EDSf REPORT
LEADING RESEARCH FOR THE DOCUMENT COMMUNICATION INDUSTRY
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The life and death of text

The day I got my first library card, print and radio were the primary media. Then came television and everything changed. I liked radio because the pictures were better. It was 1951 at the Brooklyn Public Library branch on Flatbush Avenue. I recall that I had to have a note from my teacher and be able to sign my name in script. And I then had the most wonderful ticket anyone could ever have to travel in space and time.

I grabbed the first book I saw to check out. It was "A Tree Grows in Brooklyn" and I got an immediate frown from the librarian. Over the years I went from shelf to shelf looking through every book, scanning some, and checking out many. It was my goal to read the entire Encyclopaedia Britannica but I lost interest somewhere around "I."

The words on those pages became images in my imagination. I didn't need a picture of the Nautilus or of Captain Nemo. I knew just what they looked like. Now we are at another generation of technology and civilization. Our kids have grown up in a more literal world where the image is the thing and the word is less important—where you have to see it, not imagine it. In the war between text and image, the image may be winning.

There was a discussion between a group of technologists and a group of authors. The technologists pushed their vision of a world of video screens with access to databases and other information, combining sound and sight. "Look at all the information you have access to," said the technologists. "It's called a library," said the authors. Computers and libraries are not enemies. From the computerized card catalog to online information sources, there is great synergy between the printed book and the world of the pixel book.

There is a middle ground where the book and the screen meet. For research purposes, the computer is a winner. There is no better way to search through data. I would rather see kids raised on print and then phased over to the computer. Let them learn to focus and concentrate. A front-page article in the *New York Times* reported that over the last decade, the sound bites used on TV news have gone from two minutes to less that 15 seconds. Life is transient enough.

Print is surely more democratic, even more cerebral. *And the pictures are better.*

We are now knowledge workers and few of us are not touched by the computer. Those who favor print argue that competitors to print have never succeeded. They point to radio and movies and television. And they are right. But the Internet is a viable competitor because it combines all of them and more. It seduced us because it was text based—and thus related to the printed word. Then it added images which also extended the print metaphor. Soon it added animation and sound and video—the television metaphor.

We are now in a culture whose information, ideas, and epistemology (the origins and nature of knowledge) are given form by television and the visual image, not by the printed word. The new media revolution is based on the assault on language by new forms of imagery. For most of us, seeing, not reading, is the basis for believing. Television and the computer (and even the cell phone) speak the language of dynamic visual imagery—not complex textual language. Print makes demands on us physically as well as mentally—you must be immobile and have learned to ignore the shapes of the letters on the page to see through them to the meanings of the words they form. TV and the computer are too easy—you allow the bits to wash over you.

The content in a book may no longer be intertwined with the experience of turning pages. Reading is seeing and comprehending words and sentences. Mortimer Adler described our involvement with a text as varying from "passive" to "active." Active reading combines reading with critical thinking, learning, and decision making. Passive reading is less intense and less work. Too much of the way we interface with the computer and the Internet is passive and our youth are not developing cognitive skills.

DID YOU HEAR?

- Hard disk drives have come down exponentially in cost, from $1,000 for a 1 Gigabyte drive 10 years ago to under one dollar a gigabyte today (Intel).
- UPS handles 13.6 million packages a day; FedEx handles 5 million packages. That's a lot of stuff, most of which is paper.
- Alfred North Whitehead once said that "the greatest invention of the 19th century was the invention of the process of invention." In industrial countries, non-defense private and government spending on R&D has risen from 1.6 percent of gross domestic product in 1981 to 2.1 percent in 2002, the last year for which data are available. Published scientific research has increased by 40 percent since 1988 (Business Week).
- Statement printing falls into five main categories: 38 percent financial, 33 percent utility, 10 percent retail, 8 percent insurance, and 11 percent other (InfoTrends/CAPV).
- One percentage point of annual productivity eliminates about 1.3 million jobs (Labor Dept., Forrester Research, Business Week).
- Golf balls with RFID chips let you find them with a hand-held locator.
- Cell phones will be in the hands of 2 billion people by 2007, up from 1.3 billion today (Business Week).
- The State Department is dropping the typewriter typeface Courier in favor of the typographic font Times New Roman.
- 83 percent of senior marketers say customer data is a core part of marketing activity (Marketing Direct).
- There were 175,000 new titles of books last year, up 19 percent from the year prior–up 47 percent from 1999. The number of publishers was 78,000, up 10,877 (Bowker).
- Cell phones have cut pay telephone revenue 50 percent over the past five years (Forbes).
- There are 160,000 printing companies in China (Agfa Interface).
- The market for business printing and copying is growing at a rate of less than 2 percent annually, according to InfoTrends/CAPV. FedExKinko's has a 10 percent market share, and office-supply chains hold 14 percent of all sales.

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Editor-in-chief: FRANK J. ROMANO, EDP
Editors: Toby Cobrin, EDP, Roberta McKee, EDP, Jeanne Mowlds, EDP
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EDSF The Electronic Document Systems Foundation
24238 Hawthorne Boulevard
Torrance, CA 90505-6505
USA
Tel: +1-310-541-1481
Fax: +1-310-541-4803
info@edsf.org
www.edsf.org
www.EDSFIntern.org

Snake-oil spam

Advertising in the form of posters and notices have been around since the Middle Ages, but in the United States, advertising as we know it came into its own during the early 1870s. The nation was moving from an agricultural society to an industrial one. Newspapers proliferated and they carried ads. Advertising grew and helped to spur the rise of a marketing system that in turn promoted the growth of the railroad, telephone, automobile, electrical, and printing industries. The population rose from 38 million in 1870 to about 76 million by 1900. With increased population came the opportunity to reach a greater number of people with new products and services. While newspapers have been around in one form or another since the mid 1700s, print ads grew during the 1870s with many of the ads focusing on the sale of tonics, elixirs, and other medicines that claimed to cure every ailment. Much of this market was spurred by the end of the Civil War which had created a need for medical treatment for the many veterans. The patent medicines were mostly bottles of 80-proof whisky with various herbs added to make them unique. The largest periodicals of the time were church-based religious, or temperance publications which gladly accepted the advertising dollars that the patent medicine vendors spent. 75 percent of all ads running in these publications at the time were for patent medicines. These tonics continued to dominate the media toward the end of the nineteenth century. Their outlandish claims tarnished all forms of advertising. Many print ads of the time were eyed with suspicion. In 1892 the *Ladies Home Journal* was the first periodical to ban all medical advertising in an effort to get rid of the patent medicine charlatans who offered dubious medical cures and treatments. This unleashed a wave of efforts to eradicate the industry abuses and by 1906, the Pure Food and Drug Act was passed to protect the health of the public by controlling advertising and claims of medical benefit. 56 percent of all e-mail is spam. Over half of the 12.4 billion spam messages has false claims (FTA). Spam gives e-mail a bad name, but over time, it will pass, as the patent medicines passed into history.

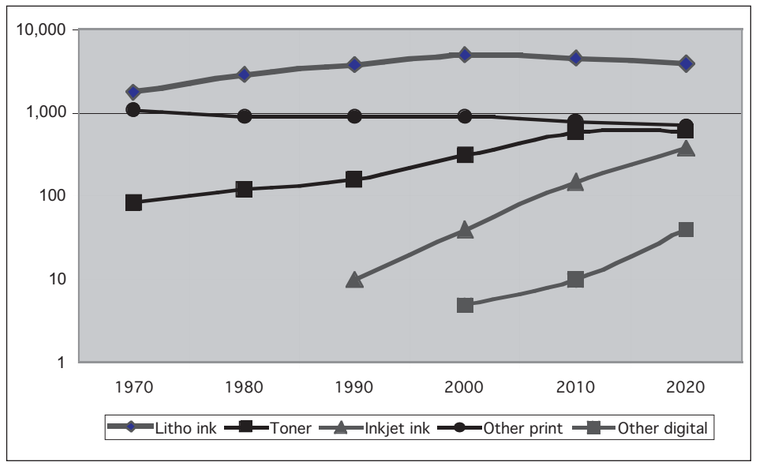
Inka dinka doo

Initially there was ink–letterpress printing ink. Then came lithographic ink, and flexographic ink, and gravure ink, and screen printing ink. In the 1960s, toner was introduced. In the 1970s we saw inkjet ink. There are also thermal and other inks. All of them are based on pigments; a few are based on dyes.

Toner uses electrical charges and can be liquid or powder in nature. Inkjet ink can be based on several different chemicals. Over the next 15 years we expect to see growth in inkjet and slight declines for most other printing inks and toners.

Chart below created by Frank Romano. We have tried to plot the historical and projected trend lines for five printing substances using a logarithmic scale. The left axis is in millions of pounds on a worldwide basis. The projections are ours, based on changes in technology over time.

The printing ink manufacturers report that ink volumes are already down for conventional printing. Digital substances are growing. And then there is "bioink" which consists of spherical aggregates of thousands of cells. An inkjet-type printer deposits them on layers of biodegradable gel. The composition of the gel coaxes them to grow into living tissue.



The evolving document printing infrastructure

At one time, *Wired*, the magazine that chronicles the digital revolution, refused to give most of its employees pens. The paper-less and pen-less/pencil-less office has gone the way of the dot-com bubble. We still use paper and we still write and print on it. In 1991, U.S. users consumed about 5 million tons of paper. By 1998, that number had risen to about 8 million tons. The typical office worker used to consume between 5,000 and 10,000 pages of paper a year. Today, it is probably about half that amount—less-paper, not paper-less.

Enterprises still run on paper. Over the last decade desktop printers proliferated. Document production infrastructures resulted in millions of dollars in excess cost annually. According to Gartner Group, a document is copied, either physically or electronically, an average of nine to 11 times at a cost of about $18. In addition, output equipment (copiers, printers, faxes, scanners, and supplies) continue to be one of the most under managed and costly assets within many companies, resulting in lost profit of approximately one percent to three percent per year.

Some estimates say that Internet users print an average of 28 pages daily. An HP survey found that 97 percent of respondents prefer paper files over digital ones. Studies have indicated that e-mail alone has increased printing volume by 40 percent. Some surveys state that the annual cost of printing, copying, and faxing can cost $860 per person per year. Others indicate that document production can eat as much as 15 percent of a company's annual revenue. That was then; this is now. Enterprises are getting smarter.

Document delivery problems retard 30 percent of business processes (Boston Research Group). Document production accounts for 20 to 40 percent of total labor costs (Datamation). Up to 60 percent of all IT help-desk calls are printer-related (Information Week). The reasons for these expenses have to do with total cost of ownership—not just the device cost or the supplies cost. Organizations have put together a confusing selection of printers, scanners, faxing machines, and copiers. Each served a specific need at the time it was purchased, but over time many companies find themselves with huge, output-related headaches—administering multiple contracts with multiple vendors for multiple machines. Planning and analysis of output requirements can help lower costs.

Document production has moved from the copier to the printer and the cost of supplies used to print a single black-and-white page now averages four cents per page. In a company that prints 250,000 pages per day, the costs of supplies alone can total a few million dollars per year. Despite the growing trend and acceptance of multi-function products (MFPs) that combine capabilities traditionally offered in separate copiers, printers, facsimiles, and scanners into one device, many offices continue to be overstocked with separate devices.

A print control program would allow companies to establish internal costs per page for each printer and then track and allocate costs to users based on actual consumption. Specific print jobs can be routed to certain printers based on pre-determined characteristics such as page length or finishing requirements. By establishing a departmental print budget and accountability, employees develop greater discipline over their printing habits. The implementation of a print tracking and control system could reduce printing costs by as much as 15 percent. Enterprises of all sizes are now reviewing their printing and communication practices to streamline the way paper is used within their organizations.

Searching for love in all the right places

Google introduced a service at the Frankfurt Book Fair that allows consumers to search the content of books online. Users of Google's main search engine can search simultaneously billions of Web pages and the texts of hundreds of thousands of books. The search works by looking for words or phrases in the bitmapped images of the pages of books that publishers have provided to Google. Cut-and-paste text is not possible. For each book found, a user would see several pages of the book with the subject of the search highlighted. The page would also offer links to online retailers, where the book could be purchased. Publishers do not pay to participate in the program. Google would make money by selling advertising on the search pages, and it would share those revenues with the publishing companies. At least a dozen companies have already signed up to participate, and executives spoke enthusiastically about the potential it offers them to attract more readers to an industry that has struggled to grow in recent years. Among the companies participating are Houghton Mifflin, Scholastic, Penguin, Warner Books and Hyperion. Google said copyright was protected because the service does not allow users to print the book pages and allows the viewing of only a few book pages on any given search. The new Google service appeared to offer competition to the Amazon look inside the book service, except that Google does not intend to sell books. They noted that the service provided links to Amazon and other retailers and that Google had other links to Amazon's site. Publishing executives have been quietly trying to figure out whether they can get rid of the middlemen—bookstores—and sell their products directly to consumers. The problem has been that most book buyers do not pay close attention to which company publishes a book, and therefore consumers would be unlikely to go to a particular publisher's Website to peruse its offerings. When Google Print generates a search result, however, it lists the book's publisher alongside each book page. It would be easy for publishers to list themselves as one of the links that a Google Print user use to buy the book. Publishing executives are conscious of their current reliance on book retailers, especially the big chains like Barnes & Noble and Borders, as well as Amazon, which has its own approach to searching within the book.

It is clear that finding information will be easier than ever before.

Disruptive technologies in the media markets

During a session at Forecast 2005 entitled "Disruptive Technologies," a group of panelists debated the impact of various technologies such as Digital Video Recorders and targeting software on the media business. There was some agreement that emerging technologies will break down the last vestiges of mass media and mass marketing. Most panelists were not sold on this notion, but they universally agreed that the TV business in particular was set to undergo tremendous change. The topic of "addressability" in TV advertising—the buzz-concept of individually tailoring advertising messages to viewers—was a key subject. New technology will enable media buyers to aggregate audience across a spectrum with the selectivity of direct mail. DVRs like TiVo reach significant penetration—30 million TV homes. That kills traditional ad models. The group offered predictions on other technological advances that may affect the media business, including wireless applications and home networking. It is noted that direct mail was the model for targeted marketing.

110-volt broadband

The Federal Communications Commission adopted new rules that enable utility companies to offer alternatives to broadband communications services for homes and businesses—high-speed Internet services through electrical outlets.

Broadband Internet service is more than a year away from wide availability. Electric wires reach more homes than either telephone lines or television cables. The technology has been limited to experiments in 18 states. Known as broadband over power lines, or B.P.L., the technology uses a special modem that plugs into electrical outlets, with speeds of 1 to 3 megabits a second, comparable to broadband service over cable modems, though not as fast as the 5 megabits a second through the residential fiber optic lines being introduced. An obstacle to the use of power lines to carry communications has been electromagnetic interference affecting some radio signals. The commission ruled that it would tolerate a small amount of radio interference in certain areas by the new service in exchange for making the broadband market more competitive.

Current Communications began broadband service near Cincinnati in a joint venture with Cinergy, the Midwest energy company. The service is priced at $29.95 to $49.95 a month, depending on the speed. The technology offers promise because the power grid is ubiquitous. If the utility companies begin to offer broadband service more widely, they would probably also enter the telephone business by offering phone services over the Internet, just as phone and cable companies have begun to do.

From passports to people, chips ahoy

Smartcard firm Axalto, a division of Schlumberger, has secured a deal with the U.S. Government Printing Office (GPO) to provide technology for America's electronic passports. The chips Axalto provides will be placed inside all new passports by 2006. The data on the chip will include a digitized photograph of the passport owner, plus all the information that is already printed on regular passports. A contactless reader will scan the chips anywhere a passport needs to be shown. The readers will be able to compare the data on the chip to the information that was printed onto the passport when it was issued. The GPO currently produces over seven million passports per year. It expects to increase production of electronic passports to quantities over one million in 2005.

The Food and Drug Administration has cleared the way for implantable chips that would provide easy access to individual medical records. Applied Digital Solutions, Delray Beach, FL, said that its devices, which it calls VeriChips, each the size of a grain of rice and inserted under the skin with a syringe, could save lives and limit injuries from errors in medical treatment. Tiny radio frequency identification, or RFID, tags similar to VeriChip have been embedded in livestock and pets in the millions in recent years as a more secure form of identification than external tags. Passive tags like VeriChip do not broadcast radio waves and cannot now be used to track a person's movements. Current scanners cannot read the passive chip from more than a few feet away, but small power sources could extend those ranges and make tracking possible.

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The Electronic
Document Systems
Foundation

24238 Hawthorne Boulevard
Torrance, CA 90505-6505 USA

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