and **membership**.

Let's try the search using the AND operator.

1. **Type #1 and membership.**
   The database searches for the term membership first. Result:777 records.
   The database then searches for those records containing both library-association (search #1) and membership.

Screen shows:

No.:	Records	Request
#3	777	MEMBERSHIP
#4	12	#1 and MEMBERSHIP

2. Press F4 to show the records.

Truncation
A series of words with the same root can be searched for in the author and title fields by using a truncation symbol joined to the preceding root. In LISA this symbol is *.

If you enter **psychol*** you will retrieve "psychology", "psychological", "psychologist" etc. Use the truncation symbol with caution: the string **librar*** in LISA will take a whole coffee-break to search!

5

Limiting the search
You will often find it useful to narrow the search by limiting it to specific fields, instead of searching free-text. In LISA, these fields are:

PY	Publication Year
LA	Language
CC	Classification code
DA	Date added to file.

To search a specific field, use **in** or **=** with the field abbreviation. e.g. french in la.

Let's suppose you want to retrieve just those records about compact discs published in 1989.

1. **Type** compact-discs at the FIND: command (search #5).
2. **Type** #5 and py=1989.

Screen shows:

No.:	Records	Request
#5	982	COMPACT-DISCS
#6	6335	PY=1989
#7	291	#5 and PY=1989

Note the difference in number of records you retrieved after stages 1 and 2 above.

* * *

FUNCTION KEYS

F1	F2	F3	F4	F5	F6	F10
Help	Find	Guide	Show	Index	Print	Commands

6

sample record

TI	Title
TO	Original (non-English) title
AU	Author(s) and other names
ED	Editor
SO	Publication source
PY	Publication year
LA	Language
AB	Abstract
FH	Feature headings
DE	Descriptors
CC	Classification code
DA	Date added to file
AN	Abstract number
XR	Abstract numbers for parts of composite works.

Fields in **bold** letters above are *Limit fields.*

7

CHAPTER ONE
BACKGROUND

1.1 Overview

> The significance of desktop publishing is threefold. First, it provides the author with the tools to express thoughts and ideas in word, graphic, and sometimes photographic (halftone) form. ... Second, the author has immediate feedback on the appearance of the final publication form. The page relationships of the elements, their sizes, and their physical characteristics are immediately visible and infinitely editable. Third, the paper output from the system is in finished form, ready for distribution to small numbers of readers ... or for further reproduction and subsequent mass distribution. (1)

The above quotation from Kleper provided the inspiration for this dissertation project. It sets forth the reasons why personnel in a wide range of work situations - such as offices and university departments - can nowadays produce their own manuals, training materials and technical reports without the need to resort to the professional printer or graphic artist. They are able to edit, compose and lay out text, artwork and photographs into finished documents with the aid of a microcomputer and desktop publishing (DTP) hardware and software never before available to any user. The hardware includes the Apple Macintosh computer, plus scanners and modern laser printers; DTP software includes the package PageMaker, issued by the Aldus Corporation, besides many other packages.

The rest of **Chapter One** deals with the reasons for choosing to undertake the project. The objectives for the project are considered: these encompass the appropriateness of using desktop publishing equipment for producing an instructional text, and the overall effectiveness of the product. The hardware and software necessary for the DTP exercise are stated, and which of the available options were eventually chosen. Results of the literature search made to give background information on design and other criteria are then assessed.

Chapter Two discusses the method used in producing the CD-ROM booklet. An account is made of the design criteria used with regard to the following points: format, attractiveness, legibility, page layout,

colour content, use of white space/margins. Preliminary designs are also included that show the major elements of the document.

Further description is then made of the hardware/software, and includes technical details relating to current cost, Random Access Memory (RAM), Read Only Memory (ROM), the Central Processing Unit (CPU), adequacy/appropriateness for the job, etc. The chapter ends with an account of the educational criteria for the booklet. The choice between different output products is weighed, and the user's background is expanded on.

Chapter Three makes an evaluation of the hardware/software in terms of these factors: ease of use; documentation; problems with interfaces. A questionnaire form attempting to evaluate the booklet is included and the results of a small scale survey are presented and analysed.

Chapter Four has concluding remarks on how far the objectives have been fulfilled and appraises the successfulness of the project as a whole.

1.2 Aims of the project

This dissertation has been undertaken from the standpoint of an amateur or novice unskilled in the traditional techniques of typesetting and artwork. My instructions were to produce an information product designed to aid in the teaching of undergraduate library students in the Department of Library and Information Studies (DLIS), or other library department at another university. I decided to produce a booklet in A5 format on getting started with CD-ROM. CD-ROM was chosen because of the exciting nature of the product and the fact that little (or no) *basic* documentation or instructional guides are available for students at the start of their study on online. A discussion of possible different formats, and the reasons for choosing the one produced, are expounded later in this project. I planned to approach the work from a technical rather than artistic viewpoint, and stress that this is not essentially an exercise in design, but a task to establish whether or not I, as an amateur, could produce a usable product for teaching purposes, using the available software and hardware.

My own experience in DTP was rather limited at the beginning of the project. I had used an earlier teaching version of the DTP software I was to use for this project (PageMaker College 3), but to produce a different - and rather less complex - type of publication. Personal desires were two-fold:

(i) To acquaint myself more thoroughly with PageMaker v. 4, a highly sophisticated desktop publishing package; AND

(ii) to aid future students in online by providing them with basic, unhurried instruction in as clear a format as possible.

1.3 Objectives

The project was conceived and written with a number of objectives (aims) in mind. The principal objectives were broadly as follows:--

(i) To evaluate the range of hardware and printing options available for the production of an instruction booklet to be used in the teaching of undergraduate (library) students in DLIS;

(ii) To analyse the usability and appropriateness of applying the desktop publishing software for the instructional material;

(iii) To gauge the effectiveness of the end-product by conducting a limited survey among student peers and staff working in a brewery, and noting their impressions and opinions.

At the outset, it was intended to assess whether the job could have been achieved more effectively using resources not at hand, from an economic and technical view point. However, this objective was found to be unrealistic for a number of reasons:--

- other options were not on offer or readily available for direct, hands-on appraisal and comparison;
- the time factor and lack of technical know-how were such that it was impracticable to evaluate other options.

Therefore, an attempt was made to evaluate only *those options* available.

Additionally, there were some less important (subsidiary or personal) aims to be fulfilled. These included:--

(iv) to ascertain what can be achieved by an amateur in DTP using the time and resources available; AND

(v) to give an overview/guidelines for present and future staff and students in DLIS as to what steps they might take in the preparation of material, such as an instruction booklet, using desktop publishing equipment.

1.4 Hardware/software options in DLIS

1.4.1 Hardware

The hardware (computer equipment) in DLIS on which the instruction booklet was produced were as follows:

(i) **Apple Macintosh IIx;**
(ii) **Radius 35 Monitor;**
(iii) **Apple Scanner;**
(iv) **Apple LaserWriter IINTX;**
(v) **Hewlett-Packard Paint Jet.**

It was decided to use items (i) - (iv) in this array of computer equipment for the DTP project. Item (v) was not used for reasons given in Chapter 3 Evaluation.

A brief description of the hardware facilities and their applications is given below:

(i) Apple Macintosh IIx

The Macintosh IIx is a fairly recent addition to the Macintosh product line and is an updated version of the Mac II. It employs a new 32-bit architecture type processor (CPU); the coprocessor is also an upgrade. Memory in RAM is 4-MB and is expandable to 8-MB. The unit is equipped with an SCSI hard disk (internal) and one internal 3.5-inch disk drive, allowing the use of 1.4-MB (high density) floppy disks. An Apple Extended keyboard was connected, into which was plugged an Apple Desktop Bus Mouse (Mini-4). The unit supported an external colour monitor, the Radius 35. The operating system to start the system, determine the memory space in RAM and move the data to and from disks is the Macintosh Operating System.

(ii) Radius 35 Monitor

No details available at time of writing.

(iii) Apple Scanner

The Apple Scanner is part of a graphics processing system used with other Mac products, here the Macintosh IIx. It enables the user to combine line art drawings and photographic material with text by capturing the two-dimensional images that fit on its flat-bed scanning surface.

In order to work Apple Scanner, the adjacent Macintosh computer needs at least 1- MB of memory, and a hard disk with storage capacity of 20-MB. These requirements were fulfilled with the Macintosh IIx. The computer and scanner were linked by a SCSI cable connection kit (the interface).

(iv) Apple LaserWriter IINTX

The LaserWriter II is part of the second generation of Apple Laser printers. It enables the user to print both text and graphics at near typeset quality. The computer in the LaserWriter accepts page descriptions in the PostScript language and converts the full-page bitmap to a dot-by-dot image. Eleven fonts are resident in the printer and additional PostScript fonts can be supported from other sources. The Ballet Engraved used for the headings in the booklet were downloaded to the printer from the computer.

LaserWriter IINTX controller hardware contains 2-MB of RAM and 1-MB of ROM.

(v) Hewlett-Packard Paint Jet

The PaintJet is a colour graphics printer for use with most computers (IBM-compatible and Macintosh). It uses a specially manufactured paper called Z-Fold (210 x 304.8 mm) which allows the printing of radiant, smudge-free characters in up to 330 different colours.

Comprehensive technical specifications are not given for this printer in the Appendix, but functional details in relation to font reproduction are given below.

The print rate of the PaintJet is very slow, at 16.7 inches/second. 167 characters/second are printed at 10 cpi (characters per inch). Symbol sets include the following: French, German, UK, Spanish, Swedish

Names, Roman8, US ASCII. Only two fonts are resident on the printer: Courier 12 point and Letter Gothic 12 point. RAM is 0.5-8 K depending on whether downloadable characters are in use: the printer has sufficient RAM memory for one downloaded character set.

1.4.2 Software

There was a small but dedicated number of packages available for desktop publishing activities in DLIS. These packages, used in conjunction with the hardware options in-house, included:--

(i) **Aldus PageMaker Version 4.0**, Aldus's market-leading DTP program;

(ii) **Aldus FreeHand Version 2.02**, a technical drawing program;

(iii) **MacWrite II**, Apple's own latest sophisticated word processing package.

(iv) **AppleScan**, Apple's software for the Apple Scanner.

The combination of integrative packages resident on the Macintosh IIx in DLIS proved to be an good choice for my needs - unlike the hardware options.

A brief description of the above software packages is outlined below.

(i) PageMaker 4.0

PageMaker 4.0, according to Aldus Magazine (2), 'has flexibility as well as power. It ... is the only desktop publishing program that is file-compatible across three platforms - Macintosh, DOS-windows and OS/2-Presentation Manager'. Thus it can import files prepared on all of the other three packages (FreeHand, MacWrite and Applescan). This compatibility between different programs proved to be PageMaker's biggest bonus as far as my needs were concerned. I was conscious early on to use the program for the purpose for which it was intended: to *make up* pages by taking text, headings and graphics from the other sources (ii - iv above) and arranging their layout on the page. PageMaker is an ideal package for this because it has 'sophisticated text-handling capabilities, professional typographic controls, and enhanced support for long documents'. (3)

It is interesting to note that people who are ignorant of the application of DTP programs simply regard PageMaker as a sophisticated word processor, that allows the user to do *anything*, even include pictures

and photographs. But anyone familiar with MicroSoft Word or WordStar will testify to the fact that the word-processing facilities on PageMaker are far outstripped by these other programs, even if you use the Story (text) editor available in PageMaker. Where PageMaker does come into its own is its capacity to allow the user to swap and change the order of all the elements *ad nauseum*. This is a second extremely useful feature.

(ii) Aldus FreeHand Version 2.0

FreeHand 2.0 is Aldus's comprehensive drawing/art program that allows the production of high-quality graphics and art-work on the Apple Macintosh. Existing images can be traced and illustrations created from scratch, depending on the needs of the user. It has a wide range of text drawing tools and colour support, and sophisticated text handling capabilities. These features can be used for a limitless range of shapes, lines, fills and colourations, as well as display/gimmick headings, with advanced control of the different layers the user is working in.

(iii) MacWrite II

MacWrite II is the latest generation of the popular Macintosh word processor. The software is written by Claris and offers all the essential tools for professional-quality word processing.

The software comprises the following: MacWrite II application disk, containing the application and other folders; the MacWrite II Reference disk containing the Help system and other folders. The software is accompanied by ample documentation: the *MacWrite II User's Guide*, *Getting Started with MacWrite II* and the *Macintosh II Quick-Reference Card*. Onscreen help is also available via the Help menu.

(iv) AppleScan

AppleScan software comprises two files: the application file and the AppleScan Preferences file. AppleScan is used with the LaserWriter printer driver version 5.2 or later and Laser Prep version 5.2 (or later). AppleScan's performance is improved with Macintosh's 4-MB of memory by decreasing the time required for the AppleScan commands.

1.5 Results of the literature search

This section is concerned with the findings of a literature search undertaken prior to the DTP exercise. The aim of the search was to locate source material that would give background information and ideas on factors necessary for the production of an instructional text. The search for material was carried out primarily in the Pilkington Library (Loughborough University of Technology). A small number of texts and journal articles were obtained on Interlibrary Loan, through the British Library.

The three subject areas in which literature was sought are shown below:-

		Classification number
(1)	**Desktop publishing;**	070.502
(2)	**Instructional design;**	371.3078
(3)	**Online searching.**	025.04

A review of selected texts from the first two categories follows below. It should be noted that the texts discussed were necessarily the best available from a selection of many in each subject area, and were the ones found to be most helpful.

(1) Books on desktop publishing

Sourcebooks in the field of desktop publishing are plentiful, and a person about to embark on a DTP project for the first time is liable to drown in the choice. An ideal text on DTP would provide the reader with two things: an up-to-date overview of the system requirement (hardware and software) which includes details on current cost and availability, and a comprehensive section on design concepts and terminology. Needless to say, few (if any) texts can achieve both these criteria because the area of DTP is continually changing with the pace of technology, and prices vary alarmingly between countries due to buying power and the fact that DTP has been slow to make inroads in business in most parts of the industrialised world. However, the use of DTP is increasing steadily: Silver (4) estimates that by 1991 sales of DTP hardware and software in the US will reach $4.4 billion.

Although to a large extent the problem of choosing suitable hardware/software for the present project was not an issue (the options were predetermined), an attempt has nevertheless been made to consider those texts containing an overview of system requirements that a would-be user unfamiliar in the art would need in order to make the appropriate choices for his/her own requirements.

(i) *The electronic publisher.* D Burns, S Venit & R Hansen.

The electronic publisher is a very useful, comprehensive guide to DTP and is claimed to be 'the only complete DTP resource for publishers, designers, typesetters and production staff'. It is an attempt to integrate publishing traditions and guidelines with computerised production methods, and looks at the needs and advantages of both.

The Introduction examines the significance of DTP and makes general comments on DTP software (page-composition applications) and hardware (system configurations). Part 1 *The publisher's task* concerns the steps required in the production of any document and contains the following chapters:--

1. The publishing cycle: division of responsibilities; steps in the production process; the battle between quality, economy and deadline.
2. Copyrights, credits, permissions and contracts.

Part 2 *Design for desktop system* is made up of two chapters:

3. Typography: the language of type; using fonts in DTP; design considerations and copy casting.
4. Publication design: principles of design; using electronic aids in design; creating a template system; considering the genre.

Part 3 *Production* contains three chapters covering the following points:

5. Text processing: typing text directly; preparing disk files; typesetting text; character/paragraph formatting; copyfitting; proofreading.
6. Illustrations: graphics equipment; sources of graphics; graphic design principles.
7. Page composition: assessing user needs; organising disk files; creating a template for page layout; building master pages; creating individual page layouts; printing; proofreading.

Part 4 *Beyond the desktop* concludes the look at the DTP process with the following three chapters:

8. Preparing for the printer: final pages or 'camera-ready' masters; putting it all together - complete mechanicals.
9. Preparing for colour printing.
10. Printing and binding: how to select a printer; printing; postpress production; checking the delivery.

The text has a comprehensive glossary of computing/DTP terms and an Index.

Given the details above, *The electronic publisher* can live up to its claim as one of the most inclusive references covering all areas of document design and production using a DTP system. Moreover, it contains details found in no other publication in the literature search: for example, Chapter 2 on Copyright information; nor was the DTP process quite so completely outlined as in this text.

(ii) *Desktop publishing source book: ready-to-use layouts and ideas for dtp users*. D Collier & K Floyd.

This DTP source book is one of a few practical publications that provide a large number of layout ideas for different types of document design. The text consists of hundreds of graphics illustrating the different styles and suggestions for the designer. A short introduction gives a brief technical description of type, graphics, design techniques and printing. The first chapter covers letterheads and establishing a corporate identity. Chapter 2 supplies design ideas for sales material, including price lists, catalogues, advertisements, presentations and invitations. Chapter 3 is on business form design. Chapter 4 covers standard DTP publications such as newsletters, magazines, books, booklets, manuals and reports. A Glossary of DTP terms is provided at the back of the work.

This sourcebook gives valuable hints and ideas on the type of documents a person would be likely to tackle with a DTP system. The book stresses an imaginative approach to different styles of a publication (modern, mainstream, classical), the artwork and typography being varied to suit each category. This is one of the most important aspects to keep in mind if a well-designed document is to be made that is appropriate in its style.

(iii) *Desktop publishing design basics.* A Holmes et al.

This book incorporates material intended for staff in colleges and companies needing guidance on design considerations, layout and typography. It gives basic ideas on the fundamentals of document design: basic design principles, measurement systems, house style, margins, grids, copyfitting, headings/subheadings, typefaces, justification, letterspacing, rules and boxes. All the information is to be found in other DTP books, and in greater detail: this book is handy for the novice, however, with its examples of different typefaces (Venetians, Old Faces, Transitionals, Moderns), the selection of fonts and the Typeface specimen charts which give fifty pages of text in the most used fonts and in varying point sizes.

(iv) *The illustrated handbook of desktop publishing and typesetting.* M L Kleper.

This American source book, which claims to 'set the standard for the desktop publishing field', could be more aptly described as a history book of typesetting, from the very beginning to the advent of microcomputers and the revolution of DTP. It is a very comprehensive book of nearly 800 pages which tries to cover as much ground as possible and becomes positively unwieldy in the process. It is already four years old and much of the detail in relation to DTP is becoming obsolescent. However, Chapter 11 could be of value to the would-be desktop publisher with its in-depth description of the Apple LaserWriter Printer System (including PageMaker, ReadySetGo, Microsoft Word, Magic) and an analysis of the IBM desktop publishing alternatives (Microsoft Windows, Xerox Ventura Publisher, PageMaker PC). Other chapters of relevance to the DTP process are Chapter 12 *Output devices: desktop and full-sized typesetters* (including the HP LaserJet); Chapter 13 *Typesetting decisions* (methodology; planning and operation); Chapter 14 *Typesetting business applications* (determining typesetting costs) and Chapter 15 *Desktop publishing and typesetting user application* (successful uses of PC typesetting technology).

At the back of the book is a large Information section covering software, user groups and equipment dealers. There is a bibliography, Illustration Index and General Index. However, the book has a very American bias, with an emphasis on hardware widely available in the

US but not elsewhere, and is therefore perhaps of limited value to a European audience.

(v) *Introduction to desktop publishing: a step beyond word processing*. G A Silver & M L Silver.

Another American publication, this is one of the most useful for aspiring desktop publishers. It is a well laid out, common-sense publication combining expository text and graphic material which manages to put across the message in a clear, straightforward manner.

Part 1 *Fundamental concepts* contains the following chapters on technical and design criteria:

1. Introduction to DTP (advantages/disadvantages, overview of system requirements, demand for DTP)
2. Overview of DTP systems (DTP cycle, hardware configurations, DTP software)
3. Basic concepts and terminology (typography, page makeup concepts)
4. DTP hardware (Macintosh vs. IBM systems)
5. DTP software (software features and categories)
6. The publishing cycle (preparing a first draft, converting ideas to print, page layout/design, proofing)
7. Using PageMaker (selecting a printer, importing graphics/text, printing)
8. Using Ventura Publisher.

Part 2 *Hands-on design concepts* contains a fairly detailed chapter on design concept projects (including style sheets, type styles, centered layouts, grid layouts, borders and rules, screen values).

Part 3 *Production project* takes the reader through many assignments from letterheads and stationery through sales brochure to instructional manuals and annual reports.

This book is strongest on general technical details and design: the latter would be of great value to the user of any DTP system. As always, system requirements are of least use to a 1990's audience, both in the case of hardware where updated models are being continually introduced and software where new versions with additional features (such as PageMaker 4) supersede old versions of DTP programs.

(vi) *Into print: how to make desktop publishing work for you.* S Quilliam & I Grove-Stephenson.

This BBC publication accompanies the TV series *Into Print* and is designed for anyone wanting to enter personal publishing, whether it be a small company, school or charity or an aspiring writer or publisher looking to save costs in book production. The book is well laid out with plentiful graphics to illustrate the points and personal profiles of people who have gone freelance in the DTP world.

Chapters 1 - 3 examine the personal publishing process including a look at the target audience and drawing up a production process chart. Chapter 4 covers document design and looks at (albeit briefly) overall format, page size/shape, preparing a rough design, etc. Chapters 5 - 7 ask the reader to consider his/her message, and looks at writing and editing, getting the graphic elements (including clip art), and presenting the text. Chapter 8 takes a look at the technology needed, and includes information on graphics packages, printers and scanners, screens and peripherals. The remaining chapters cover final preparation, reproduction methods and quality control. Contains a useful Appendix on such necessary points as books on DTP, exhibitions, magazines, professional associations, and technology prices of 3 systems (Amstrad PCW-based system; Apple Mac-based system; Atari ST-based system).

(2) **Sources on instructional design/education**

There is quite a literature on instructional design *per se*, and some of the most useful sources are reviewed below. Other sources are accessible through Educational Technology Abstracts. Relevant literature on the educational aspects of textual design is much harder to locate. Some information is very theoretical and specialised, and only the most practical sources are included. The British Education Index was used to find relevant articles in the education technology journals.

(i) *Producing teaching materials: a handbook for teachers and trainers.* H Ellington.

This book is aimed at teachers in all levels of education who intend to produce their own curricular material. Chapter 1 examines the rôles that different kinds of teaching materials can play in the three basic

instructional situations (methods). Brief definitions of materials in the seven different groups of instructional materials are given, and the trainer is provided charts to help him/her choose the type of material(s) suitable for the instructional strategy in mind.

Each of the remaining chapters of the book deals with how to design and produce the seven different classes of teaching materials, from printed/duplicated materials through audio materials to computer-mediated materials.

The book was of particular value as it gives a clear outline of the educational criteria that need to be considered by anyone intending to produce their own material. It was found useful as a framework for an analysis of the Educational criteria in Chapter 3 of this project. The text is written in straightforward language that can be understood even by those instructors not steeped in educational jargon. The book also provides an excellent overview of the diverse range of teaching materials, and enables the would-be producer to choose the easiest, most cost-effective method of producing such materials. Although it is becoming dated in some chapters (eg the one on producing printed materials), the principles remain the same regardless of the manner in which material is produced.

(ii) *Designing instructional text.* J Hartley.
Designing instructional text is a very practical sourcebook which emphasises layout and the visual presentation of text used in teaching, instructing or directing people. It draws on current typographical practice and analyses other research work carried out in the design of text and related fields.

The first four chapters are concerned with the planning aspect of producing instructional material, and the following areas are studied: page-size; typesizes, typefaces and spacing; space and structure. Chapters 5 and 7 present examples of instruction materials in their original state and offer revised versions. Later chapters include discussion of the following areas: the process of writing instructional text; alternatives to prose (algorithms, information mapping and programmed/computer-assisted instruction); the rôle of illustrations; tables and graphs; diagrams, charts and symbols; forms; designing

electronic text; and evaluating instructional text. The Appendix is a comprehensive bibliography including generally useful reference works, resource materials in journals and titles from relevant British and American Standards. Names and addresses of centres of research in the UK, USA and Canada are also supplied. A subject and author index conclude the work.

The book was found helpful in the early stages of producing the CD-ROM booklet, due to the information on planning, typefaces etc. Chapter 4 gave useful information on research carried out into word and line spacing and segmentation of text (cf. review on article by Frase and Schwartz). Chapter 6 was of value with its discussion of the organising of text (titles, summaries, headings, questions, sequencing).

(iii) *Planning and producing instructional media.* J E Kemp & D K Dayton.

This book has as its overall goal effective communication through the development of media to accomplish specific ideas or identified needs. It is a comprehensive work with copious diagrams and photos to illustrate points raised and gives information on printed media forms as well as audiovisual media. Thus it can be compared to Ellington but is rather more inclusive, especially in such areas as learning theories.

Part One *Background for planning and producing instructional media* was of most use and is made up of three chapters. Chapter 1 considers the contribution of media to the learning process and examines the different types of instructional method. Chapter 2 deals with perception, communication and learning theory. Chapter 3 discusses research carried out in the design and production of media which covers: presentation elements, colour, picture-narration relationship, printed media and intellectual abilities of the learner.

Part Two *Planning instructional media* contains five chapters. Chapter 4 Preliminary planning deals with developing objectives, the audience, content outline, etc. Chapter 5 outlines the different kinds of media. Chapter 6 *Designing the media* concerns developing the script. Chapter 7 *Producing the media* deals mainly with visual material and Chapter 8 is on using and evaluating the media.

Part Three covers fundamental production skills (photography, graphics and recording sound) and Part Four deals with the actual production of different types of instructional media, including printed media and audiotape recordings. Part Five covers Management. A Glossary of terms and Index are provided at the back of the work.

The first part of this text was of most help when producing the CD-ROM booklet. It complemented Ellington with its detailed discussion of the education criteria behind producing instructional material. Chapter 2 on learning theory (psychological factors used in document design) and chapter 3 on presentation/treatment of subject were of particular use when considering the educational aspect of the CD-ROM booklet.

(iv) Typographical cues that facilitate comprehension. *Journal of educational psychology* , 1979, Vol 71, No 2. L T Frase & B J Schwartz.

This article considers the research that has been done on the comprehensibility of technical documents by the use of typographical segmentation and spatial cues. The authors suggest that segmentation *and* indentation can be used to facilitate comprehension and attempt to prove this by carrying out five experiments in which adults read complex information. They conclude that the adults respond 14-18 % faster when the text is meaningfully segmented and indented. Line length and justification of text - debated issues in the typographical world - are mentioned and are said to have minor cognitive relevance. The most important factor is to divide text into easily encoded units.

The article was of use when considering educational criteria and gives additional information on the segmentation and component issues raised in Hartley and Kemp.

(3) . **Books on online searching**

There is a plethora of introductory and advanced textbooks on the theory and techniques of online searching. The two texts given in the Bibliography of this project were used to verify technical details when writing the CD-ROM booklet, and are similar in content and style to many others of the available literature in the field.

References

1. KLEPER, Michael L. *The illustrated handbook of desktop publishing and typesetting*, 1987, p. 367.
2. SANDERS, J (ed.) Aldus PageMaker Version 4.0 for Macintosh and PC. *Aldus Magazine*, 1991, 1 (2), p. 32.
3. *Ibid.*
4. SILVER, G A. *Introduction to desktop publishing: a step beyond word processing*, 1990, p. 13.

CHAPTER TWO
METHOD

2.1 Detailed description of hardware/software

2.1.1 Hardware

Technical specifications of the hardware features used in the DTP project are included for reference in the Appendix. Some of the details could not be of profit to the user new to the DTP world, but are necessary for a realistic comparison with hardware of different manufacturers.

2.1.2 Detailed description of software

This section expands on the general details given in §1.4 of the software used to carry out the DTP project. A fuller description is made of the most important features and facilities of each program. A prospective user would need to be aware of these when evaluating the appropriateness of the product for his/her requirements.

(1) Aldus PageMaker Version 4.0

Detailed information on all of PageMaker's commands and features is provided in the *Reference Manual*. (1) Some of these features relating to the setting up of the pages, the Master Page, templates, layout grid etc., have been given in the discussion of design criteria (§2.3) and are not repeated here. Other features fundamental to every document produced with the program (e.g. moving around in the publication, using the mouse etc.) are dealt with in §3 Evaluation.

Desktop publishing features

(a) Importing/exporting text and graphics

PageMaker's import/export capabilities are the main principle on which the program is based. Import/export filters are employed which prepare both text and graphics for transfer to and from PageMaker.

Text documents can be imported from a large number of word-processing programs. These include the following Macintosh programs:

- MacWrite 1.0 to 5.0/MacWrite II
- Microsoft Word 3.0 and 4.0
- WordPerfect 1.0 to 1.03.

Documents created by IBM PC-compatible programs (such as WordStar) and documents in ASCII (text only) format can also be imported. If the PC uses a 3 1/2-inch floppy disk, the Apple File Exchange will transfer files and convert them to Macintosh-readable format. Otherwise files are transferred as a binary file through a communications bridge.

PageMaker will not retain margin and column settings of word-processed files. Carriage returns are treated as new paragraphs by PageMaker. Tables must be produced using tabs (not spaces) for the different columns.

Text files can be exported to word-processing programs and retain any PageMaker formatting settings recognised by the word-processing program.

Graphics can be imported in the following file formats:

- Paint-type/bitmapped graphics
- PICT and PICT 2 /draw-type graphics
- Encapsulated PostScript (EPS) graphics
- TIFF images (black-and-white, greyscale and colour).

(b) Text blocks

Stories imported into PageMaker are contained in text blocks. PageMaker threads text blocks together, i.e. it remembers and maintains the word order of the story. This is a useful feature because you cannot 'accidentally' get the order of the story wrong or re-size one text block (part of the story) without the other parts being changed. Text blocks, however, can be 'unthreaded' which is sometimes necessary for convenience sake when working with long text documents.

(c) Word-processing power (Story editor)

PageMaker 4.0 is the first version of PageMaker to use a built-in word processor called Story editor. When using the editor in story view, the following editing features are available:

- Rapid word-processing functions
- Spelling checker
- Search/replace facilities for text and text attributes (font, point size, paragraph style)
- Multiple story windows for views of different stories.

(d) Style sheets

Style sheets (collections of styles, or formatting instructions) can be applied to a publication's paragraphs to define their appearance. Formatting changes will affect every paragraph defined that style and will not need to be selected and applied for every paragraph in the publication.

Define styles are body text, caption, headline, subhead 1, subhead 2.

Typographic features

(a) Fonts, type size, etc.

There were 49 typefaces (fonts) available in the copy used of PageMaker 4.0. Examples of these include (in 12 point):

Avant Garde	Palatino
Times	Courier
Zapf Chancery	Helvetica

Type size ranges from 6 to 72 point. Examples of letters and numbers are given below in 10, 14 and 24 point:

a	s	d	1	2	3
a	s	d	1	2	3
a	s	d	1	2	3

Leading ranges from 8 - 27 and Auto.

Colours are paper, black, registration, blue, green and red.

Type styles are normal, **bold**, *italic*, underline, outline, **shadow**, reverse and strikethrough.

Type options are small caps size, super/subscript size, super/subscript position.

(2) Aldus FreeHand 2.02

Detailed information on FreeHand's commands and features is provided in the *User Manual* (2). The elements used in the design of the CD-ROM

guide are described and evaluated in §3.1.2 Evaluation of the software. This section is an attempt to describe the other main features of the package.

(a) FreeHand Basics

The basics of FreeHand are very similar to those of PageMaker 4.0. These include the illustration window, menu bar, toolbox (containing freeform shape and transformation tools), scroll bars etc. The difference lies mainly in the enlarged number of drawing tools used to manipulate illustrations and other elements.

(b) Drawing tools

There are two types of drawing tools:

- **basic shape tools**, for commonly drawn elements such as squares, ellipses/circles, lines.
- **freeform tools**, used for creating freeform paths of the user's own specifications.

The size and shape of basic elements can be changed and they can also be converted to freeform elements. Freehand paths can be adjusted by pulling handles out of the points, and they can also be joined and split.

(c) Type

A range of type effects can be achieved with FreeHand. These include character fill, fill and stroke, heavy/oblique/outline/shadow, and zoom text.

(d) Elements

The elements formed with the drawing tools can be copied by cloning, duplicated to offset from the original, and transformed (by rotating, reflecting, scaling and skewing). Screens (patterns of dots or lines) can also be applied.

(e) Fills, lines and colours

- **Fills** are basic, graduated, radial, patterned, PostScript, and tiled.
- **Lines** are basic (2-point dashed) and PostScript. The width of the line can also be specified.
- **Colours** are of two types: spot colour or process colour. There are over 700 Pantone colours provided with FreeHand.

(3) MacWrite II

Detailed information on MacWrite's commands and features is provided in the *User Manual* (3). This new version of MacWrite (the principle word processing package for Macintosh) provides some additional features which bring it in line with packages such as Word 5.0. These include the following:--

- Help window accessed via the Apple menu;
- icons for line spacing and justification;
- page dialog box for precise setting of margins and columns;
- copying to/from the Scrapbook;
- word-count facility.

All the other editing and formatting features are similar to the other Claris packages.

2.2 Education criteria

Before making an analysis of the educational criteria for the CD-ROM booklet, it is important to consider the process by which curricular material *in general* is produced. This process will act as a framework for a more detailed study of the criteria for producing instructional material by drawing on ideas from literature available in the field of education.

The six stage of this process are based on arguments propounded in Ellington's (10) introduction to Chaper 1, and are as follows:--

Pre-design stage:

1. **Define** the audience (learner) and expand on his/her background;
2. **Establish** clearly defined learning objectives and specify what the user is to achieve;
3. **Identify** the instructional method that will achieve these objectives and **select** suitable supportive material for this method;

Design stage:

4. **Acquire/produce** the material, using relevant educational/design theory as necessary;

Post-design stage:

5. **Edit** the document and **evaluate** it with the users;
6. **Revise** the document on the basis of the results obtained.

The above six steps form a rather detailed account of the process by which curricular material is developed: it is not necessary for the instructor to adhere rigidly to this pattern for each and every production exercise attempted.

It should also be noted that the CD-ROM booklet was envisaged to be used as a reference/study aid placed by the workstation. It does not, therefore, fit strictly into the educational strategy outlined above.

(1) **Defining the audience**

At the heart of the first stage of the process lies the question: who is the user? Quilliam (5) states the following:

> You first need to know who are the people you want to reach with your information. ... Your possible market might be customers, friends, those with a common interest, employees, the authorities, opinion formers.

Kemp and Dayton (6) expand on this by stating 'it is advisable to plan for **one major audience group**. Then consider other **secondary** ones which also might use your materials'.

For the CD-ROM booklet, the statement ran:

> *The audience will comprise young undergraduate library students from a wide range of countries. These students have at least high school education and a good command of English. They have an interest in the information needs of the community at large, and a genuine desire to take a pro-active rôle in the dissemination of that information by deciding on a career in the library and information world.*

Students on undergraduate courses in DLIS require a variety of educational qualifications. The qualifications needed for these courses are as follows:

Single subject degree:

- O-Level in mathematics/science subject
- Grades CCC at A-Level for three subjects, or BC for two subjects.

Combined subject degree:

- Equivalent of twelve points for three subjects.

With Computing Studies:

- Equivalent of eighteen points for three subjects.

Besides the user's age and educational level it is also necessary to take the following factors into account : his/her knowledge of the subject; skills relating to the subject; attitude towards the subject; cultural context and individual differences in the group. These all influence how the material content is treated.

It was assumed that the user of the CD-ROM booklet had acquired the following skills in his/her pre-university education:

(i) a *basic* familiarity with the hardware and software components of a microcomputer, AND

(ii) keyboard skills.

The above requirement (i) was desirable, but an attempt was made to keep the instructions on the microcomputer as clear and self-explanatory as possible. No other computer familiarity was assumed. For requirement (ii), it is *de rigeur* that the user knows how to locate the ENTER key and what function this key serves; also that the layout of different keyboards can vary, especially with regard to the numbers and Function keys.

(2) Establishing learning objectives

Objectives for the instructor

> To plan successful instructional media and other learning experiences, it is necessary to know specifically what must be learned. The purpose of formulating objectives is to provide clear guidance that permits an orderly presentation of content leading to learning. (7)

The above quotation from Kemp provides the rationale for establishing learning objectives. Objectives are formulated by the instructor so that his/her general idea can be translated into a specific statement of objective(s) for the planned learning in the instructional process. Only then will (s)he be able to clarify exactly what it is that is to be imparted in the material content.

Kemp (8) divides learning objectives into three categories:

(a) **Psychomotor area**: performance skills which involve the use of muscles to carry out the task;

(b) **Cognitive area**: knowledge and intellectual skills;

(c) **Affective area**: attitudes, appreciation and values.

The difficulty lies in developing the learning experience to satisfy each objective and establishing performance measures to see if the learning has taken place.

Objectives are then formulated using two parts: (1) ACTION VERB, e.g. to *identify*, to *name*, to *demonstrate*, to *make* or *build*, to *order* or *arrange*, to *distinguish between*, to *compare*; (2) CONTENT REFERENCE following the verb, e.g. to name the *five steps in a process*, to assemble *the parts of a machine* correctly, to apply a *rule*, to solve a *problem*. A STANDARD OF COMPETENCY may also be added, e.g. *5 steps, all parts, four or five problems.*

Learning objectives for the CD-ROM booklet were as follows:--

(1) To provide a brief introduction to database structure and the CD-ROM database in particular

(2) To show in a series of structured steps how to get the system running so that searching can take place

(3) To demonstrate the principles of searching by which information is retrieved from the database

(4) To promote an interest in operating other databases.

Objectives for the learner

Newton (9) maintains that learning goals must also be stated for the learner. This enables him/her to focus attention on what matters and put the subject studied into an overall context.

An attempt was made in the CD-ROM booklet to provide such learning goals with the statement on p. 1

> It [the booklet] will tell you all you need to know to conduct a successful search of the databases issued by SilverPlatter on compact disc using a microcomputer and CD-ROM player.

(3) Identifying the instructional method/selecting supportive materials

Before appropriate supportive material is designed it is necessary for the teacher/instructor to examine the class of instructional method within which the learning process is to take place. The correct method of instruction is important so that the learning objectives can be achieved. As quoted by Ellington (10), Professor Lewis Elton of the University of Surrey has divided teaching/learning systems into the following three basic groups:

(a) **Mass instruction techniques**: all the techniques that involve expository teaching of a class of students by a teacher, e.g. a lecture. The learner usually takes a passive rôle in the process.

(b) **Individualized instruction techniques**: the techniques based on the students assuming responsibility for their learning, carrying out study at their own pace in a variety of locations such as school, home, office.

(c) **Group learning techniques**: the techniques that involve teachers and students working together in small groups in order to discuss, question, perform or take part in other forms of personal exchange.

The choosing of an appropriate instructional method will depend on a number of factors, which include:

- economic resources at the disposal of the educational establishment
- the type of learning objectives that are to be achieved
- the method(s) that instructors and students feel most comfortable with.

The technique envisaged to be most appropriate for the instruction process underlying this project was the individualised instruction technique. The choice of output product for this technique was determined by two factors:--

- how suitable the material is for the instruction mode;
- how readily the material can be produced on-site by the trainer.

Ellington (11) outlines a large number of materials suitable for individualised instruction, which include printed and duplicated materials; tape-slide programmes; video materials (on tape and videodisc). Of these categories, *printed material* was the most desirable

for teacher and learner. An A5 booklet was chosen from the range of printed materials as the means of communication for the following reasons:

(1) to explore the use of DTP and interfacing with printers in the production of such a booklet;

(2) a simple instructional booklet seemed to be the most appropriate means of teaching the basic skills of CD-ROM database searching;

(3) the ability to easily mass produce printed material facilitates the distribution and evaluation of the material;

(4) the assumption was made that all students would be able to read a booklet whereas other methods such as video, tape-slide, etc would require the ability to handle the equipment in an unsupervised situation.

(4) Producing the supportive material

This is the most difficult, time-consuming stage of the process and involves:

- writing the appropriate text, and organising it clearly;
- presenting it in straightforward, easy language with appropriate illustrations.

The design stage, therefore, entails the use of guidelines on how to write instructional text in this section, and the design criteria in §2.3. The guidelines on writing the text are based on Hartley (12) and additional literature given in the Bibliography.

Organising text

Titles are 'succinct descriptions [which] help to focus attention and expectations'. (13) They describe the content of a text especially if such text is ambiguous. They should not be ambiguous themselves, but indicate to the reader what (s)he is to get from the reading.

The title 'Beginner's guide to SilverPlatter' was short and pithy, but was based on the assumption that the reader knew what the name SilverPlatter referred to.

Summaries (telling the reader what the text is about) were not employed in the CD-ROM guide in view of the nature of the text.

Headings were placed in the margin in a different typeface to the rest of the text. Little research has been done into the position and style of headings, but they can act as an aide-mémoire for the reader and help him/her re-enter the text at the right place.

Questions, put in the text before or after paragraphs of relevant material, often lead to specific learning. Their use was not found necessary in the guide.

Sequencing is a logical order of sentences or paragraphs in instructional text. The order in the CD-ROM guide was as follow:--

1. Definition of a database
2. How to start the microcomputer
3. How to switch on the CD-ROM player and load the CD
4. Explanation of two basic kinds of searching:
   (a) using the Index (descriptor field)
   (b) using natural language
5. Use of Boolean operators
6. Use of truncation (wild cards)
7. Narrowing the search by limiting it to a specific field(s)
8. Example of sample record.

Sequencing lists, or numbering the components and placing them in a vertical list, are preferred by readers according to Frase and Schwartz. (14) These aid comprehensibility of technical text when compared to run-on in continuous text. The use of sequencing lists was not necessary in the CD-ROM booklet due to the nature of the material.

Typographic cueing is the printing of new technical terms in italic or bold and can aid the reader in learning. In the CD-ROM booklet, headings and instructional commands are in bold type, and new technical terms are in italics eg *free-text search*.

Text factors

Paragraphs length: Paragraphs were kept short and well-spaced in order to make the text easier to read.

Sentence length is important for easy understanding. Sentences that contain too many subordinate clauses make it difficult for the reader to

bear all the points in mind and disturb the flow of the ideas. Sentences were kept as short as possible in the CD-ROM guide.

Word length: Short familiar terms were used as much as possible in the guide, but did not always allow for non-native speakers of English. See §3.3 Analysis of the results.

Clarifying text:

(a) The active voice was used in the guide rather than the passive so that sentences did not become too complex, eg 'let's do a free-text search'.

(b) Positive terms were used as much as possible throughout the guide. This was not adhered to with the command (p. 2): 'Please **do not** push the drawer closed, use the open/close button instead'. This should be re-phrased 'Please use the open/close button to close the drawer ...'. The amendment would be incorporated in a revised text.

Text difficulty: Various formulae have been devised in order to calculate the difficulty of prose text, eg Flesch's Reading Ease Score or Gunning's formula. (15) A simple table based on Flesch's formula is provided by Hartley (16) and has been used to calculate the difficulty of the CD-ROM booklet.

Based on samples of text taken from the booklet, the reading age is calculated at approximately 15 -17 years old.

Footnotes: Footnotes break up the reading flow and are irritating for the reader. They were avoided in the CD-ROM booklet.

(5) Editing and evaluating the document

Editing of the text was carried out by printing draft copies and proofreading at a later stage. Spelling errors were located using the Spell Check in the Story Editor in PageMaker.

The document was evaluated by drawing up a questionnaire form and distributing it with the booklet to the different populations. Please refer to §3.3 for an analysis of the results.

(6) Revision of the document

Documents should normally be revised on the basis of the results obtained from the user testing. The CD-ROM guide is presented in this dissertation in the uncorrected version so that comments by the users can be compared.

2.3 Design criteria

Good planning is essential when designing instructional text. Hartley confirms this with the following statement:

> First, instructional text is usually much more complex in its structure and appearance than is continuous prose - and thus it requires greater care in its design and presentation. Second, technical advances in print and information processing mean that more and more 'non-specialists' are producing instructional materials. Such people require assistance, and planning will help them to be more effective. (17)

If the DTP user is a non-specialist in the area of textual preparation, s(he) has recourse to a variety of books on design that can give him sound advice before commencing the project. An outline of some of the useful texts in this area is given in §1.5 *Results of literature search*. The present section emphasises those particular aspects of design and planning that the non-specialist will need to keep in mind when designing instructional (or other) material using desktop publishing facilities on a microcomputer. Such a non-specialist, armed with an understanding of fundamental design concepts and a working knowledge of the available software, will be in the position to produce competent results once he has identified the message he wants to impart. In fact, the writing of the text and the acquisition of the graphic elements is in reality the hardest part of the whole process.

Quilliam and Grove-Stephenson (18) define document design as the 'visual appearance of the document: its size, format, layout, style'. The process necessary for producing the instructional booklet was broadly as follows:

1. Thumb-nail sketches (reference grid);
2. Page size (format);

3. Page setup/layout;
4. Typefaces and spacing.

The design decisions (inherent in each of the above four steps), that it was necessary to consider for the DTP project are discussed in this section.

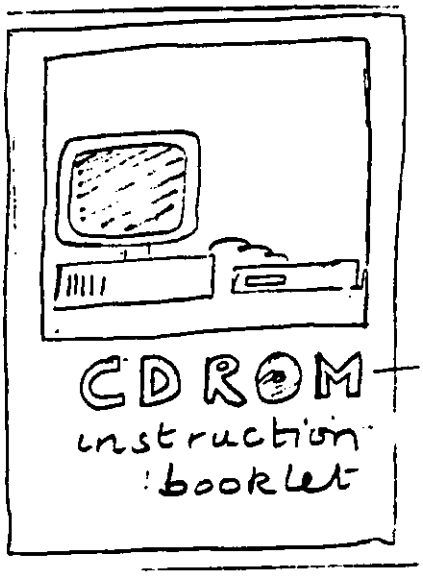
2.3.1 Thumb-nail sketches

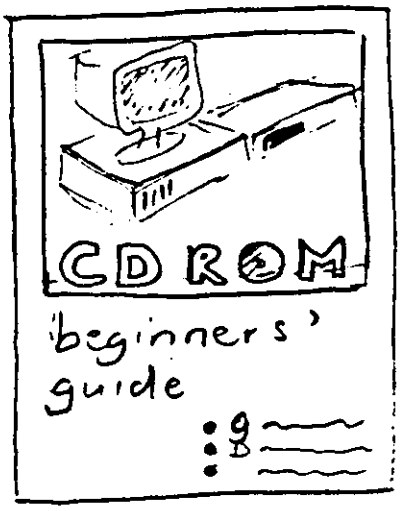
A reference grid for the publication needs to be drawn up in advance so that the relative position of all the page elements can be decided. This is a important part of the production process and is necessary for number of reasons:

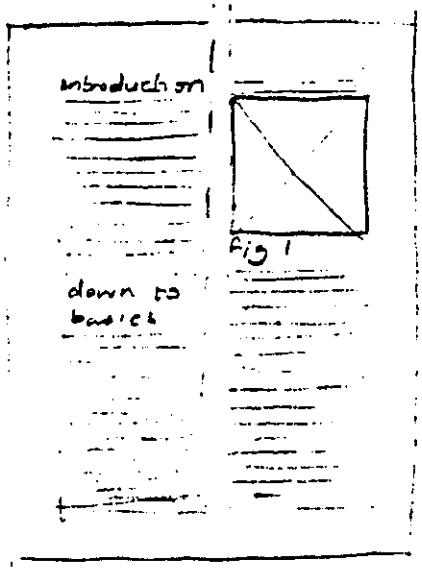
(i) it facilitates the sequential organisation and grouping of the constituent parts;
(ii) it saves the fraught, time-consuming business of having to come up with design ideas and work the program at the same time;
(iii) it allows the user's creativity to develop with the familiar medium of pen and paper.

The reference grid, strictly speaking, is a 'system of numbered co-ordinates' which maps out the information area of the page in identically dimensional modules of space'. (19) Since DTP packages such as PageMaker allow the use of rulers and non-printable guides on screen, the practice of producing a detailed basic reference was not needed. These facilities are very fast and easy to adjust using the computer once a rough sketch of the page elements (thumb-nails) has been made.

A rough grid was plotted on the thumb-nails to enable all the pages of the instruction booklet to be uniform in style and character. The different pages must be consistent so that the layout does not become confusing and chaotic to the reader. When designing for companies, it is particularly important to stick to in-house style. Please refer to §2.1.3


CD ROM
instruction
booklet


CD ROM
'beginners'
guide


introduction
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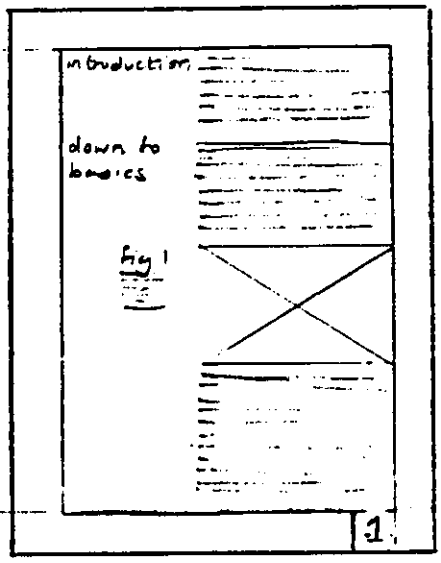
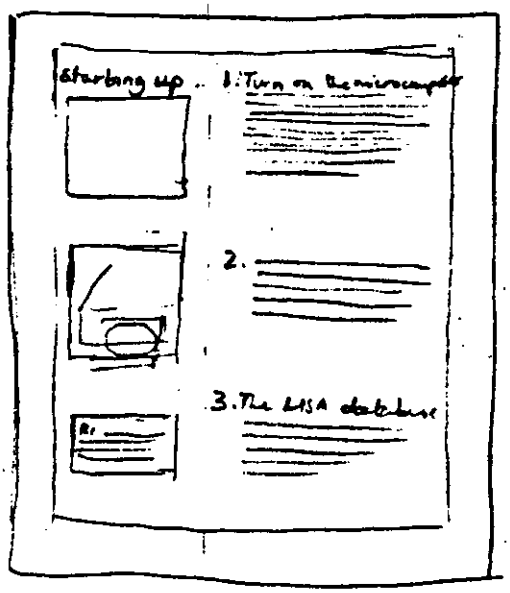
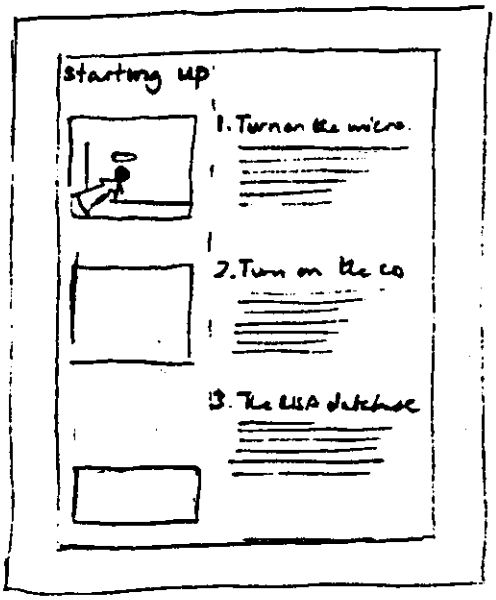

introduction
down to
basics
fig 1
1


starting up
1. Turn on the microcomputer
2.
3. The LISA database


starting up
1. Turn on the micro
2. Turn on the co
3. The LISA database

Page setup below for details on how uniformity of design is achieved with PageMaker.

In the event that the DTP user is unsure what layout is appropriate for the publication in mind, s(he) can use pre-packaged templates (also called stylesheets) to assist him in the production process. These templates are made up by professional designers and come in a wide variety of formats ranging from newsletters to price lists. PageMaker provides a number of styles for some common publication, e.g. the newsletter. A template was not employed for the instruction booklet because an appropriate format was available in the Template file, nor was it worthwhile modifying one of the pre-existing formats to suit requirements.

2.3.2 Page size

Hartley (20) states that 'the size of the page determines the size of the overall visual display to the reader'. A large format such as a poster is suitable if the reader is to scan and take in the information quickly; a smaller format (e.g. A4) allow the presentation of complex, yet easy-to-follow information and gives the designer flexibility in his/her display of illustration among text; a smaller format still (A5) is convenient for reference publications where a little information is to be displayed in a clear and uncluttered manner.

When producing documents on DTP systems, the choice of page size is naturally restricted to the dimensions of the paper that the adjacent printer can accommodate. It is as well for the would-be DTP user to go for a printer that uses standard (ISO-recommended) page sizes as he may encounter problems in reproduction - either with an outside printer or in-house. This problem was encountered with the Hewlett-Packard PaintJet in DLIS. It was planned to produce the colour version of the booklet for distribution to the survey populations using this printer; however, the unconventional page dimensions (210 x 304.8 mm, neither an A or B series designation) meant that the margins were rather too large for the A4 format and would have had to be trimmed if multiple copies were made of the booklet.

The page size chosen for the DTP project was A5, which measures 148 x 210 mm. A5 format can be displayed on screen using PageMaker 4.0, but is printed in the middle of the A4 sheet one page at a time. This problem was tackled by specifying A4 landscape in the Page Setup Dialog box, and setting two equal columns for the facing pages. A4 landscape was thus folded in half to make two A5 pages. A5 page size was chosen for three reasons: it makes for a manageable format; it is less psychologically 'daunting' than the larger A4 size; and as Stubley (21) states, 'the ability to open an A5 publication direct [on PageMaker] is particularly important for many publications, particularly library publication, use this size ...'.

2.3.3 Page setup/layout

The following quotation from Collier and Floyd acts as a starting point for our look at page setup:

> The overall page depth and width is defined by margins, and within that space, vertical columns determine where text and graphics will be placed. The page depth will depend on the size of type to be used, the leading (space between the lines of type), and the outside margins. (22)

Measurement system: The measurement system, which is used for the precise alignment of the page elements, is the first thing to be set once the document has been opened. The range on PageMaker is inches, decimal inches, picas and ciceros, and the user selects the one s(he) is most familiar with. The unit is selected from the Preferences Dialog box under the Edit menu; centimetres were chosen for the instruction booklet as being the easiest to work with.

The Master Page: The overall page layout of the publication has been roughly sketched on the thumb-nails, and can now be transferred to the actual production process. PageMaker allows this by the facility of the Master Page, on which can be incorporated all the page elements and features that are to be repeated throughout the document.

Once the document has been created and the measurement system chosen, the Master Page is accessed by clicking on the icons at the bottom left-hand corner of the screen. If necessary, both left- and right-hand master pages will have been made on document setup, but for the CD-ROM booklet just the left-hand master page was needed. The

margins, column guides and ruler guides will now be set via the menus at the top of the screen.

Margins: Margins are defined by Quilliam and Grove-Stephenson (23) as 'the space between the edge of the page and the text'. Thus they define the text area on the page. The main function of margins is to show off the text and illustrations and make the page look balanced. They are set on PageMaker in the Page Setup Dialog box. Allowance must also be given for the document to be held by the reader without obscuring any text.
Suitable margins for the CD-ROM publication, based on an A5 page, were calculated as follows:

Left: 1 cm. Little room was needed for binding the booklet which was merely stapled together.

Right: 1 cm. To balance the left margin.

Top: 1 cm. For balance on the page.

Bottom: 1.5 cm. A larger margin should be left in most documents at the bottom for visual reasons so that the text area does not appear to be 'falling off' the page.

Columns: The width of the information area will, if necessary, allow for the placing of column widths and intercolumn spaces. The decision to place more than one column is influenced by how long the line length should be (see below). On an A4 newletter, one column would be too long to be legible: two would be much easier to read. When using A5 format, one column suffices.

The strategy for the CD-ROM booklet was as follows: to allow a large margin approximately one-third the width of the text area, in which could be placed headings, graphic elements (photographs) and notes adjacent to the text to which they referred. The rest of the text area (two-thirds) would contain the body text. The principle followed was similar to that used by Hartley (24) where illustrations are interspaced unsystematically among text. A similar example is provided by Collier and Floyd (25) in their sections on manuals. It becomes much clearer from a layout point of view if such illustrations can be put on a facing page, or, in our case, a wide margin.

Ruler guides: On PageMaker 4.0, ruler guides can be set on the preliminary Master page to ensure such consistency in design/layout. Any grids, boxes etc. set on the master page are imposed on the text pages and cannot be removed. The placing of a box at the edges of the information area just beyond the margins made an attractive page design for the CD-ROM booklet.

Line length: Line length is usually gauged by the number of letters (characters) that will fit on to it. On the whole, a maximum of sixty letters per line will be found easy to take in by the eye. If the line is much longer, the eye is apt to get lost on it and reading will be impaired.

2.3.4 Typefaces and spacing

Typeface: The term typeface, in computing terms at least, describes all the sizes and styles that make up a particular design of type. Thus Helvetica is an example of a typeface. Briefly, typefaces come in two different styles: serif and sans-serif. A serif typeface contains letters with small strokes at the end of any line, which are said to help the eye move from character to character. Times is the most common serif typeface in use. Sans-serif typefaces do not contain such strokes and are arguably more difficult to read when large chunks of text are displayed.

The main effect of a particular typeface is the style it imparts to the publication. Sans-serif fonts impart a modern, clean look to a document and are generally considered suitable for technical material. Thus it was decided to set the CD-ROM booklet in Helvetica. PageMaker allows the use of several dozen fonts, and it is easy for the novice to get carried away and go for a totally inappropriate style, or even mix different fonts indiscriminately.

Type size: Type is measured in points on most DTP systems, including PageMaker. A point is 1/72-inch and 12 points make a pica. The main criteria for choosing a typeface is legibility and line length. If the typeface is too small, the document will be difficult to read and the line length appear long; if too large, the maximum number of words per line will be decreased.

10 point Helvetica was selected for the body text of the CD-ROM booklet. This was based on a calculation of an average of 45 character spaces for

a line length of 7.5 cm. Pica measurements for line measure were discarded as being unfamiliar to anyone but a professional typesetter.

Spacing elements: There are three spacing elements which make a document easy to read and pleasing to the eye. These are:

(i) Letterspacing: the horizontal space between letters in a word;
(ii) Word spacing: the horizontal space between words on a line; AND
(iii) Line spacing: the vertical space between lines.

All three are set automatically by PageMaker, but sometimes it will be necessary to adjust the spacing attributes. Line spacing (or leading) is the one that one is most likely to need to change. The lines in the CD-ROM booklet are auto-spaced, and turn out at 10/12 point (ie 10 point type with 2 points of leading). Certain areas of the text required additional leading to make them form legible. An example of this is the 'Screen shows' paragraph at the bottom of p. 3.

Justification: The term justification refers to the spacing of text so that it comes flush with the left and right margins. It is used in much of the printed matter in books, magazines and newspapers, because it was regarded traditionally as aesthetically pleasing. However, there has been a noted increase in the use of unjustified text with a ragged edge on the right. This practice has been employed in the setting of the CD-ROM booklet, where the passages contain short words and do not create a very ragged right margin.

White space: This is the margin and unprinted area around copy and figures. White space is used to provide 'air' or 'breathing space': without it, a design will look cluttered and unattractive. Since the designer's job is to make documents that are pleasing to the eye, s(he) must strike a balance in the proportion of printed area and white space if the document is to work.

PageMaker Reference Manual (26) advises on the use of white space around large headlines to set them off for impact; and less around the text to balance the page. As much white space as possible was left when designing the CD-ROM booklet. The large CD-ROM headline was enclosed in a box along with the photo of the microcomputer, and does not stand out as much as it might on its own: however, its design is

sufficiently imaginative to catch the eye. In the body text, the large left-hand margin was used so that text did not crowd the page; sufficient lines were also left between paragraphs to make the text readable. Refer to §2.3 Education criteria for information on text layout.

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CHAPTER THREE
EVALUATION

3.1 Evaluation of hardware/software

This section concerns personal reactions to, and comments on, the hardware and software used in the production of the instruction booklet. The hardware features are attempted first, followed by the software. Evaluation will be tackled by analysing the usability and appropriateness of each feature for the DTP project and will involve a discussion of the following:--

- ease of use/learning
- criticism of documentation
- comments on interfacing.

It should be noted that the evaluation is a *personal* evaluation and is written from the standpoint of the 'average' user, not a computer scientist. This is done for two reasons: firstly (and most importantly) I do not possess an expert understanding of technical details and specifications; secondly, the dissertation is most likely to be read by the user who needs a personal critique, not an expert critique (such as would be found in a magazine).

3.1.1 Hardware options

(i) Macintosh IIx (including mouse and keyboard)

The **mouse** is practically synonymous with Apple Macintosh and is almost as essential as the keyboard as an input device. It replaces the cursor (arrow) keys which work only in a compass direction. Selections and choices from the menus are also made with the mouse, by pressing the mouse button and dragging down.

The Apple Desktop Bus mouse used for the project fits comfortably in the hand and generally rolls fairly easily on the Mouse pad. The co-ordination needed to move the mouse quickly and accurately is considerable at first, and it took me weeks to become really proficient. Thus I would not claim that using a mouse is easy, but practice makes perfect (or almost). The documentation does not stress enough that the mouse must be *picked up* frequently when the new user has trouble finding the cursor or it keeps going off the screen.

The **Apple Extended keyboard** has all the usual character and number keys common to any keyboard, plus special keys (such as Option and Apple symbol keys) that allow the production of alternate character sets or duplication of actions normally done with the mouse (eg Option + S for Save in PageMaker). Additional keys not common to other Apple keyboards are the Function keys: these can be programmed with applications like the Function keys on other operating systems such as MS-DOS.

I found the keyboard quite user-friendly. The on/off key at the top right-hand corner is a really advantageous feature, and saves the user fumbling behind the main unit. The keyboard is well designed from an ergonomic point of view, and none of the keys (eg the return keys) seemed too far to reach. The most common keyboard shortcuts (save, place, tabs, print etc) were found useful as they are so quick compared to grabbing for the mouse.

The **main unit** of the Macintosh IIx used for the project contained an Apple SCSI hard disk on which were installed all the system and application folders, and one 3.5-inch floppy drive. The two Apple Desktop Bus ports allowed a left-hand, as well as right-hand configuration of the keyboard and mouse. This user-friendly feature could assist those who prefer a different arrangement of the input devices. The in-use light at the front, left-hand side of the unit was not found to be of much use. The noise of the internal fan during operation was negligible, and did not interfere with concentration.

The Macintosh IIx used would have benefited from an extra floppy drive to facilitate the making of back-up discs. A complicated procedure had to be employed for the back-up disc which involved ejecting one disc then loading the other a number of times. This can lead to confusion between discs, and inadvertent erasure of information. The ability to use high-density, 1.4-MB discs on the IIx was of value for my own work, as it allowed me to keep an additional copy of the booklet without fear of accidental erasure from the hard disc by another user (there was no facility to deny access by other users). However, graphic elements take up very large amounts of space: one of the small graphics on p. 2 took up 256 K memory at at a scanning resolution of only 150 dpi (maximum is 300 dpi). Thus even with such a modest publication as the CD-ROM

guide, the floppy is very soon full. In the light of this, it seems futile to attempt any kind of serious DTP work without the use of a hard disc.

(ii) Radius 35 monitor

Although no documentation was available for this piece of hardware, the following general comments can be made. The physical dimensions of the screen were such that a whole A4 sheet could be viewed on the screen without the need to use the scroll bars to move about the page. The monitor provided high-resolution display in colour superior to that of a television screen, enabling close detailed work with both text and graphics using the programs available: this was of most help with the zoom facility in the graphics package. With the word processing package, however, type size less that 12 point was too small to be read comfortably.

(iii) Apple Scanner

The interface used to join the Apple Scanner to the Macintosh was an SCSI cable. One end of the cable was connected to the a port on the back of the Scanner, the other to the computer itself. No problems were encountered with the interface. The Scanner hardware is easy to use and is similar in operation to a photocopier. The sample original was placed face-down on the scanner glass in the top, right-hand corner, and held down by the lid. Originals scanned for the guide were thin (photos and line-art drawings), and it was not necessary to detach the lid of the scanner to accommodate thicker originals such as books.

(iv) Apple LaserWriter IINTX

The LaserWriter had already been connected to the Macintosh using LocalTalk cables and LocalTalk connector boxes, and no problems were encountered with these interfaces. The printer resource software was also pre-installed on the Macintosh. The LaserWriter II test page was always clear, did not contain spots and was of the right shade (neither too light or dark). Thus it was not necessary to consult the chapter 'Maintenance and Troubleshooting' in the Owner's Guide. (1)

Printing with the LaserWriter via the Chooser was straightforward. A small amount of time was necessary for the printer to heat up, but helpful to check the printer before use. The Page Setup dialog box was set at the first printing of the document: paper was A4 Letter and

orientation was wide; no printer effects or options were needed. Thereafter Page Setup was not found necessary to change. PageMaker printed the first page of the document last, so the face-up delivery of the printer was appropriate. When paper ran out, the paper cassette with new stock was easy to load into the slot on the right side of the LaserWriter. The status lights all worked as indicated. Printing quality was always excellent with the paper used.

(v) Hewlett-Packard PaintJet

The PaintJet was already connected to the Macintosh II using the RS-232-C Interface cable. The computer was also configured and no further steps were necessary, nor any interface problems encountered. The print cartridges were already loaded: further loading was not found necessary during operation.

To load the paper correctly, the Guide was consulted. The procedure is a lengthy one and was not found altogether easy; on one occasion a small amount of torn paper was even trapped behind the sprockets, and needed to be removed (with difficulty) by using tweezers. Doubtless, the loading operation would improve with practice.

Colour reproduction using the Z-fold paper was good, with vivid, smudge-free colours as described in the accompanying packaging.

The PaintJet was *not* used in the final production of the CD-ROM guide for the following reasons:

(1) Few downloadable character sets were reproduced satisfactorily with the PaintJet. The printer was not able to define the desired font (Avant-Garde) well enough in terms of aesthetics or reading.

(2) Printing of multiple copies was made very difficult because Top of form (the line where printing begins) could not be maintained. This would have meant reproducing each page separately and would call for considerable skill in setting the first line of each page.

(3) Photographic elements (which were black-and-white) were not well reproduced especially in regard to half-tones. This detracted from the overall appearance of the document.

(4) The paper dimensions (larger than A4) made the imageable area too small for the page. This was further aggravated by the fact that the imageable area had to be scaled to 99%, because when

'Match LaserWriter' was selected on the Print Options, the PaintJet did not reproduce the whole image.

(5) The high cost of colour reproduction (currently £1/page at university discount prices), and the technical know-how required, precluded the photocopying and distribution of the guide to the population for survey purposes.

3.1.2 Software options

(i) Aldus PageMaker Version 4.0

On learning complex systems, Kathy Lang states:

> ... you will need at least a month (if you already have some experience and are using the system a lot), and probably three months or more (if you are new to computing or only use the system occasionally), to become reasonably proficient. (2)

Training and effort *is* required if complex DTP programs are to be fully and efficiently utilised. Learning the intricacies of PageMaker on one's own, and knowing how to produce the wide range of document designs possible takes a lot of hard work, much creativity and lateral thinking, and a lot of mistakes (not to mention frustration). My approach was to work through the manual *Getting Started* (3) before plunging into the document proper, and hoping the remainder of the documentation would act as my life-guard when difficulty arose.

This evaluation of PageMaker is made difficult by the fact that I have no experience of working with any other DTP system, and thus no point of comparison. Evaluation will proceed in the following order:

(1) Criticism of the documentation as regards guidelines on the **different formats** which can be produced;

(2) Comments on the ability of the program to produce and print the desired format in mind for the CD-ROM guide;

(3) Comments on desktop publishing features;

(4) Comments on typographic features;

(5) Additional comments.

Comments

(1) Different formats

After the planning stage, the user working alone will need to find out the best, most efficient way to produce the desired format of a document

with the DTP program. PageMaker can be learnt by working through the lessons in *Getting Started*. The fundamental tools and techniques of PageMaker are introduced first: instructions are then given for making a two-page newsletter. This is very useful for a user who does not want, or is not able to go to a class. A more comprehensive source of design ideas can be obtained from the templates file provided: these templates are for the benefit of users who frequently create the following kinds of publications: slide presentations, employee bulletins, price lists and promotional flyers. They can be used as are or modified to fit special needs. Templates can also be built from a design idea if necessary.

Having said all this, the documentation provides only limited information on document design, and templates cannot hope to cover every type of design situation. What of the publication which does not fit into the template mould? The design of the CD-ROM guide was conceived independently, and the rough draft committed to paper using thumb-nails. Advice therefore had to be sought from another user on the university campus with experience in producing an folded A5 booklet.

(2) Producing and printing the desired format

There were two problems at this stage: firstly, PageMaker does not allow the printing of two facing A5 pages on one A4 page. An A4 page landscape with two columns, one for each A5 page, therefore acted as the page format. Sequencing of pages for the guide had to be carefully attended to: the first A4 sheet had page 7 in the first column, faced by the title page; the second sheet had page 1 followed by page 6, etc. Secondly, laser printers do not allow printing on both sides of the page (this is not yet technically possible): this was overcome by making double-sided photocopies. As regards the first problem, PageMaker might not seem to be the most efficient method for producing this type of format on a regular basis. Other avenues could be explored and the advantages and disadvantages of each weighed before a final decision is made.

(3) Desktop publishing features

Importing

The process of putting together a document using **imported material** into PageMaker is not well explained in the documentation for the

variety of document situations a user might find him/herself in. Which method of importing text (clicking or drag-placing), and when each is appropriate, is largely left to the imagination of the new user. The business of click-placing text as opposed to drag-placing (ie defining the exact shape of the text block by dragging the loaded text icon) is not made clear in the *Getting Started* manual, and is not given at all in the *Reference Manual.* (4) The latter (pp. 28 -35) does, however, give the user information on steps to be taken when preparing text documents to import. This oversight seems rather grave when we consider what PageMaker is actually designed for.

Few problems were encountered when placing text and graphic into a PageMaker file, except on one occasion when the computer completely jammed. Placing was found to be an easy operation because files were from Macintosh packages and all compatible; the situation is not so easy when importing from packages made with IBM-PC systems as re-formatting will be necessary.

Text blocks

Text blocks are one of the most fundamental features of PageMaker, and it takes the user quite a lot of practice to get used to them. It really is necessary to study the 'Unraveling threaded text' in the *Getting Started* manual, yet having done this, I still found the manipulation of text blocks confusing. This seems to be another area where the documentation comes a cropper. The difficulty lay for me in the ambiguous use of the word *story*, which seems to be a publication made up of one or more text blocks imported from another file. When working with PageMaker documents, it seems better to let common sense prevail and try to work it out for yourself, or get somebody with more experience to show you.

The business of text flowing from one column/page to the next if a text block is removed (ie the tracking of the original order of the blocks by PageMaker) is a very clever and useful feature of the program, and it is important for the user to get to grips with unraveling threaded text, because in the long run it will work for, and not against him/her.

Story editor

The story editor is another feature of PageMaker with which the new user may not get to grips quickly. This is because there are a variety of methods for entering story view, depending on where in a story editing is to begin and whether or not the story is a new or pre-existing one. However, use of the story editor will be needed for any kind of serious formatting, as it is not possible to see the format codes (for paragraph, tab, etc) in layout view, and this will be necessary with complex material such as tables and complicated layout.

(4) Typographic features

Most of the commonly use fonts are available in PageMaker 4.0, although subsequent versions of this program seem to add more (perhaps less useful) fonts indiscriminately, and leaves you wondering where it will all stop. The type size range from 6 to 72 is more than adequate for the majority of users, and the range of type styles is quite comprehensive.

However, PageMaker does not allow the desktop publisher to produce much in the way of mathematical or scientific symbols, although it is possible to use super/subscript size and position.

(5) Additional comments

WYSIWYG: Output on the screen will never be completely the same as output from the printer, despite the development of outlined and bitmapped fonts by the software companies. The user should treat the concept of WYSIWYG with caution, because printed documents sometimes look very different from what is on the screen.

(ii) Aldus FreeHand 2.0

The basic concepts and tools of this package were gained by following the lessons given in the booklet *Learning Aldus FreeHand*. An attempt will be made to evaluate the ease of use of the program for producing the following features in the heading on the title page of the CD-ROM guide:

- working with type;
- drawing a circle;
- using a graduated fill.

The three features above were the only ones used in FreeHand. None of the remaining complex technical drawing features were used and are not discussed here.

Working with type: Type was entered in the illustration using the text tool as in PageMaker, and was found to be relatively easy. The business of defining the width of the text block by dragging the I-beam did not work as the documentation claimed. The type specifications were chosen before typing, but problems were encountered using the fill and stroke effect, and the documentation gave inadequate information on how to use the dialog box. Results were again obtained by trial and error.

Drawing a circle: The 'o' of the CD-ROM heading was drawn using the ellipse tool. The shift key was held down while dragging to form the circle (a constrained shape). The correct size was obtained by using the rulers at the left-hand side of the screen to measure the type described above. Another circle was repeated for the hole in the middle of the CD. This was very easy to carry out for anyone used to handling a mouse and who has studied the basic tutorial provided with the package.

Using a graduated fill: The manual Learning Aldus FreeHand outlines the steps for producing a graduated fill from black to white, but does not tell you *what* each step means. The user manual gives even less help on this. I followed the steps when producing the heading for the guide with blind faith, but as the procedure is quite complicated I would have expected the manual to give more detail.

In the light of the above comments, it can be seen that this program did everything that was expected of it, but did not always provide information detailed enough for the new user to feel comfortable about using all the features of the program.

(iii) MacWrite II

An attempt has not been made to evaluate this word processing program, which has similar features to all the other packages in the Macintosh range.

(iv) Apple Scanner

The Apple Scanner software was found to be the most difficult item to use in putting together the elements that make up the instructional text. In order to feel confident using the this software, it is necessary to study the tutorials in the Apple Scanner Owner's Guide. Experience is required to know which of the composition types (line art, halftone or grayscale) to use for the particular job in hand, and much further experimentation in order to achieve optimum results with the settings (threshold, contrast and brightness). The process of using the settings after Preview, and saving to a file, unfortunately became trial and error because not enough time could be expended on an in-depth study of another lot of documentation.

Problems encountered were as follows:

1. Using Preview was found difficult with the originals used, because not enough detail could be seen in the Scanner window to establish which part needed to be scanned. The whole image, therefore, was scanned and the shape of the scan area reduced down after.
2. The contrast levels of the photographic image on the title page of the guide were not correct and would need to be re-adjusted for the best obtainable image.
3. Perhaps because the software was not used in the correct manner (or the hard disc was full) the software would eventually not allow a scanning at 300 dpi which is the resolution appropriate for the printer. This explains the poor resolution of the photographic images on page 2 of the CD-ROM guide.

3.2 Sample populations

The questionnaire was drawn up to evaluate the efficacy of the booklet for the purpose of instructing new users on how to operate the CD-ROM database. The questionnaire and the black-and-white version of the booklet were distributed to two distinct populations: namely a non-library population (staff in the research department of a local brewery) and a library population (library students/staff attached to DLIS).

The non-library population had a wide range of educational qualifications, ranging from 'O' Levels to PhD, were familiar with the use of computers but had no training in online or CD-ROM database searching. Although they did not have access to a CD-ROM workstation their participation in the survey was valued as a way of assessing the booklet on its own merits. In contrast, the library population were all educated to degree level, had had previous instruction in online and CD-ROM databases and open access to the CD-ROM workstation and LISA database.

QUESTIONNAIRE

Introduction

The attached booklet *Beginner's Guide to SilverPlatter* has been produced as an exercise in designing and printing an instructional text using desktop publishing equipment. Your assistance would be gratefully appreciated by reading the booklet and answering the questions below. Please indicate your preference for each question by making a tick in the appropriate box.

Questions

		poor 1				good 5
1.	Attractiveness of cover	❑	❑	❑	❑	❑
2.	Legibility and appearance of text	❑	❑	❑	❑	❑
3.	Instructions easy to follow?	❑	❑	❑	❑	❑
4.	Examples helpful in explaining searching	❑	❑	❑	❑	❑

		yes	no
5.	More graphics needed?	❑	❑

		short	okay	long
6.	Length of brochure	❑	❑	❑

		yes	no
7.	Other format (e.g. instruction cards) better?	❑	❑

		poor	fair	good
8.	Overall layout and presentation	❑	❑	❑

9. Any other comments (please indicate in box below):

Please answer the following details about yourself.

		m	f
1.	Male/female	❑	❑

		yes	no
2.	Have you used a microcomputer before?	❑	❑
3.	Do you know what a database is?	❑	❑
4.	Have you used a CD-ROM database before?	❑	❑

* * *

Kindly return the form to: W J Arrowsmith, Department of Library and Information Studies, Loughborough University of Technology, Loughborough.

3.3 Analysis of the results

A summary of the answers to the questionnaire is shown in the table below. Each box in the range poor - good was scored 1 - 5. The number of replies in each box from the total is shown. The means score was derived by the following formula:

$$\frac{\Sigma X_i S_j}{n}$$

where X_i = number of replies in a box
S_j = box score
n = size of population.

To determine whether there was a significant difference between the replies from the two populations the mean scores for each question were compared using a two-sided t-test. In all cases the result was not significant at the 95% confidence level ($p \leq 0.05$). The scores from the two populations have therefore been combined to give an overall assessment of the CD-ROM guide.

	1	2	3	4	5	Mean Score
Q1. Attractiveness of cover	0	1	5	12	2	3.8
Q2. Legibility of text	0	0	1	11	11	4.4
Q3. Instructions easy?	0	1	3	11	8	4.1
Q4. Examples helpful?	0	1	3	9	10	4.2

	Yes	No	%
Q5. More graphics?	9	14	61% no

Q6. Length of brochure

Short	Okay	Long	%
1	22	0	96% ok

Q7. Other format

Yes	No	%
1	22	96% no

Q8.Layout/presentation

1	3	5	Mean Score
0	6	17	4.5

Q9. User comments--see after personal questions.

Personal questions

Q1. Male/female

M	F
14	9

61% Male

Q2. Yes =100%

Q3. Yes = 100%

Q4. No = 100%.

User comments

Below are the personal reactions to the booklet given by members of the two populations. The comments of the library and non-library populations have been kept separate for purposes of comparison. Page and line number references are given where appropriate.

Non-library population

(Person A)

p1 line 1: **CD-ROM** acronym not understood

l. 4: **DLIS** not understood

p2 l. 10: Paragraph on loading compact disc bracketed. Comment: How does it work?

p3 l. 31: Explanation of number of records retrieved needed

p6 l. 16: Limit fields not explained.

(Person B)

p1 line 4: **DLIS** acronym not understood

Remark 2 Comment: 'Not for a beginner'.

(Person C)

Remark 1 Titles to begin with a capital letter.

Remark 2 Pictures of the screen display (menus) would be useful

(Person D)

Remark 1 Function keys seem self-explanatory, but more detail on what they do might be helpful, eg what is the difference between Help and Guide?

Remark 2 Are function keys not shown on screen?

Library population

(Person A)

Title page: A sheet/board behind the player would give a less cluttered photo.

p1 l. 17: **each line** highlighted. Comment: This contradicts p. 5's use of field. You mean, each element, eg title, publisher, date

p2 l. 3: **left-hand side**. Comment: This always supposes we are looking from the angle you are. Picture not clear enough to a beginner to ascertain this. Why not 'use your right hand to reach behind the machine ...'

l. 5: **blue screen**. Comment: Graphic to show this instils confidence - I *know* I've got what I should have.

l. 9: see line 3

l. 16: Press ENTER or not?

p3 l. 18: **peruse**. Comment: A good word, but less familiar to an overseas student perhaps?

p4 l. 1: **relevancy**. Comment: relevance? -y is America-speak.

l. 2: **scroll**. Comment: I'd suggest another term to introduce 'scroll'. eg move up and down.

p5 l. 12: **#1**. Comment: This works only in this one sitting. Suppose you keep the leaflet as an aide-mémoire, and turn to this page. Either distinguish between the tutorial or treat each type of search independently?

p6 l. 13: **compact-discs**. Comment: Here we hyphenate a two-word term. With library associations we didn't. Can you explain to users when to insert one?

Function keys: good - but for ease of use on other occasions, suggest it's on back page.

p7 Fields: Comment: Personally, I think the abbreviation should follow the word. When scanning to find the right abbreviation, one looks for the concepts. I'd also prefer them alphabetically: it's how we look up phone numbers etc = left to right.

pp3 - 5 The different searches would benefit from marginal words, like the rest of the text (useful when returning to the guide to scan for help/reminder).

(Person B)

p3 l. 26: Step 4 underlined - not understood

p4 l. 7: Comment: insert 'how to select'.

(Person C)

Remark 1 Colour on front page

Remark 2 Did not think the 'Down to basics' section was that relevant.

(Person D)

Remark 1 Venn diagrams illustrating the effects of using operators would be useful

Remark 2 Photo in 'Starting up' unclear

Remark 3 Overall a useful quick reference

(Person E)

Remark 1 Digitised image on cover detracts from layout

Remark 2 Typescript of card index poor and is difficult to read

Remark 3 Thought inclusion of what Function keys do useful.

(Person F)

p4 More examples to explain Boolean operators [diagram given].

(Person G)

Remark 1 A bit more colour and more examples would have helped.

Post-design stage (editing)

In the light of the comments made by the populations on the booklet, the following alterations would be made:

(1) A silhouette image of the workstation on the title page would be made.

(2) Instructions for turning on the hardware (p. 2) would be given from the angle of the user.

(3) Photos of the computer and CD-ROM player would be re-scanned at a higher dots per inch.

(4) Terms such as *peruse* and *scroll* would be simplified for non-native speakers of English.

(5) Use of hyphen in **compact disc** (p. 6) as compared to **library associations** (p. 3) would be explained. This was left out so as not to confuse an (already) complicated issue.

(6) More marginal examples on the searches would be given. This would also help to alleviate difficulty in the body text (see (5) above).

(7) Function Keys chart would go on the back page.

(8) Given more time and money, a colour version of the booklet would have been attempted.

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2. LANG, K. *The writer's guide to desktop publishing*, 1987, p. 23.
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4. ALDUS CORPORATION. *Reference manual: PageMaker version 4.0 for Apple Macintosh*, 1990, p. 3 - 23.

CHAPTER FOUR
CONCLUSION

The principle objective of this dissertation was to show whether desktop publishing could be used by a person with basic computing skills to produce an instructional text on searching a CD-ROM database for use by undergraduate library students.

Although DTP is a complex subject there is a large amount of secondary literature available on the subject, much of it containing design criteria, which is suitable for a would-be desktop publisher. Some of the most useful texts in the field have been examined and evaluated, as have the hardware and software options used to produce the CD-ROM guide. The production of this guide showed that an understanding of DTP basics will enable the non-specialist user to combine text, artwork and photographic material into an immediately available product. DTP is therefore a valuable tool that the non-specialist can use to produce in-house material. This material would be considerably more expensive to produce by traditional publishing methods involving typesetting, graphic design and professional printing.

Whether it will be cost-effective to use desktop publishing in-house will depend on a number of factors, such as:--

(i) size of the organisation and the volume of work envisaged;

(ii) cost of acquiring the necessary additional hardware and software needed for DTP (eg laser printers, software packages);

(iii) whether suitably trained staff are already available within the organisation or whether extra staff will have to be engaged to undertake the work.

I would conclude that unless the equipment required and the staff needed are likely to be fully employed in the DTP task, it would probably be more cost-effective to contract out the work involved to a smaller firm which specialises in producing material using DTP technology. For work which is considered unsuitable for producing using DTP methods, traditional publishing techniques will have to be utilised.

My researches have shown that in order for an individual to use a DTP package all that is needed is a basic knowledge of the capabilities of

computer hardware and software and the possibilities it can thereby offer. In other words, it is not necessary to be a computer expert or to have undergone years of training in conventional publishing methods such as typography and printing in order to be able to produce one's own material, although it is necessary to be aware of the fundamental principles underlying these processes.

By using some of the available hardware and software I have shown that it is possible to produce instructional material like the 'Beginner's guide to SilverPlatter'. In order to establish the efficacy of the booklet, a small-scale survey was carried out. Feedback obtained from the survey showed that the objectives had been achieved and the booklet could be considered a useful introduction to CD-ROM searching. I therefore conclude that the DTP and graphic packages used were a suitable method for producing the material.

The instructional pamphlet which had been produced to accompany this dissertation is an example of what can be achieved in a limited time-scale, using information and resources readily available. I am convinced that the art of DTP can therefore be mastered in a reasonably short time frame and the knowledge so acquired can be put to immediate and practical use by a person with basic computer skills. Moreover, near-professional results can be obtained once the user has gained a lot of experience in using the DTP program and developed an understanding and flair for design by producing a wide variety of documents.

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APPENDIX

Technical specifications

(1) APPLE MACINTOSH IIx

Specifications

Processor	MC68030 CPU, 32-bit architecture. The microprocessor is the Motorola 68030 and is resident on the main circuit board between the Apple sound chip and the coprocessor.
Coprocessor	Motorola 68882 Floating-Point coprocessor (FPU).
Memory	RAM 4-MB expanded to 8-MB ROM 256 KB (firmware).
Disk capacity	800 KB on double-sided 3.5-inch floppy disks or 1.4-MB on high-density double-sided 3.5-inch disks (one drive unit only).
Interfaces	Two Apple Desktop Bus connectors for communication with keyboard, mouse and other devices over low-speed, synchronous serial bus. Six internal NuBus expansion slots supporting full 32-bit address and data lines. Two RS-232/RS-422 serial ports, 230.4 K baud maximum. SCSI interface. Sound port for external audio amplifier.
Input	Line voltage 120/240 volts AC automatically configured. Frequency 48 - 62 Hz single phase. Power: 230 watts maximum.
Clock/calendar	CMOS custom chip with long-life lithium battery.
Keyboard	Apple Desktop Bus Mouse, Family Number G5431.

Size/weight

	Weight	Height	Width	Depth
Main unit	11.8 kg	140 mm	474 mm	365 mm
Apple Extended keyboard	1.6 kg	56.4 mm	484 mm	188 mm
Mouse	0.17 kg	27.9 mm	58.3 mm	96.5 mm

(2) RADIUS MONITOR 35

No technical specifications are available at time of writing.

(3) APPLE SCANNER

Physical

Weight	Height	Width	Depth
9.072 kg	110 mm	340 mm	545 mm

Technical

Scanner type	Flatbed
Max. document size	8.5 inch x 14.0 inch
Interface	SCSI
Dropout colour	Green
Performance	20.4 seconds/11-inch, 300 dots per inch (dpi) scan, Line Art
Composition types	Line art, halftone, grayscale
Scaling	25% to 400%, depending on output resolution
Output resolution	75 dpi to 300 dpi
Contrast levels	8
Brightness levels	16
Threshold levels	16
Graymap settings	3

Power requirements

AC input (Universal)	100/120/200/220/240 V AC ± 10%, 48 - 62 Hz
Power consumption	Standby: 35 W Scanning 65 W.

(4) APPLE LASERWRITER IINTX

Specifications

Marking engine	Canon LBP-SX Laser-xerographic
Controller hardware	16.7 MHz 68020 CPU 1-MB ROM 2-MB RAM (expandable to 12-MB) LocalTalk interface, SCSI interface, RS-232 interface. Apple Desktop Bus (ADB) One slot for ROM expansion

Print quality	300 dpi for text and graphics
Apple fonts	ITC Avant Garde, ITC Bookman, Courier, Helvetica, Helvetica Narrow, New Century Schoolbook, Palatino, Symbol, Times, ITC Zapf Chancery/Dingbats
Speed	Eight pages per minute. Speed depends on images printed
Recommended duty cycle	Minimum life expectancy is 300,000 pages, no monthly limit
Print feed	Automatic with 200 sheet cassette. Manual with single sheet feeder.
Printing materials	16-lb to 20-lb photocopy or typewriter bond in normal mode, up to 36-lb stock in manual mode with face-up tray open
Page sizes/ capacity	Supports US-letter, US legal, A4, B5 and envelope cassettes
Imageable area	Max. printable line: 205.9 mm Min. top/bottom margins: 5.0 mm Min. left margin: 5 mm Min. right margin: 5 mm
Dimension:	Weight: 20.5 kg Height: 22 cm Width: 51.3 cm; (with cassette): 67.8 cm Depth: 47.5 cm
Voltage	(Europe) 198 V to 264 V AC 50 Hz
Power requirements	Standby 170 W average Operating 880 W max. at 240 V.