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Desktop publishing at DBMS magazine : a case study in redesign and reinvention

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DESKTOP PUBLISHING AT *DBMS* MAGAZINE:
A CASE STUDY IN REDESIGN AND REINVENTION

A Thesis
Presented To
The Faculty of the Department of Journalism
and Mass Communications
San Jose State University

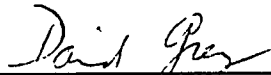
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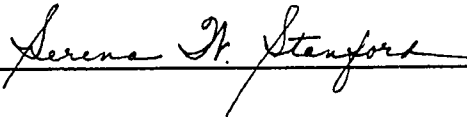


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Abstract

DESKTOP PUBLISHING AT *DBMS* MAGAZINE: A CASE STUDY IN REDESIGN AND REINVENTION

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This qualitative case study of *DBMS* magazine explored how desktop-publishing technology in the magazine environment influences both magazine design and the roles of those who produce a magazine. A month-long participant observation was conducted. Key staff were interviewed before the observation to determine the observation criteria and interviews with those observed were conducted to measure the validity of the observations. Eight employees and a design consultant were observed. *DBMS* management was both redesigning the magazine and investigating an eventual upgrade to its computer system.

It was found that typography and text-wraparound capability played important roles in the ultimate determination of what computer hardware and software should be adopted. It also was found that the typographer's job would likely be eliminated.

DESKTOP PUBLISHING AT *DBMS* MAGAZINE:
A CASE STUDY OF REDESIGN AND REINVENTION

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CHAPTER I

A CASE FOR STUDYING DESKTOP PUBLISHING AND MAGAZINE DESIGN

What is desktop publishing?

An acquaintance once asked: "What is desktop publishing?" It is a question the researcher often has asked herself, as well as the people whom she interviewed in connection with this study. In response to the acquaintance's question, the researcher loosely defined desktop publishing as the integration of word processing and graphic design onto the same printed page.

Desktop publishing has become one of those phrases that gets tossed around a lot in consumer magazines and newspaper business sections, but it is not always clear just what is meant by this buzzword. In the following section, computer reference books are used to establish what is meant by desktop publishing.

In the title of Chapter 1 of Grout et al.'s book, *Desktop Publishing from A to Z*, the authors (Grout, Athanasopoulos & Kutlin, 1986, p. xi) asked the same question: "What is desktop publishing?" In the introduction that preceded Chapter 1, the authors noted that "desktop publishing is an alternative to professional publishing. With a personal computer, page-layout software, and a printer, you can perform most of the work of publishing a document yourself." The authors' basic definition of desktop publishing holds true for individual

publishers equipped with the required personal computer, laser printer and appropriate software but does it not also apply to businesses—such as media organizations that publish magazines and use several, networked personal computers and where many people work on a single issue or project?

At *DBMS* magazine (DBMS stands for Database Management Systems—a logo-acronym that is never spelled out), which is published by M&T Publishing of Redwood City, CA, and is the subject of this case study, a manager who was responsible for production-related acquisitions and operations, preferred the term “electronic publishing” in reference to the computerized publishing system he had installed at the magazine. He distinguished between desktop publishing and electronic publishing in the following manner:

A long time ago we had typesetting and printing that was based on block letters that were put together on a platen, [that] would lead to the platen-printed piece. That began a progression of technology, albeit relatively slow at the beginning, and now very, very rapid, that moved from block setting eventually to the Linotype, hot-metal type, and then into photocomposition type, into what's now electronic, digitized typefaces and kappa ray work and laser work to put the book together. The traditions and conventions and styles that have worked out over a long period of time going back to Germany and Heidelberg is what I term as composition. And the professional electronic publishing systems are based on that same time line. They are built out of the tradition of composition.

Desktop systems generally are built out of the relatively young and new area of business publication. That to me is the primary

distinction. Business correspondence started out to a great extent as was handwritten correspondence. It moved into the form of calligraphic style where you would have a scribe. It moved from there eventually into the typewriter, and from there into a word processor. And now that word processor is moving into the publishing realm. So they're coming from two different streams of document management if you will. That is the distinction in my mind (personal communication, April 6, 1989).

Webster's New World Dictionary of Computer Terms (1988, p.128) defined electronic publishing as "a technology encompassing a variety of activities that contain or convey information with a high editorial and value-added content in a form other than print."

In *The Computer Glossary*, Freedman (1989, p. 206) defined desktop publishing as being the use of "a personal computer to produce high-quality printed output that is camera-ready for the printer. It requires a desktop publishing software package and a personal computer with a graphics-based monitor that can display one or two full pages at the same time. In order to produce printed output directly from the system, a laser printer is required; however, the 300 dots-per-inch output of a desktop laser printer is fine for text and line art, but is not suitable for shaded drawings and photographs." The author further recommended a typesetting system (such systems sometimes are called imagesetters); many of these systems are capable of generating professional-quality output of 1,200 dots per inch, or more.

Of the few definitions of desktop and electronic publishing that this researcher found in computer reference works, *print* was the key distinguishing word. Desktop publishing referred to the use of computers and software to produce a finished, printed product. Electronic publishing, on the other hand, referred to a variety of electronic media whose dissemination primarily was intended to be conducted through other-than-conventional print means. According to *Webster's New World Dictionary of Computer Terms*, these alternative, electronic publishing media include educational software disks, on-line databases, electronic mail, videotex, teletext, videotape cassettes and videodiscs. Applying these definitions, desktop publishing is the most accurate phrase to describe the technology in use at DBMS. A brief discussion of electronic publishing, as it is defined by *Webster's New World Dictionary of Computer Terms* and as it figures in the magazine field, is included in the Directions for Future Research section in the concluding chapter of this paper.

Paul Brainerd, the founder of Aldus Corp., is credited with coining the phrase desktop publishing in 1985, when his company's page-layout program, PageMaker, was introduced (Juliussen & Juliussen, 1988; Said, *MacWEEK*, 1990, Jan. 6). PageMaker was the first page-layout program marketed for use with personal computers and laser printers, although proprietary dedicated programs for newspaper and magazine publication existed prior to the introduction of Aldus

PageMaker. For example, SuperPage from Bestinfo Inc., the program used by *DBMS*, is a proprietary publishing program for MS-DOS-based machines.

An overview of magazine design research

Impetus for this exploratory research into the correlation between desktop publishing and its effect on the design and organizational hierarchy of contemporary magazines was spawned by several influences, including this researcher's undergraduate studies in the disciplines of art, photography, and graphic reproduction technology. The researcher's later decision, as a graduate student, to switch from the study of visual communication to verbal communication led her to a particular interest in magazine publishing, where visual communication and verbal communication are given approximately equal weight. A preliminary search for literature on computers and their use in magazine design and production revealed a paucity of such material. A 1987 study by Gerlach covering magazine-research articles published over the past 20 years in *Journalism Quarterly* revealed that, in general, there have been few such articles published. Only 6% of *Journalism Quarterly's* index for the 20-year period was devoted to magazine research. On the other hand, there was an abundance of research available on computers and their use in newspaper design and production.

An afternoon's perusal of *Journalism Abstracts* for the

years 1985 to 1989 revealed that academic communications research on magazines primarily involves use of advertising space within magazines, with little research being reported on in the editorial arena. In 1990, there were 2,675 general-circulation magazines and 7,683 trade, technical, and professional periodicals being published in the United States (*Gale Directory of Publications & Broadcast Media*, 1990). With over 10,000 magazines or similar periodicals (such as journals, reviews and special issues) published annually in the United States, greater research in this field is warranted and overdue.

In looking for possible subjects for this case study, the researcher informally interviewed, mostly via telephone, many editors and art directors of magazines published within the greater San Francisco Bay Area. The majority of magazines contacted only used desktop publishing to a limited extent, if at all. For example, many of the magazines regularly produced some in-house typesetting or computer-generated art for use in their issues, but they still sent the bulk of the production work to a traditional prepress shop. The prepress shop, or sometimes a combination of a typesetter and a color separator, would be used to bring an issue into the final production phase of camera-ready art before sending it to be photo-offset by a printer. One editor of a regional periodical preferred traditional typesetting and color-separation methods over desktop publishing because he said that conventional

typesetting houses provided superior character definition (type reproduction) on the printed page as well as a wider selection of typefaces. Other editors eagerly anticipated the day when each employee in their editorial, art, and production departments would have a personal computer on their desk and be able to share information through a system of networked computers. Although the researcher's informal survey of Bay Area magazines indicated that such working systems are still in the minority, they do exist.

The researcher worked at one such publication, a high-tech trade magazine. The editorial, art, and production departments were linked by a network of software and cables and they shared information files of text, computer art (computer-generated illustrations and images of computer screen information, or "screen dumps") and color photographs, which were stored on a file server (a single computer reserved for the purpose of information retrieval by multiple users).

From the extremes of a regional magazine sticking with its tried-and-true typesetting and prepress methods to a high-tech computer magazine implementing leading-edge, "paperless-office" production techniques, there lies a middle ground. Most of the Bay Area magazines contacted in preparation for this study fall somewhere in between the two extremes; these magazines were either just starting to consider, or to selectively use, desktop publishing within a single department of their magazine. As more and more of

these in-between users integrate desktop publishing systems into their workaday production routines, questions about not only the changing nature of magazine production, but also the changing definition of what constitutes a magazine, will need to be answered.

To better understand some of the ramifications of computer technology and how it is shaping magazine publishing, this research began by asking the following questions and looked at how they apply to the isolated event of a particular computer magazine grappling with the concurrent decisions to redesign its appearance and to invest in new computer technology (both hardware and software) for production purposes.

The research questions at the outset of this case study were:

- How has the introduction of desktop publishing into the magazine environment affected magazine design?
- Which employees on a magazine's staff are most likely to implement the technology? Is art or editorial orientation a factor?
- Has desktop publishing technology affected the nature of the magazine's work environment? If so, in what ways?
- How has the introduction of the computerized page affected the "product image" (defined here as design and layout) of the magazine?

As the research progressed, some of the above questions

became more specific and particularized to *DBMS*.

Not all readers will have an understanding of traditional prepress and printing operations, so the literature review first seeks to establish a consensus among designers of what constitutes good magazine design. This information is especially pertinent since the computer industry has used traditional design and printing preparation (prepress) methods as a metaphor in developing the desktop version of these operations.

CHAPTER II
REVIEW OF THE LITERATURE
Digitized Design

A Communications Overview

Ever since man in the Old Stone Age first painted the walls of his cave with ritualistic images of the hunt, he has found ways to conceptualize his world and to express these observations to others. Originally he did this with pictures. Eventually the pictures developed into pictographs and pictographs evolved into symbols representing spoken words. Whether visual or verbal, the process has always been intended and used to communicate images and ideas.

Throughout the history of human communication, the development of new technologies has had a major impact on how information and ideas are disseminated. The discovery of papyrus allowed messengers to carry the Roman emperor's word to his governors in distant lands. Gutenberg's invention of movable type in 1440 relieved monks of the tedious burden of spending their entire lifetimes copying a single ancient manuscript. Now, in an age when the sources of mass communicated messages are increasingly held in the hands of a few corporate chains or networks, new technology is once again changing the way messages are disseminated.

This chapter focuses on the emerging use of personal computers for the design of magazines. To adequately cover

all aspects of this area, this discussion includes the basic principles of design, hardware and software options, and the capabilities and limitations of hardware and software as they apply to solving magazine design problems.

Form follows function:

Design as determined by editorial content

Design is an organizing tool that endows a publication with visual unity. Dorn (1986) defined design as:

A plan to organize elements proportionately with contrast and to promote the articles, ads, and other elements present. The design takes into account the parts of a page—columns, alleys, gutter, margins, folio line, etc. (p. 209).

Good design is nowhere and everywhere. It is a skeleton on which to hang the visible flesh of text and artwork. Just as bone structure contributes to an individual's attractive appearance, so strong design strengthens a magazine's position on the newsstand (Click & Baird, 1986; Darnton, 1989).

The design of a new magazine is based on its editorial content, which in turn is a function of that magazine meeting the needs of its perceived audience. Readers and advertisers are a publisher's primary constituents (Click & Baird, 1986; Mogel, 1979). The ratio between editorial lineage and advertising space is generally balanced equally between the two (Compaine, 1982; Williams & Van Zandt,

1978). The largest growth sector of American consumer publications is in the "special-interest" category according to Click and Baird. Williams and Van Zandt (1978) referred to specialized publications as "vertical books" (p. 6) and described them as: (a) covering a single subject in great depth, or (b) being distributed within a limited geographic area. Compaine (1982) defined special-interest magazines as containing "active" information which consumers read to learn about a particular area of interest. He identified three subject areas of magazines that are in current vogue: (a) city or regional, (b) special interest, and (c) television spin-off publications that usually appear in the form of sports magazines or newsweeklies. Mogel (1979), on the other hand, cited "metros" (also known as metropolitan, or city, magazines), children's, and medical magazines as being the dominant areas in the growing special-interest sector of periodical publication.

The early 1970s saw the demise of venerable general-interest magazines such as *Life*, *Look*, and the *Saturday Evening Post*. Both *Life* and *Look* used a photojournalism format and were initiated in a pre-television era when large, glossy photographs opened windows on the world for the average person. A combination of these magazines' growing inability to compete with television for audience and advertisers, a low-yield subscription policy, and the overhead burden created by a large staff (including foreign

bureaus) proved to be their economic downfall (Mogel, 1979). Compaine (1982) defined yield as "the net revenue after acquisition has been taken into account" (p.26). Magazine circulation is critical to attract necessary advertising revenue.

Circulation is generally considered in light of single-copy sales (newsstand) versus subscription sales at the subscriber level, and paid versus controlled circulation at the advertiser level (Click & Baird, 1986; Compaine, 1982; Mogel, 1979). Onerous postage and paper costs, along with low subscription rates, contributed to *Life* and *Look's* financial hardships in the early 1970s. Since then, publishers have increasingly turned to their readers to bear the cost of magazine distribution, particularly through newsstand sales. When placing ads, advertising agencies look at a magazine's circulation figures as certified by the Audit Bureau of Circulations. Depending upon the product being marketed, a small, well-defined audience (generally those in the upper income brackets) is sometimes preferable to a large, less specific one. This is one of the factors in the trend toward special-interest magazines. Advertisers are afforded a select market for their ads when promoting their products in publications geared toward people with an established interest that relates to their product (Click & Baird, 1986; Compaine, 1982; Mogel, 1979).

Establishing a strong identity for a publication to

distinguish it from all the other pretty covers on the newsstand is critical to the success or failure of any new publishing venture. Williams and Van Zandt (1978) said, "if you can fill a need for information not satisfied by radio and television or other already-successful publications, you very definitely can succeed" (p. 6). Compaine (1982) noted that "the history of periodical publishing has proven the role of the idea to be paramount. Money and initial execution are secondary" (p. 106). Mogel (1979) cited two overriding principles for success: (a) establishing a distinct identity for the publication and (b) the ability of great editors to know and understand their audience.

The disparate elements that make up editorial content generally include hard news, features, editorials, interpretation or commentary, and regular features columns. Other options such as question-and-answer columns, letters to the editor, technical tips, and photography layouts might also be included. One of the main problems facing magazine designers is that of creating unity from the variety of editorial content. Grout, Athanasopoulos, and Kutlin (1986) cited developing "a comprehensive outline or publication plan" (p. 34) as a useful technique for planning a publication's contents. They recommended rejecting any material that strays from the focus of this outline.

Parallel sequences for organizing material were presented by Berryman (1979) and Grout et al. (1986). Grout

et al.'s pattern referred to a thematic selection of editorial content and Berryman's was directed at organizing editorial content into a pattern of visual cohesiveness. Berryman's sequence was a linear process that used the following six steps to align design theory to production technique: (a) identify the editorial problem, needs, criteria, and limits; (b) make preliminary visuals in the form of thumbnail sketches (small, quick drawings); (c) refine the solution through further exploration, examination, and redesign through the creation of rough sketches; (d) analyze, test, observe, and re-examine the model; (e) decide on a solution and present it as camera-ready art, or comps; (f) implement the decision through printing and marketing the end solution. Baxter (1986) simplifies the linear process into three steps: (a) identify the audience, (b) define the format (presentation), and (c) establish the design concept.

Clear communication: Elements of magazine design

Once the editorial direction and contents of a proposed magazine have been established, implementation—the work of actually designing the piece—begins. Implementation involves designing the cover and the body pages in such a way that the editorial concept of the publication is strengthened and enhanced through the integration of its text and graphic elements. Newcomb, when interviewed by

Scala (1985), said, "Frankly, after you have the idea, getting the thing done is largely a choice of weapons" (p.149).

Although the meat of a magazine is contained between its covers, the following is one instance where a "book" (as magazines are called in the trade, Mogel, 1979, p. 6) was indeed judged by its cover. According to Mogel, there are two attitudes about covers:

What is really more important--the photo or illustration, or the blurbs that dominate the covers of most newsstand publications? Art directors generally detest these cover blurbs, claiming they detract from the intended visual effect. Circulation managers and some editors, with an eye on profits, insist these cover lines, not the art, are what really attract the busy shopper to the magazine. A case can be made for both viewpoints (p. 56).

However, Mogel later advised magazine designers to "think of the cover as a poster" (p. 57), so his sympathies apparently lie with concept covers as discussed by Peter (1986) in *Folio* magazine. Peter defined a concept cover as "an idea presented in visual terms" and concluded his article by noting that, while clearly not suitable for every magazine, "with today's TV-educated, visually sophisticated readers, a good concept cover with the right words can get the attention of a reader" (p.125).

Concept covers were in use at *DBMS*. For example, the March 1989 issue featured a keyboard being crunched between

the jaws of a moose trap. The accompanying feature article was titled, "Avoiding traps in distributed databases" (see Figure 1). In a May 1989 meeting on the redesign, *DBMS* management discussed possible changes to the cover. The editor argued for a text-oriented cover that he said would lend the magazine a more technical appearance. The design consultant recommended the continued use of concept covers with stronger graphics, including a stronger accent on cover blurbs.

If the cover commands a reader's attention initially, it is the inside pages that must stimulate and sustain his attention. In referring to the readers' lack of time, J. V. White (1987) said the designer must "make it easy for [the readers] to enter and leave our pages. We must do the dirty work of thinking for them" (p. 121).

In the literature, there were two methods for designing the body pages of a magazine: (a) the page-by-page approach, allowing for a highly creative solution to each page's need to integrate text and graphics, an approach that is particularly appropriate to magazine design, or (b) the use of a grid system (Click & Baird, 1986; Mogel, 1979). A grid system is a pattern of intersecting vertical and horizontal lines that divides a page into rectangular shapes and it is used as a template for page layout.

Mogel preferred the page-by-page approach and J. V. White (1987) recommended that designers break the mold of

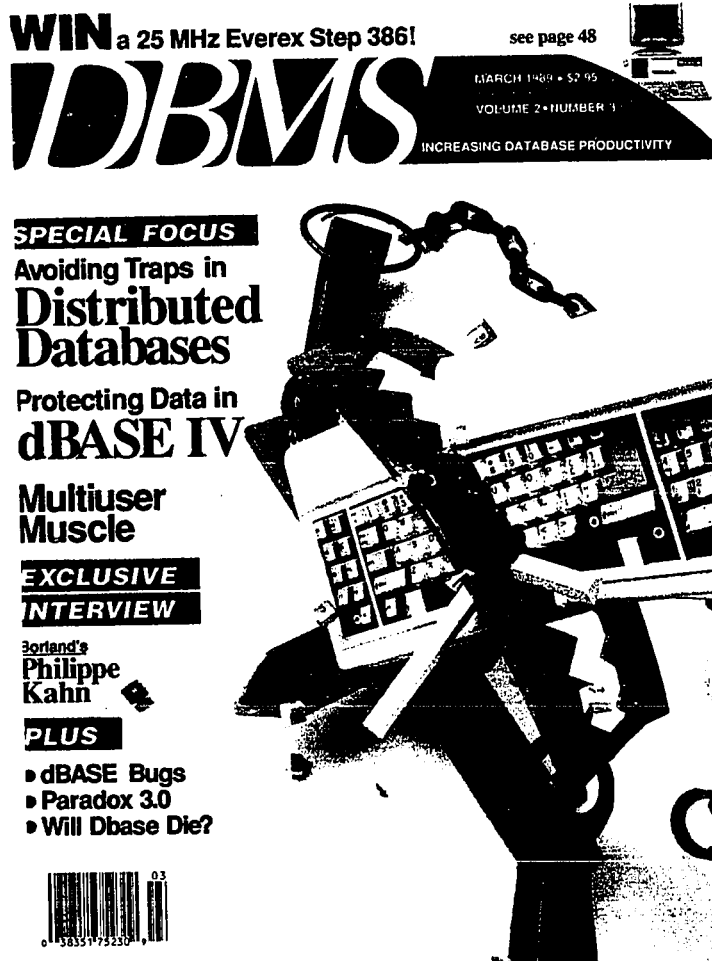


Figure 1. The cover of the March 1989 issue is a concept cover. A computer keyboard being crushed in the jaws of a moose trap graphically illustrates the featured article, "Avoiding Traps in Distributed Databases."

grid-system page layout and approach each article individually:

There is no such thing as right or wrong.
There is only effective or ineffective.
Effectiveness demands fresh, creative,
analytical thought, based on the substance and
purpose of the material as it is needed by the
reader (p. 122).

But there is an overwhelming call in magazine design literature for the use of the grid system, whether it be a designer-formulated grid or of the ready-made template variety available through software manufacturers (Williams & Van Zandt 1978; Berryman, 1979; Mogel, 1979; Baxter, 1986; Click & Baird, 1986; Grout, Athanasopoulos, & Kutlin, 1986; Antonoff, 1987; Felici & Nace, 1987). Berryman (1979) defended the grid system by saying that grids "do not necessarily lead to dull, boring visual images as some might suggest. If a grid is logically designed, and visual elements are exciting, then the grid-derived solution can be effective" (p. 38).

The key to creating an effective grid design, according to Baxter (1986), was "in determining the smallest usable graphic unit. This becomes the system building block. The format should be divided into multiples with each grid unit the same shape" (p. 62). Felici and Nace (1987) advocated use of the three-column format because it offered the most design options for magazine design. Berryman (1979) suggested using the grid as a modular layout pattern, noting

that "the grid can only provide logical positions for placing visual material, nothing more. Designers must use the grid creatively to maximize communications potential" (p. 40).

Romano (1986) cited desktop publishing as being "a euphemism for the combination of typesetting and the creation of professional-quality pages for reproduction" (p. 66). Indeed, the combination of personal computers and page-layout software allow the average person to produce polished publications with a minimum of expertise. The traditional areas of graphic arts knowledge still apply in desktop publishing, and there is a continuing need to understand design principles and typography (J. V. White, 1988); however, their application has been greatly simplified with the advent of this new technology. The previous discussion of design principles holds true for computer layout as well as the traditional production methods of mechanical page layout. Typography and graphic reproduction principles also remain basically the same from mechanical to desktop publishing, but because their implementation differs, typography and graphic reproduction will be discussed as they apply to desktop publishing.

The toolbox: Desktop publishing technology

Felici and Nace (1987) described a typesetting system as consisting of three components: (a) the front end, or

computer and software, (b) the driver which translates information from the front end into a language understood by the printer (imagesetter), and (c) the printer, or marking engine. According to most sources, the preferred computer for electronic publication is the Apple Macintosh system (Baxter, 1986; Bove, Rhodes & Thomas, 1986; Felici & Nace, 1987; Grout, Athanasopoulos, & Kutlin, 1986; Hatten, 1986; Lucas, 1987), although Hatten observed that "other personal computers, such as the IBM PC, can be used as well--although these usually require costly software additions" (p. 21). Additional disadvantages to MS-DOS-based computers are their inconvenient approach to software "merge," and a lack of software-needs uniformity from one MS-DOS machine to another. However, Underwood (1989) predicted that IBM and IBM-compatibles will gain acceptance in corporate environments where compatible mainframes were already in use, and that the Apple line would continue to dominate individual and small-business user markets.

According to Baxter (1986), the primary reason that Apple owned the largest market share in desktop publishing was because of the graphics-oriented operating system (Quickdraw) used for the Macintosh product line. By comparison, the IBM PC and its compatibles mostly used MS-DOS, a word processor-based operating system. The Apple's pull-down menu format and mouse peripheral device also added to its ease of use in creating computer-aided graphics

(Baxter, 1986). There were some IBM-type computers which supported a mouse, and the use of the Microsoft Windows operating system simulates Apple's icon toolbox on IBM PCs. Workstations, such as the those manufactured by Sun Microsystems Inc. and NeXT Inc., also have graphical user interfaces, similar to the one pioneered by Apple Computer Inc. However, workstations are generally connected to a mainframe computer (some models may be used as stand-alone units) and their use implies a different type of hardware configuration than the one in use at *DBMS* at the time of the research.

The laser printer is a peripheral device used with the personal computer and it was regarded as an essential component in the desktop publishing equipment mix. In an article prepared by Lante Corporation (1987), the authors noted that the resolution of commercially typeset documents is 1,200 dots per inch whereas the best desktop laser printers then offered 300 dots per inch. Higher quality was possible by connecting the front-end system with an imagesetter, such as the Linotronic 300 imagesetter (Felici & Nace, 1987).

Generally three kinds of software, to be used in combination, were needed to produce typeset-quality desktop publishing. These included a page-layout program, a word processor, and a graphics program. Graphics for a given project could be created in any number of graphics

applications. After being created in an application, such as Adobe Illustrator 88, a graphic was then imported into a page-layout program. Page-layout software came in two types: batch and interactive. The batch-type page-layout program was good for standard page layouts such as those found in long text documents. Interactive page-layout programs were designed with page-by-page layout in mind (as recommended by Mogel, 1979), and as such were ideally suited for magazine production (Felici & Nace, 1987).

In an article outlining criteria for selecting desktop publishing software, Rosenthal (1987) divided the available programs into four levels of sophistication. The first level included what is actually high-end word processing software, such as Microsoft Word. A disadvantage with this type of software is that generally the document displayed on-screen is not what appears on the page. The words would be the same, but often the formatting and spacing would be different when printed. Low-end page-layout programs with WYSIWYG (what-you-see-is-what-you-get) display and pull-down menus, were the second sophistication level, and they were appropriate for simple integrated text and graphics in documents between one and two pages in length. Rosenthal offered Click Art Personal Publisher as an example of this type of program.

Document-oriented software, capable of producing complex documents with advanced typesetting and advanced

graphics, was offered as the third level of sophistication. It was exemplified by Aldus PageMaker and this level was reported to be highly suited to producing magazine layouts.

The fourth level of desktop publishing program was a subcategory of production-typesetting software that worked from a complex dot-command system and offered limited graphics capability. An example of this type of page-layout program is Ventura Publisher from Xerox Corp. The technical writing intern at DBMS who produced a special-issue buyer's guide for M&T Publishing used Ventura Publisher. At the time of this research, the product only supported MS-DOS machines. At the August 1990 Macworld Expo held in Boston, Xerox employees were demonstrating a beta (unreleased) version of Ventura Publisher for the Macintosh. The company planned a fall 1990 release according to a member of the product-development team (personal communication, August 9, 1990).

The third level of software sophistication was most appropriate for use in designing magazines on personal computers. For the Apple computer system, three programs were then available: Aldus PageMaker, Ready-Set-Go, and QuarkXPress. All three programs had their advocates. QuarkXPress, the newest of the three, offered in-program editing and text-contouring capabilities not found in the other two programs.

Laser printers and imagesetters contain a computer

processor unit, or CPU, of their own, in addition to accepting commands from the front-end computer. These laser printer and imagesetter CPUs interface with the front-end system through page-description languages, such as PostScript. Page-description languages are characterized by the way they store fonts, and fonts are stored in two ways, either as character outlines that are enlarged or reduced according to the type-point-size selection or as bit-mapped fonts that produce characters dot by dot.

Page-description languages use one of two operating systems:

- (a) a static system that handles simple text and graphs or
- (b) a dynamic, or extensible, system whereby keyboard commands may be linked to form new commands, giving the desktop publisher greater control over the final product (Felici & Nace, 1987).

Dotting the i's: Typographic considerations

Typography is a prime example of design's utilitarian function. Words, letters, and typefaces of varying size, style, and boldness appear everywhere in the contemporary landscape, from bus stop benches to telephone directories, from word processor screens to magazines, yet the average person gives printed text scant thought.

A well-designed typeface can speed the reader on his way through the text of a printed document. Improper use of a decorative or display type can stop his eye and render a

message indecipherable.

Most authorities on the subject agreed that type may be divided into two major families, but there were differences of opinion as to just which two families these are. Willis (1965) specified Roman typefaces as the first family of which there are three primary categories: Venetian, Old Face Roman, and Modern Face. He called his second family Linear, and included such typefaces as Gothic, Grotesque, Egyptienne, and Italienne. These typefaces all tended toward uniform lines. Mogel (1979) divided type into "*roman* (straight up and down) and *italic* (slanted)" (p. 73). J. V. White (1988) continued Mogel's two simple, basic type families. A decade earlier, Berryman (1979) classified type into four major families: serif, sans serif, script, and text letters.

Back in the days when type was hand-set, a character at a time and line by line on a composing stick, each letter sat atop a block. Although hand-set type is now relegated to the printshops of antiquarian, hobbyist, and specialty printers, the elaborate system of type measurement that developed from this block still pertains (J. V. White, 1988; Willis, 1965). Willis summed up this block-based measurement system concisely:

Everyone concerned with type and printing should be thoroughly familiar with the point system. The standard Anglo-American typographical point measures one-seventy-second of an inch (0.013837 inch). A "pica" is one-sixth of an inch or 12 points, so that an inch has 72 points. The square

frame of any type size is called an "em," and the em of 12-point or pica type is used to measure the widths of columns: a line of 9-point type 2 inches or 12 picas (144 points) wide contains 16 ems, and a 6-point line of the same width 24 ems. (p. 13).

Felici and Nace (1987) distinguished between the words typeface and font, describing typeface as an alphabetical design and font as being a specifier of both typeface and size (measured in points). Most word processors and page-layout programs use the term "font" in reference to typefaces, with most of the thousands of varieties of fonts being offered by one software manufacturer or another.

How desktop publishing systems handle fonts is a major factor in a publisher's decision of whether or not to employ the technology. The quality of the finished product is defined in terms of how closely it resembles commercially typeset copy. When characters are formed by computer—either from an enlarged outline font or decoded from a bit-mapped matrix (J. V. White, 1988)—the refinement of individual letters on their blocks is not obtained. Letter spacing is dictated by mathematical formulas, and the desktop publishing components that allow simulation of optical spacing (through escapement and other controls) are the ones that attain "near-typesetting quality" (Felici & Nace, 1987, p. 22).

X marks the spot: Graphic elements on the page

If typography is the unsung hero of the printed page,

the graphic elements are the bold swashbucklers that leap off the page and command the viewer's attention. Used in a subtle, controlled manner, photographs, illustrations, and other graphic devices capture the viewer's imagination and turn him into a reader.

Photographs are called continuous-tone art because of their range of tones from white to black. Illustrations that do not have shading are called line art. Line art is similar to type and it is therefore easy to reproduce on computers (Click & Baird, 1986; Felici & Nace, 1987; J. V. White, 1988).

Mechanical layout methods often indicate the position of a photograph or illustration on a given page by placing a large "X" within a ruled box. This can be done using page-layout programs as well, and some designers recommend leaving the computer's involvement in reproducing photographs at this stage (Click & Baird, 1986).

Traditionally in photo-offset lithography, black-and-white photographs must be rephotographed through halftone screens to render them into the dot patterns necessary to burn their images onto the press plate. Color photographs and transparencies, on the other hand, must be photographed or laser scanned through primary-colored (red, green, blue) filters to produce the separation negatives needed for reproduction (Sanders, 1983).

Through the raster-imaging capability of personal

computers and the use of scanners, it is possible to create synthetic halftones (Click & Baird, 1986; Felici & Nace, 1987). Scanners come in three types: (a) flatbed scanners which read a photograph much the way a photocopier would, (b) sheetfed scanners, where a device grabs the original photograph and passes it lengthwise past a sensing element (Cavuoto, 1986), and (c) optical scanners which mount onto the desktop printer and read information into the front-end computer (Wood, 1988).

Cavuoto wrote in 1986 that scanners are only capable of producing "two levels of gray" (p. 187) through a process known as "thresholding." Since then, scanners have been developed for the desktop market that produce up to 256 levels of gray. This level is still far below the quality available through the use of commercial mainframe computers (Click & Baird, 1986; Jantz, 1988, August), but the technology is developing rapidly, and improvements are announced frequently by scanner manufacturers.

A picture is worth a thousand words:

Trade-offs in the workplace

From cave paintings to icon menus, from pictographs to pixels, improvements in the techniques of creating effective communication appear at every turn. Increased use of computer technology is bound to affect the field of publication design in two key areas: (a) in the design of

new magazines (as already discussed elsewhere in this paper) and the redesign of old ones; and (b) in blurring the roles of magazine editorial and art and production staffs.

It has been established that magazines have a natural life cycle (Compaine, 1982), and that as their audience matures from youth to middle-age and from middle-age to seniority, it is necessary to redesign periodicals to keep their editorial content and overall "look" exciting (Mogel, 1979). Click and Baird (1986) noted that "change and dynamism are key words in the magazine business" (p. 38). A recent revamping of 97-year-old *Vogue* magazine in order to better attract its share of the fashion-magazine specialty market is a marked demonstration of this phenomenon (Darnton, 1989).

Desktop publishing's integration of text (editorial copy) and graphic elements (design) naturally gives both editorial-department and art-department staff members equal need to understand the procedures of computerized layout, and thus equal incentive to control page layout. Gralla (1987) wrote that, "Today, anyone with a [personal computer], a layout package and access to a printer can be his or her own publisher; this can lead to a proliferation of poorly designed newsletters, proposals, brochures and documents in a company" (p. 122). J. V. White (1985), in calling on editors and designers to set aside their long-standing professional hostility, said:

These unfortunate concepts must be replaced with facts: 1) The wordsmith is indeed capable of judging intelligently, if judgment is based on substantive criteria. 2) The designer is the editor's partner in applying his skills to the purposes set by the editor. 3) Designer and editor can't do without each other, so they might as well work together toward the common good (p. 97).

To better understand how editorial, art, and production staffs interact, it was first necessary to examine the environment where they do their work. In the following section, literature on the media organization and how publishers, managers, and other employees function within an organizational hierarchy in working toward the common goal of producing a magazine issue is reviewed. In addition, the role opinion leaders play in decision making (in the areas of magazine redesign and purchasing computer technology) within the media organization is examined.

CHAPTER II

REVIEW OF THE LITERATURE

Media Organizations and the Diffusion of Innovations

Magazines share the mass communications umbrella along with newspapers, books, films, television, and radio, as well as with other emerging communications media spawned by the increasing advances in computer technology. To understand magazine production in particular, it is first important to understand media production in general. There are methods of production common to all forms of communications media. Especially notable is the common theme of creative contributions by many talented individuals needed to create a single media product—for example, a magazine or newspaper issue, a television or radio broadcast, a motion picture. The structure that pulls all of these creative efforts together is the media organization.

This research studied a particular magazine, but the intent of the research was to broaden the understanding of how magazines, in general, work. To that end, magazines will first be looked at in terms of how they function as media organizations.

The Media Organization:

How Hierarchy Affects Production and Shapes Content

Media organizations perform two functions—those of production and distribution—and are involved in four basic

kinds of activities (McQuail,1983): (a) originating new message production and starting circulation of those new messages; (b) channeling and selecting from existing communication flows; (c) processing messages in transit; and (d) distribution. Four recurring problems are related to these tasks: (a) selecting from available information supplies and flows; (b) maintaining continuity of message supply for distribution; (c) shaping content to conform to operational criteria and technology; and (d) matching the supply to audience demand. McQuail (1983) quoted Gerbner in his discussion of the cross-purposes and capabilities of the media institution:

All mass production including that of messages is "managed"; selective suppression is the other side of the mass communication coin. He identifies various "power roles" bringing pressure to bear on mass communication, including clients (e.g., advertisers), competitors (other media), authorities (especially political and legal), experts, other institutions and of course patrons (the audience) (p.112).

These are external sources of influence on the media organization, sources which the organization must heed, at least to some extent, for its economic and political health. Within the media organization there are other influences--namely, employees of the organization. Categorically these employees may be defined broadly as mass communicators. McQuail (1987) expressed the division of

labor within the field of mass communications as follows: managers and controllers, creative workers, journalists, and technicians. According to McQuail, mass communicators make decisions about the content of a media product while functioning within the media organization under one of the following four possible frameworks developed by Ryan and Peterson (1982): (a) the assembly line; (b) under the aegis of craft and entrepreneurship; (c) by following the convention and formula of a genre; or (d) by product image, the essence of which is "to shape a piece of work so that it is likely to be accepted by decision makers at the next link in the chain" (Ryan & Peterson, 1982, as cited in McQuail, 1987). Gans (1979) noted that a consensus among journalists about media output is required to avoid chaos. In addition to citing the need in general for a democratic approach to mass communicating, Gans noted that in specific cases, "a hierarchical organization in which those with more power can enforce their judgment as to what considerations are relevant for a given story (decision)" (p. 83) is needed. Argyris (1974) and Fowler and Shipman (1984) said that managers need to receive information for planning, but also that managers should convey information so that other employees feel they are a part of the organization.

The diffusion of innovations and the assembly-line model

Rice and Rogers (1980) conceptualized adopting an

innovation as being a five-step process which parallels the five-step assembly-line model for newscast production presented by Bantz, McCorkle, and Baade (1980). Rice and Rogers broke the sequence for innovation adoption into the following subprocesses: (a) agenda-setting; (b) matching; (c) redefining; (d) structuring; and (e) interconnecting.

The researchers defined agenda-setting as "the stage at which the general problems of an organization are defined . . . and commonly recognized by its members," and matching as "the stage at which a general problem from the agenda and a possible solution are brought together" (p. 500). Rogers (1983) emphasized the importance of the first two steps in the adoption sequence; these are the steps that lead to the *decision* to adopt. The remaining three steps—redefining, structuring, and interconnecting—are a part of the implementation process which occurs after the decision to adopt has been reached. Utterback (1971) used only three phases, or subprocesses, to define the process of innovation. They are: (a) idea generation, which parallels Rice and Rogers' agenda-setting; (b) problem solving, which agrees with the function of fitting an innovation (means) to an existing problem (need) that Rice and Rogers ascribed to matching; and, (c) implementation, which incorporates redefining, structuring, and interconnecting—the last three steps in Rice and Rogers' sequence of subprocesses.

Agenda-setting

Agenda-setting, or top-down decision making, is usually interpreted within its narrower definition of determining how the news gets picked to fill an available news hole. In reinvention theory, however, Rogers (1983) used agenda-setting in its broader sense of decision making as it is established by opinion leaders within a social system, such as the offices of a magazine publisher. Consequently, this research looked at agenda-setting studies conducted as they regard news content, understanding that the selection, or agenda-setting, process operates in the same fashion, regardless of whether text or graphic content is being selected, or a decision to buy new computer equipment is being made.

Early adopters and agenda-setting

A landmark diffusion study, the Columbia University Drug Study, was conducted by various researchers who concluded that adoption of an innovation by opinion leaders expedited its adoption by the larger population within a given social system (Rogers, 1983). The author noted that "a social system is a kind of collective-learning system in which the experiences of the earlier adopters of an innovation, transmitted through interpersonal networks, determine the rate of adoption of their followers" (p. 67).

The concept of opinion leadership derives from a two-step flow of communication model (Rice & Rogers, 1980; Utterback, 1971) whereby individuals with a greater-than-average degree of cosmopolitism and external contacts are the first in the model to receive information about an innovation and then they, in turn, pass this information along to others via an informal network of personal contacts. Gans (1979) described the division of labor in media organizations as being between selection and production (dissemination). He elaborated that selection is done by top editors and that production (dissemination) is performed by writers and reporters. As content selectors, editors are regarded as the opinion leaders within the social system of a media organization who determine content selection.

How agenda-setting shapes content

David Manning White's (1950) well-known study on copy-wire editor "Mr. Gates" and his selection of news items from the then four available wire services attributed a gatekeeping function to editors on news staffs. McQuail (1987) asserted that "the main purposes of (gatekeeping) research have been to either assess the degree of subjective (personal and arbitrary) judgment involved or to learn about the nature of 'news values' as applied in the news media" (p. 162). Davison, Boylan, and Yu (1982) stated that both reporters and editors share responsibility for ultimate

content selection at a news publication. Gralla (1987) said that the introduction of desktop publishing capabilities into the editorial offices of magazines has the effect of making graphic designers (creative directors, art directors, associate art directors and other, subordinate designers and layout/production employees) equal partners with the editorial staff (editors, managing editors, editorial assistants, writers and reporters) in the decision-making process.

In their study of the journey of a film clip from its latent beginnings in Saigon to its passage through many editors' "gates" to the television screens in millions of American homes, Bailey and Lichty (1972) examined the organizational checkpoints through which the product of a cooperative effort passes. Demonstration of the creative group effort in the media is evident in the television, movie and magazine industries. Bailey and Lichty found that in group-effort creative situations, the organization functions as the gatekeeper when employees of the organization rally around ideals common to their profession. The common ideal, in the case of footage of the assassination of a captured Viet Cong officer, was one of taste. It proved to be a common denominator across the professional board of all gates through which the film clip passed. McQuail (1987) noted that similar criteria are employed at each successive stage of content selection,

thereby minimizing the chances of "variety, uniqueness, and unpredictability" (p. 168). In addition to organizational procedure, McQuail cited "the technology and apparatus of production" as being standardizing influences on media output.

Whitney (1982) reversed the concept of the organization as gatekeeper and postulated that in the decision-making process the individual editor functions as an organization and, as such, becomes representative of an organizational agenda-setting model (p. 244). Environmental constraints, defined by Whitney as (a) limited news space, (b) lack of time, and (c) the impact of standardization and duplication of content on news, necessitate a priority structuring of incoming news and this prioritizing in turn cues the individual editor to output priorities. In this model the editor adopts the priorities of the organization and the application of what McCombs and Shaw (as cited by Ettema, 1982) have labeled "organizational logic" becomes more predominant in news selection than are individual choice factors. Gans (1979) noted that journalists are bound by two constraints: efficiency and power. Ettema (1982) said that organizational constraints actually enhance individual creativity, given that individual creativity occurs within the context of both production routines (efficiency) and organizational conflict (power struggles).

Matching

Utterback (1971) observed that "the process of innovation is embedded, as is the firm within which it occurs, in an environment with political, social, and cultural elements . . . " (p.78). Dimmick (1979) drew on classical organization theory to conclude that organizations are political systems where decision problems are divided into smaller subproblems to be resolved by specialized decision makers. He further noted that "the solution of the goal-conflict problem is one of subordination. Individuals must be induced to give up their own goals and pursue those of the organization [Galbraith, 1967, p. 130]. Essentially the entrepreneur or chief executive formulates the organization's goals" (p. 205).

The news-factory system, as documented by Bantz et al. (1980), led not only to a uniformity of media product but also to a uniformity of jobs within media organizations. However, the same researchers found that "technology has increased the need for role specialists and coordinative activities in the newsroom" (p. 48).

Gans (1979) noted that small-town pastoralism, a news value commonly held by journalists, regards new technology—especially computers—as being a dehumanizing factor in the workplace. J.V. White (1988) observed that "the unexpected factor the new technology (computers in design) has introduced is not mechanical but human" (p. 1).

Shropshire (1989) cited (a) what and how much computer technology integration is to take place in a magazine environment and (b) the way this integration affects the present and future staff and work flow, as being the two key aspects of integrating a computer system into magazine production. Martin (1988) cited an example where desktop publishing technology that was introduced into a magazine environment without provision for adequate staff training as a failure on the part of management (as selector) to address the needs of production employees. This case emphasized the need for interaction between both selectors and producers/disseminators, as noted by Argyris (1974).

Sometimes media organizations use committees to solve problems and to facilitate the flow of information through managerial ranks. The subdivision of decision making into subprocesses to be handled by smaller work units within the organizational hierarchical structure has created what Dimmick (1979) referred to as political coalitions. Other researchers have found that journalists, who consider themselves to be professionals, warrant a certain amount of autonomy in performing their jobs, and consequently have developed the political skills of negotiation (Sigal, 1973; Gans, 1979; Tillinghast, 1980).

Bantz et al. (1980) observed that the introduction of "new technology (within a media organization) introduces new constraints" (p. 48), yet new technology is constantly being

sought by the decision makers at media companies to both maintain competitive production strategies and to solve production problems (Rogers, 1983). A DBMS typographer noted the effect upgrading computer technology has on the production process in saying that "the more efficient you are, the more you're going to produce" (personal communication, May 26, 1989). New technologies are generally the means sought by management to improve efficiency.

The Uncertainty Factor and Production Routines

Media organizations must contend with the element of uncertainty as an inherent part of producing their products (Dimmick, 1979; Jowett & Linton, 1980; McQuail, 1987). Routinization of the production process, or production routines, is one way media organizations minimize the risk of uncertainty inherent in the nature of their business (Dimmick, 1979). In their study, "The News Factory," Bantz et al. (1980) described what they refer to as the factory model--what McQuail (1983) has called the assembly-line approach to media output: "It follows the form of an assembly-line factory--breaking tasks into smaller 'chunks' but it has the chunks being performed by newswriters with varying degrees of skill who employ complex technology" (p. 52). Bantz et al. further listed the five steps through which elements of a newscast flow: (a) story ideation;

(b) task assignment; (c) gathering and structuring materials; (d) assembling materials; and (e) presenting the newscast. The researchers saw this organizational structuring as a way for media organizations to "yield a uniform product in the face of variable events, resources and time" (p. 51).

Reinvention

Reinvention is the modification of an innovation to meet an individual adopter's needs. Rice and Rogers (1980) cited Rogers' definition of reinvention as being "the degree to which an innovation is changed by the adopter in the process of adoption and implementation after its original development. Innovations are generally either a tight bundle or loose bundle of components. An example of a tight-bundle innovation is the proprietary computer system consisting of both hardware and software technologies presented to an organization by an outside vendor as a single solution to the organization's communication needs. An example of a loose bundle of components is where a variety of computer manufacturers' hardware is linked via a network, or through a file server, to address an organization's need for a single system to handle many tasks.

Although reinvention usually takes place at one of the three implementation stages of the the five-step innovation

process outlined by Rice and Rogers (1980), the two researchers observed that "reinvention (particularly in loose-bundle innovations) can occur at any of the four stages following the agenda-setting stage in the innovation process." It is most likely to occur when the innovation is more-complex, irreversible, when an external consultant does not take an active role in the innovation process, and as a response to a threat to the political survival of an innovation (Rogers, 1983).

Redesign and Reinvention

Just as magazines have natural life cycles (Compaine, 1982) and sometimes need to be redesigned to better match the demographics of an ever-changing readership, the media organizations that produce those magazines also are living organisms that require a system for self-renewal (Argyris, 1974). The decision to redesign a magazine is almost always based upon the need to remain competitive with other publications vying for the same market share. Utterback (1971) cited a major study by Myers and Marquis where it was found that the majority of (technological) innovations in companies studied (53%) were "initiated in response to market, competitive, or other external environmental influences" (p. 81). In a niche market where technology drives the market, such as in the specialized area of magazine publishing, revitalization becomes a necessary

component for the survival of both the magazines and the publishers of those magazines.

In the following chapter, how the researcher studied a particular magazine's redesign and plan to adopt new technology will be examined.

CHAPTER III

METHOD

This case study looked at the relationship between a publisher's decision to redesign its magazine and a concurrent decision to further adapt the computer system it used in producing that magazine. Although the decisions to redesign the magazine and to adopt new computer technologies (hardware and software) were being considered and discussed by management at the same time, those decisions were not necessarily co-dependent. The need for new equipment happened to coincide with a desire to find a visual style more focused to the magazine's readership. This research also sought to discover how the introduction and possible reinvention of computer technologies changed the working environment in the editorial offices and art and production departments of *DBMS*. The limited literature available on this subject suggested that the evolving technology would fuse the roles of editor and art director into a single one of "publisher" (J. V. White, 1985). This suggestion led the researcher to wonder how desktop publishing technology might affect the job descriptions of other magazine employees as well.

The method: Participant observation

The research was conducted from an exploratory, qualitative standpoint using a participant-observer research method. Participant observation allowed for using what

Jorgensen (1989) referred to as "the logic of discovery" (p.18). An empirical, quantitative method is more traditional in American mass-communications research, where the "logic of verification" (p.18) is employed. Yet, as there was not any published research that intersected both the diffusion of innovations and magazine design theory at the time this study was undertaken, an exploratory research method was appropriate to the subject. Prior research in the area of how technology affects magazine design and production indicated that a qualitative approach was needed in order to lay the groundwork for future studies in this area, an area which will become increasingly important as the definition of the magazine medium expands to include electronic versions of printed periodicals. While the design aspect of magazines would of necessity change along with the new method of their production and distribution, it is here that the roles of editor and art director, and those of art director and production person, blend and blur and new roles are created. To understand these emerging communications formats, it is necessary to study them.

Four types of participant observation have been identified (Babbie, 1986; Jorgensen, 1989), and they are differentiated by the degree to which the researcher becomes involved with members of the group or setting being studied. They are as follows: (a) the observer, who is least involved with members of a given setting; (b) the participant-as-observer, who is more observer than

participant; (c) the observer-as-participant, who is more participant than observer; and finally (d) the participant, who interacts fully as one of a given group would. For this particular case study, the researcher chose the role of participant-as-observer. The participant-as-observer role permitted the researcher to ask questions, which were vital for the clarity and the accuracy of observation, while allowing her to retain a neutral stance in the field-research surroundings.

The research design

The research was designed to be carried out in three parts: an initial pre-study; to be followed by a month-long observation period (which emulated the various phases of magazine production, including assignment, creation, and production); and a post-study to clarify and confirm or dismiss the researcher's observations.

For the pre-study, key staff members (the editor, the managing editor, the art and production manager, and the art director) were interviewed to aid in the formulation of both observation criteria and the post-survey interview items included in Appendix B. The pre-study questionnaire appears in Appendix A.

The participant-observation portion of this study comprised a sample week (made up of two days from each phase of the magazine's production cycle) of a composite one-month production cycle for publication of a single magazine issue.

The elements of this the production cycle were: (a) assignment of stories; (b) checking on assignments; (c) editing and art selection; and (d) page production (layout, paste-up, copyfitting). Normally, the production cycle for a monthly magazine takes place over the course of a three-month period, but since during any given month three issues are being worked on simultaneously, a four-week sample period covered all aspects of production that would have been observed during a longer, three-month observation period.

Subsequent to the participant-observation conducted at the magazine, full-time editorial, art, and production staff members were interviewed, using the questions in Appendix B. These interviews included all individuals who were observed for this study. Specifically, those studied were editorial employees, including the publisher, editor, managing editor, assistant editor, and a technical writing intern from nearby San Jose State University; and creative (art and production) employees, including the art and production director, art director, associate art director, and a typographer. Two full-time M&T Publishing typographers worked on *DBMS* production, but only one worked on *DBMS* exclusively. The other typographer worked on several M&T publications, and was not included in this study, except during occasional interactions with observed staff members. As a condition of agreeing to participate in this case study, the *DBMS* employees were guaranteed they would only be identified by

their titles. This approach was approved by San Jose State University's Human Subjects Institutional Review Board Research Foundation. To offer a further degree of anonymity to those observed, throughout this paper the researcher uses the male pronoun when referring to either male or female research subjects.

Contributing editors, part-time employees, free-lancers and others not involved in the day-to-day decision-making process were excluded from this study.

The participant-observer method of research facilitated this exploratory subject. Given the lack of literature upon which to draw, the personal-interview approach allowed by the method helped the researcher to establish a more focused premise for conducting the observations. The pre-study interviews were valuable for divining which aspects of the publishing process should be concentrated on.

The magazine observed

An already existing publication, *Business Software*, underwent major stylistic changes and was created anew as *DBMS*: The premiere issue of *DBMS* circulated in September 1988. *DBMS'* original design was not a firm one; the magazine's design was evolutionary. With each new issue between September 1988 and September 1989 elements of the magazine's design were tinkered with, leading up to the completely redesigned September 1989 one-year anniversary issue. This issue incorporated design changes and

department additions that had been phased in during the previous year.

A content analysis of the magazine's graphic content was done for the issues dating from September 1988 through September 1989 (excluding the October 1988 issue, which was unavailable as a back issue from the publisher), including an analysis of the outside design consultant's recommended design changes.

DBMS used an 8.5-inch-by-11-inch format, glossy paper, and it averaged 80 to 88 pages in length. It had a circulation of about 50,000. A highly technical magazine, it featured computer code listings geared toward database computer programmers. The code listings were a primary consideration to be addressed in the redesign. According to the editor, many of the magazine's technophile readers skipped the main text of the articles and went straight for the code listings. Presentation of these listings was of great concern to the editorial and production staffs at *DBMS*. The magazine used a 50:50 split between advertising and editorial lineage. While this is a common editorial-to-advertising ratio (Compaine, 1982; Williams & Van Zandt, 1978), the non-editorial code listings took up a large amount of "editorial" space, creating a need to maximize the amount of text that could be squeezed into the 50% of the magazine reserved for editorial content.

The redesign

Mogel (1979) cited identity as one of the two overriding principles for the success of a new magazine. The other was the ability of great editors to know and understand their audiences. The major stylistic considerations used in laying out the magazine each month were to be found in its initial issue. Yet over a year's time, the design varied from issue to issue as management encountered design problems and accordingly fine-tuned its idea of successful design.

Code listings appeared on page 45 of the first issue of *DBMS* (see Figure 2). In subsequent issues, the listings were presented in three distinct ways within the magazine's pages: (a) as a brief code listing contained within a paragraph of text; (b) as a code listing set within a text column, in a manner similar to the way a lengthy direct quote is sometimes indented and separated from an article's main text; and (c) as sidebars, where lengthy code listings were altogether set apart from the body text. In the premiere issue, the practice of separating long passages of code into sidebars had not yet begun and code listings appeared only as code in text.

While being observed one day, the typographer explained some of the obstacles he encountered while entering code listings into his computer:

A listing of code must show what a file would look like to a programmer. . . .We have a way of showing a listing if it isn't broken out of text. We use a

mono-spaced font. It distinguishes code from the body text. We refer to it as "code in text."

At the machine level, they are sometimes recognized by the computer as a command. For example, a "\" (the typographer showed the researcher the backslash symbol on his computer screen) must be coded as "SC92" to appear in the manuscript as a backslash (personal communication, April 13, 1989).

Code listings, their presentation, and their peculiar demands on typesetting and the capabilities of page-layout software, were to become extremely important factors in the redesign of *DBMS*. In a meeting with the design consultant, the editor stressed the importance of code-listing presentation (personal communication, May 4, 1989). In an informal meeting held later the same week (May 5, 1989), the design consultant, editor, and associate publisher, who also was in charge of marketing, discussed the possibility of separately packaging the code listings on floppy disks that could then be inserted into the magazine. Packaging the code listings on 5.25-inch floppy disks would have solved the dual problems of how to design around the code listings and also would have freed more editorial space within the magazine; providing the additional benefit of allowing programmers to manipulate code already input onto a disk. However, the inclusion and mailing of floppy disks with the magazine had already been explored in relation to a marketing campaign. The reasons the associate publisher cited for not going this route were that: (a) it was cost-prohibitive, (b) the insertion of floppies into the magazine

committing a transaction to disk). Without location transparency this can be messy.

SQL Server's makers, however, are promising split-second accesses on a loaded 35-user LAN with a 300MB database on the server (using fast 386-based hardware on the server.) What we're looking at here is ability to tackle major applications, which are seldom done on networked PCs today. Of course, any SQL-based database has a basic speed advantage. SQL was optimized for making fast queries with far less code than an application built in something like, say, dBASE requires. Moreover, the way Sybase has extended SQL for SQL Server makes it even faster (more about that later). Still, networks can never match the speed of a single-user application: data in RAM can always be accessed more quickly than bits can be pushed across a wire, regardless of its bandwidth. So, PC users spoiled by instantaneous response of their own PCs may still balk at using networked applications.

To examine how this complex approach works in practice, let's design an application using SQL Server.

Programming with SQL Server

Going over a sample application shows SQL Server's special features at work and introduce readers to the coding that uses those special features. We'll focus on the extensions Transact-SQL provides to support OLTP — the raison d'être of SQL Server. We'll also see the kind of tasks any database server will have to manage for OLTP applications.

PROJECT SCHEMA, our sample database server design, helps a manager track people and projects in a company. It takes up 38 pages of SQL and C code.

We'll discuss its overall design, along with the specific code used to program elements that support OLTP: defaults, rules, stored procedures, and triggers — four key elements of SQL Server's support for OLTP.

PROJECT SCHEMA could have been injected into the database server by being embedded in a C program, but let's assume that we use the Microsoft SAF.

The Transact-SQL code may be written in the SAF editor, or copied into the editor from a word processor. Then the SAF delivers the code to SQL Server. Actually it goes to that workstation's resident API (Applications Program Interface), which communicates transparently with the SQL Server proper.

SQL Server is provided with a 40K API called DB-Library. DB-Library functions as a TSR on DOS-based workstations, and as a DLL (Dynamic Linking Library) on OS/2-based workstations.

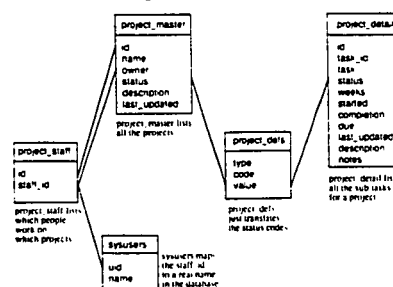
Other APIs for SQL Server could be introduced by various vendors later. In any case, the API sends the code to SQL Server, which compiles and stores it for rapid execution as needed.

PROJECT SCHEMA defines the SQL Server schema for

a project tracking system. It places five tables in the server:

- Project_master lists all the projects being tracked.
- Project_detail lists all the sub-tasks for a project.
- Project_defs merely translates the project status codes found in the Project_master and Project_detail tables.
- Project_staff lists which people work on which projects.
- Sysusers maps the staff_id in Project_staff to a real name in the database.

Database Schema for Project-Tracking System



Our prototypical database for tracking projects is divided into several tables, and designed to show how to implement such an application with SQL Server.

For example, with the first table and its columns we'd see:

```

create table project_master
(id int,
/* project id, the
primary key. */
name varchar(50), /* project name */
owner smallint /* person responsible for
project */
status tinyint /* status of project */
description varchar(250), /* project description */
last_updated datetime, /* last time master was
updated */
)
  
```

Note that each column in these tables can include user-defined data types. Otherwise, standard SQL code and comments are used. However, when we create indexes for project_master, we include a clustered index:

Figure 2. In-text code listings as they appeared in the premiere issue of DBMS (p. 45, September 1988 issue).

was both expensive and problematic from an equipment standpoint, and (c) floppies do not travel well through the mails. There are special floppy-disk mailers available, but as the editor commented (personal communication, May 5, 1989): "The mailer costs more than the disk." Thus, *DBMS*' upper-level management concluded that the problematic presentation of code listings would need to be incorporated into the magazine's redesign.

The combined importance of code listings and the need to maximize limited editorial space, made typography a crucial consideration for both the graphic appearance of the magazine and the purchase of new page-layout software to be used in the production of that graphic appearance. The design issue which melded the two disparate considerations together, however, was the one of text wraparound, or the capability of page-layout software to flow text around a graphic element within a given layout.

For example, the layout on "Predicting Your Future With Your DBMS," one of three hands-on feature articles in the June 1989 issue caused somewhat of a controversy in the art and production departments (see Figure 3). The controversy centered around text wraparounds, an issue that became pivotal in the then-proposed redesign. The four-color photograph used on this two-page spread was one of a programmer working at a personal computer. The image of the programmer was superimposed onto the image of a crystal ball, with a wispy dry-ice fog swirling about the

The remaining 14% cannot be explained without either a more complex dependency on sales staff or dependency on other factors. The memvar t , whose value is 7.902, can be used to calculate the probability of error in the estimate of B , but the procedure is beyond the scope of this article (see Draper, Norman, and Smith, Harry, *Applied Regression Analysis*, 2nd edition, published in 1977, or nearly any other textbook on regression, to see how this calculation is done).

Decision. The third step is the prediction and decision analysis itself. If Acme Widget's manager adheres to the original assumption that fluctuations of sales volume are caused solely by changes in sales staff, she can instantly evaluate the benefit of increasing or decreasing staff levels. If the monthly salaries and indirect costs of employing each salesperson is less than the profit on

increase in sales volume, it is obviously beneficial to hire additional staff.

Caveat Prognosticator. The decision made by Acme Widget's manager will be propitious *only* if the original assumption on which it is based is valid. If, on the other hand, the correlation between sales volume and sales staff is a result of some other cause-effect relationship, the decision analysis might be dangerously erroneous. For example, perhaps Acme

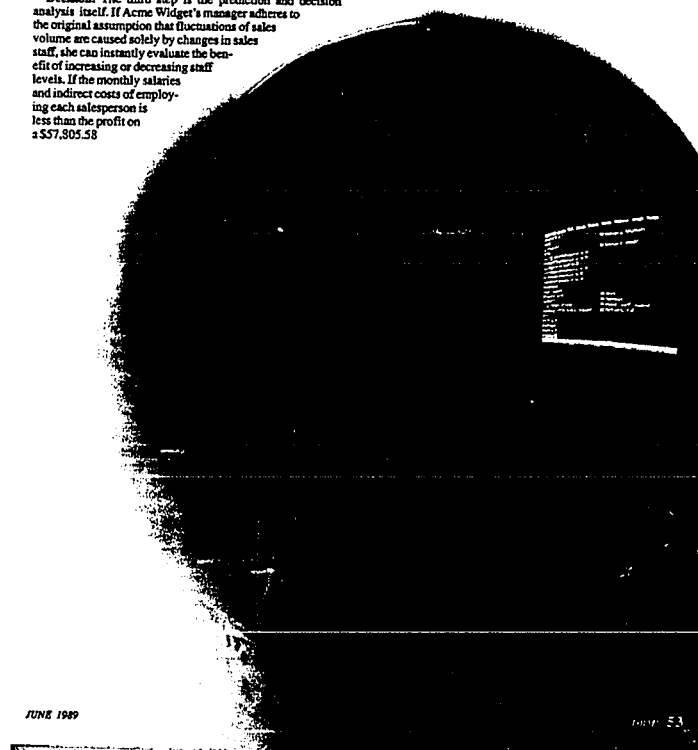


Figure 3. The "Predicting the Future with Your DBMS" layout from the June 1989 issue is an example of text wraparound. This particular layout caused much grief for the typographer who composed the page on-screen.

translucent globe. The layout required text to wrap around same chronological order that the researcher recorded them, that provide a degree of insight into how this controversy emerged:

April 13, production department conference room:

The art and production staffs from the four M&T publications meet to discuss what makes good magazine design. The employees each have been asked to bring in three magazines for the purpose of discussing what they like or dislike about the design of each of those three magazines. A DBMS typographer holds up a copy of *Personal Computing* magazine, opened to a page with text wrapping around the image of a bicycle. "I wish we could do wraps," he says wistfully.

April 21, 1:00 p.m., production department:

The typographer explains to the researcher: "I'm making changes in text editor on pages that have been proofed. I'll make changes and then send it to the Lino (Linotronic imagesetting machine). I make as many changes as possible in text editor because its faster than pulling up a file. I've been having problems with the pages not fitting." The art director, who was working nearby, said: "Wait 'til you get Regression Analysis (the working title for "Predicting the Future With Your DBMS," the article over which the text-wraparound controversy emerged). Wrap it around that crystal ball!"

The typographer replied: "I can wait."

Later that same day:

3:40 p.m.: The typographer has the "Predicting the Future With Your DBMS" article on his computer screen.

4:24 p.m.: The art director cuts out a photocopy of the crystal ball photograph and places it on a galley to check how the of text flows around it. He uses a red pen to cross out text that interferes with the crystal ball's image area and to indicate where lines of text need to break.

4:30 p.m.: The art director asks the associate art director if he has anything that needs to be taken next door? (to the editorial offices housed in a separate, nearby building).

4:31 p.m.: The art director crosses the driveway between the art and editorial departments, and drops the "Predicting the Future With Your DBMS" galleys on the managing editor's desk. The managing editor reviews them.

May 5:

Boxed code listings, and how they sometimes wraparound into the next text column, were being discussed at a meeting between the outside design consultant, the vice president of publishing, and the editor.

Design Consultant: "This is where we get into a certain amount of trouble, in terms of what people do with the wraps. It's not always easy, and then when copy editing comes along and makes changes, the wrap's completely off."

It wraps from one column to the next. I gather from the way the system works now, the system that you guys are on, that wraps are difficult at times."

Vice President of Publishing: "They are do-able. They can be done. They (the production staff) need a little more time with the copy, so that means you (to the editor) would need to get stuff in a little faster. It would be potentially possible to do wraps and that'd be the way to call-out code. The thing is, we can manipulate the code in terms of condensing it. We don't lose any spaces, or anything. What's the maximum number of characters a code line has, eighty? Like the old punch cards, eighty."

Editor: "It's also [the number of characters] on the computer screen."

Design Consultant: "And the average column character, on average, that's half of what you've been having to code. I understand [you] just can't lose the space. I understand all the problems, and it's one of these situations [where there are] a lot of problems, and the number of overlaps of solutions is very limited."

DBMS used SuperPage, a page-layout software package from Media, PA-based Bestinfo Inc., at the time of the research. Management was looking at whether it was preferable to purchase the then newly announced Wave4 Bestinfo software or to purchase an altogether different software package. One of the alternate software choices

being considered was QuarkXPress from Quark Inc. As QuarkXPress was only made for Apple personal computers, a decision to purchase QuarkXPress software would have presupposed a concurrent decision to further invest in machines from Apple Computer Inc.

DBMS was one of four magazines published monthly by M&T Publishing. Its three sister publications, *Mips*, *LAN Technology*, and *Dr. Dobb's Software Journal*, also were specialized computer magazines. M&T Publishing also published computer books and special projects in addition to its four monthlies. One such special project, an annual buyer's guide, was in production at the same time as the June 1989 issue which was observed for this study. The buyer's guide was being produced by the San Jose State University technical-writing intern. As mentioned in the previous chapter (see p. 25), the buyer's guide (unlike the June issue) was being laid out on an MS-DOS-based machine using Ventura Publisher software. Ventura Publisher's extensive automatic-indexing capability made it an ideal software choice for producing the buyer's guide, which was heavily indexed.

Reinvention of a hybrid computer system?

In the beginning, there was *Business Software* magazine. This publication appealed to a broad spectrum of both technical and business database-systems users. In September 1988, M&T Publishing split *Business Software* into two new

magazines—*DBMS* and *PC Accounting*. *DBMS* targeted the software developers and computer programmers among *Business Software's* readership. *PC Accounting* focused on those readers interested in spreadsheet and financial applications. *DBMS* thrived. *PC Accounting* joined the giant magazine morgue file in the sky.

DBMS' premiere issue brought with it both a new design and a new way of getting that design onto paper. Much of the staff of what became *DBMS* was hired the summer prior to the appearance of the debut issue. Among those hired to put together the new magazine was the art and production director. In a discussion during the observation phase of this research, the editor (personal communication, April 13, 1989) said that one reason the art and production director was hired was because of his computer savvy. *Business Software*, the early incarnation of *DBMS*, had been produced entirely using traditional, non-computerized page-layout techniques. Typesetting and color separations were contracted out to businesses specializing in those areas of prepress production. At the inception of *DBMS*, the art and production director was invited to investigate and develop a computer system whereby the prepress operations could be brought in-house. The final decision was a collaborative one between the publisher, the editor, and the art and production director, but the art and production director was the individual ultimately responsible for implementing that decision. The computer system decided upon used a

page-layout program called SuperPage from Bestinfo Inc., and the hardware configuration was comprised primarily of machines with MS-DOS operating systems. There was one Macintosh II computer centrally located within the art department that was shared by all employees of M&T's four magazines. The M&T book division employees had a Macintosh II of their own. The magazine employees sometimes used the book division's computer. With employees of four magazines sharing one computer, getting time on the Macintosh became the subject of an intense, but good-natured, discussion at one Friday morning production-staff meeting (April 21, 1989) and indicated a need for the company to re-evaluate its computer-usage strategy. The following exchange occurred:

An M&T employee (referring to the morning schedule): "Each magazine gets one hour on the the Mac--each magazine--not each person."

Art and production director: "One to five (p.m.) will be mud wrestling."

Another M&T employee: "There should be a two-hour cap in the afternoon so at least two people get on the machine."

A typographer: "There is an alarm clock on the Mac. I can show people how to set it."

The subject of whether or not the original computer system was adequate to meet the needs of art and production employees was one being given much consideration, and an issue that came up in the editorial offices as well. There was a lone Apple Macintosh on a table between rows of cubicles in the editorial building. The computer was shared

by the editorial staffs of the four M&T monthlies. While each editor had an IBM PC or IBM-compatible on his desk, the researcher observed that a queue for the Macintosh computer occurred in the editorial offices as well as in the art and production department. The managing editor, in a casual discussion of the matter, showed the researcher a map from the "Art of Distribution" layout on Pages 42-43 of the March 1989 issue (see Figure 4). "DBMS bought a slide of the map and stripped in the photos. We could have done this on a graphics program but we probably had a problem with access (to the computer)" he said (personal communication, April 24, 1989). He also noted that the brand of machine was not the criteria for the queue, but that it was the only computer in the editorial department equipped with graphics application software.

From discussions with the staff, it was obvious that DBMS had outgrown its computer equipment. The question for the company's management became one of whether to upgrade the proprietary computer system already in place, or to rethink the magazine's computer needs entirely.

In addition to the need to be better able to handle design elements such as text wraparounds, the issues of electronically connecting the editorial and production buildings and the publisher's philosophy of providing employees with their equipment of choice, came into play when new computer technology was being considered.

The editorial and production departments were separated

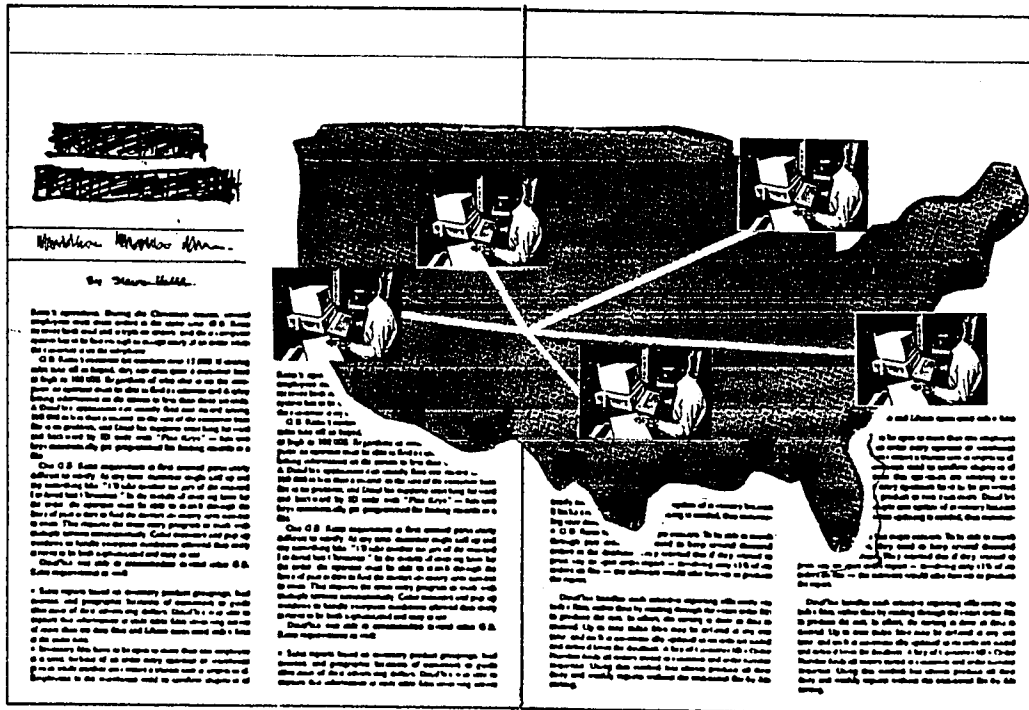


Figure 4. Above is the map from the "Art of Distribution" layout from Pages 42-43 of the March 1989 issue. It is an example of mechanical methods being used over a computer, due to a lack of computer time.

not only by function, but also by physical space. The two departments were housed in two different buildings that were separated by a driveway in the industrial park where M&T Publishing had its offices. Since the departments were not linked electronically (networked), employees were obliged to hand-carry floppy disks containing articles and page layouts back and forth between the buildings. While these little sorties often provided the researcher with a few minutes of conversation with employees useful in clarifying actions observed inside the offices and gave the employees the opportunity to get some fresh air, the necessary trips between the buildings were inefficient from a management point of view.

Computers from different manufacturers may be networked to work together, but there are limitations on this arrangement. Networking software and hardware is not standardized throughout the computer industry, so networking packages must be chosen with an eye toward future machine and software compatibility.

The lack of industry standards compounded *DBMS'* dilemma because the publisher said each employee should be allowed to use the equipment that best suited his preferences and purpose. For example, Ventura Publisher, which at the time only supported MS-DOS machines, was the desktop publishing software best-suited to producing the text- and index-intensive buyer's guide. Yet it was not the ideal software package to handle the text wraparounds in *DBMS'* redesign.

In the following chapter, how these issues were handled by the decision makers at *DBMS* and how the subsequent decisions affected the redesign, the role of employees, and the equipment mix at the magazine will be explored.

CHAPTER IV

OF PEOPLE, PUBLISHING, AND COMPUTERS

This research looked at how desktop publishing affects magazine publishing—not only the visual content of a magazine, but also the computer technology as well as the people to be found in such an environment, or “system,” in Argyris’ words (1974). On the design side, the researcher was concerned with what questions desktop publishing technology raised in the redesign of a magazine, how computers and software might change the visual content of a publication. From a technology point of view, the researcher wanted to know how the introduction of desktop publishing technology into the work place affected the magazine publishing system. Just as the process of magazine redesign is an evolutionary one, so too is the adoption and implementation of new technology.

Early in the fieldwork, the researcher discovered that management at *DBMS* was considering either replacing or upgrading its then-current computer system. As management was only exploring the issue at the time of this research, but with a definite consensus that some kind of change to the existing computer system was necessary, this study looks at the decision-making aspect of adopting new technology, drawing on diffusion-of-innovations literature as its theoretical base. A computer system was already in place at *DBMS*, and preliminary discussions with *DBMS* staff revealed that a change in the computer mix used at the magazine could

well become either an adaptation of the existing computer system (to meet changing needs brought about by the on-going redesign) or an entirely new computer system. To better explore the possible adoption of a new computer system or the potential adaptation of the existing one, the researcher, during the observation phase of the study, requested that she be allowed to introduce reinvention theory, a subarea of diffusion-of-innovations theory, into the literature review.

As a subarea of diffusion-of-innovations theory, the introduction of reinvention theory was in keeping with the theoretical base already established before the observation had begun. Reinvention theory allowed the researcher to broaden her theoretical perspective to include a better vantage point from which to examine the decision-making process used in selecting a new computer system.

The Redesign

The redesign addressed the problem of giving *DBMS* visual unity. The art and production director once described the pre-redesign appearance of the magazine as having a "Gidget goes crazy" look (personal communication, April 13, 1989). In a redesign meeting with the editor, the design consultant recommended that "If you want to start standing out as a more technical magazine, you take a more reserved, a more formal approach . . . that says to people, 'What I'm going to get in here is obviously technical' " (personal communication, May 5, 1989).

Compaine (1982) noted that magazines have natural life cycles, and that they either develop along with their ever-changing readership or cease to exist. Redesign is a survival strategy for magazines (Click & Baird, 1986; Mogel, 1979). After months of planning and tinkering with *DBMS'* design, the September, 1989, anniversary issue, which debuted *DBMS'* completely redesigned image, might be considered in light of Gidget grows up.

Item No. 1 on the post-observation questionnaire said, "The editor has said that about a year ago your magazine underwent a partial redesign, and some new computer equipment was introduced around the same time." The item went on to ask: "Do you regard the modification of the magazine's redesign and the upgrading of computer equipment as a necessary element of magazine publishing?" (see Appendix B).

Associate Art Director: Yes, I do. Because you have to change with it. Even getting little pieces. . . like we're undergoing a redesign. But as our designer has said, you've got to keep moving and changing. Readers probably won't even notice the little changes that you make, but it's necessary just as a part of the process (personal communication, May 26, 1989).

Art Director: Yes, we're having a problem with what I want to do with the magazine as far as designing and laying out features and columns. We're not able to do that with our current equipment. So, yes, I think.

We definitely need to upgrade our software. Right now we're being hampered by what typesetting can and can't do. . . . I really felt it this week. I mean I got yelled at for doing things . . . literally, I got yelled at, for doing things they couldn't do, making them do it. Yeah, it's really holding us back. We do

need newer software. (Researcher: In that question, I was looking for if the decision to purchase new equipment is a function of the redesign or more a desire to keep up with newer technology?) I think it's just, in general, where the industry is heading. We can't be a leader in our magazines if we can't even be a leader in electronic publishing. Electronic publishing is the new thing, it's expensive. It's a major investment, and I think that, in the end, it's going to be paying for itself. We're going to be laying out the magazine ourselves literally. From the people I've talked to, and this hasn't been discussed in the company, it really eliminates, in the companies that have been researching this, it eliminates the need for typesetters. So that's a big thing. That would be an interesting direction to see what we end up with here. I mean the artists will be doing it themselves on the system (personal communication, May 26, 1989).

Typographer: In the case specifically to *DBMS*, yes, sometimes it's necessary just to revive things, like painting a house and, overall, to do that ever so often just to survive (personal communication, May 26, 1989).

And the upgrading of computer equipment—Yes, it is . . . the simpler you can make life for yourself, the simpler it is. The more efficient you are, the more you're going to produce (personal communication, May 26, 1989).

Art and production manager: There was a total new design in September, 1988. Using new computer power, we brought production in-house (personal communication, May 26, 1989).

Managing Editor: Those are two separate questions. The magazine is becoming a different magazine. It's necessary to redesign to form a new identity. We lost some readers by changing our focus.

New computer equipment is not necessary. But maybe it is (personal communication, May 26, 1989).

Intern: A computer upgrade is necessary to stay competitive. Magazine publishing has a lot of high-tech stuff to it (personal communication, May 26, 1989).

Assistant Editor: Yes. From the reader's standpoint, the magazine is not technical-looking

enough. Database developers use the magazine as a textbook (personal communication, May 26, 1989).

The editor was attending an out-of-town conference the day follow-up interviews were conducted and he was unavailable to respond to this portion of the study.

Item No. 8 on the post-observation questionnaire asked *DBMS* employees how they perceived their magazine's redesign, given that a redesign may be used to address the changing needs of a magazine's readership, as a means to focus a target audience, and as a tool to be more competitive with competing magazines (see Appendix B).

The employees responded in the following ways:

Art Director: Right now *DBMS* has the largest paid circulation of the database magazines, so I think we are competitive already. But I think that the magazine was poorly designed to begin with. It's hard to design a technical magazine. It's hard. I mean this magazine we went from a business software type of magazine to a database magazine, and I don't think the people designing the magazine really knew what to focus on. If it was an editor designing the magazine, they would have focused on one thing. A production person designing the magazine would have focused on another thing, and that's what happened. So now, with the redesign, we're trying to get editorial and production involved a lot more closely to come up with the design. We've had a consultant come in who's doing the magazine and he was really asking the questions about what we both wanted to see, so I think that will be a lot more successful. And we have to stay competitive that way. I've been told it's good to redesign a magazine every couple of years. Not a drastic change, so that when you look back over four years of *National Geographic* or whatever, you see subtle changes in there. It looks better and better every time. Change with the times (personal communication, May 26, 1989).

Associate Art Director: Yes. I think as far as our redesign one of our biggest concerns is the code listings. Just because it's a real important part of the magazine, at least for *DBMS*. It's real important

for our readers. A lot of them will read all the code, and simply skim over the articles because that's what they want to look at, that's what they're interested in. So that's a big concern for the redesign . . . to try to make those readable. Text wraps of course are important. I already said that (personal communication, May 26, 1989).

Typographer: As far as magazine design change, they're in the process of having someone outside work on redesigning. And to proceed with that whole designing for me is not possible yet because I don't know what it'll look like. But as far as just redesigning a magazine, hopefully it's going to handle things at least as well as they've been, if not better. And bring up, focus on some of the things that are being done a little bit inconsistently, like [the art director] had a caption he wanted to find, and I said "Look at this." And I started showing him issues and then there was an inconsistency when justified or flush left. Hopefully, it's a way to go over all of the elements at least and look at the thing and the inconsistencies as well as modifying it (personal communication, May 26, 1989).

Art and Production Manager: Design is always evolutionary (personal communication, May 26, 1989).

Managing Editor: The redesign was done to improve readability for a specific audience. Computer code must appear exactly as it would on-screen. Also, [the redesign was done] to make the magazine more appealing to the eye (personal communication, May 26, 1989).

Intern: My main aim would be to make it more exciting (personal communication, May 26, 1989).

Assistant Editor: To focus on database developers—extremely technical. To address the changing needs of our audience, to focus on readers. Our main competitor is Data Based Advisor (personal communication, May 26, 1989).

Reinvention

Whether the process of redesigning the magazine raised the issue of re-evaluating the computer system, or vice versa, reads something like the question: Which came first, the chicken or the egg?

Item No. 2 on the post-observation questionnaire (See Appendix B) asked: Is the new desktop publishing system your magazine is looking at being selected on the basis of the needs that are being examined for the redesign or to take advantage of the the features available with the newer software (Wave4 from Bestinfo Inc., a proprietary upgrade to the software then being used at DBMS)?

Art and Production Director: It's really a combination of them both. One, the advancements in the software are rather stupendous-giant leaps for xthe good old PC. . . . What it is, is the magazine really drives the software, not the inverse. That's kind of the kernel of your question" (May 26, 1989).

Typographer: Hopefully it's being selected on the basis of both the needs of the redesign and to take advantage of features. There are a lot of things we could do if we had the software. And from the redesign point, [management] wants to do some of those things, so hopefully we're going to go through with some of those things" (personal communication, May 26, 1989).

Art Director: Oh, definitely. It will probably cut, just off the top of my head, it will probably cut at least 50% of the time just getting ready to go to get your page layout done. Because you really are doing it twice. You're laying it out to the dummy once, the artist is, she's giving that copy to the typesetter who's laying it out again. You really don't need to have the typesetter do it again for you. Once it's done, you only need to do it once. You can make a lot of the decisions yourself (personal communication, May 26, 1989).

Associate Art Director: Probably a little bit of both. As far as the redesign, hopefully they're looking at systems that will meet a lot of our needs. When we implement a lot of wraps, we have a real problem with that--photos, squares. As far as the redesign, there'll be a lot of wraps. With the system we have now, it's just not going to work. I don't know what they're planning on doing. I don't even know when they're planning on getting new equipment. Where they can do that. Because it's going to really limit the design. A lot of sidebars and things have to float in certain areas, and they couldn't actually go to a smaller size. But because of the format we have to go to either 20 and one-half or 42, or 13 or 27 and one-half. That's part of the budget, too. What can we afford? What can we get? The best system for our money? (personal communication, May 26, 1989).

Managing Editor: It's being selected for the new features. It would have been selected regardless of the redesign (personal communication, May 26, 1989).

Intern: The redesign is not linked. The ease of use is the question. I would like to do more on the machine (personal communication, May 26, 1989).

Assistant Editor: Both. The latest technology to fill our needs (personal communication, May 26, 1989).

Item No. 4 of the post-observation asked each DBMS staff member: Your magazine uses a variety of computer hardware and software to address different needs. The publisher has indicated that this allows individuals to use the tools they are most comfortable with. The production manager observed that each computer system was used for its area of expertise. Will the new electronic system maintain the hybrid of computer hardware currently in use? Or a proprietary system? How much influence do you feel that you

will have, or the needs of your particular department will have (or have had), in the selection of this new system? Will the system be customized to your suit your department's needs in anyway?

Typographer: I'm going to start from the last one: Will this system be customized to your department's needs? Well, we do that customization by building the page styles. I'm sure that Bestinfo or whoever helps you set things up you learn classes. A lot of it you build around what you want to do, so as far as the customized as far as the hardware and stuff like that. I assume that if they're going to get us something, they're going to get us what we need (personal communication, May 26, 1989).

Art Director: Oh, I think that's the whole reason, because of what we need, this is where we have to go to eliminate so much of that work. We're getting more work to do, special issues, more magazines, special supplements, and we're not getting anymore people. Since this is a faster way of doing things, although it's more expensive, I think that's why they're doing it. Because that's where we're headed (personal communication, May 26, 1989).

Associate Art Director: The redesign, as far as whatever he chooses, that's [the art and production director's] decision. I think that probably [text] wraps are the biggest factor (personal communication, May 26, 1989).

Art and Production Director: The new hardware will expand the ability to have a hybrid system. The system's ability to handle text wraps will have a great amount of influence [on the final buying decision] (personal communication, May 26, 1989).

Managing Editor: It will change the hardware. There will be some new workstations. I've had little input into the system selection. There will be some customization for the [editorial] department (personal communication, May 26, 1989).

Intern: They will always have a mix because of editorial loans (equipment lent to publishers by vendors so that the publisher can try out and test the equipment before writing about it). Page layout is independent of the text system. (personal communication, May 26, 1989).

Assistant Editor: Pass (on the first part of the question). We will have influence on the decision. We will have as much influence through the managing editor because he manages production. Production will probably have more customization than editorial (personal communication, May 26, 1989).

Redesign and reinvention

Is there a parallel between redesigning a magazine and reinventing a computer system? This researcher's findings indicate that a parallel does, indeed, exist.

Revitalization is the key element to this parallel.

Magazines must continually revamp their look to keep pace with an ever-changing, ever-growing readership. Media organizations are under pressure to implement new technology to remain competitive with other media organizations (Utterback, 1971). To better answer the question, is there a parallel between magazine design and reinvention of a media organization's computer system, it is helpful to take a closer look at how DBMS employees handled the production snafu of executing text wrapping around graphic elements in page layouts, or text wraps, in magazine-industry lingo (see Figure 2).

DBMS was in competition with another publication, *Data Based Advisor*. The latter had been published since September 1983, making its September 1989 issue its six-year

anniversary issue. *Data Based Advisor* had a more technical appearance than did *DBMS*. *Data Based Advisor* used fewer full-color photographs than did its younger competitor, although it did include photographs on the cover, in ads, and a few small head-and-shoulders portraits in the body pages. Otherwise, the art directors at *Data Based Advisor* relied on simple, prepackaged line drawings, or clip art. Sometimes a splash of color was added to the line art.

Similarities between the two magazines included the code listings discussed earlier (see Figure 2). *Data Based Advisor* used in-text code listings as did *DBMS*. However, *Data Based Advisor* tended not to break longer code listings into separate sidebars the way *DBMS* did. A two-page spread advertisement that ran in the June 1989 issue of *DBMS* also ran in the September 1989 issue of *Data Based Advisor*. During the final interviews with *DBMS* staff, the assistant editor stated that their readers used *DBMS* as a textbook (personal communication, May 26, 1989). *Data Based Advisor* made its educative intent clear by creating page after page of Case Studies, a regular, code-laden feature that included numerous examples in each issue.

SuperPage from Bestinfo Inc. was a command-driven page-layout program that required code commands to place text and graphic elements on the page. The typographer had to rely on his knowledge of the code commands, familiarity with his magazine's standard page grids and a certain amount of intuition when placing page elements in SuperPage. The opposite, more intuitive approach to page layout was offered

by machines and operating systems that use a graphical user interface, or GUI, such as Apple computers and Microsoft Windows, an operating system for IBM and IBM-compatible computers (announced June 1990). Apple machines and the Windows operating system for MS-DOS-based machines both provided on-screen WYSIWYG (what you see is what you get), making the production person's job of placing elements precisely within a layout much easier. It should be noted that Microsoft Windows was unavailable as a solution to DBMS management at the time this field research was conducted. However, had it been available, it would have been another reinvention-oriented stratagem.

The capability to visualize the page layout while it's in progress cannot be understated. Using the SuperPage system, the typographer said that he spent two weeks trying to accomplish the text wrap requested by the art director for the "Managing Your DBMS" layout of the June 1989 issue. The layout was one of the first to incorporate text wraps, a signature element of the evolving redesign. If the typographer had been able to see the interplay of graphic elements and text on-screen, the guesswork of placing code would have been eliminated, greatly reducing the time required to produce the layout. Although the researcher cannot concretely state what the time savings might have been in this instance, she has accomplished similar layouts within minutes using a graphical-user-interface machine and software that possessed the WYSIWYG feature. (Specifically, the researcher achieved quick text wraps using Apple

Macintosh computers and QuarkXPress software, a combination of equipment that, according to the *DBMS* managing editor, was receiving much consideration by the magazine's management a few months after the observation [personal communication, September 11, 1989].)

The importance of typography loomed larger after the observation phase of the research. In an informal, follow-up interview with the managing editor (September, 1989), he revealed that the redesign team had decided on another typeface, different from the one recommended by the outside consultant. The motivating factor behind choosing a different typeface was that it was smaller, and made more efficient use of the magazine's limited editorial space. The new typeface was not available as a font in SuperPage. In fact, it was only available in software designed for Apple machines. Thus, type and its availability as a software font became an issue in the potential selection of both computer hardware and software at *DBMS*.

A parallel between redesign and technology revitalization was bridged by the graphic design element of typography and the availability of page-layout software and software fonts. It became an important factor at the decision-making stage of selecting new computer equipment, as predicted by reinvention theory.

The production process and people

During the September 1989 interview with the managing editor, he mentioned that the typographer's position would

be eliminated pending implementation of the planned upgrade of the company's computer system. Effectively, the art directors would assume the typographer's portion of the workload by creating on-screen layouts in a page-layout program, and then importing the edited articles, which were stored as text documents in a word processing application, directly into the electronic page layout. The new computer hardware and software would eliminate the duplication of effort that *DBMS* experienced with the old, observation-era computer system. A manual page layout would no longer be required, and the need to rekey edited articles into the code-heavy SuperPage proprietary software would be rendered obsolete.

The researcher's expectation, based on suggestions from the literature, was that there would be a blurring of the roles of editor and art director, but the case at *DBMS* instead indicates that blurring occurs between the roles of art director and production staff. However, it has been the researcher's experience in doing free-lance copy editing and desktop publishing at computer magazines that there may be a trend for the roles of copy editor and production person to merge. For example, at *MacWEEK*, a computer trade magazine, the copy desk's function was divided equally between copy editing and desktop publishing.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The goal of this thesis at the outset was to better understand how desktop publishing technology is shaping magazine design. The researcher asked: How has the introduction of desktop publishing into the magazine environment affected magazine design? From talking with editors, art directors, and others in the magazine publishing business, the researcher ascertained that the technology is changing the practice of magazine design and publishing in every conceivable way. However, the conclusions to be drawn from this case study are not wide-sweeping and must be confined to the single, high-tech publication that was studied.

The researcher spent four weeks observing the editorial, art and production staffs at *DBMS* magazine (*DBMS* stands for Database Management Systems—a logo-acronym that is never spelled out), a monthly publication for database-systems managers, programmers and MIS (manager of information services) personnel. *DBMS* is published by M&T Publishing of Redwood City, CA, close to California's Silicon Valley, an area known for its leading-edge computer research, development and production.

That there were changes coming in *DBMS'* design and in some of the employee's job descriptions was clear. But a

month-long observation period was insufficient to do more than take the pulse of the *DBMS'* work place. Follow-up interviews with key staff members, such as the managing editor, provided more insight into the coming changes than was possible from a neutral-stance observation done over a few weeks' time.

The researcher spent four weeks observing *DBMS* employees go about the task of putting out an issue. A significant problem, centering on the page-layout software's capability of executing a circular text-wraparound arose during the observation. The consensus among *DBMS'* management was that there was no real link between the tandem decisions to redesign the magazine and to buy new computer equipment. However, the opposite was true among those whose daily efforts actually produced the magazine. The text-wraparound scenario that occurred during the researcher's observations supports the viewpoint of the rank-and-file employees that new computers and software would be adopted by management to meet the production needs dictated by the new design elements (namely, text-wraparounds), but the researcher was not there to see how the drama was finally played out.

There are inadequacies with the participant-observation method of studying a population, but nevertheless the method does afford the researcher valuable nuances and subtleties that he or she would not get by conducting a survey of hundreds of magazine editors, art directors, production

managers, managing editors, typographers and other publishing-industry employees. Longer periods of observation, such as the ones Argyris and Jorgensen used in their studies (of a newspaper, *The Daily Planet*, and a Satanic cult, respectively), offer material for more in-depth analysis. However the scope of those studies is more appropriate to more extensive research than is usually undertaken for a Master's thesis.

One of the goals of this research was to discover which employees on a magazine's staff would be most likely to implement the technology. Among those interviewed at *DBMS*, the employees who had the most computer literacy were the ones in management positions. This held true regardless of editorial or art and production orientation. This finding is consistent with Rogers' (1983) theory about mass communications managers (editors) being the early adopters of technology within a social setting. However, at *DBMS* it was those employees involved in putting the magazine out that were most eager to see a change in the computers and software being used. Management shared enthusiasm for the idea of adopting new technology to meet production needs, but management also reflected on its budgetary constraints when discussing the matter.

After conducting both pre-study and post-study interviews and spending random hours over the course of four business weeks (Monday through Friday, 9 a.m. to 5 p.m.) that averaged out to about two eight-hour business days each

week, the researcher came away with many field notes, audiotape recordings of interviews and meetings, sample pages, interoffice memos, and other materials. In addition, a design content analysis of eleven *DBMS* issues was done. From this data, it was still impossible to know which way the magazine's management was to decide on the question of purchasing new computer hardware and software. It also was impossible to foresee exactly how those changes, if implemented, might affect the magazine's employees. Yet being able to watch as the decision-making process evolved provided information that would have been difficult to obtain by other research methods. Participant-observation, then, is valuable for observing a population over time and gathering in-depth data about a particular phenomenon. Also, by becoming familiar to, and thereby less threatening to research subjects, a researcher is able to obtain more candid responses to his or her inquiries. For example, the participant-observation method allowed the researcher to fully explore one of her initial research questions: Has desktop publishing technology affected the nature of the magazine work environment? According to the art director (personal communication, May 26, 1989), the technology enhanced the staff's ability to put out a better-looking magazine, more quickly. A comparative study with how a non-desktop published magazine put out an issue would have provided a more critical reference point than did the before-and-after focus on the redesign that this study used.

Another goal of this research was to examine how the introduction of the computerized page has affected the "product image" (defined as design and layout) of the magazine? Looking at *DBMS'* first year, this is not an easy question to answer. The magazine began with a new look (an update of the now-defunct *Business Software*) and the use of in-house desktop publishing equipment for the first time. What the observation conducted at *DBMS* did offer was an opportunity to explore the interplay between magazine design and the establishment of the magazine's equipment standards.

Redesign is an evolutionary process. Over a year's time, *DBMS'* appearance changed many times. Departments were added and phased out, according to reader response. The pull quotes went from varying in both appearance and style from one article to another, to being consistent throughout the magazine. The mostly royal-blue parallelograms where department names appeared in reversed out, white type at the tops of the pages beginning a given department changed in size and sometimes color from September 1988 to September 1990. In the redesign, the department boxes became black rectangles with the department name appearing in reversed-out type. A gray rectangle shadowed the black boxes, giving the department headings an almost three-dimensional effect.

The implications from the data collected at *DBMS* are that both redesign and reinvention (the adoption and adaptation of new technologies) are inherent to magazine publishing. A decision about one aspect couldn't be made

without looking at the other. The limitations of page-layout software could greatly slow down the typographer's ability to complete a two-page spread that featured an important component of the redesign—namely, text-wraparounds.

In the sections that follow, the researcher will take a more-in-depth look at some of the implications of this case study and how they apply to the larger landscape of magazine publishing.

Typography: An important aspect of redesign and reinvention

Typography is the vehicle that commits a verbal message to the page in a visual manner. Nowhere else in magazine design do verbal and visual elements come together in such a unique way. At *DBMS*, typography was an important element of the magazine's redesign. To meet the goals of the editors, the art director, and the production department, a typeface was needed that: (a) was easily read; (b) suited the high-tech appearance sought by the editor and art director; (c) maximized the amount of text that could be squeezed into the limited editorial space; and (d) was available as a font in the software package to be adopted.

Typography was a crucial consideration in selecting software at *DBMS*. The software eventually to be selected needed to have the flexibility to do a variety of text wraps—runaround, square, rectangular, and circular. It also needed to have the capability of importing text files from

other word processing applications with a minimum amount of clean up. Sometimes when translating a text file from one software program into another, a few special symbols were not recognized by the software program into which the text files were being imported. This required the typographer or an editor to do either a global command to change a problematic symbol to the one desired, or if a global command option was not available in a particular software program, the desired changes had to be made manually, one by one. The latter solution was both labor-intensive and time-consuming.

Since QuarkXPress, the page-layout software the managing editor said was being given the most serious consideration (personal communication, September 11, 1989), was only available for Apple computers, a decision to adopt QuarkXPress automatically would assume further investment in Apple computers for the typesetting/production area, an area where predominantly MS-DOS-based machines were in use during the observation.

The uncertainty factor

The need to reduce uncertainty in manufacturing a media product, in this instance a magazine, was the factor that interlinked the redesign of *DBMS* with the reinvention of the magazine's computer software and hardware technologies. *DBMS'* premiere issue was the result of interplay between the revision of an old magazine, *Business Software*, and bringing

page layout and production of the new magazine in-house. Under the title of *Business Software*, the prepress steps of typesetting and page makeup for the publication were handled externally. The editor said that the idea behind bringing prepress operations of the magazine in-house was to lend credence to the newly increased editorial emphasis on high-tech content by increasing the magazine's high-tech appearance. The redesign of *DBMS* was planned to coincide with its one-year anniversary issue. At the same time, an upgrade of the existing computer system and software (purchased about the same time that the initial *DBMS* issue made its debut) was being investigated.

Media organizations must contend with the element of uncertainty in producing their products (Dimmick, 1979; Jowett & Litton, 1984; McQuail, 1987). In the case of M&T Publishing, the product was *DBMS* magazine. The routinization of the production process is one way in which media organizations, such as M&T Publishing, cope with the uncertainty factor. Formalization is one method sometimes used to achieve the desired routinization of procedures. During the redesign meeting (May 4, 1989), a discussion of whether or not to formalize the cover of *DBMS* occurred. A formalized cover, it was thought, would lend the magazine the technical-journal appearance sought by the editor, but not be as effective in attracting single-copy sales at the newsstand level of distribution. The editor said that the design consultant's initial, formalized cover designs

received "a lot of resistance" (personal communication, May 4, 1989) because they were considered to be overly conservative. M&T's vice president of publishing was known to prefer covers with sizzle to attract the reader's eye at the newsstand. (See the discussion on concept covers, Chapter II). But the editor said that newsstand sales had not met the desired circulation goals for *DBMS* (personal communication, May 4, 1989). Distribution was being redirected toward a combination of paid and controlled circulation. Finally, the stylistic use of conceptual photographs on the covers was retained, the logo solidified, and the blurbs standardized. The design consultant's suggestion of "marching the cover lines (blurbs) down the side" was followed in the redesign.

Routinization helps increase awareness of which features of the magazine contribute to its continued, monthly salability. The use of modular grids, logos, and other standardized symbols (for instance, the "icon library" introduced along with *DBMS'* redesign), creates an identity that is comfortable and familiar to a magazine's readers. In discussing the proposed redesign with the outside design consultant, the editor noted that many of the magazine's readers skipped reading the articles, and instead immediately looked for the programmers' code listings published by *DBMS*. The programmers were eager to try out the code listings on their own computers, according to the editor. As a proven attraction for the magazine's readers,

the code listings needed to be presented in a manner easily recognized from issue to issue. Ultimately, in a memo to the editor, the design consultant (May 5, 1989) recommended the following threefold solution for the presentation of code listings:

All listings are set the same size and in the same face:

8/9 COURIER BOLD.

For the first type of listing the intertext listing must be six lines or less. This makes it easier to read and can allow for the occasional line wrap. These can occur wherever needed and have white space above and below each one.

The second type of listing is separated from the body of the text in a box with a banner head. It must always be in the range of five to twenty line of code. These sections of code are placed in boxes that expand across the column allowing longer lines with hopefully no code wraps. These boxes should be placed directly next to their mention in the text or as close as possible. . . .

The third type of listing is the full-blown listing that takes up a two-column-wide space.

Reinventing the Computer System

DBMS used a hybrid computer system. Rice and Rogers (1980) referred to this type of a technological system as a "loose-bundled" innovation. This hybrid computer system consisted of networked MS-DOS machines (IBM and IBM-compatible machines) linked electronically via cables and communications software to Apple Macintosh computers. Two separate local-area networks were in place, however. The computers in the editorial offices were electronically linked, as were the machines in the art and production department; however, they were not networked between the two

buildings. Floppy disks containing the edited computer files of articles had to be hand-carried between the buildings. This configuration of machines allowed the art and production director, who was ultimately responsible for purchasing and assembling the magazine's computer equipment, to adapt the hardware and software to the unique needs of individual employees as well as those of M&T. Given the ongoing use of the hybrid, or loose-bundle, computer hardware at *DBMS*, reinvention of an existing system was occurring rather than the complete discontinuance of one system, and the subsequent adoption of a secondary system.

The typographer noted that customization is done "by building the page styles" (personal communication, May 26, 1989) which indicated that whatever computer system *DBMS* management selected, there still would be a degree of reinvention occurring. The customization of innovations is at the heart of reinvention theory.

Innovation as a design determinant:

Typography and the importance of software

Typography and the software's ability to handle the typographic needs of both the editorial and design staffs proved to be a pivotal issue in the redesign of *DBMS*. The art director said that he felt constrained by the limits of the software in use at the time of this research to execute text wraps around illustrations, code listings, drop capitals, and pull quotes. The editors' concerns included

the software's capability to incorporate code listings into the text of regular features and articles and the capability of maximizing the potential amount of editorial lineage within an allotted space. The production staff was concerned about a given software package's capability of producing the results desired by the art directors and editors in an efficient and timely manner. The typographer found the on-screen execution of the text wraps using SuperPage, as requested by the art director, to be both cumbersome and time-consuming.

Given the issues of text wrapping around graphic elements, including typographic elements, and the need to squeeze as much information as possible into the existing editorial space; typography and typesetting were important areas of concern in both the implementation of the redesign and the selection of hardware and software technologies for the new electronic publishing system. Between hardware and software, software was the most critical design determinant. The software chosen needed to be compatible with all components of the mixed computer system that were already in place, as well as with the proposed additions to the computer system.

Reinvention in a loose-bundle system

At an organization where a loose-bundle computer system is in place, the process of reinvention becomes a more than likely occurrence at one of the three implementation stages

(redefining, structuring, interconnecting) as outlined by Rice and Rogers (1980). In a system that begins by using a mixture of machines from various hardware manufacturers (in the case of *DBMS*, MS-DOS computers coupled with Apple computers), the process of reinvention is inherent to that system. The art and production director at *DBMS* noted that mixing "a proprietary software system that has the ability to import and export into the other hardware/software systems, is definitely a plus. . . .We're not locked into the older hardware technology or speeds. We can move machines around, and not have any bad repercussions to it. It offers flexibility that we wouldn't otherwise have in a proprietary system" (personal communication, May 26, 1989).

Opinion leadership and the organizational hierarchy

The hierarchical organization of *DBMS* followed the pattern described in the two-step flow of communication model (Rice & Rogers, 1980; Utterback, 1971). The editor and art and production manager were opinion leaders, or early adopters, in the magazine's organizational system. The magazine itself could be considered as a model of early adoption within the larger, business system of magazine publishing. By virtue of their leadership positions within the media organization, the editor and art and production director held the perquisite qualities for being categorized as early adopters: They both were computer cosmopolite, had external contacts in the computer industry, and were

influential opinion leaders within their social system. Thus, within the microcosm of *DBMS*, the editor and the art and production director functioned as early adopters whose opinions greatly guided their peers in the selection of new components for the hybrid computer system. In addition, the art and production director, given his strong technical background, vendor contacts, and implementation responsibilities, functioned as an internal change agent (usually a position occupied by someone external to a system), providing in-house technical expertise.

Limitations on the research

This case study provided some interesting insights into a magazine that was grappling both with the mechanics of a redesign and the fact that it was outgrowing its existing computer technology. However, given the lack of pre-existing studies in this vein, the results of this research are not generalizable beyond the context of *DBMS*.

Inconclusive results about reinvention occurred because a key decision maker declined to be observed. This prevented the researcher from attending and recording meetings held by upper-level management. Since this study focused on reinvention at the decision-making stages, the individual's disinclination to be observed somewhat interfered with some key aspects of the research. But the individual did agree to a post-observation interview where much of the observation material in question was confirmed,

denied, or clarified.

Directions for future research

A blurring of roles

The literature available on the introduction of desktop publishing into media organizations suggested that a blurring of the distinction between the roles of editor and art director was likely to occur. The situation at *DBMS* indicated that the most noticeable blurring of job descriptions was occurring instead between the art director and the typographer. Both the art director and the managing editor indicated that the effect the implementation of a new software package and the addition of new computers would have was one of eliminating the role of the typographer altogether (personal communication, May 26, 1989; September 11, 1989). The job would no longer be required once page makeup was being done entirely on the computer, rather than first as a hand-drawn dummy sheet and, subsequently, as an electronic page. During the research, the typographer was converting edited text from other applications to conform to SuperPage. Further study needs to be conducted in this area to develop a method of measuring the extent to which print-media employee roles are merging, and under what conditions these mergers are occurring.

Electronic magazines: On floppies or on-line?

Electronic magazines have been investigated by publishers and are now available to some extent. The prohibitive expense of producing and distributing them contributes to the current paucity of electronic magazines. In a DBMS redesign meeting, the associate publisher, editor, and design consultant (May 5, 1989) discussed the feasibility of packaging a floppy disk (containing code listings, the single most troublesome aspect of the redesign) inside the magazine. The reasons for not going this route were that: (a) it was cost-prohibitive; (b) inserting the floppies into the magazine was both expensive and problematic from an equipment standpoint (insertion machines were not widely available at bindery houses), and that (c) floppies didn't travel well through the mails.

The other method of distributing an electronic magazine was via a modem (a peripheral device which allows computers to exchange data over telephone lines). On-line distribution would usually require a combination of an access fee (the equivalent of an electronic magazine subscription), plus the per-use utility cost (telephone expense) incurred by the end user. Presently, the annual subscription for a traditional magazine is far below these costs. Some magazines do offer electronic versions of their shelf product. For example, *Writer's Digest* magazine advertised a computer database version of its annual *Writer's Market* in the October 1989 issue. A study of the

start-up of an electronic magazine and the issues involved, would open doors on a fascinating avenue leading into the future of magazine publishing.

Conclusion

Whatever twists and turns the magazine publishing industry takes in the future, it is abundantly clear that new technologies such as desktop publishing and on-line services change the shape and distribution of information products for mass audiences. For example, an on-line Ziff-Davis publication, *Zmac*, abstracts articles from two of the publisher's print magazines—*MacUser* and *MacWEEK*—and stores them in an electronic database which is open to anyone with a subscription, a computer, and a modem. Users are referred to the print magazines for full-text versions of the articles.

This researcher has done free-lance copy editing and production work at several magazines while writing this thesis. All of those magazines required familiarity with computers and often with specific software applications, as a condition of employment. From her personal experience and by conferring with classmates from the Department of Journalism and Mass Communications at San Jose State University who have gone on to work in journalism, it is clear that to be properly prepared for employment upon graduation, students in many areas of media need to possess computer skills.

It is hoped that, although itself limited in scope, this research will open avenues of exploration in the areas of desktop publishing, magazine design, and how the interplay of the two affect the media organization.

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APPENDIX A
PRE-OBSERVATION QUESTIONS

Interview Questions:

- Has the introduction of desktop publishing technology into your office changed your job description?
- Has it changed the way you do your job?
- If there has been a change either in how you do your job or in your job description, are others doing what you used to do? If so, who?
- Do you have more autonomy using desktop publishing? Less autonomy?

Has the use of desktop publishing:

- affected the content (copy as well as graphic) of your magazine?
- changed the way you layout your magazine?
- limited or expanded your choice of typographical content?
- affected the percentage of editorial space devoted to graphic content (e.g. illustrations, halftones, charts, white space)?
- had a discernible affect on production routines?
- decreased the amount of time necessary to produce an issue? increased the amount of time necessary to produce an issue?

APPENDIX B

POST-OBSERVATION INTERVIEW QUESTIONS

- 1) The editor has said that about a year ago your magazine underwent a partial redesign, and some new computer equipment was introduced at around the same time. Do you regard the modification of the magazine's design and the upgrading of computer equipment as a necessary element of magazine publishing?
- 2) Is the new electronic publishing system that your magazine is looking at being selected on the basis of the needs that are being examined for the redesign or to take advantage of the features available with the newer software?
- 3) Using the current software, the editor has said he feels that, in essence, paste-up is being done twice: once when the artists paste-up photocopies of the galleys, and again when the typesetters use the mechanical paste-ups as a guide for on-screen positioning of elements. Will the new electronic publishing system address this situation? If so, in what way?
- 4) Your magazine uses a variety of computer hardware and software to address different needs. The publisher has indicated that this allows individuals to use the tools they are most comfortable with. The production manager observed that each computer system was used for its area of expertise. Will the new electronic system maintain the hybrid of computer hardware currently in use? Or a proprietary system? How much influence do you feel that you will have, or the needs of your particular department will have, (or have had) in the selection of this new system? Will the system be customized to your suit your departments needs in anyway?
- 6) What percentage of your day would you estimate is spent using a computer?
- 7) I have observed that people sometimes wait to use the Macintoshes, both in the art department and in the editorial department. Is this an accurate assessment of the situation? Would you use those computers more if they were available?
- 8) Redesigns may be used as a way of addressing the changing needs of the magazine's readership, as a means to focus

the target audience, and as a tool to be more competitive with other magazines. How do you perceive your magazine's design change?

- 9) Typography and typesetting seem to be important areas of concern both with the implementation of the redesign and the selection of the new electronic publishing system. For example, the need to fit more text into the editorial pages, the importance of code listings, the ability to do text wraps around graphics and to produce drop caps are some concerns that I have heard expressed. Is this an accurate observation? Why or why not?
- 10) The editor has mentioned a desire to have the design consultant produce a library of graphic symbols to stylize graphic communication of ideas that frequently occur in the magazine's text. What is your perception on this facet of the redesign?
- 11) I have observed that the art directors sometimes add or delete house ads, based on the need to either create or fill space in a given layout. Are there any parallel situations for editorial employees?
- 12) There seems to be a lot of cooperation between employees in the various departments of the magazine. Would you agree with this assessment?

Demographics:

- What is your position/title?
- What is your job function, briefly?
- How long have you been employed by the magazine?
- Did you use a computer before you came to work here?
Desktop applications?
- Do you have a computer at home? If so, how long have you used a computer at home?
- Where did you acquire your desktop and computer skills?
On the job? Through education? Through other experiences?